Chapter 7: Using the Conceptual Model–Why did Delta Smelt abundance increase in 2011?

In this Chapter, we further explore Delta Smelt responses and habitat attributes as depicted in the driver and life stage transition conceptual model diagrams presented in Chapter 5. The purpose is to demonstrate the utility of our conceptual model framework for generating hypotheses about the factors that may have contributed to the 2011 increase in Delta Smelt abundance. For each life stage transition, we explore a series of hypothesized linkages among ecosystem drivers, habitat attributes, and Delta Smelt responses. We evaluate these hypotheses by comparing habitat conditions and Delta Smelt responses in the wet year 2011 to those in the prior wet year 2006 and in the drier years 2005 and 2010.

In this Chapter we briefly describe the comparative approach and the hydrological conditions during the four years that are the focus of our comparisons. We then state and explore each hypothesis for the adult, larval, juvenile, and subadult life stages of Delta Smelt using data sources described in Chapter 3. Key points from these evaluations, as well as previous report Chapters, along with benefits and limitations of the comparative approach are summarized and discussed in Chapter 8. In several cases, we lacked suitable data or other necessary information to evaluate our hypotheses; these data and information gaps are described in Chapter 9. Chapter 9 also includes a brief review of some of the more complex mathematical analyses used in recent peer-reviewed publications, such approaches currently being used by others, and three examples of additional mathematical modeling approaches that can be used to further explore some of the linkages and interactions in our conceptual model and complement previously published and other ongoing mathematical modeling efforts for Delta Smelt.

Comparative Approach

The comparative approach used for evaluating the hypotheses stated in this Chapter is similar to the approach taken in the FLaSH investigation (Brown et al. 2014, see also http://deltacouncil.ca.gov/science-program/fall-low-salinity-habitat-flash-studies-and-adaptive-management-plan-review-0). This allowed us to place the results of the FLaSH investigation in a year-round, life cycle context as recommended by the FLaSH Panel (FLaSH Panel 2012). Specifically, we compared data from the two most recent wet years, 2006 and 2011, and the two years that immediately preceded them, 2005 and 2010. To conduct our comparisons, we determined how Delta Smelt responses or habitat attributes would be expected to respond in the different years and then compared the expected response to the observed response. If the expected and observed responses were similar, the hypothesis was considered to be supported.

Moderate to wet hydrological conditions tend to benefit many estuarine organisms, including Delta Smelt (Sommer et al. 2007). But low recruitment or low survival at any point in the predominantly annual Delta Smelt life cycle can lead to low abundance even in a wet year. Identifying the reason(s) for low abundance in a wet year may give important insights into key habitat attributes and environmental drivers that could be managed in a way that would improve the likelihood of abundance increases in all wet years.

The two wettest years after the onset of the POD were 2006 and 2011 (Fig. 58). Delta Smelt abundance increased substantially in 2011, but not in 2006 (Fig. 3). The failure of the Delta Smelt population to increase in the wet year 2006 and the increase of Delta Smelt in the wet year 2011 provides an opportunity to compare and contrast habitat attributes in these two years and possibly identify new options for management actions. As stated in Chapter 3, our working assumption is that different Delta Smelt abundances in 2006 and 2011 should be attributable to differing environmental conditions, in some cases attributable to management actions, and subsequent ecological processes influencing the Delta Smelt population.

Preceding habitat conditions may have important implications for the response of a population to the environmental conditions present during a wet year; therefore, we also consider data from 2005 and 2010. Further, we also consider adult and larval abundance in 2012 following the wet year of 2011. We did not include any years predating the POD period in this analysis. This was done to prevent the possibly more subtle, but management-relevant, environmental changes occurring during the POD period from being overwhelmed by effects of the strong POD step changes in the early 2000s as well as similarly strong changes that occurred before the POD (e.g., after the invasion of the clam *Potamocorbula amurensis*).

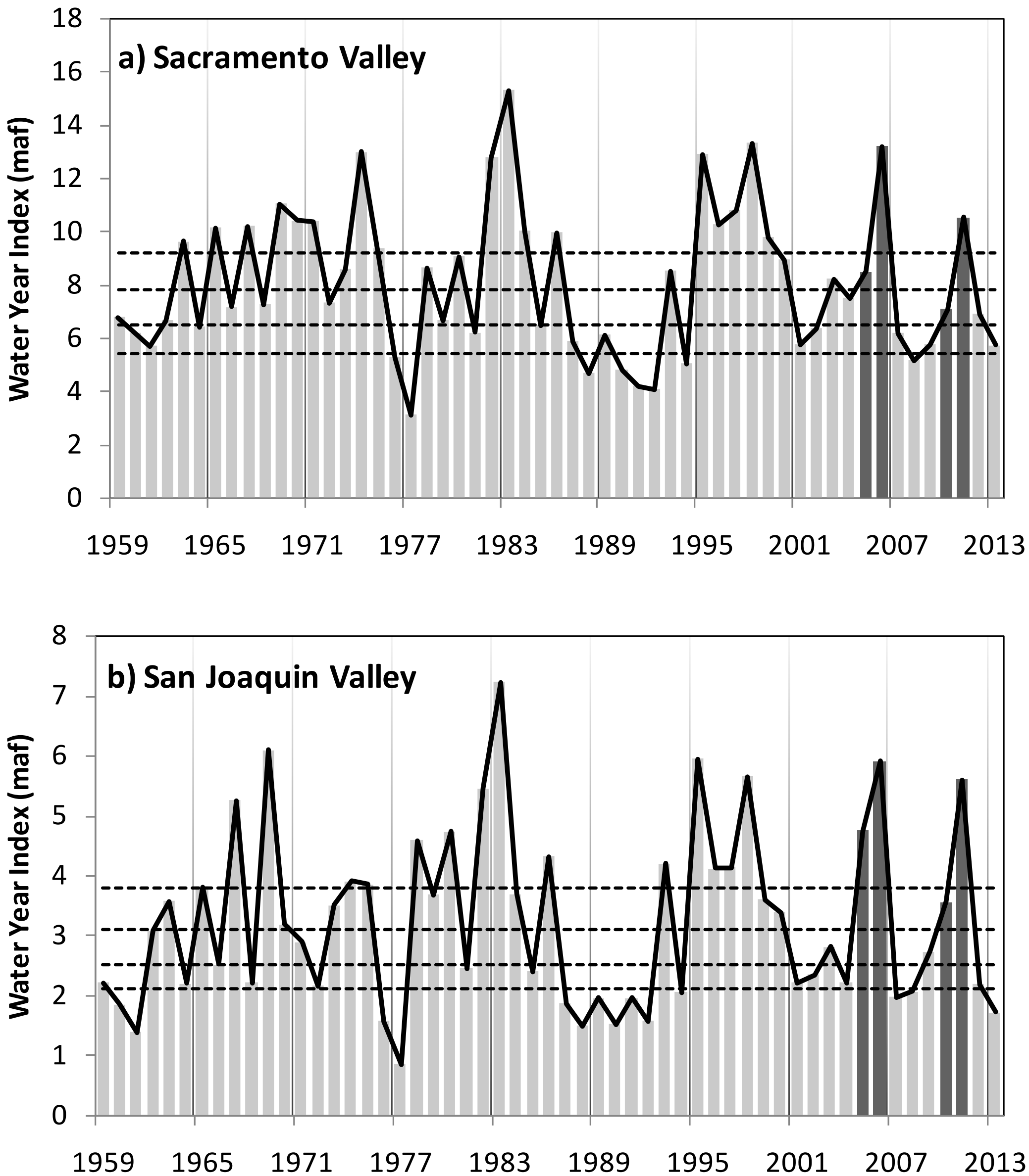
For the purpose of this report, we call 2005, 2006, 2010, and 2011 our "study years." We use "year" rather loosely because the Delta Smelt life cycle does not follow the calendar year. As already explained, life stages can overlap and can be observed during different months in different years. Mature adults of a cohort produced in one year are generally not observed until the following year. Similarly, the life cycle does not strictly follow the water year type. We do our best to explain these mismatches when they occur and keep the presentation focused on the life cycle and the conceptual models.

Note that we do not examine the complex interactions that may occur when more than one hypothesis is true (or false), nor do we rule out that a hypothesis may be true in some years and false in others. Therefore, it is important to recognize that data contrary to a hypothesis may indicate that the habitat attribute was not controlling in the selected years, or that complex interactions among multiple habitat attributes (and corresponding hypotheses) contributed to the observed effects. Addressing such complexities is more appropriate for quantitative models as discussed in Chapter 9.

Hydrological Conditions

According to annual water year indices and classifications for overall hydrological conditions in the Sacramento and San Joaquin Valleys that provide the freshwater inflow into the Delta, 2005, 2006 and 2011 were the wettest years of the POD period (Fig. 58, see also http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST). In the San Joaquin Valley, 2010 was the fourth wettest year of this period. In the Sacramento Valley, 2003 and 2004 were wetter than 2010. Specifically, water year 2010 was classified as "below normal" in the Sacramento Valley and "above normal" in the San Joaquin Valley and 2011 was classified as wet in both areas, according to the water year index classifications. Water year 2005 was classified as "above normal" in the Sacramento Valley and "wet" in the San Joaquin Valley and 2006 was classified as wet in both areas. (Fig. 58). Water year 2012 was classified as "below normal" in the Sacramento Valley and "dry" in the San Joaquin Valley.

Figure 58. Annual water year indices for the a) Sacramento and b) San Joaquin Valleys since the initiation of the Summer Townet Survey in 1959. Horizontal dashed lines: threshold levels for water year type classifications as wet (W), above normal (AN), below normal (BN), dry (D) and critically dry (C). Darker grey bars indicate the four study years (2005, 2006, 2010, 2011) examined in Chapter 7 of this report. (Data are from http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST).



The overall wet hydrological conditions in the Sacramento and San Joaquin Valleys in 2005-6 and 2010-11 resulted in relatively prolonged periods of high Delta inflow and outflow and low X2 values in the winter and spring months of the four study years (Fig. 59). In the first half of the year, 2006 had the highest outflow and lowest X2 values followed by 2011, 2005, and 2010. In the second half of 2011, outflow was higher and X2 values were lower than in the second half of 2006 and of all other years during the POD period. In spite of having the lowest spring X2, 2006 had the highest fall X2 (September to October) of all study years, followed by 2005, 2010, and 2011 (Fig. 60).

The overall high flows during these four years allowed for periods of very high fresh water exports from the Delta (Fig. 59). This led to record high volumes of fresh water exported in water year 2011 (6.7 maf) and in water year 2005 (6.5 maf) and a somewhat lower export volume in water year 2006 (6.3 maf). The total water export volume was substantially lower in water year 2010 (4.8 maf) because 2010 immediately followed a three-year drought and the below normal hydrological conditions in the Sacramento Valley (Fig. 58) were not sufficient to rapidly replenish reservoirs and allow for greater exports.

Hypotheses

Individual hypotheses are indicated in the life stage transition conceptual model diagrams next to the arrows depicting each hypothesized linkage or outcome (figs. 46-49). While all linkages are considered important, we only developed hypotheses for selected linkages. We developed hypotheses for linkages with sufficient data for quantitative assessments and where there is disagreement or uncertainty regarding the outcome resulting from a driver. We also developed hypotheses for linkages considered important but where we found critical information was missing; thus, highlighting topics where new work is needed. For each of these hypotheses, we then considered the available data to examine whether the Delta Smelt response expected under the hypothesis was consistent with the observed trends in habitat attributes or population dynamics. While we would have liked to test hypotheses about the linkages between habitat attributes and the specific life stage transition processes shown in the life stage transition conceptual model diagrams, the available data often only allowed us to test "lower tier" hypotheses about the linkages between ecosystem drivers and habitat attributes.

Note that we have not examined the complex interactions that may have occurred when more than one hypothesis was true (or false), nor have we ruled out that a hypothesis may be true in some years and false in others. Therefore, it is important to recognize that data contrary to a hypothesis may indicate that the habitat attribute was not controlling in the selected years, or that complex interactions among multiple habitat attributes (and corresponding hypotheses) contributed to the observed effects. Addressing such complexities is likely more appropriate for quantitative models as discussed in Chapter 9. Our overall objective in this Chapter is to provide a demonstration of how the conceptual model can be used to generate and test hypotheses and highlight data gaps while addressing a specific topic of management interest—the increased Delta Smelt abundance index in 2011.

Adult Hypotheses

Hypothesis 1: Hydrology and water exports interact to **influence entrainment risk for adult Delta Smelt.**

As discussed earlier, we do not currently have a reliable measure of actual entrainment of fishes by the SWP and CVP export pumps. We also do not have actual population abundance estimates for Delta Smelt. As discussed by Kimmerer (2008, 2011) and Miller (2011), it is thus difficult to estimate proportional population losses due to entrainment. We consider the published

Figure 59. Net daily flows in cubic feet per second for a) Delta inflow from all tributaries, b) Delta outflow into Suisun Bay, and d) total freshwater exports from the Delta. Also shown are daily values for c) X2 (see Chapter 4 for explanation). Flow data are from Dayflow (http://www.water.ca.gov/dayflow/). X2 values are calculated from daily Delta outflow with the equation in Jassby et al. (1995.)

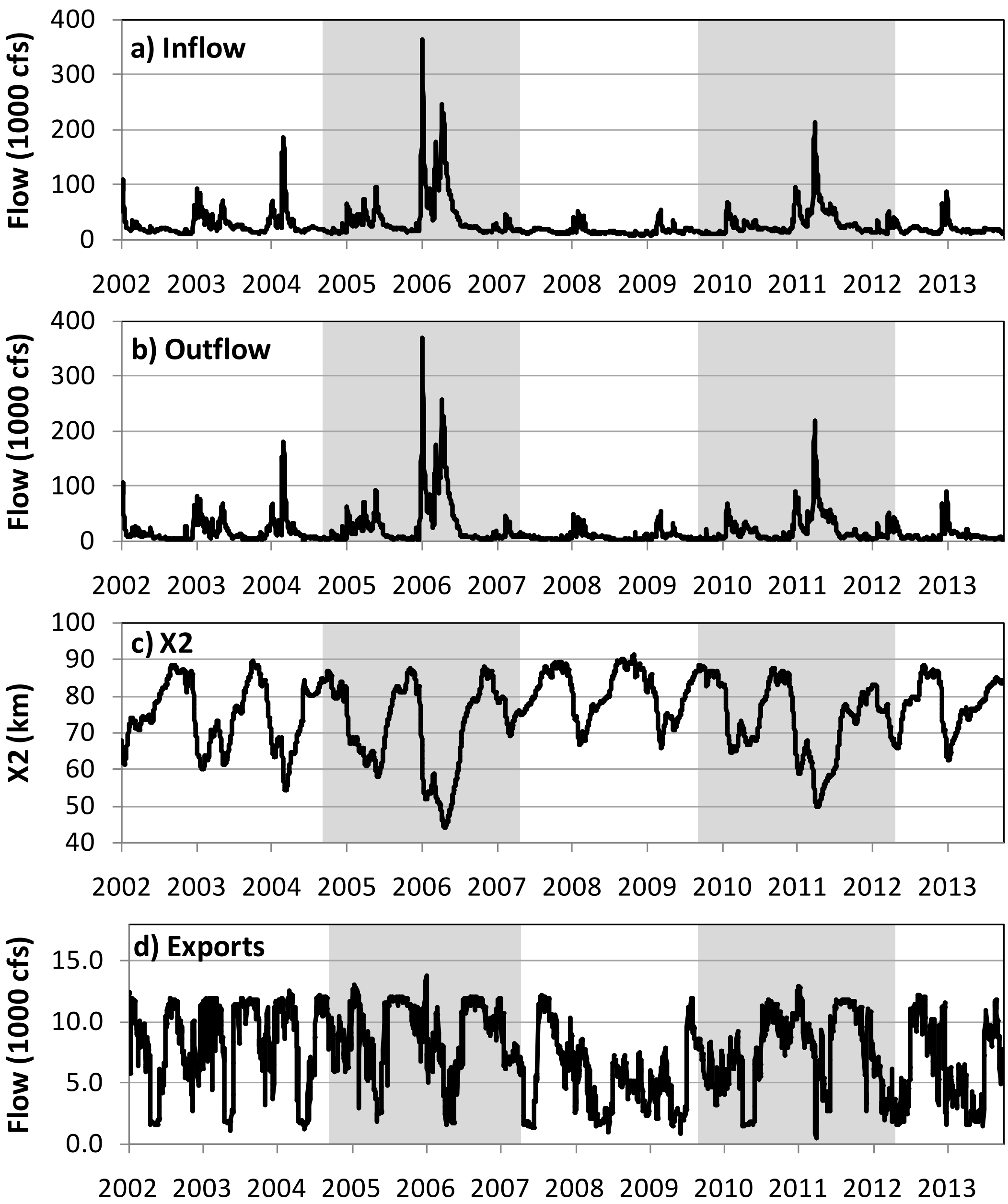
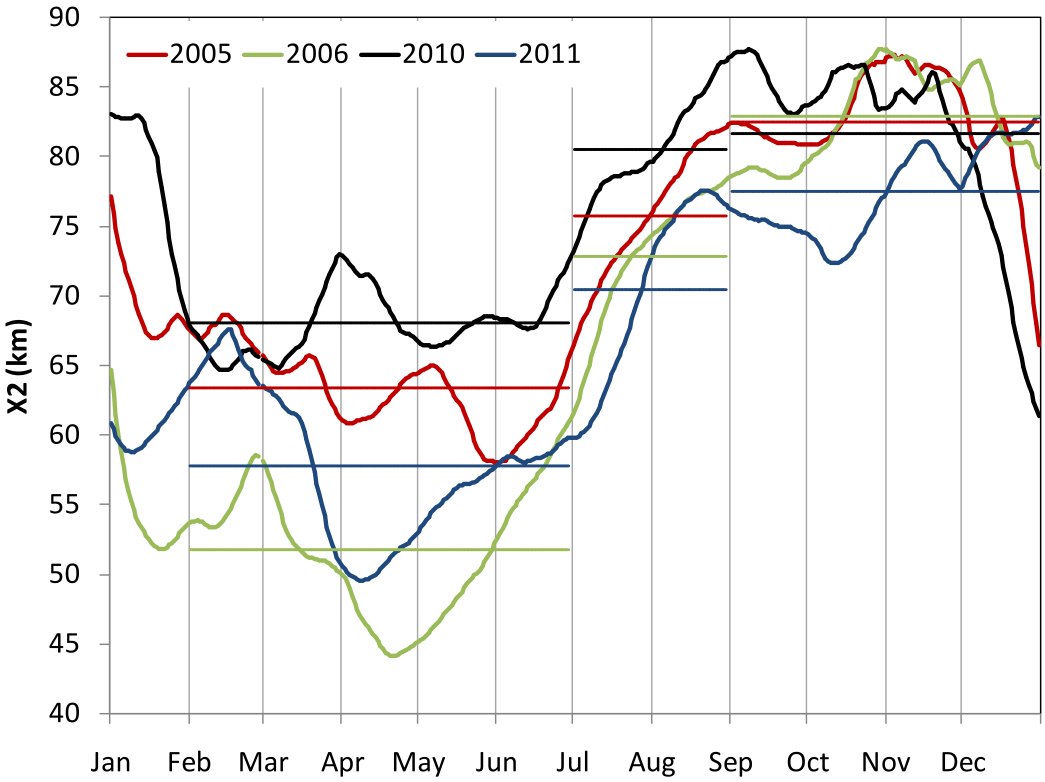


Figure 60. **Daily X2 values in January to December for each of the four study years. Seasonal X2 averages are indicated by horizontal lines for spring X2 (February to June), summer X2 (July and August), and fall X2 (September to December). See Fig. 15 for seasonal X2 in other years.**



proportional loss estimates for adult Delta Smelt entrainment losses for the two years for which they are available (2005 and 2006; Kimmerer 2008). However, we otherwise restrict our analysis – and this hypothesis – to an assessment of entrainment risk based on salvage and OMR flow data. Note that high entrainment risk for an individual fish does not automatically lead to a high proportion of the population lost to entrainment mortality. For example, in wetter years when large numbers of fish are present but most of the population is distributed farther away from the pumps, a large number of fish can be entrained but only a small percentage of the entire population.

Adult (December-March) Delta Smelt salvage was highest in 2005 followed by 2006 and 2010 and lowest in 2011 (Fig. 61). In 2005, most salvage occurred in January, while in the other three years it occurred in February and March (Fig. 62). Overall, adult Delta Smelt salvage in the four comparison years was on the very low end of the historical time series starting in 1980 (Fig. 26). On the other hand, the ratio of adult salvage divided by the previous year's FMWT index was high in 2005 (6th highest on record since 1979), but much lower in 2006 and 2010, and lowest in 2011 (Fig. 26).

Low salvage levels in these years and especially in 2010 and 2011 were not particularly surprising due to the low FMWT levels of the POD years along with more active management of OMR flows for Delta Smelt and salmonid protection after 2008 in accordance with the USFWS (2008) and NMFS (2009) BioOps. For management purposes, the onset of increased adult Delta Smelt entrainment risk is inferred from distributional patterns of Delta Smelt detected by the SKT survey, Delta Smelt salvage and, more recently, consideration of Delta conditions, including turbidity patterns. Since 2009, net OMR flows during periods of increased adult Delta Smelt entrainment risk are now always less negative than they were in years prior to the BioOps. Prior to 2008, net OMR flows often reached -8,000 to -10,000 cfs (see Fig. 31, Kimmerer 2008, Grimaldo et al. 2009), when outflow was low. An exception to these strongly negative flows occurred during April-May export curtailments associated with the Vernalis Adaptive Management Program (VAMP, 2000-2012). These curtailments were especially pronounced in the first half of the VAMP period (2000-2005). During the four comparison years, winter (December-March) net OMR flows were least negative in 2006 followed by 2011 and 2010 with the most negative net OMR flows in 2005 (Fig. 63). High inflows particularly from the San Joaquin River during 2005, 2006 and 2011 moderated effects of negative OMR flows, while export pumping generally remained high. In 2010 at the end of a three-year drought, there was little water in storage to provide for Delta exports prior to the first substantial inflows in mid-January. Subsequently, export levels had to be curtailed to achieve the desired OMR flows. Average winter-time net flows past Jersey Point on the San Joaquin River were positive in all four study years and greatest in 2006 followed by 2011, 2005, and 2010 (Fig. 63).

Kimmerer (2008) used salvage, OMR flows, and fish survey data to estimate proportional population losses due to entrainment for the years 1995-2006. The years 2005 and 2006 represent some of the lower loss estimates in the years examined by Kimmerer (2008); mean population losses reached up to 22% of the adult population in some years when OMR flows were more negative than -5000 cfs (Kimmerer 2008). Even if Kimmerer's estimation method provides a potential overestimate of loss (Miller 2011), proportional losses of the adult population were less than 10% in the two years that coincide with our comparison years (2005 ≈ 3% , 2006 ≈ 9%; from Fig. 12 in Kimmerer 2008). These types of proportional loss estimates are not available for

Figure 61. Annual adult (December-March) Delta Smelt salvage at the CVP (blue bars) and SWP (green bars) fish protection facilities for 2005-2012.

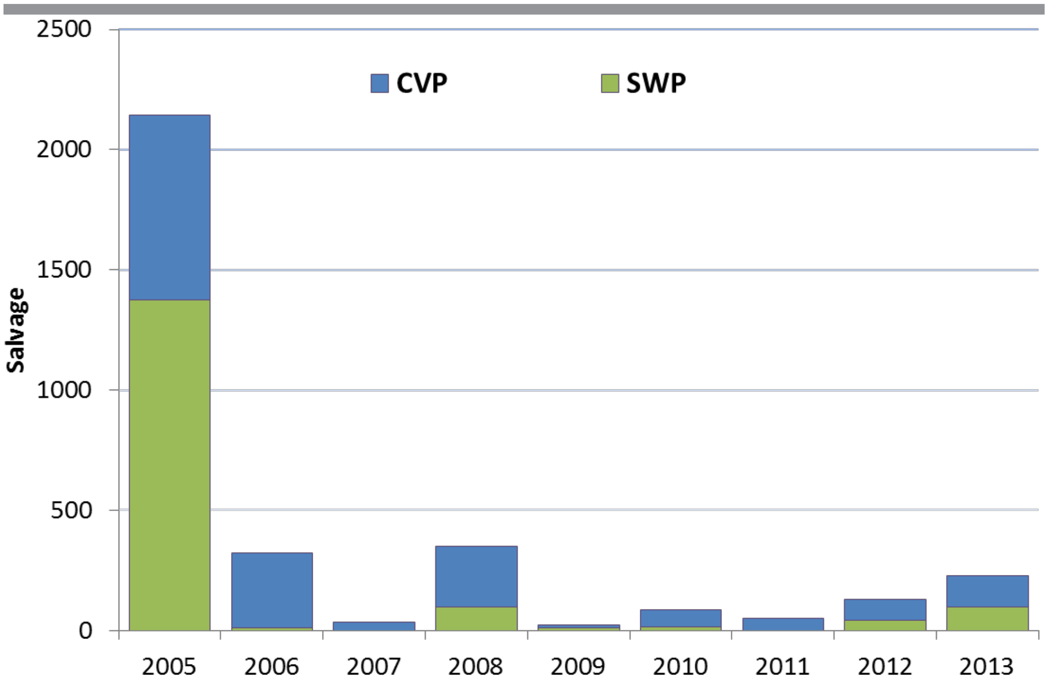
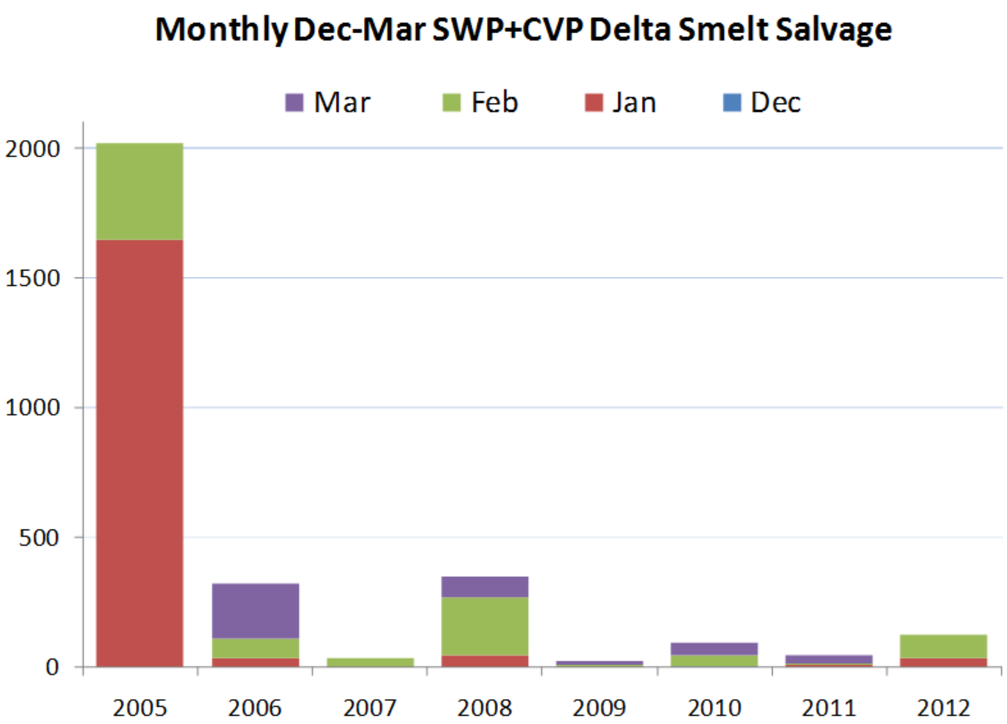


Figure 62. Annual combined adult (December-March) Delta Smelt salvage at the CVP and SWP fish protection facilities by month for 2005-2012.



2010 and 2011, but would likely be even smaller than for 2005 due to less negative OMR flows and fish distributions away from the CVP and SWP pumps. Salvage was also lower in these two years than in 2005 and 2006.

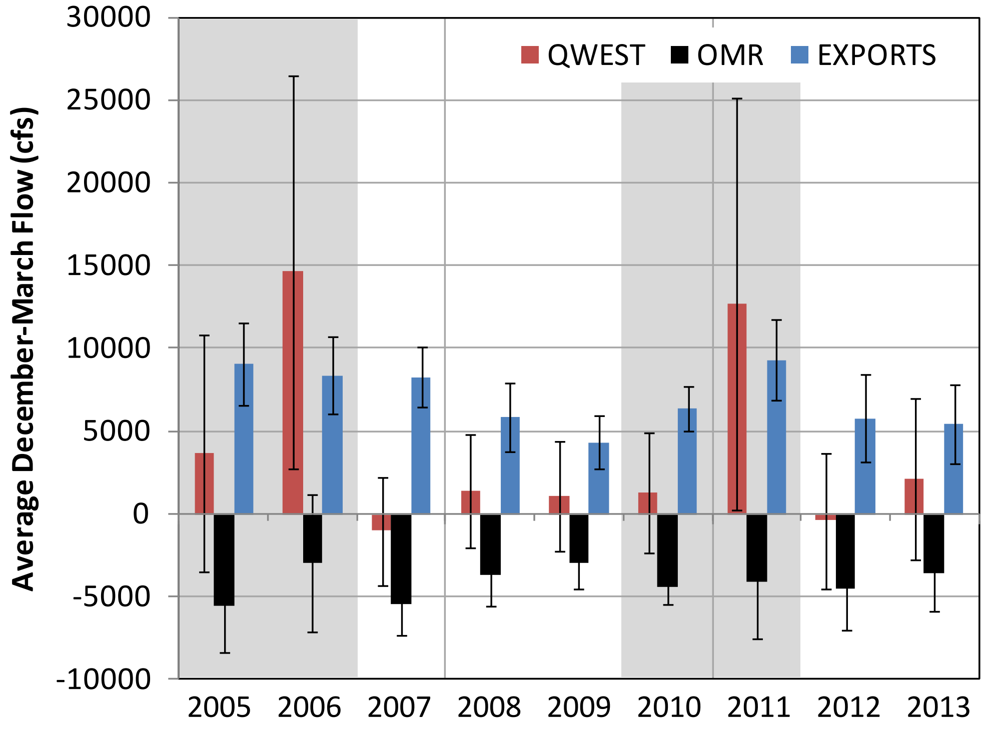
In summary, we conclude that hydrology and water exports do interact to influence entrainment risk for adult Delta Smelt and that adult Delta Smelt entrainment risk during the four comparison years was perhaps higher in 2005 than in the other years, but was low relative to historical levels in all four years.

Hypothesis 2: Hydrology interacting with turbidity **affects predation risk for adult Delta Smelt.**

At present, we do not have information about differences in actual predation mortality between the comparison years. As with entrainment, we thus limit this hypothesis and our analysis to to a general discussion of predation risk. Fully characterizing predation risk is exceptionally complicated, making it difficult to generate simple hypotheses that describe associated losses of all life stages of Delta Smelt. We thus limit our hypotheses about predation risk to a few factors for each life stage. For adults, we consider hydrology and turbidity as well as overlap with predators (next hypothesis).

Because Delta Smelt migrate during higher flow conditions when the water is generally turbid, it is assumed that losses to visual predators are lower or at least not substantially higher during the migration period than during other periods. First flush studies led by the USGS and UC Davis

Figure 63. Annual average daily net flows for December through March in cubic feet per second (cfs) in Old and Middle River (OMR), past Jersey Point on the lower San Joaquin River (QWEST) and total exports in millions of acre feet (MAF), 2005-2013. Error bars are 1 standard deviation.



suggest that Delta Smelt aggregate in the water column away from channel edges during daytime flood tides during upstream migration events (Bennett and Burau 2014), but it is not known if Striped Bass or Sacramento Pikeminnow *Ptychocheilus grandis*, the most likely predators of Delta Smelt in the water column, can detect and exploit these aggregations.

In the winters of 2005, 2006, 2010, and 2011 the highest Secchi depths (lowest turbidity) were found in the freshwater regions of the estuary (< 1 salinity), except for the Cache Slough region in the north Delta which was as turbid as the saltier regions of the estuary (Fig. 64). Winter-time Secchi depths in the freshwater region recorded during the SKT surveys (Fig. 64) were often higher (water clearer) than the average Secchi depths across all IEP EMP monitoring sites during these months since 2003 (about 60 cm) and especially when compared to pre-POD winter Secchi depths (around 50 cm on average) recorded by the EMP (Fig. 25). Winter-time Secchi depths in the other salinity regions were generally lower (water more turbid) than the EMP Secchi depth averages for the POD years and more similar to historical averages. In all four comparison years, predation risk associated with turbidity levels was thus likely not different from the historical risk in the more saline regions and the Cache Slough complex, but possibly higher in the freshwater regions, except for the Cache Slough region.

The salinity region differences were much more pronounced than the interannual differences between the four comparison years. Based on these data, it is not clear that higher flows in 2006 and 2011 contributed to higher turbidity in the winter months. The exception might be near the end of the Delta Smelt spawning season in early April when Secchi depths in the freshwater region were often substantially lower in the two wetter years 2006 and 2011 than in the two drier years 2005 and 2010 (Fig. 64). This will be discussed further in the report section about larval Delta Smelt. For adults, we conclude that interannual differences in turbidity between the wetter and drier of the four comparsion years did not likely contribute substantially to reduced predation risk and increased survival in the two wetter years.

Hypothesis 3: Predator distribution affects predation risk of adult Delta Smelt

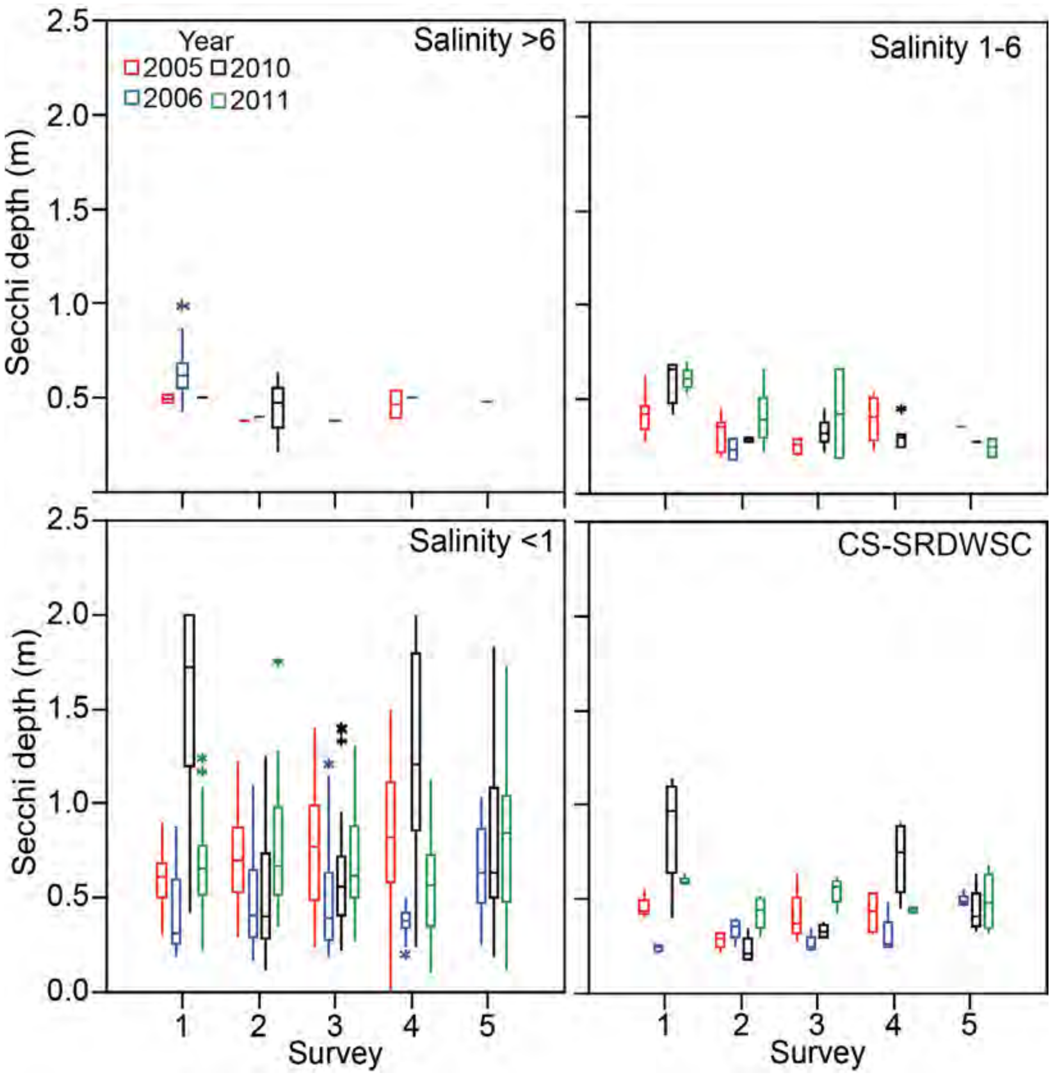
Spatial and temporal overlap with predators is a likely factor contributing to predation risk for all life stages. At present, we do not have information about how predator distribution varied between our comparison years but it is recognized that adult Delta Smelt could be vulnerable to predation if the distributions of predators and Delta Smelt populations overlapped. As already mentioned, Striped Bass and Sacramento Pikeminnow are the most likely open-water predators of adult Delta Smelt. If Delta Smelt utilize littoral habitats to a greater extent than presently assumed, then increased overlap with the distributions of Largemouth Bass and other centrarchid populations is possible. Results of field studies (Feyrer et al. 2013, Bennett and Burau 2014), described for Adult Hypothesis 2, found that adult Delta Smelt did move nearshore on a tidal basis to avoid displacement or move upstream during the “first flush.” Such movements would increase proximity to shoreline predators like Largemouth Bass, albeit during periods of increased turbidity when such visual predators would be at a disadvantage. Clearly, Hypothesis 2 and Hypothesis 3 are closely linked because predation risk is a function of predator presence and prey vulnerability. More information about predator presence is needed to evaluate this aspect of predation risk.

Hypothesis 4: Variability in prey availability during winter and spring affects growth and fecundity (eggs per clutch **and number of clutches) of female Delta Smelt.**

The hypothesis is that increased food availability leads to not only increased adult survivorship, but also growth, which in turn increases reproductive output (number of eggs per female increases with size; Bennett 2005). In addition, with cooler temperatures and lower metabolic rates, sufficient food resources during winter can contribute to energetically demanding multiple spawning events (three spawns possible in wild fish; L. Damon, CDFW, written communication 2012).

For adult females, the ability to meet the bioenergetic demands of reproductive development with sufficient food consumption may be particularly important for fish that spawn multiple times in a year. Preliminary findings from January through April 2012 indicated that adult Delta Smelt are indeed consuming large prey items, such as amphipods, mysids, and larval fish during their spawning period (Fig. 44) with feeding incidence near 98% for the period (Table 2). For this report, we cannot address whether food limitation is a relevant factor during the late winter-spring spawning period because we do not have sufficient data about adult Delta Smelt feeding, but we hypothesize that it may be a critical issue for spawners that need energy for multiple egg clutches. Evidence in support of this hypothesis comes from the modeling simulation experiment by Rose et al. (2013b) who found that food availability along with water temperature affected fall and winter growth and egg production prior to spawning and ultimately population success.

Figure 64. **Secchi depth data collected during the Spring Kodiak Trawl Survey. Surveys are conducted monthly January-May. See Chapter 3: Data Analyses for explanation of boxplots.**



Based on trajectories in adult fork lengths, it appears that adult growth may have been somewhat higher in 2005 and 2011 than in 2006 and 2010, although differences were not pronounced (Fig. 17) and as noted in Chapter 6, annual fork lengths of Delta Smelt collected in the SKT were similar in the four study years (Fig. 55). From these data we infer that environmental conditions were generally good, supporting both continued growth in length and maturation of eggs, except perhaps in 2010. In 2011, only 13 mature females were collected, so growth estimates are uncertain. In general, the number of mature females collected each year reflected year-class strength as measured by the SKT (Fig. 3), except in 2011 when only 13 ripe or ripening females were collected. Adults may use more energy for egg production than for continued somatic growth, but we do not have data on clutch sizes to evaluate this for the four study years.

Data on prey availability for current IEP sampling locations is also limited. Adult Delta Smelt diet is varied (Fig. 44) and includes pelagic and demersal invertebrates, as well as larval fish. Current mesozooplankton (copepod and cladoceran) and mysid sampling by the EMP

Table 2. Percent of age-1 Delta Smelt captured during the Spring Kodiak Trawl Survey with food present in the stomach collected January through May 2012 for three salinity regions and the freshwater Cache Slough-Sacraramento River Deepwater Ship Channel (CS-SRDWSC).

		Month					
YEAR	REGION	JAN	FEB	MAR	APR	MAY	GRAND TOTAL
2012	> 6	100%	100%				100%
	1 - 6	100%	100%	100%	100%	0%	99%
	< 1	100%	93%	100%	90%	89%	94%
	CS-SRDWSC	100%	100%	100%	96%	100%	99%
GRAND TOTAL	100%	99%	100%	95%	90%	98%	

Zooplankton Study and invertebrate sampling by the EMP Benthic Monitoring Study does not sample the full geographic range occupied by adult Delta Smelt, including Cache Slough and the Sacramento River Deep Water Ship Channel. In addition, epibenthic cumaceans and amphipods consumed by Delta Smelt might not be effectively sampled with current methods (substrate grabs using a Ponar dredge), which are more suited to sampling organisms in or attached to the substrate. Amphipods found in stomachs of adult Delta Smelt collected January 2012-May 2012 (Fig. 44) were 95% *Corophium* spp., and of those, 90% were juveniles ranging 0.8 to 1.3 mm in body length. These amphipods are believed to be mostly juvenile *Americorophium spinicorne* and *A. stimpsoni*, which as adults are tube building amphipods (Hazel and Kelley 1966). Dirt, substrate debris, and tube pieces were not found in Delta Smelt stomachs with the amphipods, so it is possible these juveniles amphipods are epibenthic or pelagic prior to settling and building tubes. Size distribution of amphipods collected by the DWR EMP Benthic Monitoring Study is not currently available. The IEP Smelt Larva Survey does collect larval fish data during winter (January-March) over a wide section of the estuary, but comparisons with larval fish consumption by adult Delta Smelt are limited because this survey is still new; it was initiated in 2009.

Data were insufficient to conclusively test the hypothesis that variability in prey availability affects growth and fecundity of adult Delta Smelt. More data are needed on growth, clutch number and size, and prey availability.

Larval Hypotheses

Hypothesis 1: Delta Smelt larvae numbers are positively affected by increased duration of the temperature spawning window

To evaluate this hypothesis, we developed two water temperature measures. The first is the number of days in the temperature spawning window as indexed by mean daily water temperatures at Rio Vista between 12 and 20 °C. This temperature range was selected as representing a reasonable balance between the various temperature ranges observed in laboratory and field studies (Wang 1986, Baskerville-Bridges et al. 2004b, Bennett 2005) and reviewed in earlier sections of this report. Presumably, a longer duration spawning window would result in more repeat spawning for individual females and greater total fecundity. The second water temperature measure is the number of days in the optimal temperature for egg survival to hatch. We referred to Fig. 10a in Bennett (2005) and selected the temperature range of 12-17 °C as optimal for egg survival. As explained in previous sections, adult abundance, based on SKT sampling, peaked in 2012 as the 2011 year-class of Delta Smelt reached maturity (Fig. 3). In contrast, the spawning stock (i.e., 2011 SKT) that produced the 2011 year-class ranked second lowest to 2006 (Fig. 3, Adults). Despite this low level, the 2011 spawning stock produced the highest adult abundance observed to date in 2012. This suggests that adult stock size has not limited subsequent adult recruitment from rebounding to levels comparable to those of immediate pre-POD years (see Fig. 3, Subadult). As mentioned in Chapter 6, this suggests that even a severely depleted adult stock can still produce a substantial number of larvae and a rebound in the Delta Smelt population, albeit with potentially lower genetic variability than before (Fisch et al. 2011). It also suggests that factors acting on the survival of larval, juvenile and later stages have a substantial effect on recruitment of adults, because relatively low larval abundance in 2011, was associated with the high 2012 adult abundance (Fig. 3).

As mentioned in the adult section, mature adult female Delta Smelt appeared to grow throughout the spawning seasons of the years compared, except 2010 (Fig. 17). We used water temperatures at the Rio Vista Bridge as a surrogate for temperatures experienced by spawning Delta Smelt (Fig. 65) and calculated the duration of the spawning window and of optimal temperatures to hatch. We calculated each as the number of days between the date of first achieving the lower temperature and the date of first achieving the upper temperature. The onset of the spawning window occurred earliest in 2010, followed by 2005 and 2011 (Fig. 65; Table 3). The spawning window occurred latest in 2006 (Fig. 65; Table 3). The spawning window was broad in both 2005 and 2010 at 128-129 days, intermediate in 2011 at 113 days (20 °C not achieved until July 4, not shown), and was shortest in 2006 at 85 days (Fig. 65; Table 3). Assuming that female Delta Smelt undergo a 35-day refractory period, based on a 4-5 week refractory period (J. Lindberg, U.C. Davis, personal communication, 2013) between each spawning, even in 2006 three spawning events were possible, assuming fish were mature and ready to spawn at the initiation of the spawning window. In all other years, four spawning events were possible, so this measure does not discriminate among years well. The duration of optimal hatch temperature was also lowest in 2006, but other durations ranked differently across years than did spawning window duration (Table 3).

The data for the four study years do not provide conclusive support for the hypothesis that the duration of the spawning window or duration of optimal hatching temperature affected larval production. Relatively high larval abundance in 2005 was consistent with a long spawning window and moderate duration of optimal hatch temperatures (129 days and 68 days, respectively; not shown). However, 2006 with the shortest spawning window (85 days) and shortest optimal hatch duration among the 4 study years also had relatively good larva abundance (Fig. 3). In contrast, larval abundance was low in 2010 although the spawning window and optimal hatch duration were both relatively long. Other factors likely contributed to poor larval abundance in 2010, because ripening and ripe females were not detected after early April 2010 and female growth through the winter was poor (Fig. 17). Finally, both the spawning window and optimal hatch duration were fairly long in 2011 as compared to 2006, so slightly lower larval production in 2011 is inconsistent with these durations. This hypothesis was not supported.

Figure 65. **Mean daily temperatures (°C) at Rio Vista from February 1 through June 30, 2005, 2006, 2010, 2011. The green lines enclose the spawning window, which represents temperatures at which successful spawning is expected to occur.**

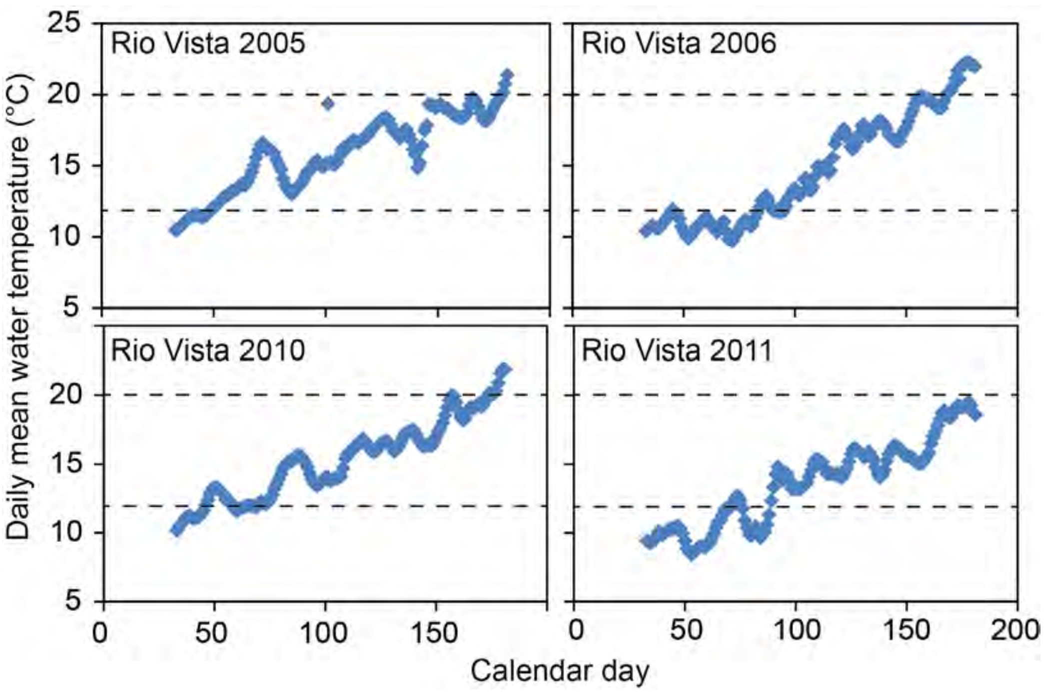


Table 3. **Delta Smelt spawning window (12 to 20 °C inclusive) and optimal hatching period (12 to 17 °C inclusive) for 2005, 2006, 2010, and 2011, defined as number of days of water temperatures, based on mean daily water temperatures measured at Rio Vista. Data are calendar day when water temperature achieved 12, 17, and 20 °C and the duration (days) between those calendar days. The upper limit in 2011 was not reached until July 4, outside the spring season.**

Year	Day 12 °C Achieved	Day 17 °C Achieved	Day 20 °C Surpassed	Duration 12-20	Duration 12-17	Duration 17-20
2005	50	118	179	129	68	61
2006	84	120	169	85	36	49
2010	46	136	174	128	90	38
2011	72	163	185	113	91	22

Hypothesis 2: Increased food availability results **in increased larval abundance and survival.**

This hypothesis focuses on seasonal changes in phytoplankton biomass and the zooplankton community and resulting changes in abundances of food items most often consumed by Delta Smelt larvae. Phytoplankton biomass data (chlorophyll-*a*) collected at 10 stations by the IEP

EMP show that the highest spring biomass levels were observed in May of 2010 and 2011 (Fig. 66). Median biomass levels were lower in April and May of 2005 and 2006 than in April and May of 2010 and 2011. This suggests that more food was available for zooplankton growth in the spring of 2010 and 2011 than in 2005 and 2006. In all four years, however, chlorophyll concentrations were lower than 10 ug/L at almost all stations, suggesting that zooplankton may have generally been food limited in these years (see Chapter 4). Nevertheless, greater phytoplankton biomass in late spring of 2010 and 2011 may have contributed to overall greater food availability and better survival of late larvae and early juveniles in these years.

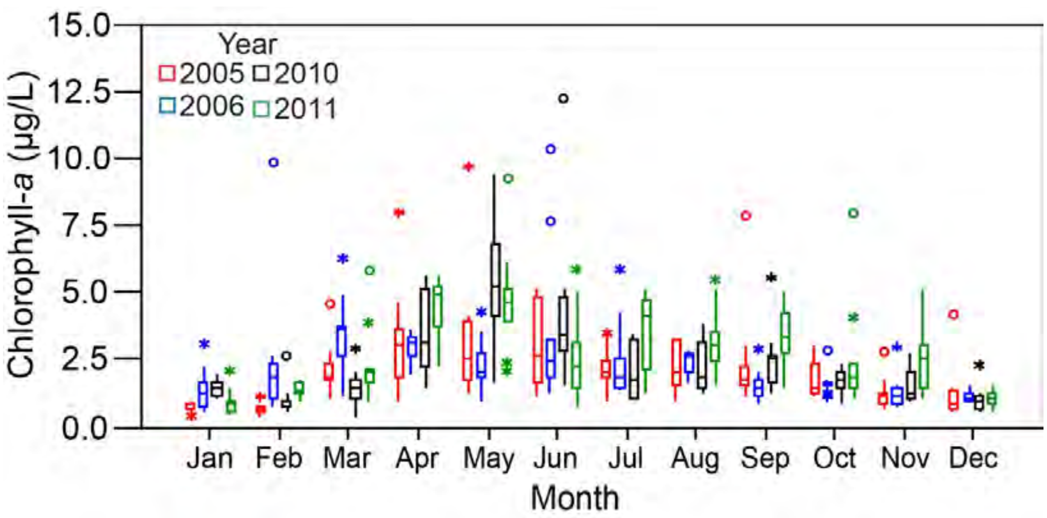
Juvenile and adult calanoid copepods, particularly *E. affinis* and *P. forbesi*, comprise most of the larval diet through June (Nobriga 2002, Slater and Baxter 2014). *E. affinis* is moderately abundant only during winter and spring and rare in summer and fall, whereas *P. forbesi* is abundant only in summer and fall (Durand 2010, Hennessy 2010, 2011, Winder and Jassby 2011). It is not clear whether the seasonal decline in abundance of *E. affinis* is related to temperature, potential competitive interactions with *P. forbesi*, differences between the species in vulnerability to consumption by *P. amurensis* (Miller and Stillman 2013), or a combination of such factors. The transition between high abundances of the two species, may create a seasonal “food gap” during late spring or early summer. This food gap has been hypothesized to be an important period for Delta Smelt larval survival (Bennett 2005, Miller et al. 2012).

To assess whether a gap in prey availability existed between periods of high abundance of *E. affinis* and *P. forbesi*, we evaluated abundance patterns in 20 mm Survey copepod data for stations with and without Delta Smelt. The food gap hypothesis was only weakly supported by the data. The density of *E. affinis* (in the presence of Delta Smelt larvae) typically reached 100 m^3 by week 16 (Figs. 67 and 68). Assuming 100 m^3 as a baseline density for *E. affinis*, this baseline was generally maintained until about week 22, when they declined at about the same time that *P. forbesi* densities increased to 100 m^3 (Figs. 67 and 68). After combining the densities of both *E. affinis* and *P. forbesi* and tracking them through time, we detected a gap in food during week 22 (late May – early June) of 2005 (Fig. 67), which is inconsistent with 2005 exhibiting the highest larva abundance among our comparison years (Fig. 3). Such density gaps were not observed in the other three comparison years (Figs. 67 and 68), which exhibited lower abundance than 2005 (Fig. 3). Survival of larvae to juveniles was very low in 2005, but was also low in 2006 (Fig. 51) with no evidence for a food gap in 2006. Survival of larvae to juveniles was relatively high in 2010 and 2011 (Fig. 51). This analysis does not support the hypothesis that differences in zooplankton availability affected larval abundance and survival in the four study years, but higher phytoplankton biomass in April and May of 2010 and 2011 could have contributed to overall greater food availability and better survival of late larvae and early juveniles in these years.

Hypothesis 3: Distributional overlap of Mississippi Silverside with Delta Smelt and high abundance of Mississippi Silverside increases predation risk/rate on larval Delta Smelt, whereas, increased turbidity, **decreases predation risk/rate on larval Delta Smelt.**

Silversides are ubiquitous within the Delta (Brown and May 2006) and have long been proposed (Bennett 1995) and more recently confirmed as a predator of Delta Smelt larvae (Baerwald et al. 2012). We do not have estimates of predation losses to Silversides during the four study years and thus focus on assessing predation risk by evaluating fish distributions, predator and prey sizes, and prey growth, which is related to temperature.

Figure 66. Trends in chlorophyll-*a* concentrations (µg/L) in samples collected by the IEP Environmental Monitoring Program during each the four study years (2005, 2006, 2010, and 2011). Sample site locations shown in figure 15. See Chapter 3: Data Analyses for explanation of boxplots.

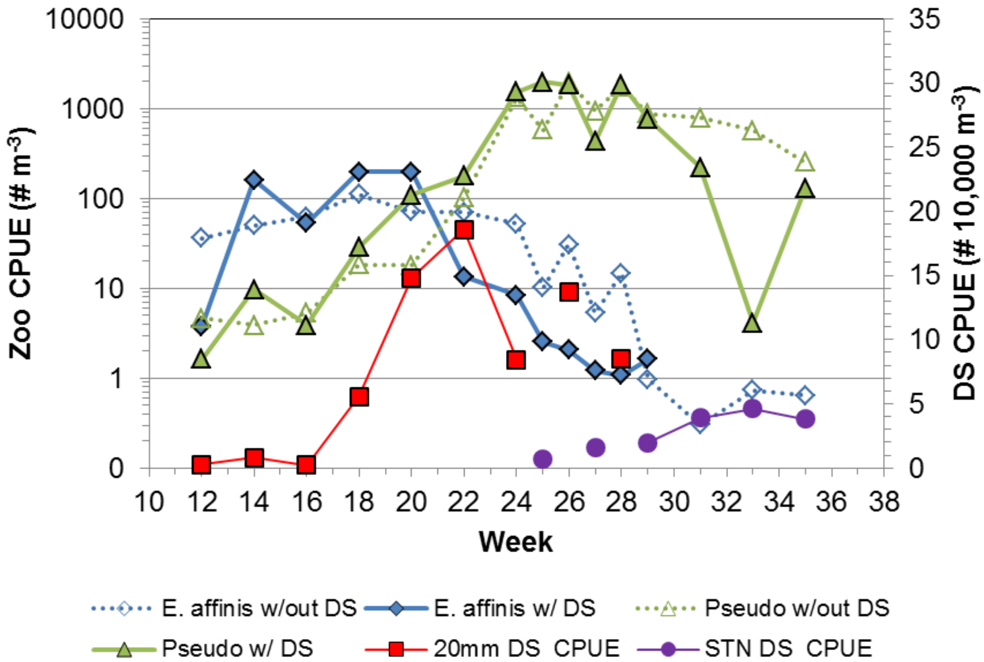


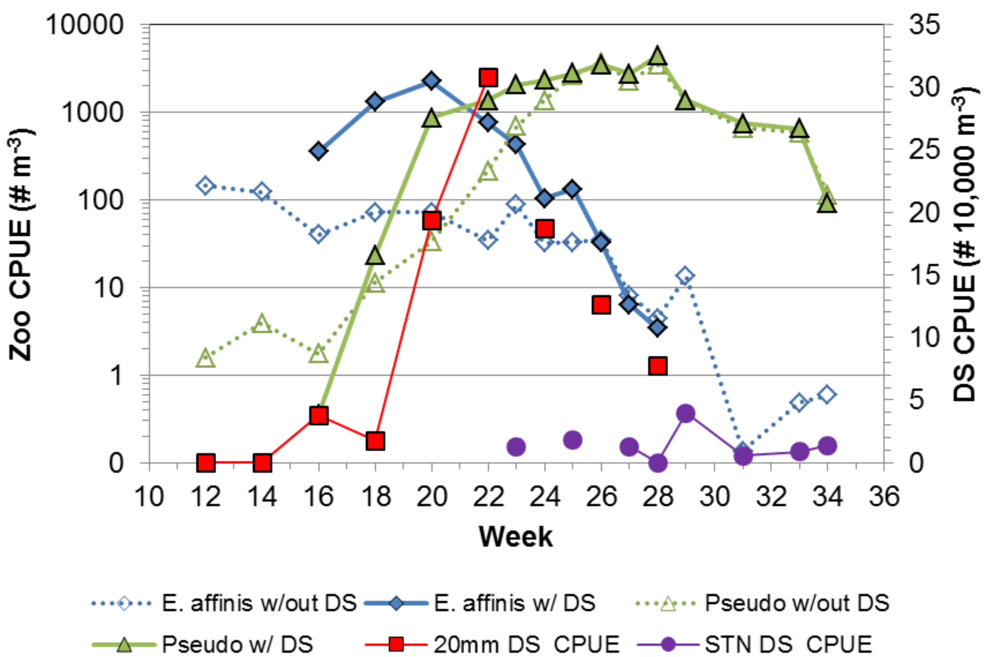
Silversides large enough to consume fish larvae are present in the Delta during spring and are likely to prey upon Delta Smelt larvae. Silverside habitat has been characterized as open water shoals and shoreline (Brown and May 2006, Grimaldo et al. 2012); however, the species also occurs in low density in deep open water primarily in summer (Grimaldo et al. 2012). Catches in the SKT confirm silverside presence in open water in spring as well, though catches tended to be low. However, SKT sampling does not occur at night when offshore Silverside densities may be higher, if foraging patterns follow those observed in Clear Lake, California (see Wurtsbaugh and Li 1985). Compared to the open embayments, SKT Silverside catches were higher in channels such as Montezuma Slough, Cache Slough, the San Joaquin River, and especially the Sacramento Deepwater Ship Channel (Table 4). This Silverside distribution matched higher March through May regional catches of Delta Smelt larvae (Table 4, see http://www.dfg.ca.gov/delta/data/20mm/CPUE_map.asp), except that larvae catches in Suisun Bay and the lower Sacramento River were occasionally high and Silversides catches were usually low. Delta Smelt larvae were found in significantly higher densities in offshore-open water habitats (Grimaldo et al. 2004), which corresponds to the habitat where Silversides consuming Delta Smelt larvae were captured (Baerwald et al. 2012). As discussed above, the relatively large-sized silversides present in the Spring Kodiak Trawl indicates some offshore movement and overlap of predator-sized foraging silversides with Delta Smelt larval habitat.

The frequency and magnitude of Silverside catches by the Spring Kodiak Trawl increased as Secchi depths approached and dropped below 50 cm (Fig. 69), suggesting that Silversides may venture offshore more frequently and in higher numbers in turbid water. This might also represent a displacement effect resulting from high flows, but high catches were most common in Montezuma Slough and the Sacramento Deepwater Ship Channel (Table 4) where displacement by flow should not have been a factor.

The hypothesis is somewhat supported in that: 1) Silversides are captured in Spring Kodiak Trawl in March and April (Fig. 70), when early stage Delta Smelt larvae are common; 2) Silverside

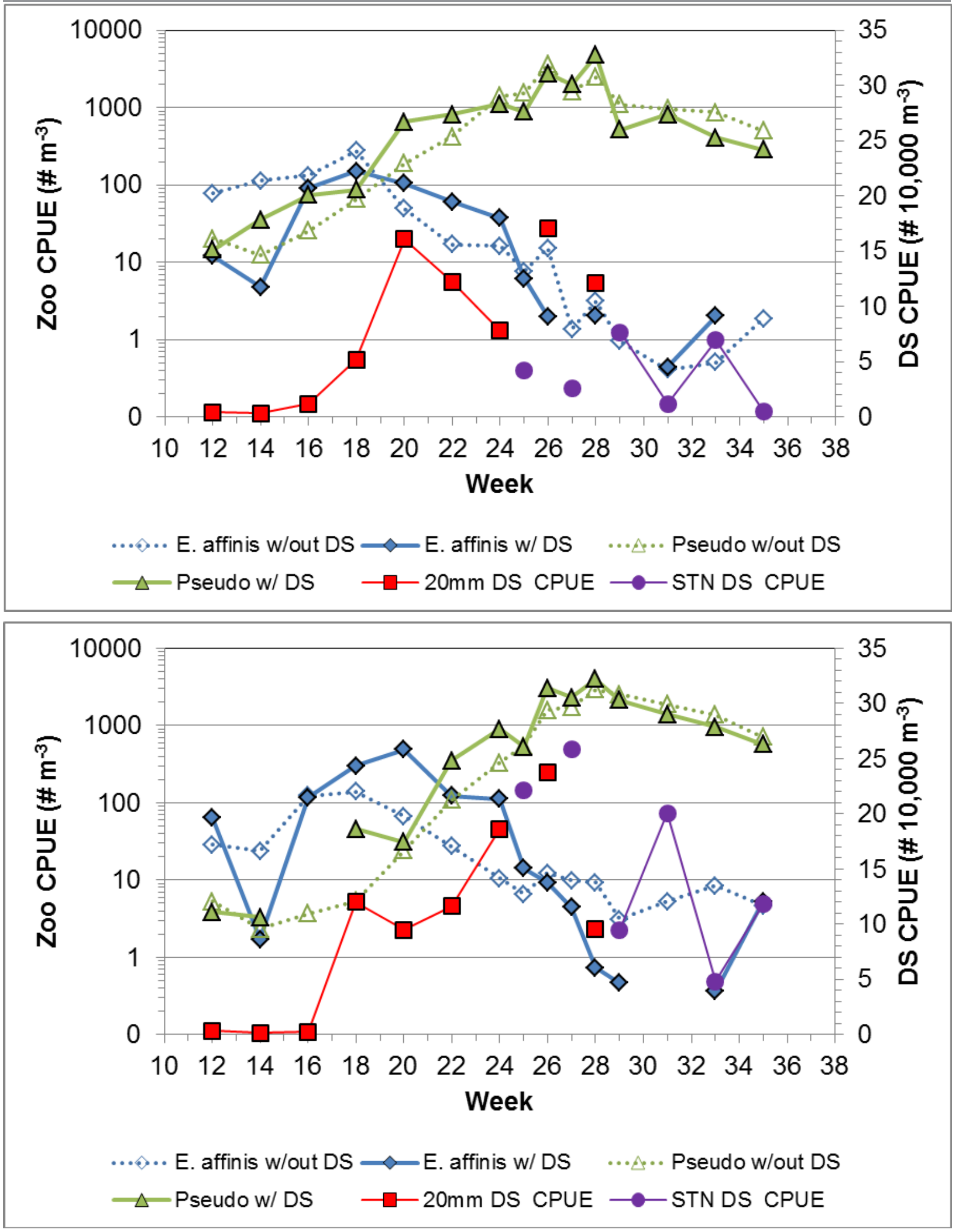
Figure 67. **Catch per unit effort (CPUE) of adult *Eurytemora affinis* and *Pseudodiaptomus forbesi* (Zoo; number individuals/m³ sampled) and Delta Smelt (DS; number individuals/10,000 m³ sampled) by calendar week from mesozooplankton sampling and Delta Smelt catch by the 20 mm and Summer Townet surveys, 2005 (top) and 2006 (bottom)**





catches offshore increase with increased turbidity (i.e., declining Secchi depth; Fig. 69), and 3) there is regional overlap in Cache Slough and the Sacramento Deepwater Ship Channel, and some in Montezuma Slough (cf. Table 4 and http://www.dfg.ca.gov/delta/data/20mm/CPUE_

Figure 68. **Catch per unit effort (CPUE) of adult *Eurytemora affinis* and *Pseudodiaptomus forbesi* (Zoo; number individuals/m³ sampled) and Delta Smelt (DS; number individuals/10,000 m³ sampled) by calendar week from mesozooplankton sampling and Delta Smelt catch by the 20 mm and Summer Townet surveys, 2010 (top) and 2011 (bottom).**



map.asp), known larval rearing regions. It is also possible the nighttime offshore foraging by silversides is a more common strategy (Wurtsbaugh and Li 1985), but one that goes undetected by current sampling. Silverside catch per trawl (Table 4) indicates low offshore densities and the same turbidity that facilitates offshore movement may also inhibit predation effectiveness.

Table 4. **Mississippi Silverside catch by region (monthly sample number in parentheses) and year by the Spring Kodiak Trawl Survey sampling monthly March through May (months when Delta Smelt larvae are present), 2005, 2006, 2010 and 2011; distribution survey data only. Annual sampling effort summarized consisted of 3 surveys and 37 stations. Tow volume varied substantially, but averaged 6,300 m^3 per tow for the 4 years.**

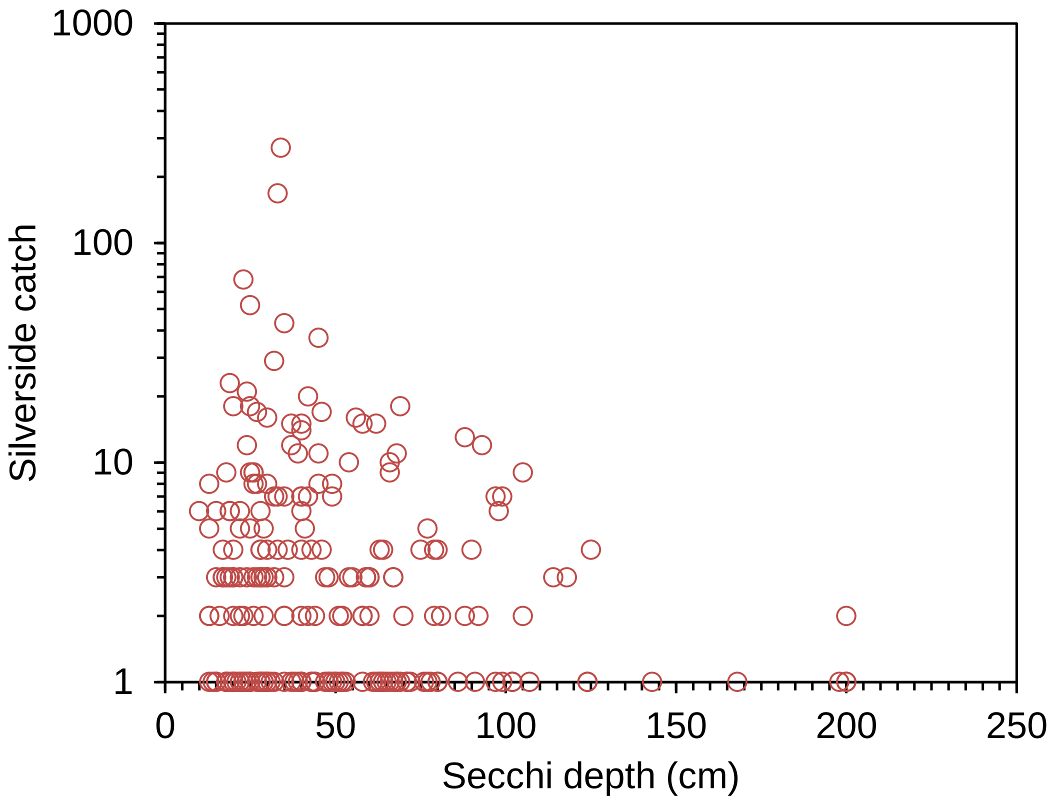
Region	2005	2006	2010	2011	Total Catch	Total Catch per Trawl
SUISUN BAY (N=10)	1	1	2	1	5	0.04
MONTEZUMA SL (N=3)	51	4	17	22	94	2.61
LOWER SACRAMENTO R (N=4)	10	1	1	3	15	0.31
CACHE SL (N=3)	9	2	4	2	17	0.47
SAC DEEPWATER SHIP CHANNEL (N=1)	14	20	45	22	101	8.42
SAN JOAQUIN R (N=8)	39	9	11	14	73	0.76
MOKLEMNE R. (N=5)	1	1	1	8	11	0.18
SOUTH DELTA (N=3)	1	0	1	1	3	0.08
ANNUAL TOTAL FOR REGIONS	126	38	82	73	319	

Overall, the conclusion regarding the effects of species distributions and abundances on predation risk is unclear. If there is an effect, it is most likely to occur in smaller channels, such as Montezuma Slough and those in the Cache Slough and the Sacramento Deepwater Ship Channel where Silversides are present in high numbers along the shoreline and larval Delta Smelt occur offshore.

Hypothesis 4: Hydrology and water exports interact **with one another to influence direction of transport and risk of entrainment for larval Delta Smelt.**

As for adults, we do not have proportional entrainment estimates for all four study years, so the entrainment portion of this hypothesis cannot be directly evaluated. Also, larvae (< 20 mm fork length) entrained in the State and federal water export systems are generally not quantified. To test this hypothesis we use data for the distribution and density of larvae (≥ 20 mm fork length)

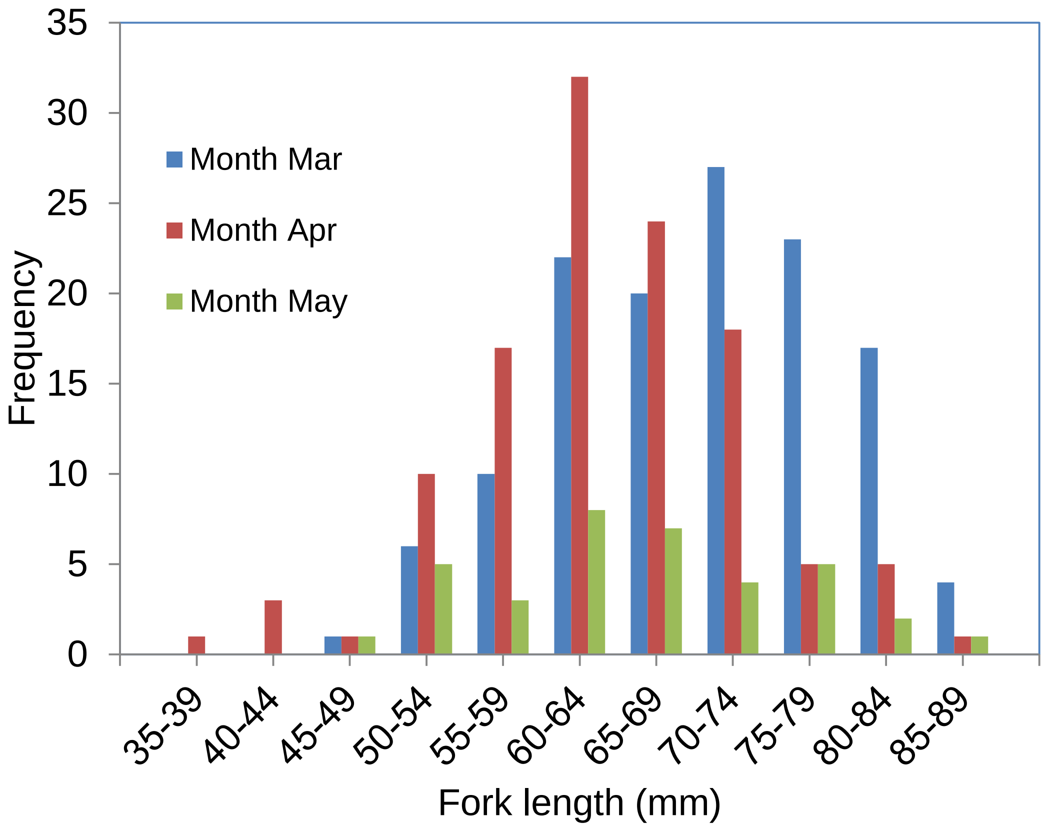
Figure 69. **Scatter plot of Mississippi Silverside catch plotted on Secchi depth (cm) at location of capture from the Spring Kodiak Trawl Survey, 2005, 2006, 2010 and 2011.**



in the central and south Delta and estimates of channel flows to infer risk of entrainment. Among the study years only 2005 larval entrainment was estimated by Kimmerer (2008), and loss to the population was relatively low. However, Delta Smelt density and distribution in the central and south Delta were greater in 2005 than in the three other study years (Table 5). This simple analysis suggests that in our 4-year comparison, entrainment risk for larval Delta Smelt may have been highest in 2005. Hardly any larval Delta Smelt were caught in this region in the two wet years, 2006 and 2011.

As for adults, we also used OMR flows (Fig. 31) to assess larval entrainment risk. Mean March through May OMR flows were positive during the two wet years 2006 and 2011 (8,221 cfs and 3,560 cfs respectively) and negative during the two dry years 2005 and 2010 (-417 cfs and -1,302 cfs, respectively). These OMR values suggest little if any risk during 2006 and 2011, and at most moderate risk in 2005 and 2010. Grimaldo et al. (2009) found that juvenile salvage was a function of abundance in the 20 mm Survey (positive) and OMR flows (negative). Looking more closely at various net daily flows from March to June of 2005, we find that OMR flows were moderately negative (i.e., toward the export pumps) only in March, and were zero to weakly positive in April and May, except for a brief period in mid-April (Fig. 31); also in 2005, Qwest was strongly positive from late March through early June, promoting downstream transport in the San Joaquin River, and exports were low from late April through late May (Fig. 31). The other dry year, 2010 exhibited a similar pattern, but lower inflows resulted in the magnitude of exports more directly influencing OMR flows (Fig. 31), and leading to moderately negative OMR flows

Figure 70. Monthly length frequency of Mississippi Silversides captured by the Spring Kodiak Trawl during distribution sampling March – May in the Sacramento River and Cache Slough sampling stations only, 2002-2012. The months and geographic range were selected to overlap with that of Delta Smelt larvae as they hatch and begin to grow.



in March and again in June, but only weakly negative flows in April and most of May coincident with positive Qwest. In the high outflow years 2006 and 2011, few larvae were detected in the central or south Delta (Table 5) and Qwest flows were strongly positive from March through at least early June, while OMR flows were near zero or weakly negative in March and positive to strongly positive by April and continuing to early June of both years (Fig. 31). Thus, for our comparison years, it appears that the available data generally support our hypothesis, but entrainment of larvae was unlikely to be an important factor during either wet year and was probably not a substantial factor in either dry year.

Table 5. Mean monthly catch of Delta Smelt per 10,000 m^3 by station for stations in the south and central Delta for the 20 mm Survey, 2005, 2006, 2010, 2011. Non-zero values are bolded.

Year = 2005	Months				
STATION	MARCH	APRIL	MAY	JUNE	JULY
809	0.00	0.00	**3.14**	**5.17**	0.00
812	0.00	0.00	**3.14**	**6.66**	0.00
815	0.00	**3.06**	**3.39**	0.00	0.00
901	0.00	0.00	**3.21**	0.00	**3.61**
902	0.00	0.00	0.00	0.00	0.00
906	**1.65**	**2.93**	**3.22**	0.00	0.00
910	0.00	0.00	0.00	0.00	0.00
912	0.00	0.00	0.00	0.00	0.00
914	**3.18**	**1.49**	**1.56**	0.00	0.00
915	0.00	0.00	0.00	0.00	0.00
918	**1.52**	**1.41**	0.00	0.00	0.00
919	0.00	0.00	0.00	0.00	0.00
Year = 2006	Months				
STATION	MARCH	APRIL	MAY	JUNE	JULY
809	0.00	0.00	0.00	0.00	0.00
812	0.00	0.00	0.00	0.00	0.00
815	0.00	0.00	**1.24**	0.00	0.00
901	0.00	0.00	0.00	0.00	0.00
902	0.00	0.00	0.00	0.00	0.00
906	0.00	0.00	0.00	0.00	0.00
910	0.00	0.00	0.00	0.00	0.00
912	0.00	0.00	0.00	0.00	0.00
914	0.00	0.00	0.00	0.00	0.00
915	0.00	0.00	0.00	0.00	0.00
918	0.00	0.00	0.00	0.00	0.00
919		0.00	0.00	0.00	0.00

Year = 2010	Months				
STATION	MARCH	APRIL	MAY	JUNE	JULY
809	0.00	0.00	**1.62**	0.00	0.00
812	0.00	0.00	0.00	0.00	0.00
815	0.00	**1.77**	**1.72**	0.00	0.00
901	0.00	0.00	0.00	0.00	0.00
902	0.00	0.00	0.00	0.00	0.00
906	0.00	**3.36**	0.00	**1.64**	0.00
910	0.00	**5.24**	0.00	0.00	0.00
912	0.00	0.00	0.00	0.00	0.00
914	0.00	0.00	0.00	0.00	0.00
915	0.00	0.00	0.00	0.00	0.00
918	0.00	0.00	0.00	0.00	0.00
919	0.00	0.00	0.00	0.00	0.00
Year = 2011	**Months**				
STATION	MARCH	APRIL	MAY	JUNE	JULY
809	0.00	0.00	0.00	**1.73**	0.00
812	0.00	0.00	0.00	0.00	0.00
815	0.00	0.00	0.00	0.00	0.00
901	0.00	0.00	**3.69**	0.00	0.00
902	0.00	0.00	0.00	0.00	0.00
906	0.00	0.00	0.00	0.00	0.00
910	0.00	0.00	0.00	0.00	0.00
912	0.00	0.00	0.00	0.00	0.00
914	0.00	0.00	0.00	0.00	0.00
915	0.00	0.00	0.00	0.00	0.00
918	0.00	0.00	0.00	0.00	0.00
919	0.00	0.00	0.00	0.00	0.00

Juvenile Hypotheses

Hypothesis 1: High water temperatures reduce juvenile Delta Smelt growth and survival through lethal and sublethal (bioenergetic stress; reduced distribution) effects.

High water temperatures have a strong effect on juvenile Delta Smelt survival (Swanson et al. 2000, Komoroske et al. 2014). In addition to the obvious potential for lethal effects, temperature can have sub-lethal effects such as reduced habitat area, higher food requirements, increased susceptibility to disease and contaminants, and increased predation. The potential for increased prey requirements and increased predation is described below for other hypotheses.

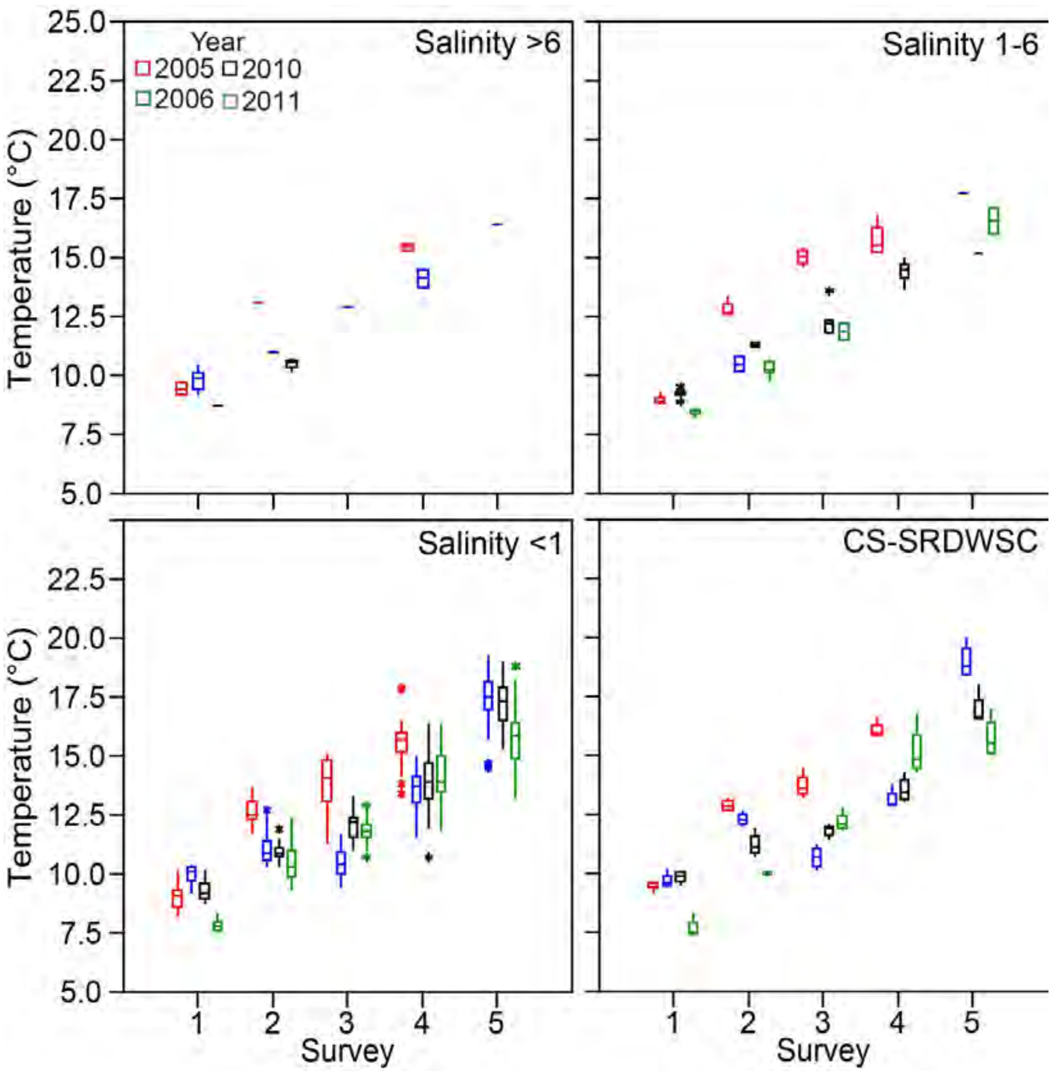
As noted in the adult section, spring water temperature was generally coolest in 2006 and 2011, but warmed up more rapidly toward the end of spring 2006 (May) than in spring 2011. Spring water temperature was overall warmest in 2005 (Fig. 71). Following the high late-spring water temperatures in 2005 and 2006, summer temperatures in 2005 and 2006 tended to be higher than in 2010 and 2011 during July and August (e.g. TNS surveys 3-5; Fig. 72). Temperatures during surveys 4 and 5 may have been particularly important as they exceeded lethal levels in freshwater at some sites, suggesting the potential for mortality. Note that this does not mean that temperatures were universally cooler in 2010 and 2011 than in 2005 and 2006; for example the region around Cache Slough had relatively high temperatures in August 2011. Larval to juvenile survival (ratio of TNS index to 20 mm index) was highest in 2011 followed by 2010, 2006, and 2005, suggesting that the cooler late spring and summer temperatures in 2011 and 2010 may have been beneficial for Delta Smelt. However, juvenile to subadult survival (ratio of FMWT index to TNS index) was highest in 2011 and lowest in 2010 (Fig. 51). While relatively high water temperature in late spring and early to mid summer of of 2005 and 2006 may thus have contributed to low survival of late-stage larvae and early juveniles, water temperature may have been less important to survival in the late summer and early fall. Overall, the results of this analysis of temperature and survival data support our hypothesis that high water temperatures reduce juvenile Delta Smelt growth and survival.

At this point, our data and analyses are inadequate to address temperature effects on juvenile Delta Smelt growth. Although there are some data for Delta Smelt growth during several of the target years, it is difficult to separate the relative effects of improved bioenergetics (see below) versus simple ontogenetic changes in fish size. Juvenile fish growth rates are typically not constant and change with size ("allometric effects;" Fuiman 1983). Specifically, daily growth rates (e.g., mm/day) are often faster for smaller fish and slower for older fish. Hence, cooler years may delay Delta Smelt transitions from faster to slower growth phases, yielding a relatively fast measured growth rate at a specific point in time (e.g., September) because at that specific time the fish are still relatively young and still on the "steepest" part of an idealized growth curve.

Hypothesis 2. Distribution and abundance of Striped Bass, temperature, and turbidity influence predation risk/rate on juvenile Delta Smelt

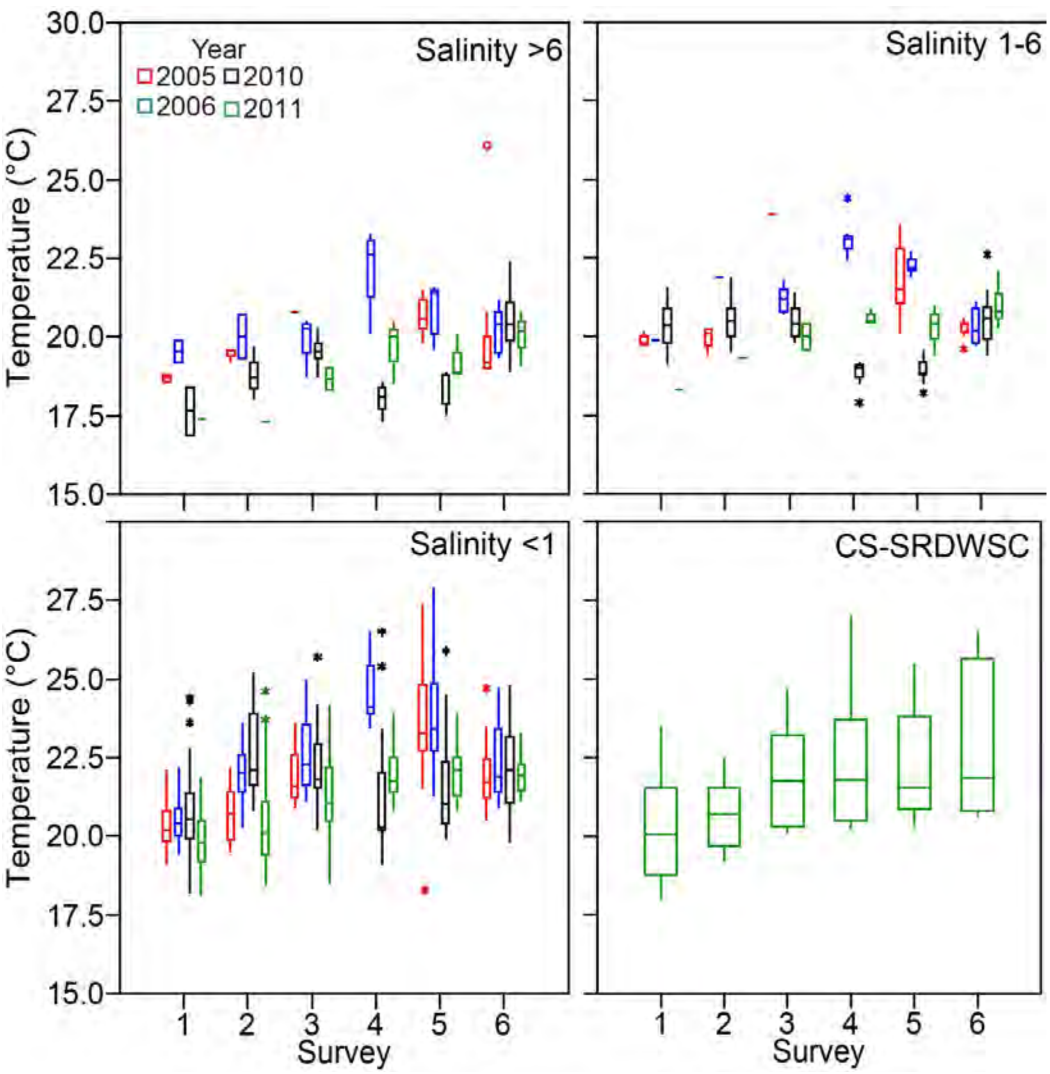
We hypothesize that subadult (age 1-3) Striped Bass are the major predator on juvenile Delta Smelt and that losses are likely affected by temperature and turbidity patterns. However, other factors likely affect predation risk (e.g., other predators such as centrarchids) and several factors

Figure 71. Water surface temperature data collected during the Spring Kodiak Trawl Survey for three salinity regions and the Cache Slough-Sacramento River Deepwater Ship Channel (CS-SRDWSC). Surveys are conducted monthly January-May. See Chapter 3: Data Analyses for explanation of boxplots.



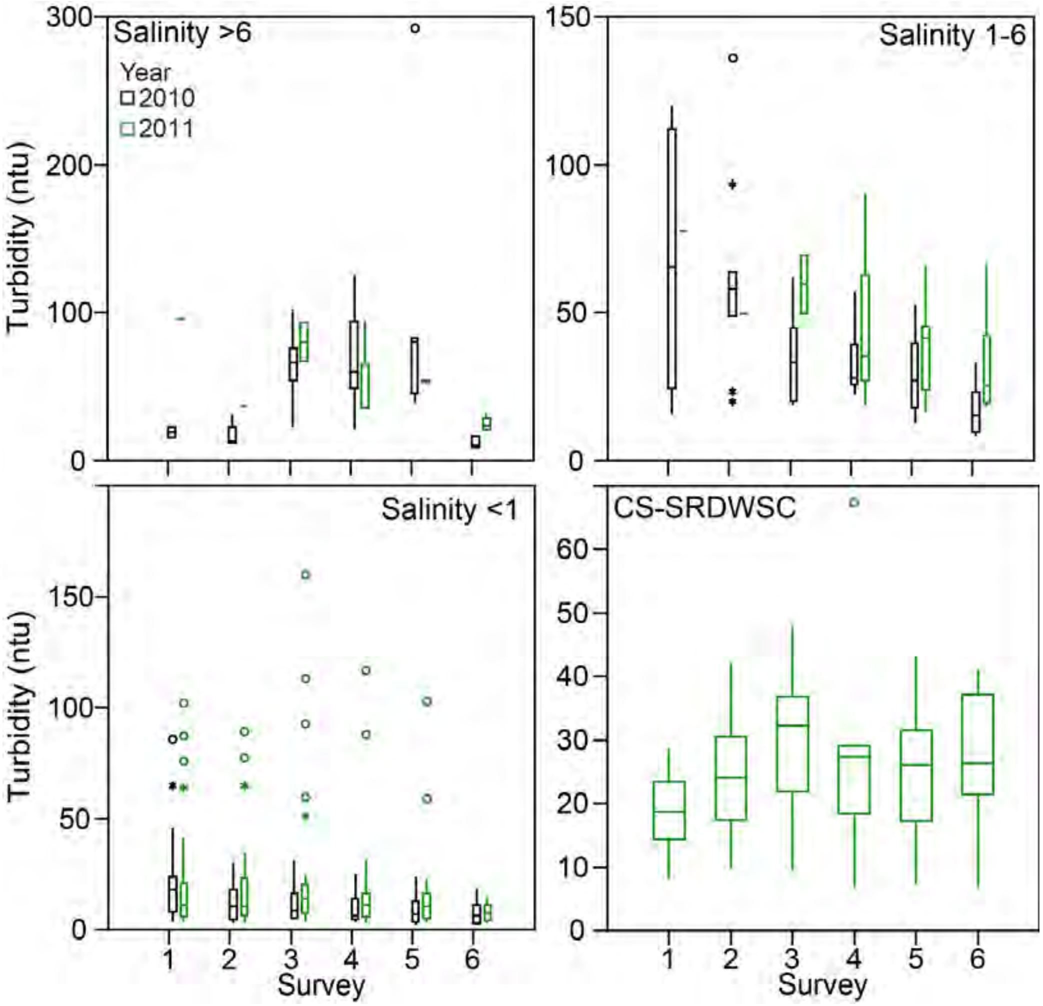
may interact. As noted above for temperature and below for food, high temperatures and low prey density likely lead to bioenergetics problems and increased foraging activity, which might reduce predator avoidance behavior (e.g., Marine and Cech 2004) in Delta Smelt. These effects may be compounded by low turbidity, which makes Delta Smelt more visible to predators in their habitat. Although higher Striped Bass abundance could theoretically result in greater consumption of prey including Delta Smelt (Loboschefsky et al. 2012), changes in habitat variables for both species such as food, temperature, and turbidity mean that predation rates on Delta Smelt periodically may be independent of predator abundance. Although there has been substantial progress in modeling (Lobschefsky et al. 2012, Nobriga et al. 2013) and genetic methods (Baerwald et al. 2012), there is not yet a standardized way to assess the effects of predation on Delta Smelt. Moreover, there are no effective surveys to assess age 1-3 Striped Bass abundance or distribution. Therefore, we are unable to directly evaluate this hypothesis. Lacking this information, we can

Figure 72. Water temperature data collected during the Summer Townet Survey for three salinity regions and the Cache Slough-Sacramento River Deepwater Ship Channel (CS-SRDWSC). Surveys are conducted biweekly June-August. See Chapter 3: Data Analyses for explanation of boxplots.



at least examine turbidity and temperature patterns for the four years. Temperature responses were described for Hypothesis 2. In general, summer 2005 and 2006 temperatures were relatively higher than 2010 and 2011 during key summer months (e.g. TNS surveys 3-5; Fig. 72). We expect that cooler temperatures in 2010 and 2011 may have contributed to reduced predation on Delta Smelt. Turbidity data are limited to 2010 and 2011 (Fig. 73). There were no consistent differences between the two years. Secchi depth data did not suggest major differences among the 4 years except at salinities > 6 when 2005-2006 had higher values in some months (Fig. 74).

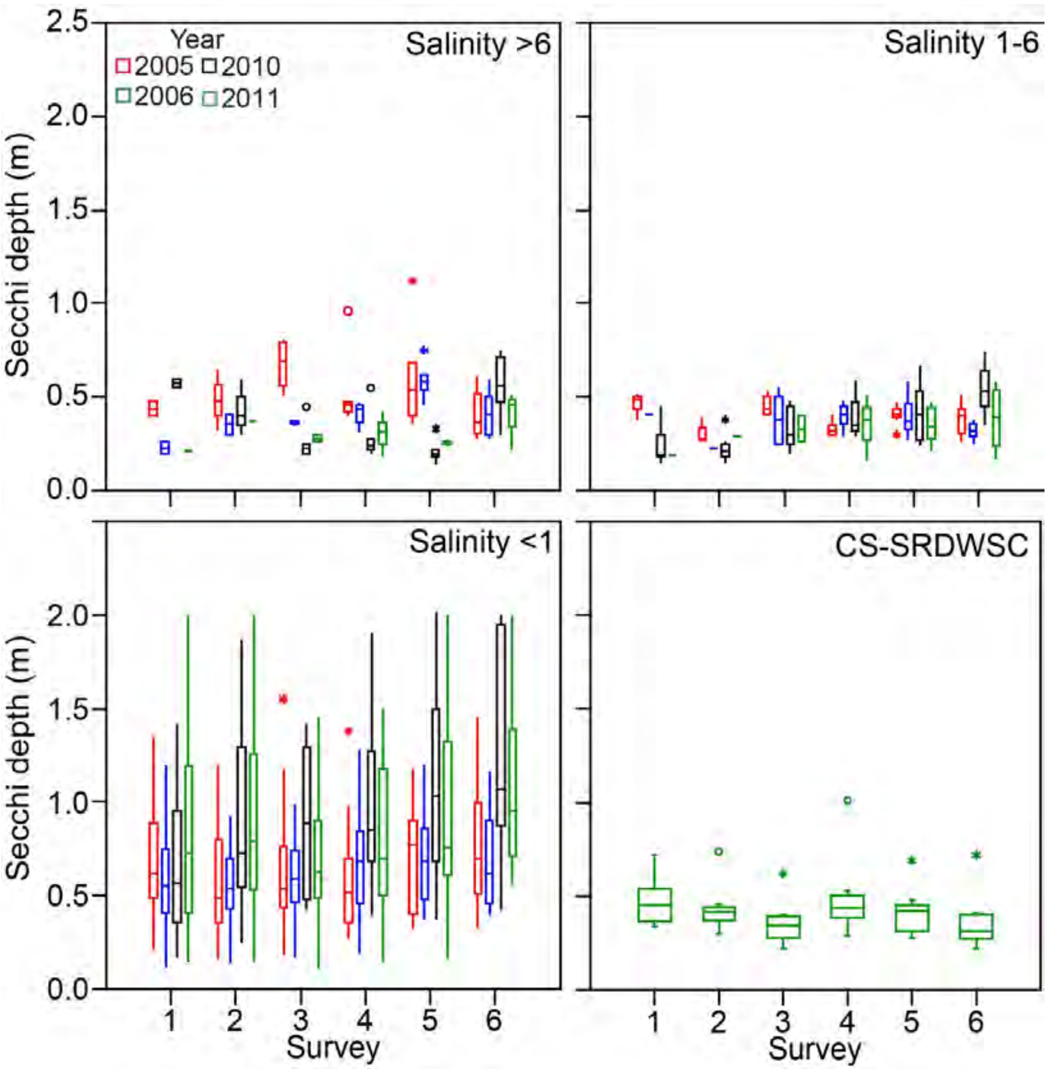
Figure 73. Turbidity data collected during the Summer Townet Survey. Surveys are conducted biweekly June-August. Note different scales among salinity regions. See Chapter 3: Data Analyses for explanation of boxplots.



Hypothesis 3. Juvenile Delta Smelt growth and survival is affected by food availability.

As for Hypothesis 1, we are currently unable to evaluate the growth data because water temperature affects development time, and because growth curves are complicated by allometric effects. The general conceptual model is that higher food abundance results in faster growth rates and larger, healthier fish. In addition, larger, healthier Delta Smelt are presumably less vulnerable to predators because of increased size making them difficult for smaller predators to capture and consume. In general, the median abundance of some of the key prey for juvenile Delta Smelt such as calanoid copepods is highest in summer months (Fig. 75), when juvenile Delta Smelt are present; however, the range of observed densities is broad in all months. As noted previously, Kimmerer (2008) found that Delta Smelt survival from summer to fall was positively associated with calanoid copepod biomass in the low salinity zone.

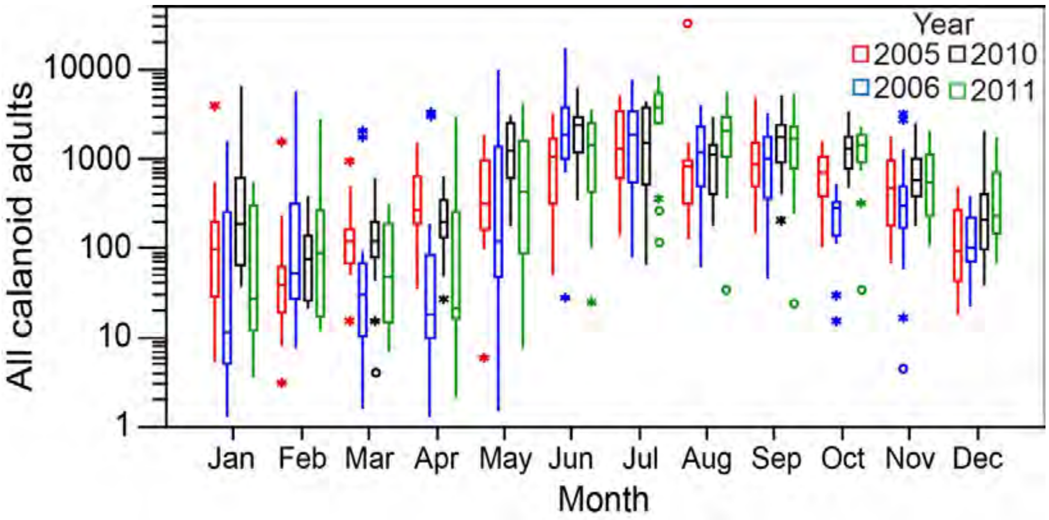
Figure 74. **Secchi depth data collected during the Summer Townet Survey. Surveys are conducted biweekly June-August. See Chapter 3: Data Analyses for explanation of boxplots.**



Interpretation of the field data is complicated because there are no long-term IEP EMP study stations located in some of the core habitats for Delta Smelt, for example, Cache Slough and the Sacramento River Deep Water Ship Channel. Moreover, densities of calanoid copepods vary among regions based on differing habitat (temperature and salinity) requirements of each species (Fig. 76).

Summer-time phytoplankton data (chlorophyll-*a*) suggest that the base of the food web was most enhanced in July and August 2011 and relatively depleted in 2005 (Fig. 66). There is some evidence that these changes may have affected zooplankton abundance. For example, summer densities of calanoid copepods in the LSZ and <1 ppt regions also tended to be highest in 2011 as compared to the other years (Fig. 76). This pattern generally held when individual taxa are considered including two of the most important food sources for Delta Smelt, *Eurytemora affinis* (Fig. 33) and *Pseudodiaptomus forbesi* (Fig. 34).

Figure 75. Trends in calanoid copepods (number/m^3 for all taxa combined) collected by the IEP Environmental Monitoring Program (EMP) during each the four study years (2005, 2006, 2010, and 2011).

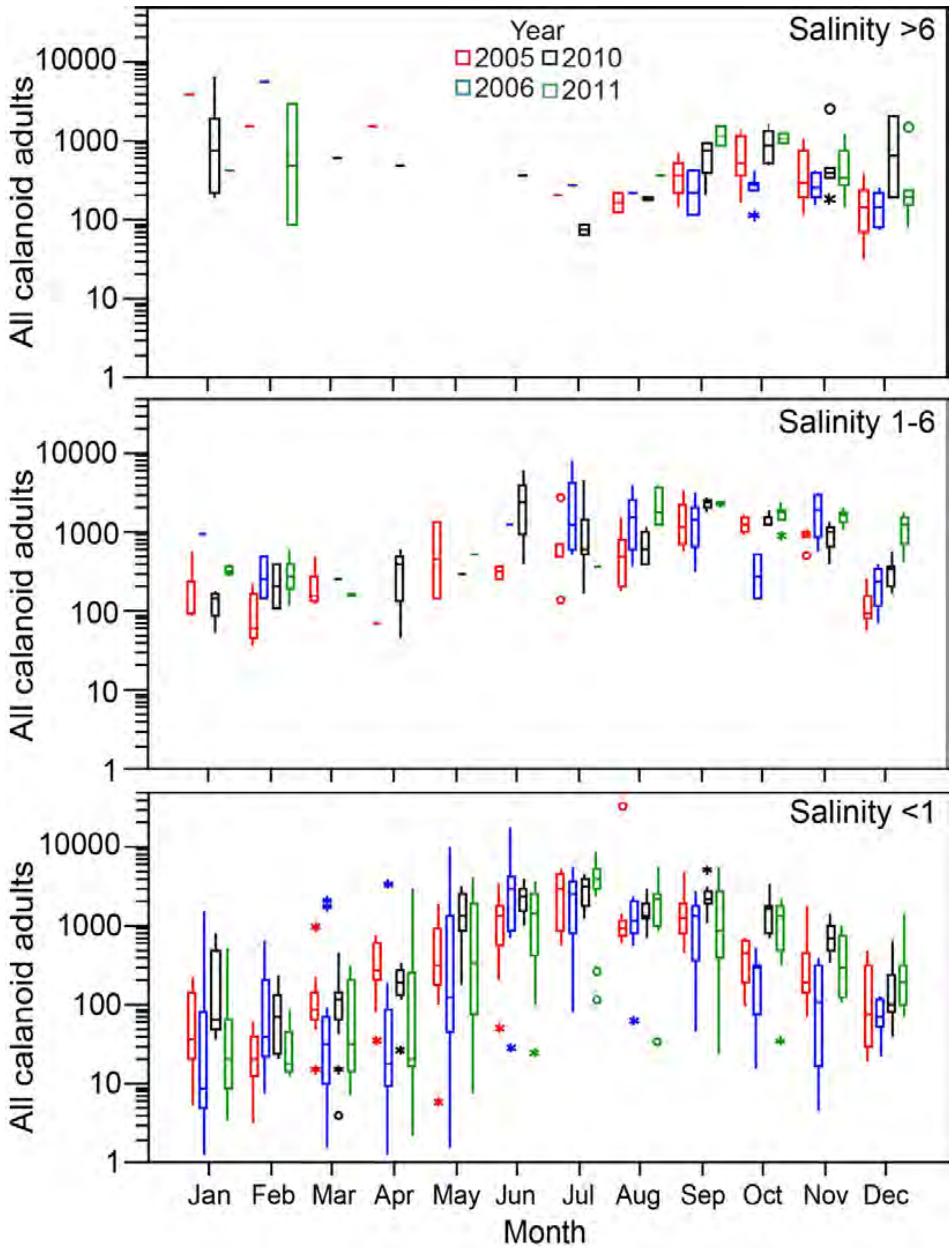


As mentioned above (Hypothesis 1), juvenile to subadult survival was highest in 2011 followed by 2006 and 2005 and lowest in 2010 (Fig. 51). If food availability was the primary habitat attribute driving juvenile survival, our expectation was that summer prey abundance would have been higher in 2011 than 2010. Figure 69 suggests that while differences were not very pronounced, prey levels were indeed somewhat higher in July and August of 2011 than 2010. Calanoid copepod levels varied across the different salinity ranges, but generally followed the same pattern (Fig. 76). In addition, calanoid copepod densities in June and August were higher in 2006 than in 2005 (Fig. 75), which may have contributed to higher juvenile to subadult survival in 2006 compared to 2005 (Fig. 51).

Fish bioenergetics are affected by both food and temperature. As mentioned above, both summer 2010 and 2011 had relatively cool temperatures as compared to 2005 and 2006, which may have affected bioenergetics. In addition, recent studies (S. Slater, CDFW, unpublished data) indicate that Delta Smelt consumption was not just limited to calanoid copepods, so our assessment does not reflect the full dietary range.

In conclusion, our analyses provide some support for the hypothesis that juvenile Delta Smelt growth and survival is affected by food availability; greater food availability may have contributed to greater juvenile survival in 2011 and 2006 compared to 2010 and 2005. However, differences in prey availability among years were not very pronounced and our analyses were limited to calanoid copepods; other species may also be important prey items for Delta Smelt.

Figure 76. Trends in calanoid copepods (number/m³ for all types combined) collected by the IEP Environmental Monitoring Program (EMP) in three salinity ranges (> 6 ppt; 1-6 ppt; < 1 ppt) during each the four study years (2005, 2006, 2010, and 2011). See Chapter 3: Data Analyses for explanation of boxplots.



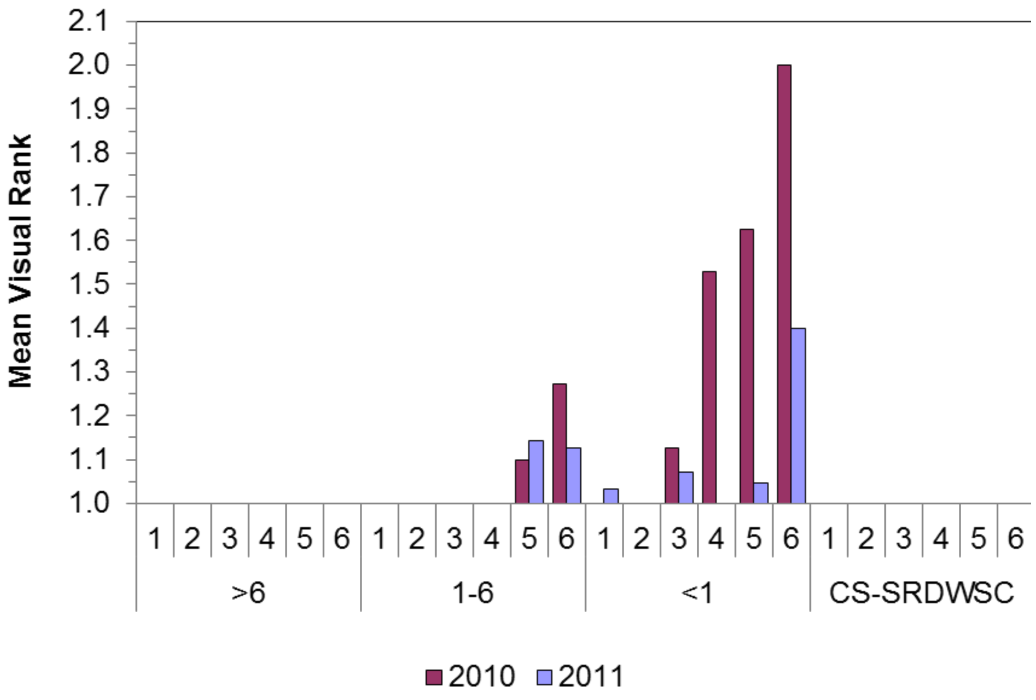
Hypothesis 4. Juvenile Delta Smelt survival and growth is reduced by harmful algal blooms (HAB) because of direct (habitat quality and toxic effects) and indirect (food quality and quantity) effects.

The appearance of late-summer HAB, especially *Microcystis*, is thought to be another component of the decline in habitat quality for Delta Smelt (Baxter et al. 2010, Lehman et al. 2010). Direct effects may include toxicity to Delta Smelt and a reduced area of suitable habitat. There also may be indirect effects on food quantity and quality, particularly with respect to their zooplankton prey (Ger et al. 2009, 2010a,b, Lehman et al. 2010).

The growth responses of Delta Smelt during the four target years are still unclear (see below), but there is evidence that Delta Smelt juvenile to subadult survival was highest in 2011 and lowest in 2010 (Fig. 51). If HABs have a negative effect on survival, we would expect that lower *Microcystis* (or other HAB) abundance would be associated with higher survival in 2011. This seems to have been the case for 2010 and 2011. Densities of *Microcystis* near the water surface were qualitatively assessed (visually ranked) at all TNS stations in these years. In agreement with our expectation, observed levels were low during the TNS in 2011 as compared to 2010 across a range of salinities (Fig. 77).

Unfortunately, we do not have data about other HAB species and more quantitative estimates, nor is similar data available for 2005 and 2006. In general, our expectation is that 2006

Figure 77. Summer Townet Survey mean visual rank of *Microcystis* spp. (ranks 1-5 possible; 1 = absent) observed at all stations during biweekly surveys (1-6) in various salinity regions (> 6, 1-6, and < 1 ppt) and in the CS-SRDWSC during June through August 2010 and 2011. Observations were not made in Cache Slough-Sacramento River Deepwater Ship Channel (CS-SRDWSC) during 2010.



Microcystis levels would have been relatively low as a result of higher flow levels that discourage blooms (Lehman et al. 2005). Based on the available qualitative data for 2010 and 2011, this analysis supports the hypothesis that juvenile Delta Smelt survival and growth is better when *Microcystis* does not bloom as intensely, but more data is needed to more conclusively assess this relationship.

Subadult Hypotheses

Hypothesis 1. Subadult Delta Smelt abundance, growth, and survival is affected by food availability.

Similar to juveniles, the general conceptual model is that higher food abundance results in faster growth rates and subsequently, lower predation loss and greater survival (e.g., Houde 1987, Sogard 1997, Takasuka et al. 2003); however the opposite situation in which the fastest growing fishes are most vulnerable to predators has also been observed in at least one east coast estuary (Gleason and Bengston 1996). Fall abundance of Delta Smelt was highest in 2011 followed by 2006, 2010, and 2005 (Fig. 3) while survival of subadults to adults was highest in 2010 followed by 2006 and equal in 2011 and 2005 (Fig. 45). In spite of the lower subadult survival in 2011, the relatively large number of subadults in 2011 gave rise to the highest adult abundance on record in 2012.

In general, fall calanoid copepod abundance and cladocera abundance were higher in 2011 in freshwater and the low-salinity zone compared to the other years, particularly 2005 and 2006 (Fig. 71). However, these data are highly variable, so this conclusion does not apply to each region in every month. With that caveat, the data generally support the hypothesis that food availability affects Delta Smelt abundance and survival; on average, prey density was higher for subadult Delta Smelt in 2011. This may have contributed to the high FMWT abundance index in 2011, although it did not contribute to an equally high survival to adults relative to the other three years. Nevertheless, it seems likely that the relatively good food availability in 2011 also contributed to the high number of adults in 2012. As noted above, we are currently unable to evaluate whether Delta Smelt grew faster in 2011 because water temperature affects spawning and hatch dates, which complicates the interpretation of growth rates.

Hypothesis 2. Distribution and abundance of Striped Bass, temperature, and turbidity influence predation risk/rate on subadult Delta Smelt

As already described for other life stages, predation risk is exceptionally complicated, making it difficult to generate simple hypotheses that describe associated losses of Delta Smelt. The data are not currently available to test this hypothesis (Nobriga et al. 2013). Thus, no firm conclusion can be made.

Hypothesis 3. Subadult Delta Smelt abundance, survival and growth are reduced by harmful algal blooms (HAB) because of direct (habitat quality and toxic effects) and indirect (food quality and quantity) effects.

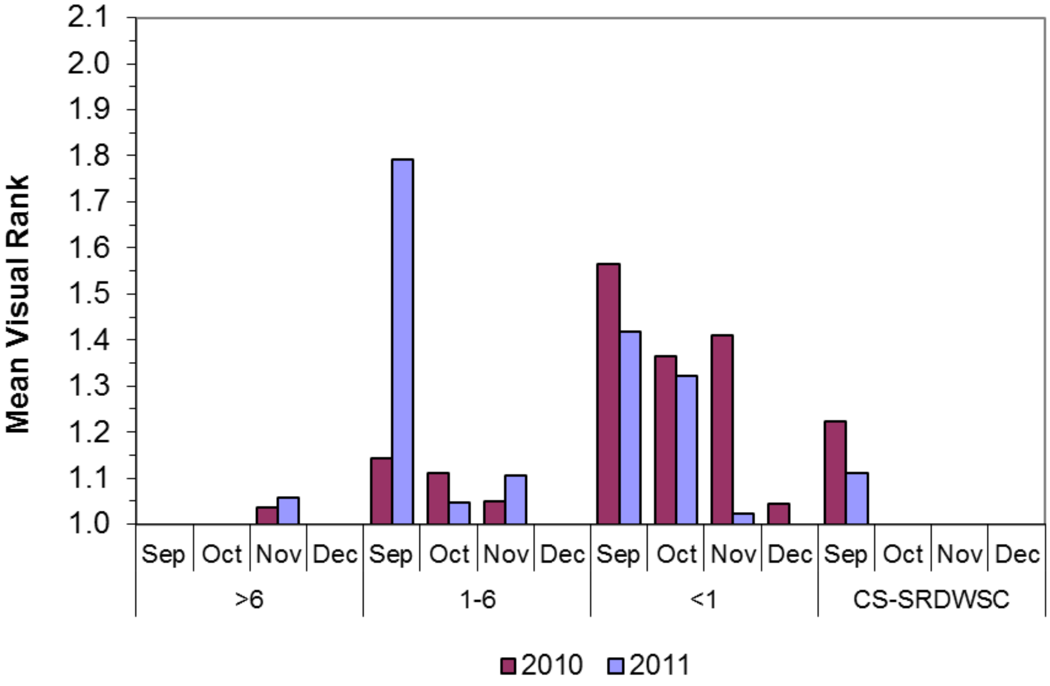
The appearance of late-summer harmful algal blooms (HAB), especially *Microcystis*, is thought to be another detriment to habitat quality for Delta Smelt (Baxter et al. 2010, Lehman et al. 2010). Direct effects may include toxicity to Delta Smelt and a reduced distribution if the fish try to limit their overlap with the bloom. There also may be indirect effects on food quantity and quality, particularly with respect to their zooplankton prey (Ger et al. 2009; 2010a,b, Lehman et al. 2010).

The growth responses of Delta Smelt during the four target years are still unclear (see above), but there is evidence that summer juvenile to subadult survival was highest in 2011, while juvenile survival to adults was highest in 2010 (Fig. 45). Our expectation is therefore that HAB were less prevalent in the summer of 2011 compared to 2010, but more prevalent in fall 2011. As already described for juveniles, the hypothesis that summer *Microcystis* bloom would be less intense in 2011 compared to 2010 was generally supported (Fig. 77). In fall, *Microcystis* levels were also overall lower in 2011 than in 2010, except in September 2011 when a high level of *Microcystis* was observed in the LSZ (Fig. 78). This may be an indication that the higher outflow in September-October 2011 displaced *Microcystis* produced in the Delta seaward into the LSZ. The comparatively high 2011 Delta Smelt FMWT index that coincided with this shift in *Microcystis* distribution is not consistent with the hypothesis; however, the occurrence of fairly high levels of *Microcystis* in the LSZ in 2011 may help explain the lower subadult to adult survival in 2011 compared to 2010. It is also important to remember that the visual survey results presented here are only qualitative and do not necessarily reflect the potential for differences in actual toxicity among years. Overall, these results are inconclusive, although they may provide limited support for the hypothesis that high *Microcystis* levels may have a negative effect on subadult to adult survival; this may help explain the lower subadult survival in 2011 compared to 2010.

Hypothesis 4. Subadult Delta Smelt abundance, survival and growth are affected by the size and position of the low salinity zone during fall.

We do not address this hypothesis in detail because it is the subject of an adaptive management experiment (FLaSH) described earlier (Reclamation 2011, 2012; see also Brown et al. 2014, http://deltacouncil.ca.gov/science-program/fall-low-salinity-habitat-flash-studies-and-adaptive-management-plan-review-0). According to the FLaSH conceptual model, conditions are supposed to be favorable for Delta Smelt when fall X2 is approximately 74 km or less, unfavorable when X2 is approximately 85 km or greater, and intermediate in between (Reclamation 2011, 2012). Surface area for the LSZ at X2s of 74 km and 85 km were predicted to be 4000 and 9000 hectares, respectively (Reclamation 2011, 2012). The data generally supported the idea that lower X2 and greater area of the LSZ would support more subadult Delta Smelt (Table 6). The greatest LSZ area and lowest X2 occurred in September and October 2011 and were associated with a high FMWT index which was followed by the highest SKT index on record, although survival from subadults to adults was actually lower in 2011 than in 2010 and 2006. There was little separation between the other years on the basis of X2, LSZ area, or FMWT index (Table 6). The position and area of the LSZ is a key factor determining the quantity and quality of low salinity rearing habitat available to Delta Smelt and other estuarine species (see Chapter 4 for more detail

Figure 78. **Fall Midwater Trawl mean visual rank of *Microcystis* spp. (ranks 1-5 possible; 1 = absent) observed at all stations during monthly surveys in various salinity regions (> 6, 1-6, and < 1 ppt) and in the CS-SRDWSC during September through December 2010 and 2011.**



and Chapter 8 for additional analysis results). In addition, the complex hydrodynamics produced during higher outflows may alter the lateral mixing environment of the Estuary (especially in shallower areas like Suisun Bay) in ways that improve the quality of Delta Smelt habitat in general (Monismith, personal communication). The limited amount of available data provides some evidence in support of this hypothesis, but additional years of data and investigations are needed.

Chapter 8: Conclusions

As with all reports focusing on conceptual models, this report is intended as a working document, not as the final word on Delta Smelt ecology, because our knowledge will continue to increase. We intend the conceptual model to be used as a framework and tool to further improve our understanding of Delta Smelt ecology and to explore and test management options for improving conditions for the Delta Smelt population. In essence, the updated conceptual model represents a synthesis of our current thinking on the factors affecting vital rates of the Delta Smelt population. We fully expect a wide range of opinion about the relevance of the conceptual models presented here and about the degree of certainty regarding many of its component dynamics and linkages. We have clearly acknowledged that we lack information on many important factors and processes that likely affect Delta Smelt, such as predation and toxicity and their functional relationships

Table 6. **Mean and standard deviation (SD) for X2, surface area of low salinity zone (M. McWilliams, Delta Modeling Associates, unpublished data), and values of the Fall Midwater Trawl index (FMWT) for abundance of subadult Delta Smelt.**

	X2 (km)		Surface area LSZ (hectares)		FMWT index
YEAR	MEAN	SD	MEAN	SD	
2005	83	2	4889	252	26
2006	82	3	4978	320	41
2010	85	2	4635	226	29
2011	75	1	8366	133	343

with survival and growth. The conceptual model incorporates many hypotheses that should be tested via new research, modeling, and ongoing analysis and synthesis of new and previously collected data. This is how science advances.

Conceptual models are increasingly used as tools to develop questions or hypotheses about specific mechanisms through which stressors or other environmental factors drive ecological outcomes. Conceptual models can be used as a basis for communication among managers and scientists to plan research activities and assess outcomes of management actions (Ogden et al. 2005). Because of their broad utility, conceptual models are viewed as a critical element of adaptive management programs (Thom 2000). In the SFE, conceptual models have become common and even required as the community moves toward adaptive management and collaborative science. A primary outcome of conceptual models is the identification of key areas of uncertainty due to lack of information, or areas of disagreement due to different interpretations of the available data and information. Careful examination of these areas often identifies critical data and information gaps, which if filled, would allow a more robust evaluation of the major hypotheses derived from conceptual models. In this way, conceptual models can guide the research community to the topics critical for understanding Delta Smelt biology and formulating effective management actions.

The development of our conceptual model, based on assessment of recent information, identified some key points about conceptual models that are worth highlighting, including the following:

1. Nested and linked conceptual models of increasing specificity provide a useful framework for capturing the dynamics of ecosystem drivers and habitat attributes over a large range of temporal and spatial scales and for providing a comprehensive picture about their effects.

2. Our knowledge about Delta Smelt and the SFE is constantly growing and conceptual models about them have to be regularly updated and revised to properly reflect this knowledge.

3. Construction of our conceptual model and the formulation and evaluation of hypotheses greatly benefitted from the large amount of high-quality ecological data and information available about Delta Smelt and the SFE. The most critical data about Delta Smelt dynamics came from four long-term IEP fish monitoring surveys. Other monitoring

and studies provided key data and information about habitat attributes and ecosystem drivers.

4. Our conceptual model is also useful for identifying important data and information gaps. More data and information is especially needed about predation risk and toxicity, two potentially important attributes of Delta Smelt habitat.

Conceptual models are meant to be useful tools for scientists, managers, and others. But just how useful are the new conceptual models in this report? To find out, we used them to generate and test hypotheses and highlight data gaps while addressing a specific topic of high management interest—the increased Delta Smelt abundance index in 2011.

We found that our conceptual model allowed us to formulate a variety of testable hypotheses about individual components and the linkages among them. Our hypotheses and the analyses we conducted to test them had some clear limitations (discussed below), but highlighted some key points about Delta Smelt and their habitat. In many respects, the points about Delta Smelt seem self-evident from basic biology and earlier conceptual models, but they warrant reinforcement because they are crucial to understanding Delta Smelt and to developing and assessing habitat management actions. Key points about Delta Smelt include the following:

1. Environmental conditions occurring in all four seasons contribute to year-class strength of Delta Smelt - “it takes a year to make a mature Delta Smelt.”

2. Survival and recruitment are affected by many factors that interact in complex ways and the importance of these factors and interactions varies from season to season and year to year.

3. Recovery of Delta Smelt depends on better than average larval production (recruitment) and survival in all seasons. The number of eggs and larvae sets an upper limit for the production of mature adults. Low survival between any two life stages can substantially reduce the actual production of mature adults. Success of Delta Smelt in 2011 was related to a high level of larval production (recruitment) followed by moderate to high stage-to-stage survival over the entire year. In contrast, the high level of larval production (recruitment) in 2006 was followed by very low survival from larvae to juveniles which led to low abundance of mature adults.

4. Throughout 2011, Delta Smelt may have benefitted from a combination of favorable habitat conditions: 1) adults and larvae benefitted from high winter 2010 and spring 2011 outflows which reduced entrainment risk and possibly improved other habitat conditions, prolonged cool spring water temperatures, and possibly good food availability in late spring; 2) juveniles benefitted from cool water temperatures in late spring and early summer as well as from relatively good food availability and low levels of harmful *Microcystis*; 3) subadults also benefitted from good food availability and from favorable habitat conditions in the large, westward low salinity zone.

Our hypothesis tests were carried out with the simple comparative approach used in the FLaSH investigations (Brown et al. 2014). Specifically, we compared differences in Delta Smelt responses and in individual habitat attributes during the two most recent wet years and the two years immediately preceding the two wet years. Using this approach allowed us to put the FLaSH results into a year-round context as recommended by the FLaSH Panel (FLaSH Panel 2012).

It also provided an opportunity to further assess the utility of this approach for evaluating the outcome of adaptive management actions such as the fall outflow action.

As with the FLaSH investigations (Brown et al. 2014), we restricted our analyses to simple comparisons among four recent years after the 2002 POD decline for several reasons including the following:

1. Using a comparative approach similar to that in the FLaSH investigation allowed us to place the results of the FLaSH investigation in a year-round, life cycle context as recommended by the FLaSH Panel (FLaSH Panel 2012).

2. This report is intended for a broad audience. Simple comparisons are easily replicated and understood by all.

3. More pertinent data is available for recent years than for earlier years. For example, adult Delta Smelt monitoring began in 2002 with abundance index values available starting in 2003.

4. The POD regime shift (Baxter et al. 2010) changed ecological relationships and the strong pre-POD signals would have likely overwhelmed more subtle, yet meaningful, signals in the period after the POD. For example, it appears that high larval recruitment may now be positively associated with wet hydrology, but that this may not have been the case before the onset of the POD.

5. Clear differences in habitat conditions among years might point to new or refined management strategies aimed at improving specific habitat conditions.

6. More complex modeling approaches take much more time and effort than was available to produce this report. A complex life cycle modeling effort is currently underway (see Chapter 9).

As noted above, our analytical approach yielded some interesting results, but it also raised more questions than it could answer. In many cases this was due to critical data and information gaps; these will be described in more detail in Chapter 9. It also illustrates, however, several limitations of our simple comparative approach as well as difficulties associated with posing and testing hypotheses about ecological phenomena in general. Examples of specific limitations and difficulties include the following:

1. Our hypotheses focused on individual habitat attributes and were tested with a series of separate univariate analyses even though we know that Delta Smelt are affected by multiple interacting habitat atributes. We did not conduct multivariate tests or examine the complex interactions that may have occurred when more than one hypothesis was true (or false), nor did we consider or rule out that a hypothesis may be true in some years and false in others.

2. Our simple comparisons of differences in individual habitat attributes among different years cannot conclusively establish whether these differences are indeed mechanistically linked to the observed differences in Delta Smelt dynamics. In addition, an absence of observed differences does not prove that there is really no effect because actual effects can be masked or counteracted by interactions with other causal factors that differ among years. For example predation in the South Delta may mask actual entrainment

effects and toxicity of anthropogenic contaminants may counteract the effects of abundant food in some years, but not in others.

3. Results contrary to our observations may simply indicate different outcomes in other years or that complex interactions among multiple habitat attributes (and corresponding hypotheses) contributed to the observed effects.

4. We restricted our analyses to observational data collected in a small number of moderately and very wet years during the POD period; including data from additional, more historical, and drier years may have provided more conclusive results.

5. Data available for our analyses were not necessarily collected to test hypotheses similar to the ones in this report; targeted data collections are needed in addition to routine status and trends monitoring.

Many of these difficulties and limitations were expected because hypothesis testing in an ecological context is nearly always problematic. For example, Quinn and Dunham (1983) warned that attempts to follow a strictly hypothetico-deductive scheme (Popper 1959, Platt 1964) to draw "strong inference" from a series of univariate tests aiming to falsify hypotheses about the ecological effects of individual causal factors often lead to inconclusive or even erroneous results. One reason for this is that by design, they generally do not consider non-additive interactions among causal factors. While we did not necessarily set out to strictly follow such a scheme, we nevertheless treated habitat attributes as largely independent from each other and formulated a series of distinct hypotheses about their univariate effects on Delta Smelt. But habitat attributes are not necessarily additive and habitat is indeed more than the "sum of its parts." A more inductive, multivariate modeling approach with hypotheses about interactive effects and evaluations of the relative contributions of multiple interacting habitat attributes to these effects would have likely been more appropriate, but would have required analyses beyond the scope of this report.

We give some examples of multivariate approaches in Chapter 9, but note that even with the most sophisticated modeling techniques, ecological responses to management manipulations and other changes of the SFE have been notoriously difficult to assess and interpret. Reasons for this persistent difficulty include limited opportunities for experimental control, multiple interacting causal factors, multiple ecological response pathways, and changing environmental conditions due to species invasions, species declines, and the many physical and chemical changes and management manipulations described in this report. In other words, the signal to noise ratio of management actions to environmental variation tends to be low in the SFE because of its size and complexity. The fact that Delta Smelt is now a rare species adds another considerable difficulty. Together, these difficulties are part of the reason why adaptive management actions such as those described in the ongoing Fall Outflow Adaptive Management Plan (Reclamation 2011, 2012) and the now concluded Vernalis Adaptive Management Plan (VAMP, San Joaquin River Group Authority 2013) are planned for a minimum of 10 years, allowing accumulation of data, development of appropriate interpretation of these data, and comparison of observations across as broad a range of conditions as is possible given a 10-year time frame. But even after such a relatively long period of manipulation and observation, questions will likely remain about how some factors interact to affect Delta Smelt abundance.

In summary, we conclude that our new conceptual models can be used successfully to derive testable hypotheses about Delta Smelt responses to changing habitat conditions. Our hypotheses and the analyses we conducted to test them highlighted some key points as well as critical data gaps and the challenges associated with formulating and testing hypotheses in complex ecological contexts. The key points about Delta Smelt and their habitat generally agree with basic biological principles and earlier conceptual models, but warrant reinforcement because they are crucial to understanding Delta Smelt and to developing and assessing habitat management actions. Other results are less conclusive because of data limitations and the shortcomings of our largely univariate hypotheses and simple comparative analysis approach. Next steps should include addressing critical data gaps, modeling that more fully considers the effects of interacting factors on Delta Smelt, and applications of the information in this report in support of management actions. Examples of such efforts are provided in Chapter 9.

Chapter 9: Recommendations for Future Work and Management Applications

The conceptual model in this report can be viewed as a collection of hypotheses. These hypotheses are not limited to the hypotheses posed in Chapter 7 of this report; essentially, each component and linkage in the conceptual models can give rise to meaningful questions and hypotheses by itself or together with other components and linkages. This is one of the main functions of conceptual models.

Some of the hypotheses that can be derived from our conceptual model have already been addressed in the published research reviewed in Chapter 4 of this report. These results provide the knowledge base used to construct our conceptual model as well as previous conceptual models. They also provide the knowledge base for current Delta Smelt management efforts. The results and conclusions in this report add to this knowledge, but they also emphasize the need for additional monitoring, focused studies, and/or additional analysis and synthesis of existing data. These are the information gaps that can be used to guide future research activities to enhance our understanding of how factors interact to control Delta Smelt abundance.

Filling these information gaps is critically important for improving management strategies for Delta Smelt and for constantly adapting them to expected and unexpected future changes. It is clear that ecological changes due to continued growth of California's human population, climate change, new species invasions, and other natural and anthropogenic factors will increase the challenges associated with Delta Smelt management. Moreover, as discussed in the previous Chapter, we will likely never be able to correctly detect or predict all effects of management actions and other changes in an ecosystem as complex and constantly changing as the San Francisco estuary. Science and management have to go hand in hand to constantly identify, implement, evaluate, and refine the best management options for this ever-changing system. In this Chapter, we provide examples of next steps in three major areas where additional work is needed: 1) filling critical data and information gaps; 2) mathematical modeling; and 3) applications to support adaptive management actions. We conclude this report with recommendations for future analysis and synthesis efforts.

Critical Data and Information Gaps

A short list of the most critical data and information gaps identified by the updated conceptual model is given below. It is important to note that this is not an exhaustive list of the potentially productive research questions that could be addressed for Delta Smelt. Instead, these are primary research topics that emerge as major data and information gaps in multiple places within the updated conceptual model. This indicates that additional monitoring and research on these topics may be particularly urgently needed and filling these gaps would provide immediately useful results. The list of critical data and information gaps is organized around the environmental drivers and habitat attributes identified in our conceptual models.

Contaminants and Toxicity

There is a general awareness that exposure to contaminants can impair the health of Delta Smelt and other fishes. A few studies have documented adverse effects, but little is known regarding the thresholds at which most contaminants would be toxic to or otherwise adversely affect Delta Smelt (or their prey). Even less is known about how various contaminants may interact when they co-occur, or how their effects may be enhanced or suppressed by these interactions or by other environmental factors.

1. Focused laboratory studies may provide the most efficient way to assess effects of metals, pesticides, pharmaceutical products, or mixtures of contaminants as long as field-relevant concentrations are used. However, translating results of laboratory tests to the field remains a challenging problem (Scholz et al. 2012).

2. Significant work to understand the effect of nutrient loading from municipal sources on the food web has been done (Weston et al. 2014) (e.g., Sacramento Wastewater Treatment Plant, Parker et al. 2012). A logical next step is to conduct manipulative experiments in which effluent is reduced or shut off. This type of work has recently begun (T. Kraus, USGS, personal communication), but may require multiple iterations during a variety of seasons and environmental conditions in order to understand how such manipulations or future treatment upgrades could be used to provide desired food web responses. Monitoring should continue after any such upgrades to determine if they have the expected outcomes.

Entrainment and Transport

Evaluation of differences in entrainment among years could not be critically evaluated from salvage data; better ways to estimate, monitor, and evaluate entrainment losses due to south Delta exports are needed. Such improved estimates could be derived from experimental research on Delta Smelt and other species along with hydrodynamic modeling. Besides the need to improve the estimates of direct proportional population losses due to entrainment, similarly relevant or more important needs include assessing the influence of entrainment on key population attributes (e.g., genetics, demographics, population dynamics and viability effects).

Predation Risk

The majority of the hypotheses regarding predation risk could not be fully evaluated due to a lack of data regarding co-occurring predator and prey biomass and predation rates of predators on Delta Smelt.

1. The distribution and diet of major predators with respect to the distribution of Delta Smelt needs further investigation. For some predator species, data may already be available that describe distributions over multiple years and one data synthesis effort has already begun (Mississippi Silversides, USFWS Beach Seine Survey; analysis initiated by B. Schreier, DWR). However, data are lacking for several Striped Bass and Largemouth Bass life stages and focused studies are necessary to understand how these species' distributions overlap with the distribution of larval, juvenile, sub-adult, and adult Delta Smelt.

2. The distributional overlaps of Delta Smelt with their predators need to be described over varying conditions of turbidity, salinity, temperature, and hydrology. Linking predation risk to key environmental drivers and habitat attributes will shed light on how Delta Smelt may experience varying degrees of predation across seasons and years.

Food

Food availability is a critical aspect of Delta Smelt habitat throughout the conceptual model. However, many of the hypotheses about effects of food availability in the conceptual model could not be fully evaluated with available observational data due to incomplete information on prey densities and Delta Smelt feeding behavior throughout Delta Smelt habitat.

1. An extension of the IEP EMP into the Cache Slough complex and possibly other areas around the margins of the estuary would allow a fuller regional comparison of prey densities.

2. Another option is to make concurrent zooplankton sampling a routine part of the four major surveys monitoring Delta Smelt (SKT, 20 mm, TNS, FMWT). To varying degrees, this has been ongoing since 2005, but lack of trained staff has resulted in delayed processing of many samples and concurrent zooplankton samples have never been collected during the SKT survey. Adding appropriate zooplankton sampling and sample processing capacity to the fish monitoring surveys would allow for broader and more timely comparisons of pelagic food availability between monitoring stations with and without Delta Smelt present, similar to the analysis conducted in this report for the larvae collected during the 20mm survey (Larval Hypothesis #2).

3. Studies of Delta Smelt growth (from otoliths) and feeding habits (from stomach contents) concurrent with zooplankton sampling would maximize the utility of the concurrent prey sampling by allowing the refinement of functional response models.

4. Studies of Delta Smelt feeding behavior and prey availability with regard to amphipods and other prey that are not well sampled by any of the existing monitoring surveys could help determine the importance of these types of prey to the Delta Smelt population.

Harmful Algal Blooms

While recent research has resulted in improved understanding of the factors influencing the quantity, toxicity and location of HABs, there are still many uncertainties about their direct and indirect effects on Delta Smelt relative to other factors and about what can be done to prevent them. Furthermore and in spite of their importance to ecosystem and human health, there is still no routine quantitative monitoring program in place that specifically targets harmful algae. The TNS and FMWT surveys now include qualitative, visual assessment of *Microcystis*, but more quantitative techniques and techniques that detect additional harmful species and their toxicity would likely provide greater insights. Such techniques are increasingly available (e.g., solid phase adsorption tracking; Wood et al. 2011) and some focused studies that quantify and provide distributions of HABs have been conducted or are underway. These studies should be continued in order to address hypotheses related to the effects of HABs in the conceptual model and evaluate the utility of these techniques for routine monitoring applications.

Delta Smelt Responses

To fully evaluate the interactions of various stressors on Delta Smelt population biology, a quantitative life cycle population model is needed. While such models exist, they can be refined based on research into important aspects of Delta Smelt reproductive biology, including the reproductive output of individual Delta Smelt and the population as a whole, and how it varies with environmental conditions.

In particular, fecundity data on adult female Delta Smelt caught in the SKT have only recently been collected. This is a critical parameter, necessary to assess the reproductive potential of the population in any given year. Continued collection of fecundity data over multiple years and hydrological conditions is crucial to understanding the population response to environmental conditions in the seasons preceding reproduction. In addition, an understanding of variables controlling the number of spawning events in a year for wild Delta Smelt is necessary to understand the full reproductive potential of the population. An exploration of whether spawning events are discernible on otoliths is ongoing (Hobbs group, UC Davis); if so, retrospective analyses relating multiple spawning events to concurrent conditions (e.g., tidal phase, food availability, water temperature) may be possible.

Finally, efforts to better characterize spawning habitat and habitat attributes needed for successful egg hatching should also continue. This is needed to more fully evaluate and understand linkages between environmental drivers such as hydrology and larval recruitment. Of all the life stages of Delta Smelt, we know the least about the egg stage; Delta Smelt eggs have never been found in the wild. Because of this, we were not able to construct a life stage transition conceptual model that specifically focused on eggs. More information about spawning and egg hatching habitat is needed to fill this gap in our conceptual models and to identify management actions that would promote beneficial habitat attributes.

Mathematical Modeling

As demonstrated in this report and by others, conceptual models are useful tools for identifying and understanding key ecosystem components and relationships, but they do not quantify them and cannot be used to quantitatively define functional responses to environmental drivers or make quantitative predictions. Furthermore, as discussed above, the simple univariate and comparative analysis approaches employed throughout this report cannot capture the effects of multiple and often interacting drivers on the Delta Smelt population as a whole and on specific processes such as growth, mortality, and reproduction. The influences of interspecific interactions and abiotic forcing factors on populations and communities in complex ecosystems such as estuaries are also difficult to directly measure in any practical way. Only mathematical models can deal with such complexities and provide quantitative assessments and predictions.

Fortunately, the number of scientific publications about Delta Smelt that include various types of increasingly sophisticated mathematical models is growing rapidly. Recent examples include mathematical models based on statistical approaches (e.g., Bennett 2005, Manly and Chotkowski 2006, Feyrer et al. 2007, Nobriga et al. 2008, Kimmerer 2008, Kimmerer et al. 2009, Feyrer et al. 2010, Thomson et al. 2010, Mac Nally et al. 2010, Miller et al. 2012, Sommer and Mejia 2013, Kimmerer et al. 2013). These efforts generally focused on habitat associations using presence/absence data from the various monitoring surveys or on changes in Delta Smelt abundance based on abundance indices generated by the monitoring surveys and the effects of multiple habitat attributes (covariates) on these changes.

There is also a rapidly developing body of population life cycle models for Delta Smelt and other SFE fish species (e.g., Blumberg et al. 2010, Maunder and Deriso 2011, Massoudieh et al. 2011, Rose et al. 2011, Rose et al. 2013a, b). These models use either a statistically-based "state–space" multistage life cycle modeling approach or a spatially explicit, individual-based simulation modeling approach. Both approaches allow for analysis of the importance of drivers that affect different life stages of Delta Smelt and vary in space and time.

Not surprisingly, results of mathematical modeling efforts to date agree strongly that no single factor can explain the observed Delta Smelt population dynamics and long-term changes in abundance. There is less agreement, however, about which factors are most important (see for example Rose et al. 2013b) and about the exact sequence and nature of their interactions that led to the 2002-3 Delta Smelt POD decline. It is possible, perhaps even likely, that the natural complexity of the estuarine ecosystem coupled with multiple human impacts will prevent definitive answers to these types of questions, especially when they are sought through overly rigid application of formal hypothetico-deductive reasoning and methods (Quinn and Dunham 1983). We agree with Rose et al. (2013b) that the inherent complexity of the system and the challenges it presents for scientists and managers alike "is perhaps the best reason to develop and compare alternative modeling approaches." Even the most sophisticated modeling oversimplifies complex systems and includes many assumptions. This means that instead of a single modeling approach, multiple alternative conceptual and mathematical modeling approaches, from the simple to the complex, are needed to understand how complex systems work and to predict future changes with sufficient confidence to allow for effective management interventions. The following sections give a brief overview of some of the alternative mathematical modeling efforts currently underway or proposed for the future.

A comprehensive state-space modeling effort that takes advantage of available Delta Smelt abundance data from all monitoring surveys and the even larger monitoring data set about habitat attributes is currently underway (Ken Newman, FWS, personal communication) and future analyses using the individual-based model developed by Rose et al. (2013a) have been proposed (Rose et al. 2013b). As mentioned above, a full description or application of mathematical models is outside of the scope of this report, but to illustrate the utility of additional alternative approaches and further explore some of the linkages and interactions in our conceptual model, we give three additional examples of alternative mathematical modeling approaches that may be used to further test some of the hypotheses in the conceptual models in this report. The first is a qualitative modeling approach, the second a multivariate statistical modeling approach, and the third a numerical simulation modeling approach. Each of these approaches was explored by one of the co-authors of this report. Importantly, these approaches are meant to complement, not replace state-space, individual-based, and other modeling approaches for Delta Smelt. **Furthermore, results are preliminary and included for illustrative purposes only; peer-reviewed publications of these analyses need to be completed before they can be used to draw any conclusions.**

Qualitative Models

Qualitative modeling provides a theoretical foundation for understanding system behavior by minimizing the loss of generality and realism at the expense of model precision (Levins 1974, Levins 1975, Puccia and Levins 1991). Qualitative modeling is based on a mathematically rigorous approach that can be used to gain insight on community level process and to examine the consequences of intended or inadvertent human-induced perturbations in managed systems. Questions often addressed through qualitative modeling include the resilience and stability of the system and the direction of population change (Puccia and Levins 1991), the role of system structure on stability (Dambacher et al. 2003, Fox 2006) and the degree of predictability in the response of populations to perturbations (Montaňo-Moctezuma et al. 2007, Hosack et al. 2009). Such questions have strong implications in terms of stability-complexity relations (May 1972, Pimm 1984, Haydon 1994) and the persistence of populations and communities following regime shifts (Baxter et al. 2010, Brook and Carpenter 2010, Capitán and Cuesta 2010, Cloern and Jassby 2012).

The increased ecological understanding of the upper SFE and the potential drivers and mechanisms underlying the interannual population responses of Delta Smelt reviewed by the FLaSH and MAST syntheses provide a strong rationale to further refine and integrate our knowledge on community level interactions and ecological drivers in this highly altered system. Towards that goal, we envision qualitative modeling as a complementary approach to other types of models to evaluate the response of Delta Smelt and other populations in the upper SFE over several temporal and spatial scales. Qualitative modeling for Delta Smelt can address some relevant system-level knowledge gaps which are usually less amenable to analyses using other modeling approaches, namely, the influence of species interactions and multiple feedback levels on community stability and population changes in response to perturbations on one or more species. For example, understanding the mechanisms leading to Delta Smelt population responses under different hydrological conditions is an area of significant interest.

Signed-digraphs are a useful representation of the structure of a system, as defined by the community matrix, and have been used in qualitative models exploring food webs (Liu et al. 2010), extinction events in communities (Vandermeer 2013), and other ecological topics of theoretical and conservation relevance. Castillo (unpublished data) used this approach to evaluate the predicted response of Delta Smelt to a sustained change in fall outflow as required in the 2008 FWS Biological Opinion. Recognizing that outflows can control X2 and the size and location of the LSZ (see Chapter 4), and affect other segments of the aquatic community supporting Delta Smelt, Castillo (unpublished data) modeled the response of subadult Delta Smelt to low (5,000 cfs; X2 = 85 km), intermediate (8,000 cfs; X2 = 81 km) and high (11,400 cfs; X2 = 74 km) fall outflow scenarios. Community composition for each outflow scenario was determined relative to the geographical distribution of species expected to occupy the LSZ. The high outflow model included six community components: phytoplankton, zooplankton, Delta Smelt, predators of Delta Smelt, the overbite clam *Potamocorbula amurensis*, and outflow. The intermediate outflow scenario included two additional community components: the Asian clam *Corbicula fluminea* and the cyanobacteria *Microcystis aeruginosa*). The low outflow scenario included the same variables as in the intermediate flow scenario, except that the overbite clam was excluded and the Brazilian waterweed, *Egeria densa* was added. For each of these communities, community components could exhibit positive or negative feedbacks and positive or negative interactions with other community components. For each of the assumed flow conditions, the four alternative types of community interactions were assumed and each met the stability criteria, as defined by Puccia and Levins (1991). The predicted response of the Delta Smelt population was: 1) predominantly positive under the high outflow community scenario, 2) ambiguous under the intermediate outflow community scenario and 3) very ambiguous under the low outflow community scenario. According to these preliminary results, both outflow and outflow-induced changes in community composition and structure seem to play a critical role in determining the population response of Delta Smelt. These model predictions supported the hypothesis that a shift in the LSZ towards X2 = 74 km is a necessary condition for the fall outflow action to exert a positive influence on the Delta Smelt population. Qualitative models like these can provide useful assessments when the general direction of community interactions are understood but the data are insufficient to support a quantitative model.

Multivariate Statistical Modeling

In this report we reviewed results from many multivariate statistical modeling efforts such as the multivariate autoregressive modeling (MAR) conducted by MacNally et al (2010) to discern the main factors responsible for the POD declines and the hierarchical log-linear trend modeling by Thomson et al. (2010) that used Bayesian model selection to identify habitat attributes (covariates) with the strongest associations with abundances of the four POD fish species and determine change points in abundance and trends. The state-space life cycle modeling by Maunder and Deriso (2011) is also based on multivariate statistical modeling; an extension of this work is currently underway by Newman and others (Ken Newman, USFWS, unpublished data).

We anticipate that insight from the current conceptual model may be used to facilitate additional multivariate statistical models. As an example, we present preliminary results (Mueller-Solger, USGS, unpublished data) of univariate and multivariate statistical analyses of X2 relationships with annual Delta Smelt abundance indices that follow the approach in Jassby et al. (1995). The purpose is to further explore some of the hypotheses related to hydrology and the size and position of the LSZ included in our conceptual model and to illustrate the importance of considering more than one factor when trying to understand Delta Smelt dynamics. We include this brief exploration in this report because it serves as a useful and relevant example, but as noted above, we advise readers that these are preliminary results from an analysis that has not yet undergone peer review and should be viewed with caution. Moreover, individual and interactive effects of additional factors were not considered in this analysis, but are likely also important (see Chapter 8). As noted in Chapter 7, we recognize that “hydrology” by itself does not affect Delta Smelt, nor does the “X2” index which is used in this analysis as an index of general hydrological (outflow) conditions in the estuary. As shown in our conceptual model (Fig. 38), hydrology affects Delta Smelt through the combined effects of its interactions with other dynamic drivers and stationary landscape attributes (tier 1) on habitat attributes (tier 3). Many of these interactions have been described in this report; others should be explored further in future studies.

This analysis is intended to evaluate the effects of prior abundance, step changes, and concurrent and prior hydrological conditions in the estuary on the relative abundance of larval to early juvenile Delta Smelt (20 mm index, Fig. 3; hereafter referred to as "larval" Delta Smelt). It also considers prior hydrological conditions and the entire available abundance index time series for larval Delta Smelt provided by the 20 mm survey. The 20 mm survey, one of the newest IEP monitoring surveys, was started in 1995. Delta Smelt distribution data from this survey is heavily used to assess and manage entrainment risk. Similar to prior analyses of TNS and FMWT data (Feyrer et al. 2007, Nobriga et al. 2008), Kimmerer et al. (2009, 2013) and Sommer and Mejia (2013) used a generalized additive modeling (GAM) approach to examine the associations between Delta Smelt occurrence or catch per trawl at 20 mm survey stations and habitat attributes (salinity, temperature, turbidity, and calanoid copepod density) measured concurrently at the same stations. There have, however, been few analyses of annual abundance data from this survey. After 19 years, the 20 mm survey now provides barely enough annual abundance data points (indices) to conduct multiple regression analyses with up to two predictor variables. Clearly more years of data collection and more in-depth analyses are needed and the analyses presented here are merely a starting point.

This analysis uses annual abundance indices for larval Delta Smelt (20 mm survey, 1995-2013), adult Delta Smelt (SKT survey, 2003-2013), and subadult Delta Smelt during the previous year (FMWT survey, 1995-2013) (Fig. 3). It also uses larval recruitment indices calculated from the annual abundance indices (20 mm to SKT ratio and 20 mm to $FMWT_{Year-1}$ ratio, Fig. 46; see previous chapters for caveats regarding index ratios). Data from the SKT survey was only used for univariate analyses because the SKT index time series only has 11 data points at this time. Spring and fall X2 values were obtained by first calculating mean monthly X2 values calculated from daily X2 values provided by the DWR Dayflow database and then averaging the mean monthly X2 values for the "spring" months February to June and the "fall" months September to December. The 2002-2003 step decline in Delta Smelt abundance (Thomson et al. 2010) was introduced as a before/after factor ("Step"). Details about the data sources are provided in Chapter 3 of this report.

The multivariate analyses presented here were conducted with generalized linear modeling (GLM) following the approach of Jassby et al. (1995) and followed with a classical linear modeling (LM) approach guided by the GLM results. For the GLM, model parameters were estimated with a Poisson error distribution, a log link function describing the relationship between the predictor variables(s) and the mean, and a natural spline to represent non-linearities. The degrees of freedom for the splines were restricted to only 2 (i.e. one interior knot) because of the low number of available data points. Models requiring estimation of more than two independent parameters (aside from the intercept) were not considered for the same reason. Applying the GLM approach avoids the need for log-transforming the abundance data and using natural (quadratic) splines as smoothers allows a more natural representation of non-linearities than using polynomials.

The responses predicted by these models have a fairly high degree of precision as indicated by low values of SE/Mean and residuals were consistent with model assumptions. The results show significant univariate relationships at the $P < 0.05$ level (Table 7) between the 20 mm abundance index and spring X2, prior fall X2, and prior FMWT abundance index. The relationship is strongest with prior fall X2, followed by spring X2 and prior FMWT abundance index (Table

7). The relationship with spring X2 appears unimodal with maximum 20 mm indices associated with spring X2 values between about 55 and 70 km (Fig. 79a). The relationship with prior fall X2 appears negative (Fig. 79b), and the relationship with the prior FMWT abundance index (Fig. 79c) appears positive. Each of these univariate relationships was improved by the inclusion of one of the other predictor variables (Table 7). Relationships with spring and prior fall X2 were also improved by including the 2002-3 step change. As mentioned above, multivariate analyses with more than two predictor variables were not conducted because of the relatively small amount of available data (n = 19, Table 7). Based on AIC comparisons (Table 7), including the 2002 step change (introduced as a before/after factor, “Step”) somewhat improved the relationship of the 20 mm index with spring X2 (Fig. 73a) and with prior Fall X2 (Fig. 79b), but not with the prior FMWT index because that index was the basis for the analyses that detected the step change and thus already includes the step change in the actual data (Fig. 79c, model not included in Table 7). Including the prior FMWT abundance index improved the relationships with spring and fall X2 more substantially, but the model combining the effects of spring and fall X2 fit the 20 mm index data nearly as well as the model combining the effects of spring X2 and prior FMWT (Table 7).

It is interesting to note that while prior fall X2 by itself was a stronger predictor of the 20 mm index than spring X2, spring X2 was the stronger predictor when the step change or previous fall abundance were taken into account. Baxter et al. (2010) hypothesized that the shift toward higher prior fall X2 values (Fig. 17) may have contributed to an ecological “regime shift” associated with the step decline in Delta Smelt and other species. This means that prior fall X2 and the “step” factor and FMWT decline in this analysis may be related, which could explain the very similar outcomes for the two models combining spring X2 with either prior fall X2 or the prior FMWT index.

Partial residual plots show the relationship between a predictor variable and the response variable given that other independent variables are also in the model; in other words, they show the effect of one predictor variable given the effect of one or more additional predictor variables. Partial residual plots for the relationships of the 20 mm index with the combinations of spring X2 and prior fall X2 (Fig. 80 a and b) and spring X2 and prior FMWT abundance index (Fig 80 c and d) show that the general shape and direction of the relationships of the 20 mm index with each of the individual predictor variables (Fig. 79) remains intact in the models with combined predictors, but the partial residuals do not closely follow the fitted lines. This indicates that while each variable has its own, distinct effect on the 20 mm index that is maintained in the presence of the other variables, interactive effects among these variables are quite strong. In summary, low values of prior fall X2, high prior FMWT abundance, and intermediate values of spring X2 have positive associations with the abundance of larval/postlarval Delta Smelt, but the effects of individual variables are mediated by the presence of the other variables.

Because the spline degrees of freedom were strongly restricted in this GLM analysis, the results are quite similar to the results of classical linear models (LM) with log-transformed abundance data and a quadratic term to represent the unimodal non-linearity in the relationship between the 20 mm index and spring X2 (Fig. 81). We include these models here because they are more easily reproducible than the GLM models and offer simple equations for making predictions about larval abundance that can be used in adaptive management applications. As for the GLM analysis (Table 7), the best fits overall were achieved by combining spring X2 with either the step change or the prior FMWT abundance index (Table 8). All predictor combinations improved the models compared to the univariate relationships (Table 8). Based on a comparison of regression

Table 7. **Summary of relationships between the 20 mm abundance index for Delta Smelt (response variable) and one or more predictor variables: n, number of observations (years); SE/Mean, model standard error (square root of mean squared residual) as proportion of mean response, P, statistical significance level for the model; R^2, coefficient of determination; adjusted R^2, R^2 adjusted for the number of predictors in the model; AIC, Akaike information criterion; Δ AIC, AIC differences; w (AIC), AIC weights. All relationships modeled with generalized linear models (GLM) with a Poisson error distribution, log link function, and a natural cubic spline with two degrees of freedom as a smoother for all predictor variables except "Step."**

Predictor Variable(s)	n	SE/ Mean	P	R^2	Adjusted R^2	AIC	Δ (AIC)	w (AIC)
Spring X2, $FMWT_{year-1}$	19	0.119	<0.001	0.791	0.731	39.5	0.00	0.53
Spring X2, Fall $X2_{year-1}$	19	0.120	<0.001	0.787	0.726	40.1	0.60	0.39
Fall $X2_{year-1}$, $FMWT_{year-1}$	19	0.126	<0.001	0.764	0.697	43.2	3.78	0.08
Spring X2, Step (Factor)	19	0.143	<0.001	0.677	0.612	53.6	14.12	0.00
Fall $X2_{year-1}$, Step (Factor)	19	0.135	<0.001	0.712	0.655	55.8	16.35	0.00
Fall $X2_{year-1}$	19	0.145	<0.001	0.646	0.601	56.0	16.53	0.00
Spring X2	19	0.176	0.006	0.476	0.411	79.9	40.43	0.00
$FMWT_{year-1}$	19	0.187	0.015	0.408	0.334	89.4	49.98	0.00

coefficients and P-values, the LM relationships were statistically weaker (Table 8) than in the GLM analysis (Table 7).

Another way of including prior abundance in statistical relationships of abundance with habitat attributes and environmental drivers is to use abundance indices that are proportional to prior abundance indices, in other words, ratios of present to prior abundance indices. In this report, we used the ratios of 20 mm to SKT and 20 mm to $FMWT_{Year-1}$ abundance indices (Fig. 46; see also caveats about these indices in Chapter 3) as larval recruitment indices from adults and subadults, respectively. We found that recruitment of larvae from adults was linearly related to spring X2 for the entire available time series (2003-2013, Fig.82a and Table 9). The recruitment index for 2013 was higher than expected based on the other data points. The relationship of the recruitment index from subadults to next year's larvae with winter-spring X2 was also linear for the POD period after the abundance step decline in 2002 (Thomson et al. 2010), but with more scatter at higher X2 values. Interestingly, no relationship was apparent at all before the 2002 step decline when the proportional larval recruitment from then more abundant subadults was generally low (Fig. 82b and Table 9). In the current POD regime, larval recruitment from parental stock appears to be highest when flows through and out of the Delta are high and the interface between fresh and brackish water is located to the west (i.e. low X2), although it can occasionally also be high at lower flows, as was the case in 2013.

In late winter and spring 2013, CVP and SWP exports were reduced to comply with OMR flow requirements in the 2008 USFWS Biological Opinion aimed at reducing the risk of adult and

Figure 79. Plots of the Delta Smelt 20 mm survey abundance index as a function of a) spring (February-June) X2, b) previous year fall (September-December) X2, and c) Delta Smelt fall midwater-trawl abundance index in the previous year. Details of general linear models (GLM) used to fit the lines are in Table 7.

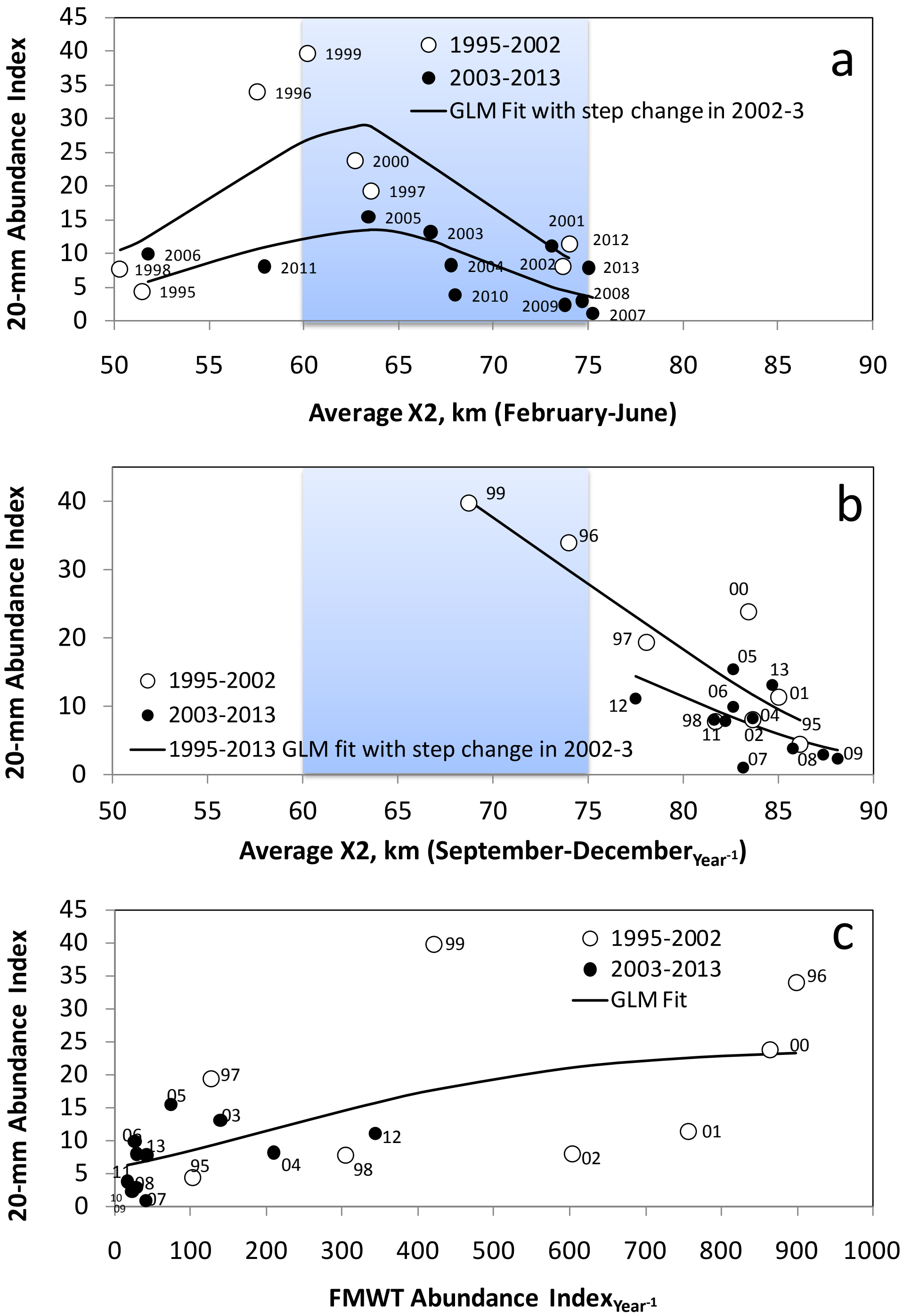


Figure 80. **Plots of partial residuals for the relationships of the 20 mm index with the combinations of spring X2, prior fall X2, and prior FMWT abundance index summarized in Table 1 (panels a, b, d, and e). The plots shown here also include partial fit lines and their 95% confidence intervals. Values for the time period of analysis are shown for: c, X2; and f, the fall midwater trawl abundance index from the previous year**

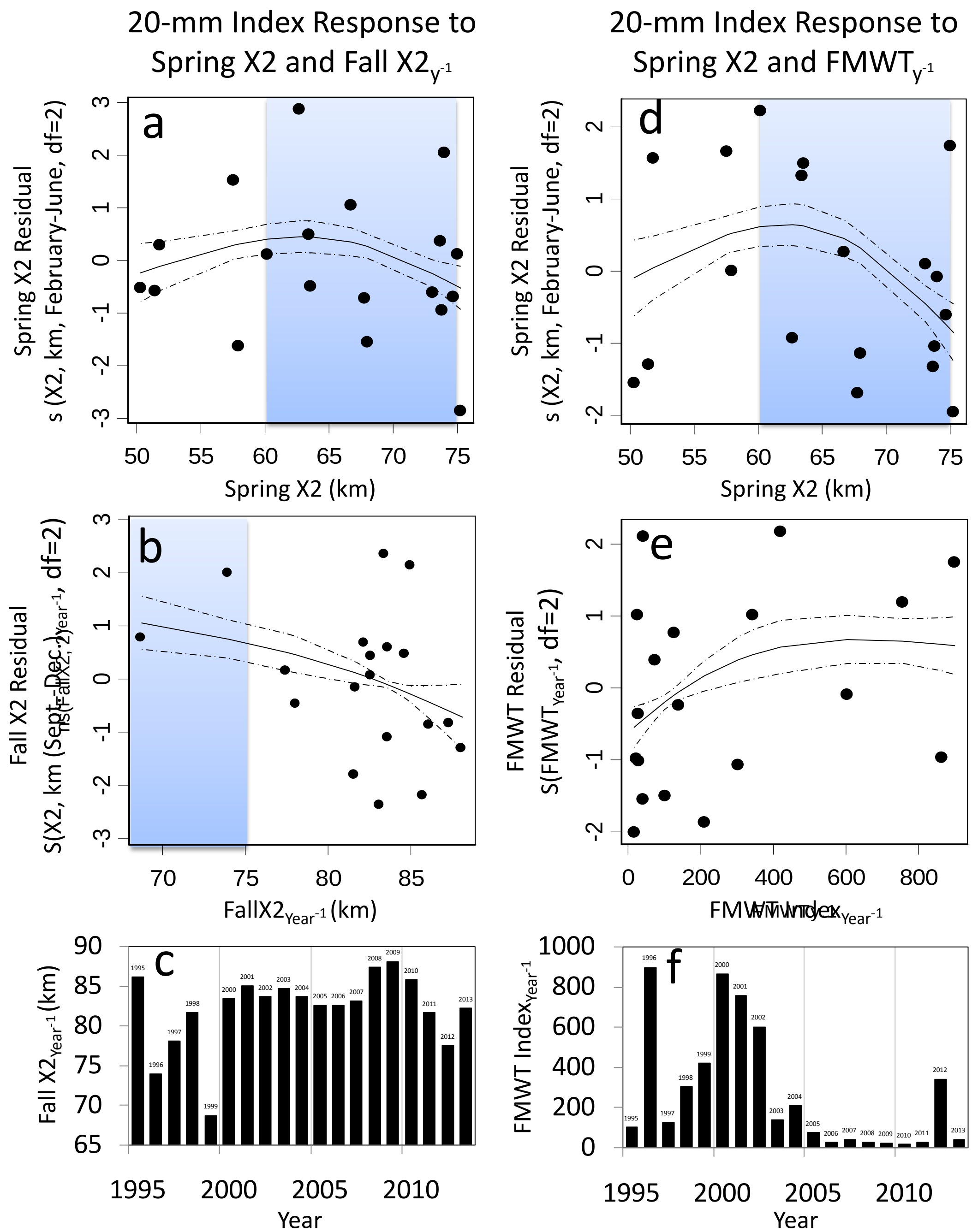
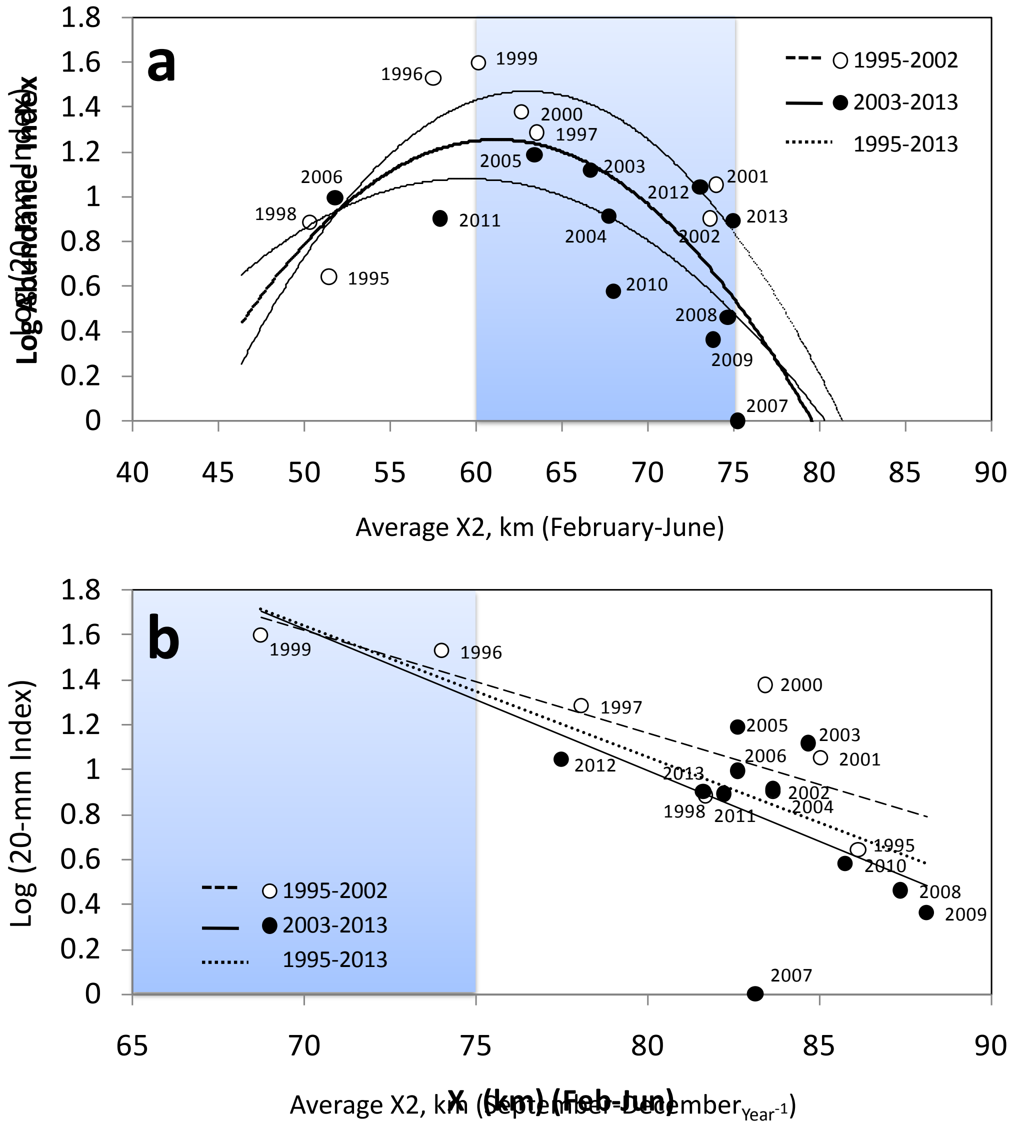


Figure 81. **Plots of the Delta Smelt 20 mm survey abundance index as a function of a) spring (February-June) X2, and b) previous year fall (September-December) X2. Lines are either simple linear least squares regression (lines) or quadratic regression (curves). Details of linear models (LM) used to fit the 1995-2013 lines are in Table 8.**



larval Delta Smelt entrainment into the water export pumps. This was the first time since the 2008 USFWS Biological Opinion was issued that exports were specifically reduced to lower Delta Smelt entrainment risk. In other years, flows were high enough to allow for higher export levels or export reductions to protect salmon were deemed sufficiently protective for Delta Smelt. It is possible that the intentional reduction in Delta Smelt entrainment risk in 2013 contributed to the high larval recruitment from adults during relatively low flow conditions, but additional years with similar conditions and targeted management actions as well as better estimates of entrainment and more in-depth analyses with other flow variables and flow averaging periods

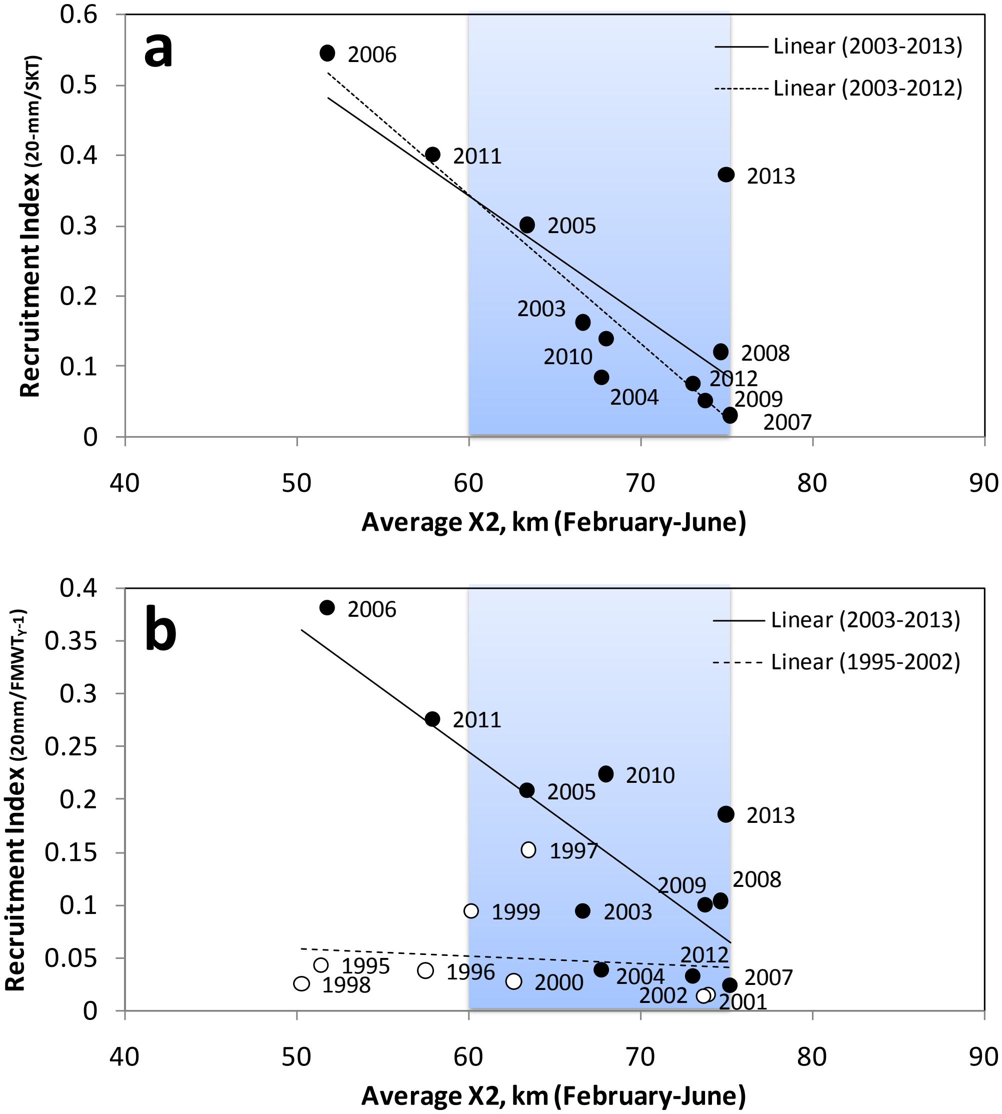
Table 8. Summary of relationships between the log-transformed 20 mm abundance index for Delta Smelt (response variable) and one or more predictor variables. All relationships modeled with simple least-squares linear models (LM). For explanation of column headings see Table 6.

Predictor Variable(s)	n	SE/ Mean	P	R^2	Adjusted R^2	AIC	Δ (AIC)	w (AIC)
Spring X2, (Spring X2)^2, log $FMWT_{year-1}$	19	0.237	0.000	0.745	0.694	2.1	0.00	0.85
Spring X2, (Spring X2)^2, Fall $X2_{year-1}$	19	0.274	0.001	0.661	0.593	7.5	5.42	0.06
Fall $X2_{year-1}$, log $FMWT_{year-1}$	19	0.280	0.000	0.621	0.574	7.7	5.54	0.05
Spring X2, (Spring X2)^2, Step (Factor)	19	0.292	0.002	0.616	0.540	9.9	7.78	0.02
Fall $X2_{year-1}$, Step (Factor)	19	0.307	0.002	0.544	0.487	11.2	9.06	
Fall $X2_{year-1}$	19	0.318	0.001	0.479	0.449	11.7	9.58	0.01
Spring X2, (Spring X2)^2	19	0.329	0.006	0.473	0.407	13.9	11.83	0.00
log $FMWT_{year-1}$	19	0.333	0.002	0.430	0.397	13.4	11.29	0.00

are needed to test this hypothesis and obtain a better understanding of flow effects on larval recruitment.

Overall, these preliminary findings suggest that abundance of the larval to early juvenile life stages of Delta Smelt may respond quite strongly to spring and prior fall outflow conditions. The relationships of the 20 mm index with spring X2 shown in this analysis were much stronger than relationships of the TNS and FMWT indices with spring X2 (Table 1, Fig. 17. Similarly, hydrological conditions in the fall seem to have a greater impact on subsequent abundance of larvae than on subsequent juvenile abundance (TNS index; Mount et al. 2013). This is consistent with the findings by Kimmerer et al. (2009) who noted more pronounced relationships of spring X2 with earlier than with later life stages of Delta Smelt and explained that this was “probably because the earlier life stages occupy areas that are fresher and therefore more responsive to changing flow than the more brackish regions.” While the size and location of the LSZ itself may be important for maturing adults in the fall, its interface with fresh water may be important to larvae and spawning adults. A more westward interface means a larger freshwater habitat for spawning and larval rearing that reaches into the shallow eastern region of Suisun Bay and is well connected with Suisun Marsh sloughs and, in wetter years, the Napa River. It also means a larger distance to the export pumps in the southern Delta and thus a reduced risk of entrainment for spawning adults and larvae. Interactions of flow with other drivers and habitat attributes as shown in the conceptual models in this report are likely also important. This suggests that at least

Figure 82. **Adult (panel a, SKT) and subadult (panel b, FMWT the previous year) to larvae (20 mm Survey) recruitment indices (abundance index ratios) as a function of spring X2 (February-June). For 20 mm/SKT a linear regression was calculated with and without 2013, which appears to be an outlier. For 20 mm/FMWT the previous year separate regressions were calculated for the POD period (2003-2013), the period before the POD (1995-2002), and the entire data record (not shown). See Table 9 for regression results.**



at present, increased Delta outflow and a more westward LSZ in fall, winter, and spring may have important beneficial effects on early life stages of Delta Smelt, but other factors (possibly including summer flows which were not included in this analysis) may be more important for their survival to adults.

Finally, similar to previously published analyses, this analysis strongly suggests that previous life stage abundance should always be taken into account in statistical explorations of habitat effects

Table 9. Summary of relationships of larval recruitment indices (abundance index ratios) for Delta Smelt (response variable) and spring X2 (predictor variable; spring: February-June): n, number of observations (years); SE/Mean, model standard error (square root of mean squared residual) as proportion of mean response, P, statistical significance level for the model; R^2, coefficient of determination. All relationships modeled with least-squares linear models (LM).

Index Ratio	Period	n	SE/Mean	P	R^2
20-mm/ SKT	2003-2013	11	0.556	0.006	0.588
20-mm/ SKT	2003-2012	10	0.270	0.000	0.918
20-mm/ $FMWT_{Year-1}$	2003-2013	11	0.469	0.003	0.648
20-mm/ $FMWT_{Year-1}$	1995-2002	8	1.012	0.771	0.015
20-mm/ $FMWT_{Year-1}$	1995-2013	19	0.981	0.321	0.058

on Delta Smelt. Prior abundance can be introduced into these relationships as actual abundance data (e.g. abundance indices or catch per trawl data), periods of relatively constant abundance (here introduced as a “step” factor), or by combining it with present abundance in proportional abundance indices such as the index ratios used here as recruitment indices. Similar to the relationships of juveniles with spring X2 discussed in Chapter 4, the overall depressed abundance of larval Delta Smelt during the POD period that started in 2002 leads to less substantial larval abundance increases with increasing outflows and decreasing X2 values than before the onset of the POD. However, the association of high larval recruitment with high spring outflow suggests that winter and spring hydrology, through its effects on habitat attributes, may be an important driver of larval recruitment during the current POD period, although it may be less important at higher abundance levels.

In summary, this preliminary analysis provides an example of how relatively simple multivariate modeling can yield intereresting insights, in this case about how prior conditions (prior fall X2), prior abundance (prior FMWT), step changes in abundance, and concurrent environmental conditions (spring X2) may all have important effects on Delta Smelt abundance in the spring. While further analyses, more sophisticated life cycle modeling, and publication in a peer-reviewed journal are needed to draw firm conclusions, these preliminary results support the idea discussed throughout this report that neither scientific understanding nor management effectiveness can be improved by only considering a single effect, or a single season or life stage. High larval recruitment is essential for setting the stage for a strong year class, but higher growth and survival through subsequent life stages are also needed to achieve and sustain higher population abundance levels.

Numerical Simulation Modeling

Quantitative simulations of the multiple factors and processes that affect Delta Smelt life stage transitions in our conceptual model are an obvious next step in the exploration and synthesis of the information presented in this report. The purpose of simulation modeling is to represent a phenomenon or process in a way that allows users to learn more about it by interacting with the simulation (Alessi and Trollip 2001). In particular, simulations allow users to easily control experimental variables and test hypotheses. Guidance from simulation model "dry runs" can make actual laboratory and field experimentation much more efficient and effective. Simulations are also valuable in visualizing outcomes, thus further promoting learning and understanding.

The individual-based Delta Smelt model by Rose et al. (2013a, b) is an example of a complex simulation model specifically created for Delta Smelt. Another simulation modeling option is to utilize "off-the-shelf" simulation software such as the "STELLA" (Structural Thinking and Experiential Learning Laboratory) simulation construction kit (http://www.iseesystems.com/softwares/Education/StellaSoftware.aspx). STELLA is designed to let users easily create their own simulations using system dynamics including positive and negative causal loops, and flows, accumulations and conversions of materials.

Culberson (USFWS, unpublished data) created a simple quantitative simulation model in STELLA that includes several life stages of Delta Smelt and is based on seasonal environmental conditions and stage to stage estimates of survival. While this simulation modeling approach appears to be feasible, it remains to be seen how such an approach will approximate actual population dynamics encountered in the field and how results compare to those of other simulation models such as the individual-based life cycle model by Rose et al. (2013a,b). A user-friendly STELLA-based model can be useful in the interim, however, to explore the relative contribution of lifecycle stage and environmental covariates to the overall status of Delta Smelt abundance from year to year and to test hypotheses derived from the conceptual model. In its fullest expression, this MAST-associated lifecycle model will be useful for illustrating how multiple suites of plausible co-variates can allow for different Delta Smelt abundance outcomes. For example, it may be possible to find high abundance under degraded conditions given low entrainment losses across successive winters and springs. Conversely, it is possible to encounter low Delta Smelt abundance given otherwise good environmental and outflow conditions with significantly warmer temperatures during fall pre-adult maturation periods. Moreover, simulated changes in survival can provide a useful frame of reference to evaluate alternative outcomes of cohort size or population size attained at different life stages. For example, given the reported levels of larva, juvenile and sub-adult Delta Smelt in IEP surveys, what levels of daily survival between life stages would be required to attain the relative abundances corresponding to each of the four years being compared? Could the small anticipated differences in assumed daily survival among those four years be attributed to some combination of habitat attributes? Or, could stage-to-stage survival (e.g., percent of individuals surviving from one stage to the next) provide a more useful frame of reference to address that question? Our proposed STELLA simulation model and associated modeling exercises will comfortably allow exploration of these questions and related ideas.

This type of modeling will best be used iteratively with emerging data and within synthesis reports to identify where important gaps exist in the Delta Smelt lifecycle understanding and demonstrate how disparate information sources might be brought together to inform our smelt population estimates through time. Importantly, our model can be used in combination with the narrative description of "a year in the life" of the Delta Smelt population from the conceptual model to more effectively describe environmental and management effects on population status in the SFE. We are especially interested in using such a model to avoid single-factor outcome discussions where smelt populations are seen as the result of "one versus another" environmental or management-related trade off, particularly when single factor analysis is aggregated over decades of data collection efforts in what we know is a constantly-changing estuary.

Figure 83 shows how output from such a model might be useful for keeping track of the variable influence of factors on overall Delta Smelt abundance across seasons within three hypothetical years. Six factors are plotted according to their sensitivity rank (their relative influence on simulated population outcomes). Specific sensitivity levels can then be identified according to the combinations of factors that emerge as important across succeeding seasons and years. Models built to simulate these influences can then be closely examined to discern how different years, year types, or management practices influence simulated abundance, and to detect where potential data gaps or inconsistencies are among the alternative conceptual models or model modes. The basis for using such an approach is a comparative one, and an absolute resolution of the size or behavior of the real Delta Smelt population is not anticipated – but remains the overall objective. Of real interest here is providing a way to interpret our emerging conceptual model within potential regime-shifts, and to capitalize on previous specifications of this model to organize our ever-improving understanding. Of additional benefit is the ability to use these models easily in “learning sessions,” where users interact with the modelers and species experts to deepen understanding of Delta Smelt biology and its relationship to Delta ecology and management.

Applications to Support Delta Smelt Management

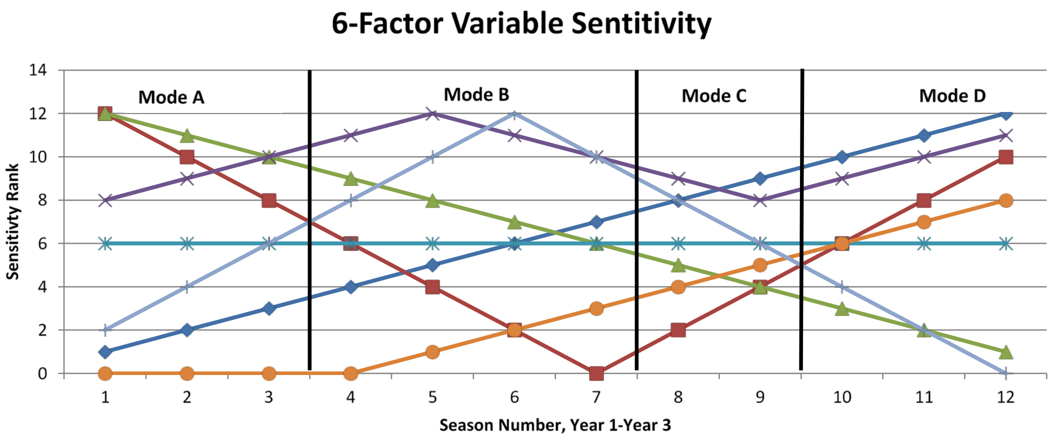
We have shown that the conceptual models in this report provide a reasonable and up to date conceptual framework that can be used to analyze and synthesize existing data and knowledge about Delta Smelt, identify critical data and information gaps, and guide new field and laboratory studies as well as mathematical modeling efforts. We have also discussed many challenges that limit our ability to reach firm conclusions and make highly confident predictions about the effects of management actions and other changes on Delta Smelt. And we have noted that science and management have to go hand in hand to constantly identify, implement, evaluate, and refine the best management options for Delta Smelt in the highly altered and ever-changing estuarine ecosystem that represents the entire range of this species.

Adaptive management is a well-established approach for systematically integrating science and management. As mentioned earlier in this report, it is increasingly required in plans for management of the San Francisco estuary, but to date, the Vernalis Adaptive Management Program (VAMP) and the Fall Ouflow Adaptive Management Plan are among the few clear examples of systematically planned and implemented adaptive management in the estuary.

We end our report with examples of how our conceptual models can be used to adaptively manage and improve Delta Smelt habitat. We conclude with several recommendations for the next analysis, synthesis, and modeling efforts. These efforts are a key ingredient for the more widespread adoption and success of adaptive management strategies; without the conceptual and mathematical models provided by these efforts adaptive management of ecosystems simply cannot proceed.

Table 10 gives examples of adaptive management goals and associated uncertainties to address habitat deficiencies (“habitat problems”) identified and discussed in this report. This table is intended as an illustration of how our conceptual models can be used to inform the first three steps of the nine-step adaptive management framework developed by the DSC Delta Science Program (DSP 2013). These three steps are: 1) definition of the problem; 2) establishment of

Figure 83. **Simulated output from a STELLA model for assessing sensitivity of the model to variation in model variables.**



management goals and actions to address the problem; and 3) modeling of linkages between management goals and actions. The third step specifically requires conceptual or quantitative models for the purpose of evaluating outcomes of alternative management actions and identification of uncertainties and data gaps. Conceptual models are also important in the other six adaptive management steps, for example to design effective adaptive management experiments and appropriate monitoring and to analyze, synthesize and evaluate results.

Table 10 is organized around the habitat attributes identified in the conceptual models. For each habitat attribute, we describe some example categories of management actions that could be considered to improve the status of Delta Smelt. In essence, these actions represent an example "tool box" for the management of Delta Smelt.

Note that the tool box identified in Table 10 is not meant to be exhaustive. Rather, the list is intended as an example set of adaptive management actions suggested by the conceptual models. As such, the list provides no insight into the cost-effectiveness or feasibility of any of the potential actions. Moreover, we acknowledge that there is substantial uncertainty about the potential benefits of actions in the tool box. As mentioned above, identification of uncertainties about the feasibility and benefits of proposed management actions is an important step in adaptive management that can only be accomplished with the help of conceptual or quantitative models. A key point is that these studies are somewhat different than the critical data and information gaps presented earlier in this Chapter. Specifically, Table 10 emphasizes information gaps that are most relevant to specific management questions, while the earlier list focuses on needs to improve the overall scientific understanding that provides the basis for our conceptual models for Delta Smelt. Clearly, efforts to resolve uncertainties and gaps in understanding are needed in both categories. Overlapping uncertainties may highlight especially urgent data and information needs. For Delta Smelt, this includes uncertainties related to contaminants, predation, and entrainment along with interactions of physical habitat attributes with other factors.

Table 10. Example tool-box for applying the conceptual model to Delta Smelt management.

Habitat Attribute	Management Actions	Example Study Efforts
Physical Features	Increase habitat area & quality	-Identification of key microhabitats for each life stage and attributes. -Effects of flow/LSZ position on habitat quality, particularly key biotic habitat elements (access to prey, evasion of predators). -Approaches to maintain & expand high turbidity habitat (e.g. supply, habitat design, SAV management). -Approaches to maintain and expand habitat with moderate temperatures (e.g. channel configuration, water depth and velocity). -Evaluation of whether targeted restoration meets habitat needs (e.g. temperature, substrate, turbidity)
Chemical Features	Reduce toxicity	-Identification of chronic effects of contaminants. -Identification of effects of Harmful Algal Blooms. -Approaches to reduce toxicity from contaminants and HABs
Food	Increase pelagic production Increase access to alternative foods (e.g. epibenthic). Reduce sources of loss Manage towards higher quality foods Prevention and control of non-native species	-Role of tidal wetlands as subsidy habitats (not necessarily occupied by smelt) -Ammonia-bivalve interactive effects on diatom, copepod, mysid, amphipod production. -Relative importance (contribution to smelt growth) of epibenthic foods (e.g., mysids, amphipods, aquatic insects). -Effect of bathymetry, vegetation type (and density) on access to epibenthic and pelagic foods. -Role of tidal wetlands and wetland/open-water complexes. -Approaches to reduce losses to benthic grazing (e.g. invasive clams) and/or to the suppression of bivalve populations -Value of different food types to Delta Smelt nutrition. -Effects of habitat conditions (e.g. ammonia, flow) on food quality. -Identification of nutrient sources and sinks. -Improved detection methods for invasive species -Studies to evaluate alternative control methods.
Entrainment	Avoid entrainment region Adjustments to timing and magnitude of exports	-Identification of factors that lead to increased occupancy of South Delta. -Improved measurement of entrainment and its environmental correlates -Effects of exports and entrainment on viability (e.g. abundance, genetics, demographics). -Approaches to reduce entrainment and enhance emigration success.
Predation risk	Reduction of predator population Reduction of predation rate	-Studies on delta smelt responses (behavior, distribution, abundance) to variation in predator abundance. -Identify habitat features that reduce predation rate (e.g. depth, turbidity, food, lower water temperatures).

Recommendations for future analysis and synthesis

Efforts to resolve the management issues listed in Table 10 or carry out the modeling and fill the critical science gaps discussed earlier in this Chapter will not succeed without an organizational commitment to continued systematic and long-term collection, synthesis and evaluation of data and information about Delta Smelt, its habitat, and important drivers of habitat and abundance changes. The importance of Delta Smelt for ecosystem and water supply management in and far beyond the SFE is widely recognized. The impressive rate at which we are learning about Delta Smelt and the estuarine ecosystem and the large amount of existing information about them is less widely recognized by many managers and even by many scientists. Part of the reason for this is that it is difficult to track the large quantity of new (since 2010) information documented in this report and even more difficult to integrate it with the previously existing information in a meaningful way. But without this integration, identification of priorities for additional scientific investigations is ad hoc and piecemeal at best and the value of new information cannot be fully realized in management applications such as those listed in Table 10.

Moreover, comprehensive adaptive management efforts simply cannot succeed without adequate conceptual and mathematical models and important science and management opportunities will be missed. Such efforts currently include the ongoing fall outflow adaptive management for Delta Smelt and new efforts called for by the new "Collaborative Science and Adaptive Management Program" (CSAMP), the California Delta Stewardship Council's Delta Plan, and the multi-agency Bay Delta Conservation Plan (BDCP). The fact that even the incomplete draft version of our report released for public review in June 2013 already played a central role in CSAMP work planning, court documents, and elsewhere bears clear testimony to the fact that there is a great and urgent policy and management need for analysis, synthesis and conceptual models such as those provided in this report.

In consequence, we strongly recommend that there be a continued management, analysis, and synthesis effort, whether carried out by the IEP, the Delta Science Program, or some other scientist, group or agency. While it is possible for individual scientists to take on such efforts (e.g., Bennett 2005), the amount, diversity, and rapid growth of pertinent data and information suggests that team efforts may usually be a more feasible and possibly also a more effective option. Collaborative, multidisciplinary analysis and synthesis teams are also at the core of the National Center for Ecological Analysis and Synthesis in Santa Barbara, CA (NCEAS, http://www.nceas.ucsb.edu/), the newer National Socio-Environmental Synthesis Center in Annapolis, MD (SESYNC, http://www.sesync.org/) and the Delta Collaborative Analysis and Synthesis (DCAS) approach promoted by the Delta Science Program's Delta Science Plan (DSP 2013). Important IEP POD and MAST lessons for future synthesis teams are that the role and responsibilities of all team members need to be very clear, that lines of communication need to always be open and available to all, and that there needs to be strong and fully engaged team leadership with a clearly dedicated lead author and/or lead editor for all major team products. In addition, to complete analyses and reports on schedule, it is necessary for team members to prioritize synthesis efforts for sustained periods of time, without being tasked with additional projects that may be urgent for short-term needs.

Another consideration is the type of publication that results from analysis and synthesis efforts. The IEP MAST and POD teams have written comprehensive agency reports, but would have preferred writing peer-reviewed books or monographs (e.g., published by the American Fisheries Society or by U.C. Press) had the time and resources been available to do so. Such books would be considered better scientific products with greater scientific standing and a longer life span and would reach a much larger audience. Another approach would be to write a series of shorter articles that could be published in a special issue of a peer-reviewed scientific journal. This too would take more time and effort and would also somewhat restrict the types of topics that could be covered. Journal articles are, however, the main target for national analysis and synthesis centers such as NCEAS and SESYNC because they have the greatest scientific standing and are the most widely accepted and well established method of written science communication.

Regardless of which analysis, synthesis, and communication approach is chosen, none of these efforts can succeed without commitment of adequate funding, staffing, and other resources. The IEP MAST team that developed and wrote this report was formed in 2012 for IEP science synthesis and work planning, but it has remained a pilot-level effort that was never adequately supported. MAST work remained a part-time effort for all co-authors of this report, and for most it was an "on the side" task compared to their "regular" agency duties. There is no doubt that completion of this report could have proceeded much more rapidly with greater allocation of resources. Public and independent peer reviews of a draft version of this report (see http://www.water.ca.gov/iep/pod/mast.cfm) greatly improved the structure and content, but were not an original part of the MAST planning. Preparing and conducting the reviews as well as responding to the 355 specific and many more general review comments took considerable time (see also Appendix A). Other MAST tasks also added to the delays. In addition to this report, the MAST completed a synthesis report for the Fall Low Salinity Habitat (FLaSH) investigation component of the Fall Outflow Adaptive Management Program (Brown et al. 2014) and prepared a solicitation package for research proposals, which it then also reviewed.

We strongly recommend that adequate, long-term support for these types of efforts be among the highest science and adaptive management priorities for the region and the entire State of California. Given its pivotal role in adaptive management and the increasingly large amounts of new scientific data and information that are produced every year, the authors of this report, individually and as a team, cannot think of any science activity that is more urgently in need of greater support than analysis, synthesis, and communication of scientific results.

For additional analysis and synthesis efforts about Delta Smelt, we recommend that the next individual or team to take this on should:

- Build on this report by evaluating the conceptual model with more rigorous analyses that include more years of data, developing lifecycle and numerical models as discussed above, and/or using the conceptual model to develop a comprehensive list of data and information gaps and approaches to addressing these gaps in order to inform management strategies;
- Early in the process, make clear decisions about the analytical/modeling approaches to be used, the scope of the synthesis to be done, and approaches for review and communication of results;
- Evaluate additional data and information needs concerning Delta Smelt;
- Consider approaches to understand the effects of the wide variety of management actions targeting Delta Smelt, including adaptive management of fall outflow, entrainment, habitat restoration, etc (e.g., Table 10);
- Develop key "indicator" variables that can be used to track and predict the status of Delta Smelt and its habitat and serve as "performance metrics" to evaluate the success of management actions. Such variables, and a "report card" to summarize them, were considered for this report, but the MAST decided that developing them was beyond the scope of

this report and would require a fairly substantial effort that could be the main focus of an additional effort.

An additional recommendation is that an ultimate goal of these efforts should be the integration of conceptual and mathematical models such as those described in the previous section of this Chapter and the routine use of both types of models in adaptive management. Neither the recently published mathematical models nor existing conceptual models for Delta Smelt have been applied to management issues in a consistent manner. This is likely at least partially due to unfamiliarity of managers with the models and the need for specialists (model developers) to apply the mathematical and in some cases even the conceptual models to management issues in the absence of easy to use and understandable model interfaces and specifications. We also recommend a comprehensive biological modeling forum and/or more specific biological modeling teams and "summits" as recommended by the IEP Science Advisory Group (2010, available at http://www.water.ca.gov/iep/docs/IEPModelWorkshopReview.pdf) and, more recently, the Delta Science Plan (DSP 2013). Such groups would not only facilitate communication among modelers, but could also help make the connection from model development to model applications of interest to managers and policy makers. They would complement and could (and likely should) be integrated with the existing, California Water and Environmental Modeling Forum (CWEMF, see http://www.cwemf.org), which tends to focus on modeling physical processes. As with the overall analysis and synthesis teams, these groups could be implemented by the IEP, The Delta Science Program, CWEMF, or others. The chosen organizational umbrella is less important than actual implementation and involvement of appropriate local and outside scientific and management expertise. Some possible topics for these groups include:

1. Reviews and updates to existing conceptual and mathematical models

2. Further development of mathematical models of Delta Smelt population abundance drawn specifically from the conceptual models described in this report; applications and extensions of recently published models to help make management decisions and guide new modeling efforts; additional modeling efforts and future research projects to improve resolution and understanding of the particular factors identified as critical to reproduction, recruitment, survival, and growth.

3. Review and refinement of new models such as the emerging comprehensive state-space population model (Newman, personal communication); development of additional models or modules of models specifically aimed at estimating effects of inadequately monitored or difficult to measure and evaluate habitat attributes such as predation risk and toxicity; development of new "nested" and/or "linked" mathematical modeling approaches that can accommodate multiple drivers and their interactive effects across temporal and spatial scales.

4. Collaboration among physical and biological modelers, experimental and other scientists, managers, and stakeholders to develop and model management scenarios and strategies that move beyond the current focus on relatively crude distinctions among "water year types" toward a more integrative ecosystem and landscape-based management approach.

We end this report with the hope that the conceptual models and information presented will be used for achieving better management outcomes for Delta Smelt and the estuarine ecosystem on which it depends. These precious natural resources are owned by no one, but are held in public trust by the California and U.S. governments for the benefit of all the people. We are grateful for the opportunity to serve our State and nation in the collaborative manner afforded by working under the interagency umbrella of the Interagency Ecological Program for the San Francisco Estuary.

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Appendix A: How the Delta Smelt MAST Report was Written

The report titled “An updated conceptual model for Delta Smelt: our evolving understanding of an estuarine fish” (hereafter referred to as Delta Smelt MAST report) was written in 2013-2014 by the IEP Management, Analysis, and Synthesis Team (MAST). The Delta Smelt MAST report was developed through a series of report drafts and a public technical review and followed a set of general report guidelines. This report appendix describes the Delta Smelt MAST report guidelines, the report review and revisions, and report milestones.

Delta Smelt MAST Report Guidelines

Report Purpose and Approach

The Delta Smelt MAST report is a technical report intended to synthesize the latest scientific data and information on Delta Smelt, a topic of particularly high relevance to agency managers and decision makers in California. Specifically, it provides an up to date assessment and conceptual model of factors affecting Delta Smelt throughout its primarily annual life cycle and demonstrates how the conceptual model can be used in science and management. The Delta Smelt MAST report updates and redesigns previous conceptual models for Delta Smelt with new data and information since the release of the last synthesis report about the “Pelagic Organism Decline” (POD) by the Interagency Ecological Program (IEP) in 2010. It then uses the conceptual model to generate hypotheses about the factors that may have contributed to the 2011 increase in

Delta Smelt abundance and evaluate them using a simple comparative approach. The Delta Smelt MAST report ends with key conclusions, a discussion of our hypothesis testing approach, and recommendations for future work and adaptive management applications, with examples.

1. **Report Development.** The 2014 MAST report is a synthesis report developed and written by the IEP Management, Analysis, and Synthesis Team (MAST). The MAST is co-chaired by the IEP Lead Scientist and IEP Program Manager and includes senior scientists from IEP member agencies tasked with data analysis, synthesis, and work planning. The MAST report is the collective product of a dynamic and collaborative interagency team process involving focused team discussions at monthly MAST meetings, intensive conceptual model and report development at additional multi-day off-site meetings, presentations and discussions with other scientists, stakeholders, and the public (e.g., at the annual IEP workshop, meetings of the IEP Stakeholder Group and IEP Project Work Teams), and data analysis and synthesis as well as writing, integration, and revisions of report sections by MAST members with written communication via email and the MAST wiki. MAST report authors were expected to follow the MAST report guidelines described here. They were also expected to consider all internal review comments by other MAST members and members of the IEP Management and Coordinators teams as well as external technical review comments received during a 40-day public review period. Details about the public review process are given in II.

2. **Report Authorship.** The “author of record” for the 2013 MAST report is the entire IEP MAST, and the responsibility for authorship lies with the entire MAST as well. Individual authorship of report sections is not credited; the report is a product of the IEP MAST and not of any individual author or an individual IEP member agency. All current MAST members are MAST report authors and are listed alphabetically in the initial pages of the report (see III. below). Former MAST members will not be listed as authors, but will be noted as contributors. Each report section had a lead author who had primary responsibility for writing and revising the section. One designated MAST member (Larry Brown, USGS) functioned as report lead editor who compiled and integrated all sections and sent full draft report versions to the MAST for review by all MAST members. All MAST members sent their edits and comments back to Larry Brown and the section authors for revisions. The report went through multiple draft versions before its finalization.

3. **Report Organization.** The 2014 MAST report is an IEP technical report and follows the same basic organization as other IEP technical reports, including a title page, list of all authors, acknowledgements, table of contents, executive summary, an introductory section with background information and report objectives, and concise sections detailing the analysis and synthesis approach, models and hypotheses, findings, and conclusions as well as illustrative tables, figures, and full references for all citations. In response to reviewer recommendations received during the public technical review (see II.), the report was restructured and expanded from originally six to nine Chapters.

4. **Supporting Evidence.** The 2014 MAST report follows the conventions of IEP and other technical reports regarding supporting evidence, which includes the following. The rationale for any findings, conclusions, and recommendations should be fully explained in the report. Whenever possible, conceptual models and hypotheses should be evaluated through analysis of the available data. Additional supporting information should be obtained from the peer-reviewed literature or from publicly accessible reports. Related or competing hypotheses and models that have been previously published in the peer-

reviewed literature should be acknowledged and discussed in the report and conclusions should be based on even-handed, dispassionate consideration of all available evidence. Sources for all supporting data and information should be clearly identified and cited. Citation of personally communicated unpublished results (e.g. emails, memos) is permissible, but should be used sparingly.

Delta Smelt MAST Report Review and Revisions

1. **What was the purpose of the review?** The purpose of the public technical review of the draft Delta Smelt MAST report was to ensure its scientific credibility, relevance to managers and decision makers, and a transparent and legitimate process that welcomed and considered input and recommendations from other scientists, managers, stakeholders, and the public.

2. **What was expected of draft Delta Smelt MAST report reviewers?** MAST report reviewers were asked to provide written comments on any and all technical aspects of the draft report, but to pay particular attention to review criteria outlined in the MAST report review guidelines.[1]

3. **Who reviewed the draft Delta Smelt MAST report?** The draft Delta Smelt MAST report released for public review on July 23, 2014, was reviewed by invited IEP staff and colleagues as well as by invited external peer reviewers and other scientists who submitted comments during the 40-day public review period, as follows.

    a. IEP Coordinators (1 Reviewer, IEP management review)

    b. Former MAST Members (2 Reviewers, IEP colleague scientific peer review)

    c. Invited Subject Area Expert (1 Reviewer, IEP colleague review of contaminants sections)

    d. Independent Scientific Peer Reviewers (3 Reviewers, external independent scientific peer review facilitated by the Delta Science Program)

    e. Other Scientists, Stakeholders and the Public (7 Reviewers, external public review)

    In addition, the IEP Coordinators were asked to review the revised, near-final version of the Delta Smelt MAST report and the executive summary and to approve the final version. The IEP Directors were briefed and invited to comment on the direction and progress of the Delta Smelt MAST report on a quarterly basis.

4. **How were external draft Delta Smelt MAST report reviewers identified, invited, and informed?** Independent Scientific Peer Reviewers for the draft Delta Smelt MAST report were identified by the Delta Stewardship Council's Delta Science Program (DSP) and Delta Lead Scientist. In accordance with the DSP "Procedures for Independent Scientific Peer Review,"[2] the Delta Lead Scientist determined and invited the independent scientific peer reviewers using the following selection criteria: standing in the scientific community, expertise relevant to the documents being reviewed, and free of conflict of interest.

1 http://www.water.ca.gov/iep/docs/mast_report_process_july2013.pdf
2 http://deltacouncil.ca.gov/docs/2012-11-06/delta-science-program-procedures-conducting-independent-scientific-peer-review

All other review was invited by email and in a notice posted on the IEP website.[3] A draft of the 2013 MAST report, associated figures, and MAST report review guidelines were posted on July 23, 2013, for public technical review. The draft report release for review did not include an executive summary and conclusions. The public review period closed on August 31, 2013.

5. **How many review comments were received and where can they be accessed?** The MAST received 14 sets of review comments on the July 2013 draft MAST report. They included many general comments as well as 355 comments that referred to specific lines in the report, see table A1. All comments by external reviewers (public review comments and the review comments by the three independent scientific peer reviewers) were posted on the IEP website.[4]

6. **How were the review comments addressed?** All review comments received during the 40-day review period were compiled in an Excel spreadsheet and summarized numerically (Table A1). Review comments and procedures for addressing them were discussed by the MAST at its regular monthly meetings and during a one-day offsite meeting in November 2013. The process for addressing review comments included the following:

    a. The lead author for each report section had the primary responsibility for addressing review comments pertaining to that section and for revising the section.

    b. Secondary revision leads were also assigned and assisted the primary revision lead.

    c. For each review comment in the Excel spreadsheet, it was noted whether the comment: (1) Did not suggest a revision and no revision was made; (2) Suggested a revision and a revision was made; or (3) Suggested a revision, but no revision was made, for example because it was outside of the report scope, explained elsewhere, or the lead author did not agree with the recommended revision.

    d. Revised sections and the annotated excel spreadsheet were sent by email to the entire MAST. MAST members were alerted to all major revisions.

    e. Major revisions were discussed with all MAST members during MAST meetings and via email.

    f. Decisions about major revisions were made by the whole MAST; no comment implied consent.

    g. Decisions about more minor revisions were made by the section revision leads and the report lead editor, often in consultation with some or all other MAST members.

    h. The report lead editor (Larry Brown, USGS) compiled, further revised, and integrated all revised report sections and sent full draft report versions to the MAST for review by all MAST members. The final draft versions of the report and executive summary were also sent to the IEP coordinators for their review and approval.

3 http://www.water.ca.gov/iep/pod/mast.cfm
4 http://www.water.ca.gov/iep/pod/mast.cfm

Table A1. Numerical summary of review comments for the July 2013 draft MAST report.

2013 Draft MAST Report Review Comment Set #	Total Number of Comment Pages	Total Number of References and Attachment Pages	Total Number of Pages	Total Number of Specific Comments (by Line)
1-Public: Academia	3		3	19
2-Public: Academia	2		2	10
3-Public: Waste Discharge	4		4	11
4-Public: Fishing	27	27	54	29
5-Public: Water Supply	39	188	227	43
6-Public: Water Supply	2		2	7
7-Public: Water Supply	10	1	11	30
All Public Reviews	*87*	*216*	*303*	*149*
8-Former MAST member	6		6	58
9-Former MAST member	1	286	287	57
10-Subject Area Expert	4		4	24
11-IEP Coordinator	2		2	21
12-Academic (DSP)	4		4	0
13-Academic (DSP)	5		5	24
14-Academic (DSP)	7		7	22
All Other Reviews To Date	*29*	*286*	*315*	*206*
All Reviews To Date	***116***	***502***	***618***	***355***

7. **What major changes were made to the draft report in response to review comments?** The draft Delta Smelt MAST report underwent several major changes in response to review comments. Changes include the following:

   a. The report purpose and goals were reconsidered, clarified, and somewhat expanded. Specifically, the four-year comparison of factors that may have contributed to the Delta Smelt abundance increase in 2011 was deemphasized in favor of a broader assessment and conceptual model of factors affecting Delta Smelt throughout its primarily annual life cycle and demonstrations of how the conceptual model can be used in science and management.

   b. The report structure was substantially changed to better fit the revised report purpose and goals and to improve the organization of the large amount of information included in the report. Four new Chapters were added to describe the updated conceptual model (Chapter 5), provide a more thorough overview of Delta Smelt life history and population dynamics (Chapter 6), summarize and discuss findings and conclusions (Chapter 8), and provide recommendations and examples of future work and management applications (Chapter 9). An executive summary was also added, along with this appendix.

   c. The content of the report was expanded to accomplish the somewhat expanded report purpose and goals, reflect previously missing information pointed out by reviewers as well as new information from the latest scientific publications, and provide conclusions and recommendations for future work and management applications.

   d. Several reviewers commented that the simple four-year comparative approach that was used to evaluate factors that may have contributed to the Delta Smelt abundance increase in 2011 was too limited and that more years of data and more in-depth analyses and modeling were needed for this evaluation. The MAST agreed, but decided that these types of analyses would require additional time and resources and were outside the scope of this report which emphasized synthesis of existing information over new data analyses. Instead, the MAST decided to discuss some of the benefits and limitations of analysis and synthesis approaches used in the report in Chapter 8 and existing and ongoing analyses and modeling efforts along with additional, analysis, synthesis, modeling, and other science needs and potential management applications in Chapter 9. Three examples of additional mathematical modeling approaches are also included in Chapter 9. These approaches were explored by individual co-authors of this report. Preliminary results of these analyses are given for illustrative purposes only; peer-reviewed publications of these analyses need to be completed before they can be used to draw firm conclusions.

Delta Smelt MAST Report Milestones

Note: The time line for the development, review, revision and completion of the Delta Smelt MAST report had to be adjusted repeatedly because of numerous new work assignments for individual MAST members, the large number and depth of review comments, the federal government shut-down, personnel changes, etc.

2012

March 13-16 Initial MAST off-site meeting (Marconi Center, CA) to discuss MAST products and direction and start MAST work on the 2012 IEP proposal solicitation[5], the "FLaSH" report[6], and the Delta Smelt MAST report (hereafter MAST report)

Sep 13-14	MAST off-site meeting (Yolo Wildlife Area, CA)
Dec 4-5	MAST off-site meeting (Clarksburg, CA)

2013

March 29	First draft MAST report completed
April 24	MAST presentation (talk) at annual IEP Workshop (Larry Brown, USGS)
May 20	Second draft MAST report completed
June 6	Third draft MAST report completed
July 23 – Aug 31	Fourth draft MAST report completed and posted on the IEP website for a 40-day review period
August 14	Draft MAST report discussion with IEP Stakeholder Group
Sep 11	Special IEP Stakeholder Group meeting about the draft MAST report
Oct 30	MAST report poster presentation at 2013 State of the Estuary Conference
Nov 14	MAST off-site meeting (UC Davis, CA)
Dec 8	Fifth draft MAST report completed

5 http://www.water.ca.gov/iep/archive/2012/solicitations.cfm
6 http://deltacouncil.ca.gov/science-program/fall-low-salinity-habitat-flash-studies-and-adaptive-management-plan-review-0

2014

Feb 3	Sixth draft MAST report completed
Feb 11	MAST presentation (talk) at DSP-SWRCB "Delta Outflows" workshop (Larry Brown, USGS)
Feb 20	MAST presentation (talk) at a meeting of the IEP Resident Fishes Project Work Team (Larry Brown, USGS)
Feb 26	MAST presentation (talk) at annual IEP Workshop (Larry Brown, USGS)
April 16	Seventh draft MAST report completed
April 17	First draft MAST report executive summary completed
April 24	Second draft MAST report executive summary completed and sent to IEP Coordinators for review
May 15	Eight draft MAST report completed and sent to IEP Coordinators for a one-week "red flag" review. This draft includes the executive summary and a description of how the MAST report was written and revised with a list of major report revisions in response to review comments (Appendix A)
June 2	Ninth draft MAST report completed and sent to IEP Coordinators for review and IEP Directors briefings
June 11	IEP Coordinators briefed on MAST report including a review of the major changes.
June 17	Agencies and stakeholders of the CAMT Delta Smelt Scoping Team briefed about the MAST report including major findings and changes since 2013.
July 2	IEP Stakeholder Group meeting to discuss MAST report revisions and completion
July 3	Coordinators approve the final draft MAST report for publication as an IEP Technical Report; when ready the draft final report will be posted on the MAST webpage[7] until the IEP Technical Report publication is completed and report is posted on the IEP Technical Reports webpage[8]
July 14	MAST model presented to IEP Wetlands Conceptual Model Team.
July 29	IEP Directors meeting with presentation and discussion of final MAST report
July 30	MAST model presented to IEP Wetlands Project Work Team.
August 6	MAST briefing to Drought Operations Plan Team

Appendix B: Calculation of Annual Abundance Indices

This Appendix describes the data and methods used by 4 long-term fish monitoring surveys for calculating annual abundance indices for Delta Smelt (*Hypomesus transpacificus*). Descriptions are arranged sequentially beginning with the Spring Kodiak Trawl, which calculates an index of abundance for adult Delta Smelt, followed by the 20 mm Survey, which calculates an index

7 http://www.water.ca.gov/iep/pod/mast.cfm
8 http://www.water.ca.gov/iep/products/technicalrpts.cfm

for late-stage larvae and small juveniles; the Summer Townet Survey calculates an index for juveniles and the Fall Midwater Trawl Survey calculates an index for sub-adults. As mentioned in the main document, abundance indices are not population estimates, but they are believed to increase monotonically with increases in true population size.

Spring Kodiak Trawl

The Department of Fish and Wildlife (DFW) initiated the Spring Kodiak Trawl Survey (SKT) in 2002. The SKT replaced the Spring Midwater Trawl and provided a more effective means to monitor the distribution and reproductive status of adult Delta Smelt. Survey results provide near real-time information on the proximity of adult Delta Smelt to south Delta export facilities and can provide an indication of likely spawning areas.

The SKT includes 5 monthly Delta-wide surveys, January through May (Figure 84). Only the first 4 surveys contribute to the annual abundance index. No index exists for 2002, when only 3 surveys were conducted. The index is calculated after all data have been verified for accuracy.

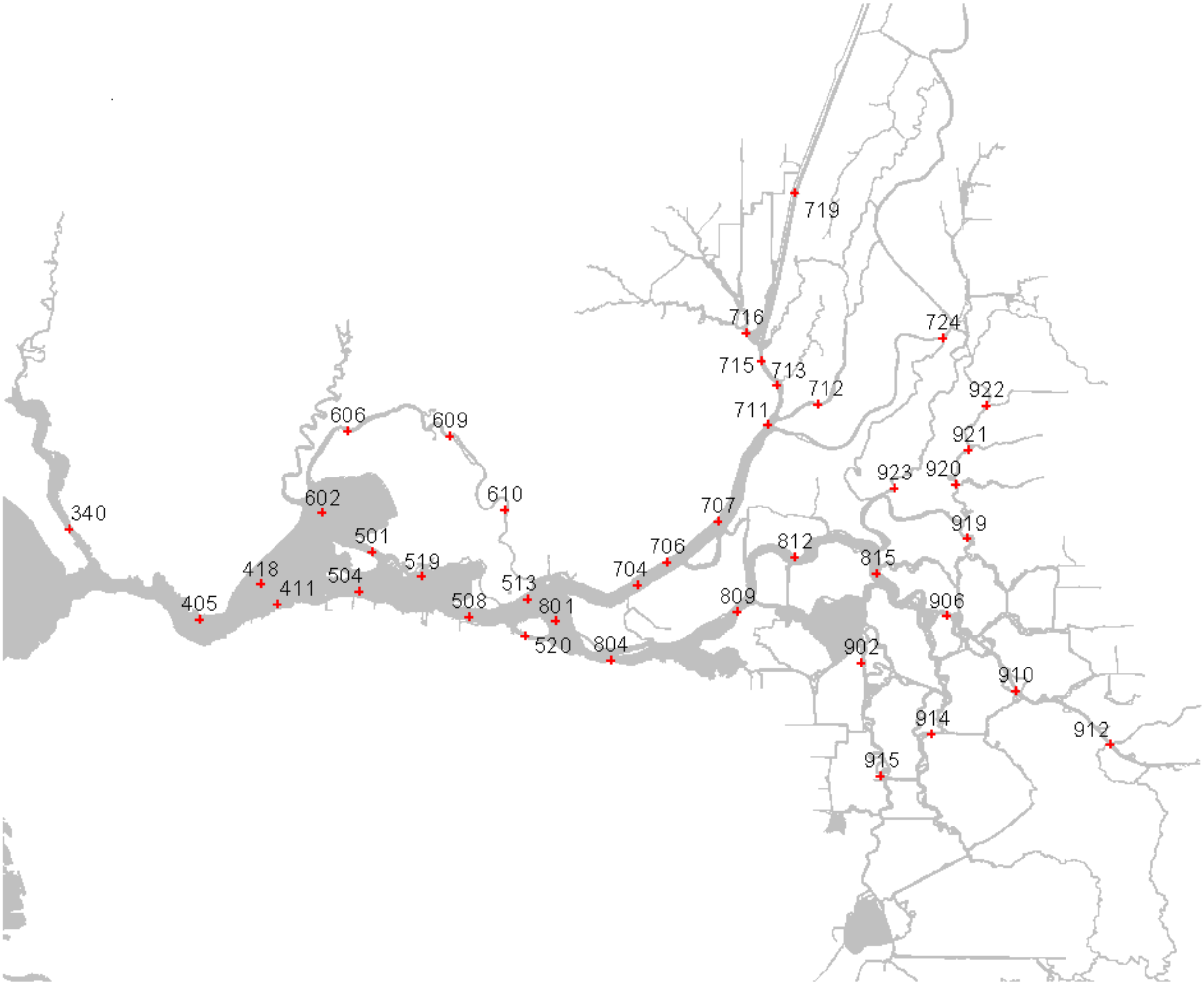
Field crews tow the net at the surface between 2 boats once for 10-min at each station per survey; 5-min surface tows are used at stations with historically high catch to limit excessive Delta Smelt take; a second 5-min surface tow is completed if Delta Smelt catch in the first tow did not exceed 50. A flow meter deployed at the start of the tow and retrieved at the end provides information on distance towed through the water. To calculate fish density, survey personnel assume that the SKT net fishes with the mouth fully opened, an area of 13.95 m^2 (7.62 m wide by 1.83 m deep). Volume filtered is the product of distance towed and mouth area. Volume filtered varies and by convention researchers expand catch per volume filtered (number per m^3) for juvenile and adult fish to catch per 10,000 m^3.

Annual abundance index calculations use adult Delta Smelt data from 39 of the 40 stations (Fig. 84). For each of the first 4 monthly surveys, adult catch per 10,000 m^3 values from each station are grouped into 3 distinct regions based on geographic location: 1) the confluence and Suisun region (sites 340, 405, 411, 418, 501, 504, 508, 513, 519, 520, 602, 606, 609, 610, 801); 2) the Sacramento River and Cache Slough region (sites 704, 706, 707, 711, 712, 713, 715, 716, 719, 724); and 3) the San Joaquin River and Delta region (804, 809, 812, 815, 902, 906, 910, 912, 914, 915, 919, 920, 921, 922, 923). A monthly mean is calculated for each region and the sum of the regional means is the monthly or survey index. The sum of the 4 survey indices is the annual index.

20 mm Survey

DFW initiated the 20 mm Survey in 1995 to monitor the distribution and relative abundance of larval and juvenile Delta Smelt throughout their historical spring range in the upper San Francisco Estuary (Fig. 85), and provide near real-time information on the relative densities and proximities of these young fish to south Delta export pumps. The 20 mm Survey includes sampling on alternate weeks from mid-March through early July, typically resulting in 9 surveys per year. During each survey, field crews complete 3 oblique tows at each of the 47 stations (Fig. 85). The 20 mm Survey added stations over time, but not all contribute to annual abundance index calculation. The survey added 5 Napa River stations in 1996 for a total of 41 core stations, which are included in the annual abundance index calculations (Fig. 85, circles). In 2008, 6 non-

Figure 84. **Map of Spring Kodiak Trawl Survey stations showing all currently sampled stations. Data from all stations except 719 are used in abundance index calculation.**

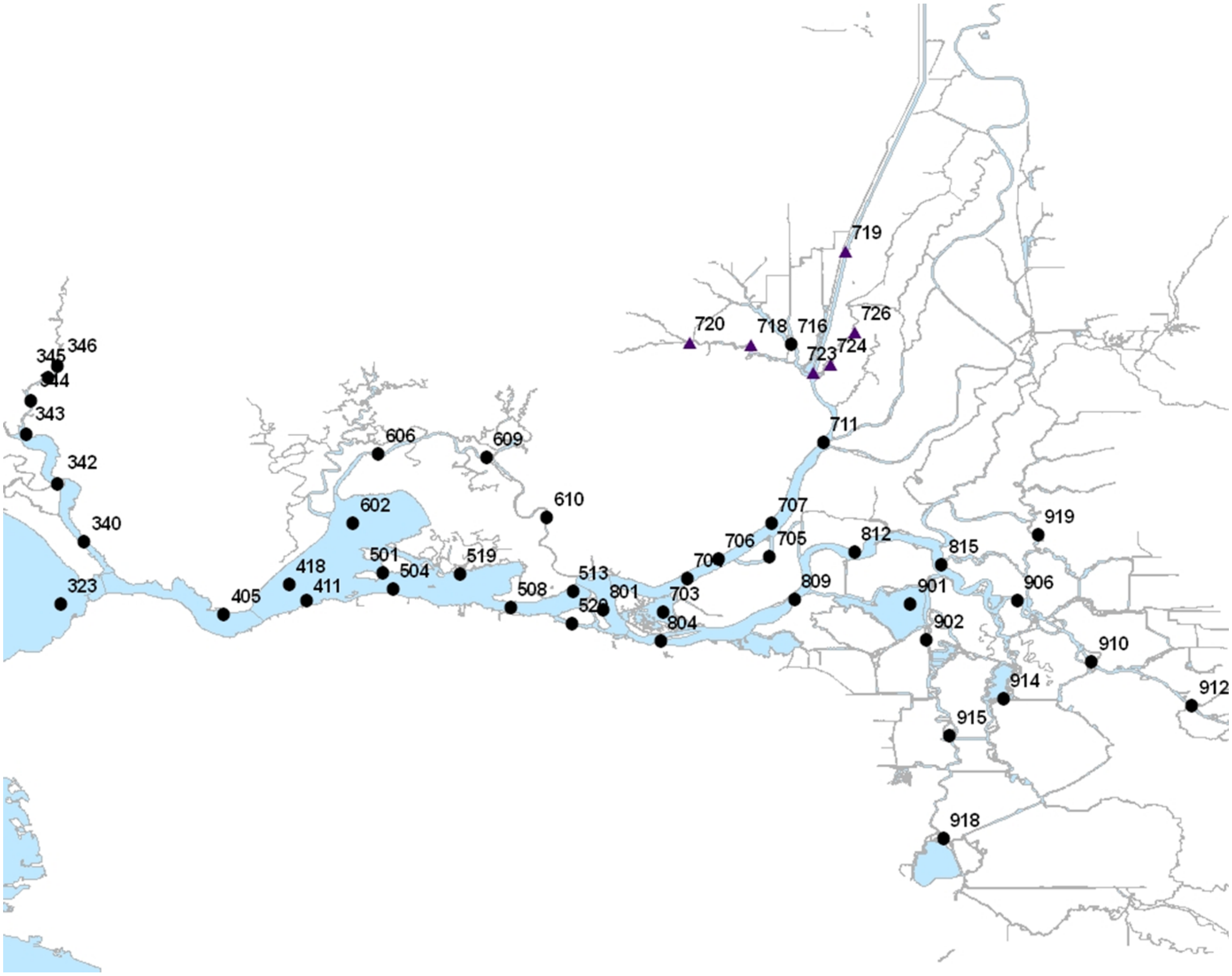


core stations were added, which are not included in the annual abundance index calculations, including Barker Slough (site 720), Lindsey Slough (site 718), Miner Slough (sites 724 and 726), and the Sacramento Deep Water Shipping Channel (n = 2; sites 719 and 723) (Fig. 85, triangles).

The 20 mm net includes a flow meter located within the mouth of the net to measure distance traveled by the net during the tow. This value is then multiplied by the fixed mouth area of the net (1.51 m^2) to provide total volume filtered. The tows are then standardized to catch of Delta Smelt per 10,000 m^3.

As already noted, the annual abundance index calculation uses only catch per 10,000 m^3 values from the 41 index stations. For each survey, the mean fork length of Delta Smelt is calculated from measurements of the fish captured during each survey. The two surveys just before the average fork length reached 20 mm and the 2 surveys just after the average fork length reached 20 mm are included in the annual abundance index calculation. For these 4 surveys the geometric

Figure 85. **Map of 20 mm survey stations showing all currently sampled stations. Data from all core stations are used in abundance index calculation.**



mean of the catch of Delta Smelt per 10,000 m^3 is calculated across the 41 core stations. The geometric mean for each survey is calculated as the arithmetic mean of $\log_{10}(x+1)$-transformed values of Delta Smelt catch per 10,000 m^3 across the 41 core stations. The resulting value is then back-transformed (including subtraction of 1) for the calculation of the annual abundance index. The annual abundance index is calculated as the sum of the geometric means of the 4 selected surveys.

Summer Townet Survey

The Summer Townet Survey (TNS) was started by DFW in 1959 to produce an annual index of summer abundance for age-0 Striped Bass (*Morone saxatilis*). In the mid-1990s, DFW staff developed an abundance index calculation for Delta Smelt. Annual abundance indices for Delta Smelt have been calculated for the period 1959 through the present, except for 1966-1968. The

TNS Survey samples 32 historic stations, 31 of which contribute to index calculation (labeled as “core stations,” Fig. 86). Currently sampled TNS stations range from eastern San Pablo Bay to Rio Vista on the Sacramento River and to Stockton on the San Joaquin River (Fig. 86). In 2011, TNS added 8 supplemental stations in the Cache Slough and the Sacramento River Deepwater Ship Channel region to increase spatial coverage and better describe Delta Smelt range and habitat (Fig. 86). Historically, TNS sampling began when age-0 Striped Bass achieved a mean fork length of 20 mm based on larval sampling, typically in mid-June to early July, and ended when age-0 Striped Bass surpassed a mean size of 38.1 mm fork length. Since 2003, TNS has consistently included 6 surveys annually, running on alternate weeks from early June through mid- to late August.

Field crews perform at least two 10-min oblique tows at most stations. A third tow is conducted when any fish were caught during either of the first 2 tows. At least 1 tow is completed at each of the new Cache Slough and Sacramento River Deepwater Ship Channel stations. To reduce Delta Smelt take, field crews only perform a second tow at these stations if Delta Smelt catch from the first tow is less than 10. Delta Smelt catch per tow data are used for index calculation.

The annual abundance index for Delta Smelt is the arithmetic mean of the abundance indices from the first 2 surveys conducted each year. Delta Smelt abundance indices for each biweekly survey are calculated by summing catch across all tows for each index station, multiplying the summed catch by a station weighting factor representing the water volume of that station (Table B1); then the volume-weighted catches are summed across all 31 index stations and the sum divided by 1000.

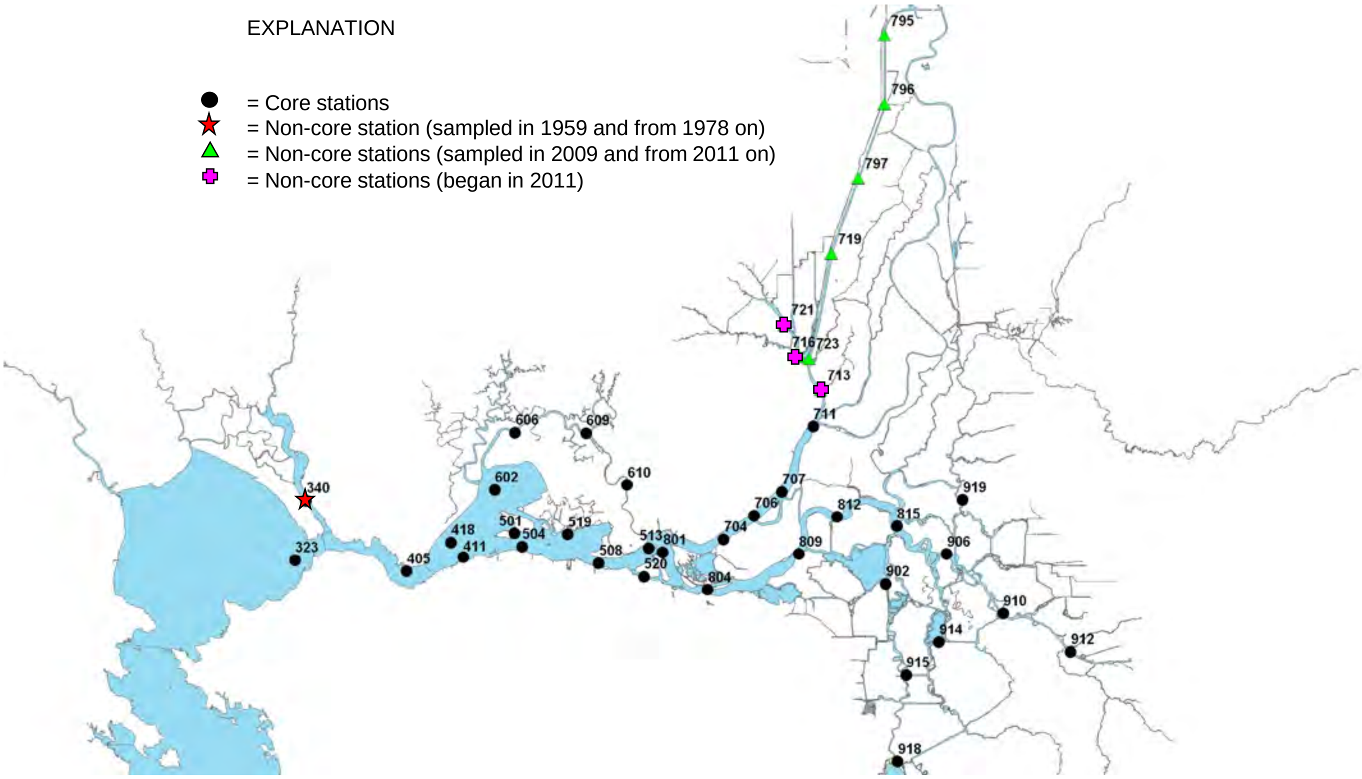
The annual abundance index for age-0 Striped Bass is calculated using similar methods, except the first two surveys are not used. Instead, abundance indices from the 2 surveys that bound the date when the fish reach a mean fork length of 38.1 mm are used; this frequently occurs after several surveys have been completed in a field season.

Fall Midwater Trawl Survey

DFW began the Fall Midwater Trawl Survey (FMWT) in 1967 to provide an annual index of relative abundance and information on the distribution of age-0 Striped Bass for the fall period. Later, DFW staff developed abundance and distribution information for other upper-estuary pelagic fishes, including Delta Smelt. Surveys have been conducted in all years from 1967 to present, except 1974 and 1979. The FMWT survey currently samples 122 stations monthly (Fig. 87), from September through December. Station locations range from San Pablo Bay to Hood on the Sacramento River, and from Sherman Lake to Stockton on the San Joaquin River (Fig. 87). Currently, annual abundance index calculations use catch data from 100 of the 122 stations sampled monthly, but the number of stations used for the index has varied through time. Table 12 contains the complete list of stations used for abundance index calculation for FWMT (n = 117), including historical stations (underlined) that must be included for proper calculation of past indices, but are not included in calculations for recent years. The remaining 22 stations were added in 1990, 1991, 2009, and 2010 to improve our understanding of Delta Smelt habitat use (Fig. 87). At each sampling station, field crews perform a single, 12-min oblique tow monthly.

Delta Smelt catch per tow data are used for calculation of the annual abundance index. Individual survey indices are calculated by first grouping the 100 core stations (Fig. 87) into 14 regions based on their location (Table 12). Survey indices are calculated by averaging Delta Smelt catch

Figure 86. **Map of summer townet survey stations showing all currently sampled stations. Data from all core stations are used in abundance index calculation.**



across index stations within each region, multiplying these regional means by their respective weighting factors (i.e. a scalar based on water volume; Table 12), and summing the weighted values. Annual abundance indices are calculated as the sum of the 4 survey abundance indices (i.e. September through December).

Table B1. Station weighting factors for stations used in calculations of the summer townet survey annual abundance indexes. Regions are geographic areas designated by the California Department of Fish and Wildlife. See fig. 86 for station locations.

Region	Station	Station weighting factor
MONTEZUMA SLOUGH	606	20
	609	15
	610	4
SAN PABLO BAY	323	213
SUISUN BAY	405	13
	411	46
	418	70
	501	49
	504	60
	508	31
	513	43
	519	15
	520	9
	602	44
SACRAMENTO RIVER	704	53
	706	27
	707	35
	711	32
SAN JOAQUIN RIVER	801	26
	804	52
	809	56
	812	22
EAST DELTA	815	40
	906	21
	910	11
	912	8
	919	10
SOUTH DELTA	902	23
	914	15
	915	15
	918	11

Figure 87. Map of fall midwater trawl survey stations showing all currently sampled stations. Data from core stations are used in abundance index calculation.

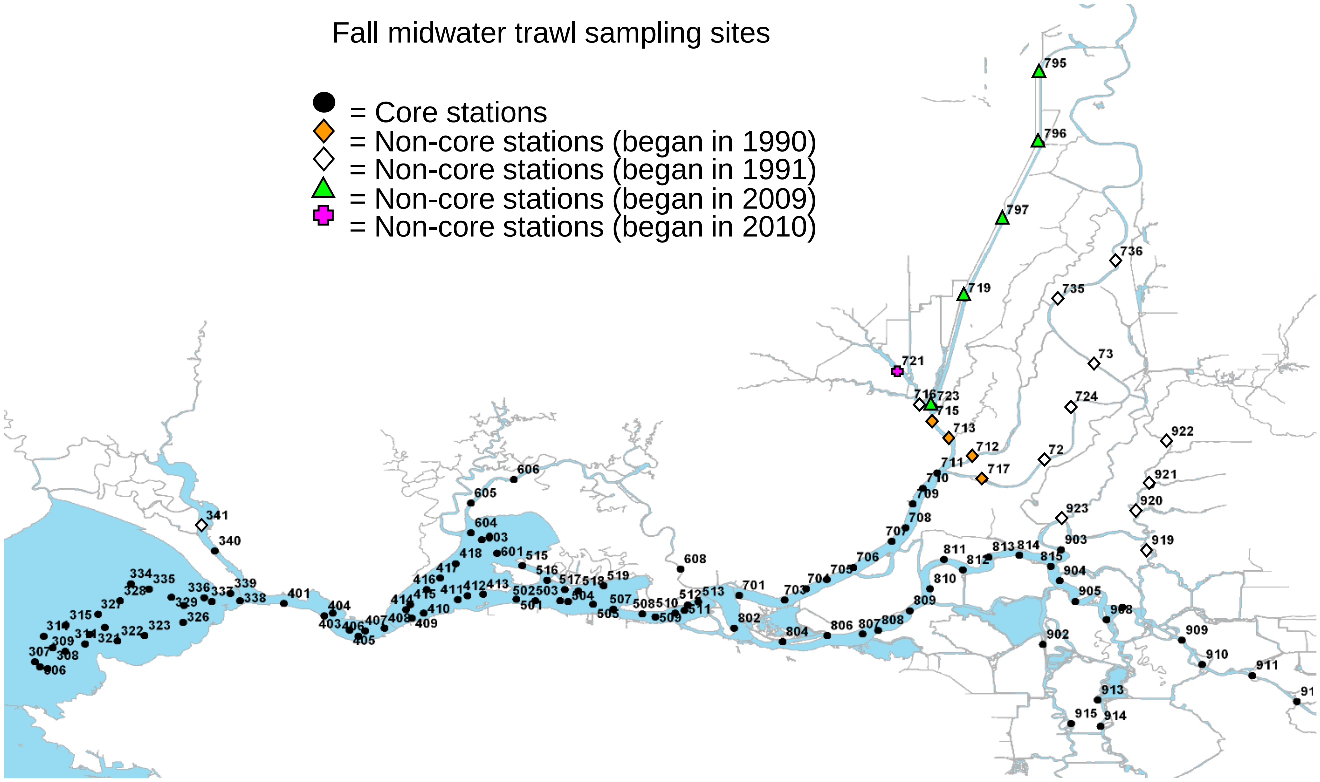


Table B2. **Area-regions, weighting factor for each area-region, and stations included within each area-region. Bolded station numbers indicate the current 100 core stations used in calculation of annual abundance indexes. Underlined station numbers indicate stations previously included in calculations but subsequently dropped.**

Area-region	Weighting factor	Stations included
1-San Pablo Bay	8.1	**336** **337** **338** **339**
3-San Pablo Bay	11.3	**321** **322** **323** 324 **325** **326**
4-San Pablo Bay	6.5	**327** **328** **329**
5-San Pablo Bay	12.2	330 331 332 333 **334** **335**
7-San Pablo Bay	10.2	312 313 **314** **315** 316
8-San Pablo Bay	18.5	303 304 **305** **306** **307** **308** **309** **310** **311**
10-Napa River	4.8	**340**
11-Carquinez Strait	16.0	**401** **403** 402 **404** **405** **406** **407** **408**
12-Suisun Bay	14.0	**409** **410** **411** **412** **413** **414** **415** **416** **417** **418**

13-Suisun and Honker bays	18.0	**501**
		502
		503
		504
		505
		506
		507
	18.0	**508**
		509
		510
		511
		512
		513
		514
		515
		516
		517
		518
		519
		601
14-Grizzly Bay and Montezuma Slough	5.0	**602**
		603
		604
		605
		606
		607
		608
15-Sacramento River	12.0	**701**
		702
		703
		704
		705
		706
		707
		708
		709
		710
		711
16-San Joaquin River	14.0	**802**
		804
		806
		807
		808
		809
		810
		811
		812
		813
		814
		815
17-South Delta	20.0	901
		902
		903
		904
		905
		906
		907
		908
		909

1.D.2.4 Attachments to Comments of North Coast Rivers Alliance

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EXHIBIT
1

Feds scramble to avoid another mass salmon die-off in the Sacramento River

By Phillip Reese and Ryan Sabalow preese@sacbee.com

A year ago, California lost nearly an entire generation of endangered salmon because the water releases from Shasta Dam flowed out warmer than federal models had predicted. Thousands of salmon eggs and newly hatched fry baked to death in a narrow stretch of the Sacramento River near Redding that for decades has served as the primary spawning ground for winter-run Chinook salmon.

Earlier this year, federal scientists believed they had modeled a new strategy to avoid a similar die-off, only to realize their temperature monitoring equipment had failed and Shasta's waters once again were warming faster than anticipated.

In the months since, in what is essentially an emergency workaround, they've revised course, sharply curtailing flows out of Shasta. The hope is that they reserve enough of the reservoir's deep, cold water pool to sustain this year's juvenile winter-run Chinook. But it's meant sacrificing water deliveries to hundreds of Central Valley farmers who planted crops in expectation of bigger releases; and draining Folsom reservoir – the source of drinking water for much of suburban Sacramento – to near-historic lows to keep salt water from intruding on the Delta downstream.

In spite of all this, another generation of wild winter-run Chinook salmon could very well die.

For all the focus on fallowed farm fields and withered lawns in California's protracted drought, native fish have suffered the most dire consequences. The lack of snowmelt, warmer temperatures and persistent demand for limited freshwater supplies have left many of the state's reservoirs – and, by extension, its streams and rivers – hotter than normal. The changing river conditions have threatened the existence of 18 native species of fish, the winter-run Chinook among them.

Chinook are called king salmon by anglers for a reason. They can grow to more than 3 feet in length, and the biggest can top more than 50 pounds. Decades ago, before dams were built blocking their traditional spawning habitat, vast schools of these silver-sided fish with blue-green backs migrated from the ocean to spawn and die in the tributaries that feed the Sacramento River in runs timed with the seasons.

The largest run that remains in the Sacramento River system is the fall run, which survives almost entirely due to hatchery breeding programs below the Shasta, Oroville and Folsom dams. The winter run, in contrast, is still largely reared in the wild, laying its eggs in the gravel beds below Shasta's concrete walls. Their numbers have dwindled in the face of predators and deteriorating river conditions. The federal government declared the run endangered in 1994, and it has flirted with extinction ever since.

Following last year's failed federal efforts, only about 5 percent of the winter-run Chinook survived long enough to begin to migrate out to sea. The species has a three-year spawning cycle, meaning that three consecutive fish kills could lead to the end of the winter run as a wild species. One hatchery below Lake Shasta breeds winter-run Chinook in captivity.

Officials with the U.S. Bureau of Reclamation, which operates both Shasta and Folsom dams, say they believe their emergency efforts at Shasta are working and they anticipate "some" winter-run Chinook will survive this year.

"We believe that we are on track," said bureau spokesman Shane Hunt. "We are sitting in a much better place today than we were a year ago today."

Several biologists interviewed remain dubious. They note that preserving more cold water in Shasta has meant many stretches of the Sacramento River are warmer than they were last year. They worry that salmon eggs and fry will still die – only gradually instead of suddenly.

“We stand a pretty good chance of losing the wild cohort again this year, like we did last year,” said Peter Moyle, a UC Davis researcher and one of the nation’s leading fisheries biologists. “If we get lucky some of those fish will survive. We’re definitely pushing the population to its limits.”

Agricultural leaders, meanwhile, say there’s good reason to suspect the government models will again prove flawed and the fish will die despite the sacrifices farmers have made.

Rep. Jim Costa, a Democrat and third-generation farmer who represents a wide swath of the San Joaquin Valley, is among those who think there’s a good chance farmers have been punished for no benefit to the fish.

“That begs the question: What are we accomplishing?” Costa said. “We are in extreme drought conditions. ... The water districts that I represent in the San Joaquin Valley have had a zero – zero – water allocation. ... Over half a million acres have been fallowed ... It just seems to defy common sense and logic.”

Some members of California’s fisheries industry also have lost confidence in the bureau, arguing the government has badly mismanaged its rivers. Beyond the very existence of a wild population of fish, they say, the government is risking millions of dollars for California’s economy and hundreds of fishing jobs – and a key source of locally caught seafood for markets and restaurants.

Two consecutive fish kills involving an endangered species could lead to more stringent regulation of commercial and recreational fishing. It’s a real possibility, state and federal fisheries regulators said, that salmon fishing could be severely restricted along much of California’s central coast and in the Sacramento River system next year.

Larry Collins, a commercial fisherman operating out of Pier 45 in San Francisco, said that in the fight over water, the fishing industry – and wild fish – lack the political clout compared with municipal and agricultural interests.

“I’ve been around a long time, and I’ve fought the battle for a long time, and I’ve watched the water stolen from the fish,” he said. “The fish are in tough shape because their water is growing almonds down in the valley. To me, it’s just outright theft of the people’s resource for the self-aggrandizement of a few, you know?”

“You got money you can buy anything,” he added. “You can buy extinction.”

Federal models prove faulty

On paper, the requirements for salvaging the winter-run Chinook seem fairly basic. The winter-run Chinook spawn from April to August. Juvenile fish swim downriver from July to March. If the water in the Sacramento River is too hot as the fry emerge from their eggs, they die. Warm water also makes it more difficult for the juveniles to survive their swim downstream to the ocean.

But in practice, there are broad variables to keeping the river cool, involving snowmelt, heat waves, water depths and the temperatures of the tributaries entering the reservoir, as well as conditions in the river downstream.

A year ago, federal and state officials had a plan to keep temperatures in key portions of the Sacramento River below 56 degrees; temperatures above 56 can trigger a die-off. The models built by the Bureau of Reclamation indicated operators could release large amounts of water from Lake Shasta while still maintaining a cool temperature, easing the pressure on farms and cities. According to their calculations, the water would be cold enough at key points in the Sacramento River to ensure survival of 30 percent of the salmon run.

But the models were wrong. The Bureau of Reclamation essentially ran out of cold water reserves in Lake Shasta, limiting its ability to control temperatures in the Sacramento River. Average daily river temperatures rose well above levels needed by salmon to survive. The 5 percent that did transition from eggs to fry were left to navigate to the ocean in tough conditions.

“That 5 percent – I guarantee you they didn’t make it down through the Delta,” said Bill Jennings, executive director of the California Sportfishing Protection Alliance.

Fast forward to this year, and another plan gone awry.

During the spring, government officials again said they would keep winter-run Chinook alive by maintaining water temperatures below 56 degrees. The State Water Resources Control Board signed off on their plan in mid-May.

Only weeks later, Bureau of Reclamation officials told the state that their temperature monitoring equipment wasn’t working. In fact, they said, temperatures in Shasta were warmer than anticipated – and dramatic intervention would be needed to keep winter-run Chinook alive. They asked the board to consider a new plan and immediately restricted flows from Shasta.

The state water board took up the issue at a meeting on June 16. Members of the board bemoaned their lack of good choices and later adopted a plan that left no one happy. Water releases would be curtailed out of Lake Shasta. Folsom Lake would be drawn to historic lows. Deliveries to farmers would be reduced.

And, despite those measures, the average daily temperature in the Sacramento River would rise to 57 degrees on most days and 58 degrees on some days, according to the government models. That’s too high a temperature for all winter-run Chinook to survive, but the Bureau of Reclamation, in documents supporting the change, said its modeling predicted roughly 20 percent of the fish would survive to early adulthood. That would be lower than a typical year – but not a disaster.

But are this year’s models more accurate? Already this summer, average daily temperatures at a key point in the Sacramento River have risen above 58 degrees on seven separate occasions, including several times in late August, state data show.

Federal officials said their models anticipated some temperature spikes, and noted that on each occasion so far, they were able to release cold water into the river and bring temperatures back down.

“It can have an effect” on fish, said Hunt, the bureau spokesman, of river temperatures above 58 degrees. But, he added, “That temperature is not a lethal temperature immediately.”

Jon Rosenfield, a biologist with the Bay Institute, disagreed, saying that many winter-run salmon likely were doomed by the temperature spikes. He offered the analogy of a chicken egg: “If you take an egg and dip it in boiling water, you are jeopardizing its ability to develop into a chick,” he said. “The longer you do that and the hotter the temperatures, the less likely it is to develop.”

Another concern is whether there is still enough cold water in Shasta to keep river temperatures low into the fall. Hunt says yes – that the government projects that Shasta will contain 350,000 acre-feet of cold water, below 56 degrees, at month’s end, far more than in 2014.

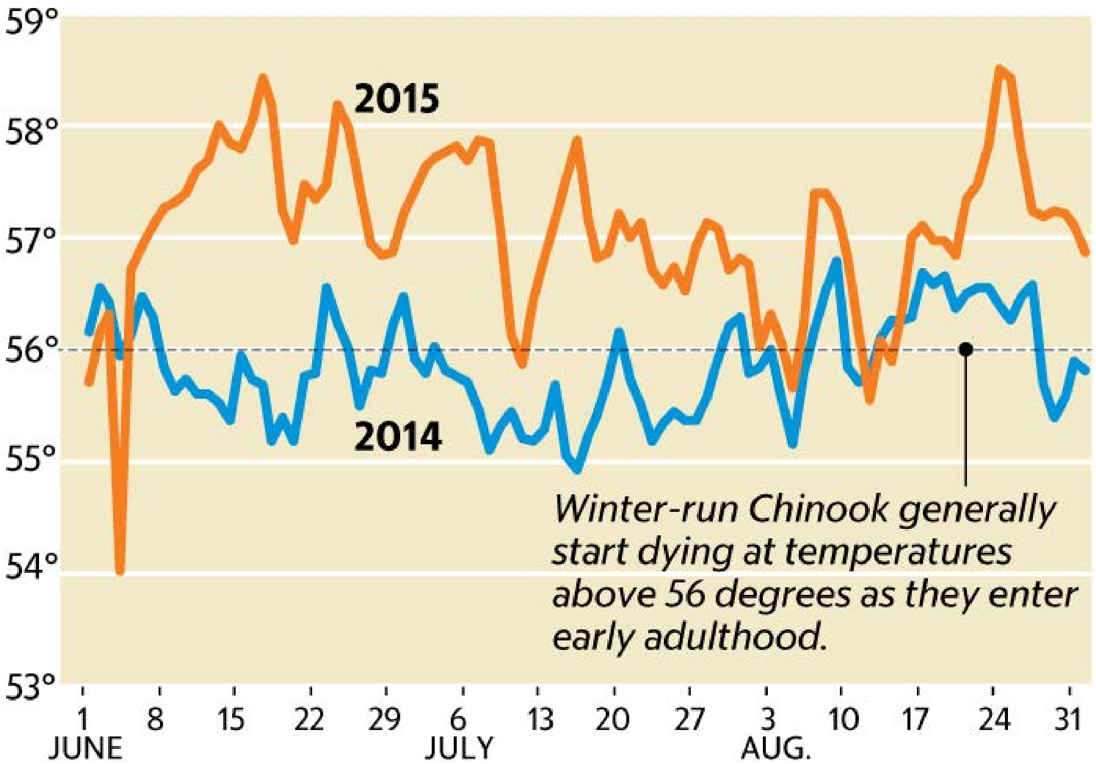
Rosenfield expressed doubts that the bureau is in position to do detailed calculations on its cold water supply. “They are way behind in anything using modern technology in measuring how much cold water they have,” Rosenfield said.

Scientists won’t know whether this year’s plan worked until fish surveys are completed in the winter. In a worst-case scenario, the government could rely even more heavily on its hatchery to sustain winter-run Chinook. Rosenfield called that option a “Band-Aid,” noting it would not preclude the loss of the fish as a wild species. Hatchery fish, he said, tend to come from a limited gene pool and may also have difficulty surviving in warm water.

Higher river temperatures; low lake levels

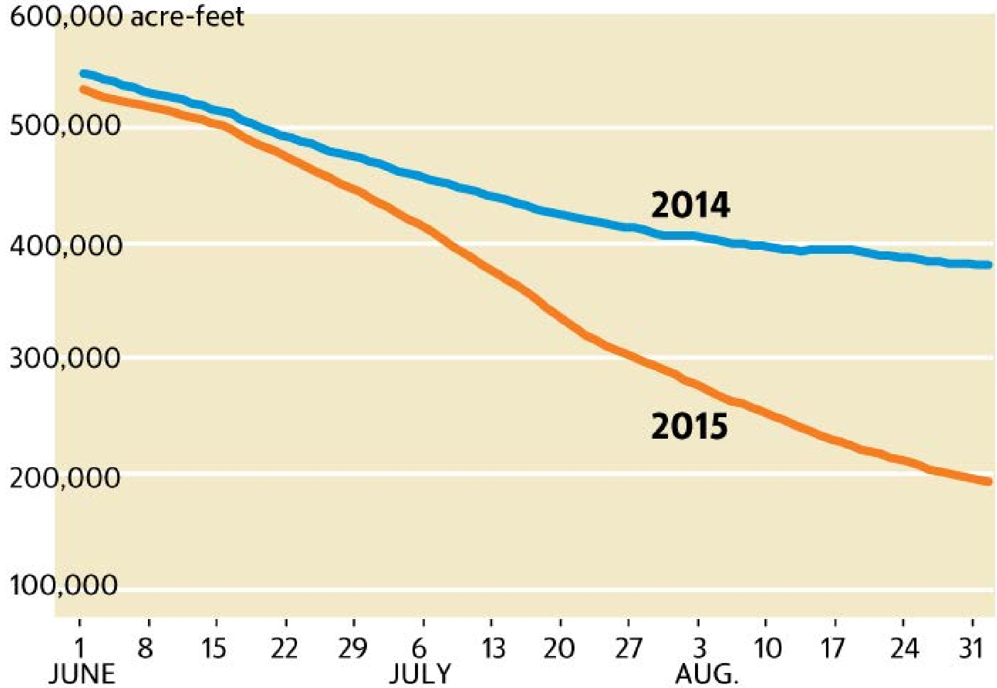
Under a new plan, federal officials have allowed temperatures in the Sacramento River in Shasta County to rise above 56 degrees consistently throughout the summer. They predict the warmer temperatures will not cause a mass salmon die-off; some biologists are dubious.

Average daily water temperatures in the Sacramento River above Clear Creek



One consequence of the temperature plan to keep winter-run Chinook alive has been increased flows out of Folsom Lake.

Daily Folsom Lake storage (in acre-feet)



Source: California Department of Water Resources The Sacramento Bee

Looking to the future

Jeff Gonzales worries about the ripple effects of another bad salmon season. Gonzales, a retired fire captain from Durham who guides clients on river-fishing trips, remembers when fisheries managers shut down the season for the fall-run Chinook in 2008 and 2009.

In those years, officials closed the fall-run fishing season in response to an unprecedented decline in the numbers of Chinook that had returned to the Sacramento, American and Feather rivers to spawn. The run plummeted amid poor ocean conditions and environmental problems in the Sacramento-San Joaquin Delta.

Gonzales thinks a similar scenario could be well underway, and that this year’s fall run is also in danger. He’s troubled by photos his fellow guides have sent him of fully-grown fall-run salmon floating dead in southern stretches of the Sacramento River. He attributes the deaths to warm water.

On Thursday morning, he was guiding clients on the river near Los Molinos, between Chico and Red Bluff, in search of fall-run salmon. The river is so warm, he said, that it’s been tough to find fish in his normal spots. The fish, he said, have either raced upstream seeking colder water, or are holding off the entrance to the Delta in the Pacific, waiting for a cold water flow.

That means slow-going for him and other guides.

On Thursday, his four clients, all firefighters enjoying an off-day, spent a four-hour stretch watching ospreys, wood ducks and herons glide by as their lures wriggled in the swift current. Every so often, a Chinook would breach the water and slap the surface with its tail, almost tauntingly. That morning, just one client saw his rod bend under the weight of a lunging 15-pound, silver-sided king.

Some clients have canceled trips because of the paltry catches, Gonzales said, and business will only get worse if the salmon seasons get shut down due to yet another winter-run die-off.

Maneuvering through the currents, the river rippling out before him, he lamented not just the loss of the fish but of a cultural heritage.

“You’ve gotta think about our future here, you know?” Gonzales said. “Our children and our grandchildren may not be able to see what we’re seeing here.”

Phillip Reese: 916-321-1137, @PhillipHReese.

EXHIBIT
2

STATUS REPORT OF THE 2015 OCEAN SALMON FISHERIES OFF WASHINGTON, OREGON, and CALIFORNIA.

Preliminary Data Through August 31, 2015.[a/]

Fishery and Area	Season Dates	Effort Days Fished	CHINOOK Catch	CHINOOK Quota	CHINOOK Percent	COHO[b/] Catch	COHO[b/] Quota	COHO[b/] Percent
COMMERCIAL								
Treaty Indian[c/]	*5/1-6/30*	683	30,916	30,000	103%		Non-Retention	
	7/1-9/15	364	26,944	29,084	93%	2,961	42,500	7%
Non-Indian North of Cape Falcon[d/]	*5/1-6/30*	2,118	38,930	40,200	97%		Non-Retention	
	7/1-9/1[e/]	1,090	25,248	26,800	94%	2,924	19,200	15%
	9/4-9/22[f/]	NA	NA			NA	NA	NA
Cape Falcon - Humbug Mt.	*4/1-8/27*	6,645	82,752	None	NA		Non-Retention	
	9/3-9/30	NA	NA	None	NA		Non-Retention	
Humbug Mt. - OR/CA Border[g/]	*4/1-5/31*	161	1,177	NA	NA		Non-Retention	
	6/1-6/26	100	1,528	1,800	85%		Non-Retention	
	7/1-7/31	88	769	1,184	65%		Non-Retention	
	8/6-8/27	23	50	772	6%		Non-Retention	
OR/CA Border - Humboldt S. Jetty	*9/11-9/30*	NA	NA	3,000			Non-Retention	
Humboldt S. Jetty - Horse Mt.				Closed				
Horse Mt. - Pt. Arena	*5/1-5/31, 6/15-6/30, 7/12-8/26*	3,577	59,515	None	NA		Non-Retention	
	9/1-30	NA	NA	None	NA		Non-Retention	
Pt. Arena - Pigeon Pt.	*5/1-31,6/7-30, 7/8-8/29*	2,281	20,775	None	NA		Non-Retention	
	9/1-30	NA	NA	None	NA		Non-Retention	
Pt. Reyes-Pt. San Pedro	*10/1-2, 5-9 &12-15*	NA	NA	None	NA		Non-Retention	
Pigeon Pt. - Pt. Sur	*5/1-31,6/7-30, 7/8-8/15*	2,289	12,176	None	NA		Non-Retention	
Pt. Sur - U.S./Mexico Border	*5/1-31,6/7-30, 7/8-31*	866	4,412	None	NA		Non-Retention	
RECREATIONAL								
U.S./Canada Border - Queets River[h/]	*5/15-16, 22-23, 5/30-6/12*	751	215	10,000	12%		Non-Retention	
Queets River - Leadbetter Poin[h/]	*5/30-6/12*	2,080	745				Non-Retention	
Leadbetter Point - Cape Falcon[h/]	*5/30-6/12*	499	242				Non-Retention	
U.S./Canada Border - Cape Alava	*6/13-9/3*	13,255	8,199	8,400	98%	3,665	14,850	25%
	9/4-9/30						4,100	0%
Cape Alava-Queets River	*6/13-9/3*	2,685	2,113	2,600	81%	388	3,610	11%
	9/4-9/30						625	0%
	10/1-10/12			100	0%		100	0%
Queets River - Leadbetter Pt.	*6/13-9/3*	36,583	15,946	27,900	57%	22,793	52,840	43%
	9/4-9/30						13,000	0%
Leadbetter Pt.-Cape Falcon	*6/14-9/3*	32,970	8,881	15,000	59%	38,300	79,400	48%
	9/4-9/30						15,300	0%
Cape Falcon - Humbug Mt.	*3/15-10/31*	29,466	1,227	None	NA	Non-Retention except for periods listed		
Cape Falcon to OR/CA Border	*6/27-8/9*	Included Above or Below		NA	NA	14,925	55,000	27%
Cape Falcon to Humbug Mt.	*9/4-9/30[i/]*	Included Above		NA	NA	NA	20,700	NA
Humbug Mt. - OR/CA Border (OR-KMZ)	*5/1-9/7*	2,795	321	None	NA	Included Above		
OR/CA Border - Horse Mt. (CA-KMZ)	*5/1-9/7*	8,711	3,640	None	NA		Non-Retention	
Horse Mt. - Pt. Arena (Ft. Bragg)	*4/4-11/8*	11,181	5,023	None	NA		Non-Retention	
Pt. Arena - Pigeon Pt. (San Francisco)	*4/4-10/31*	28,061	12,972	None	NA		Non-Retention	
Pigeon Pt. - P. Sur (Monterey N.)	*4/4-9/7*	12,648	2,547	None	NA		Non-Retention	
Pt. Sur - U.S./Mexico Border (Monterey S.)	*4/4-7/19*	1,996	359	None	NA		Non-Retention	

TOTALS TO DATE (through Aug. 31)	**Effort 2015**	**Effort 2014**	**Effort 2013**	**Chinook Catch 2015**	**Chinook Catch 2014**	**Chinook Catch 2013**	**Coho Catch 2015**	**Coho Catch 2014**	**Coho Catch 2013**
TROLL									
Treaty Indian	**1,047**	1,342	1,232	**57,860**	62,217	49,518	**2,961**	49,625	43,553
Washington Non-Indian	**2,468**	1,887	2,218	**53,564**	37,993	39,361	**1,874**	10,313	5,764
Oregon	**7,757**	9,491	6,473	**96,890**	195,852	74,407	**1,050**	3,997	309
California	**9,013**	11,807	15,401	**96,878**	151,367	285,592	**0**	0	0
Total Troll	**20,285**	24,527	25,324	**305,192**	447,429	448,878	**5,885**	63,935	49,626
RECREATIONAL									
Washington	**82,288**	101,428	70,938	**34,597**	38,290	26,810	**57,820**	96,034	39,387
Oregon	**38,796**	89,147	65,431	**3,292**	15,194	26,865	**22,251**	70,189	11,680
California	**62,597**	103,319	138,490	**24,541**	64,936	112,022	**38**	476	361
Total Recreational	**183,681**	293,894	274,859	**62,430**	118,420	165,697	**80,109**	166,699	51,428
PFMC Total	**203,966**	318,421	300,183	**367,622**	565,849	614,575	**85,994**	230,634	101,054

a/ Inseason estimates are preliminary.

b/ Non-Indian coho fisheries prior to Sept. are mark-selective and non-mark-selective recreational fisheries occur in Sept., (except SOF rec.) see the regulations for details.

c/ Effort is reported as landings. Chinook summer quota of 30,000 decreased by subtracting spring quota overage on an impact neutral basis by 916 fish.

d/ Numbers shown as Chinook quotas for non-Indian troll and rec. fisheries North of Falcon are guidelines not quotas; only the total Chinook allowable catch is a quota.

e/ September quotas to be adjusted due to iimpact neutral trades and rollovers.

f/ Remaining mark-selective coho quota to be converted to non-mark-selective quota on an impact neutral basis.

g/ July and August quotas adjusted from preseason due to impact neutral rollover of

h/ Mark-selective fishery for Chinook

i/ 12,500 preseason quota plus an impact equivalent roll-over from the Cape Falcon to OR/CA border mark-selective recreational coho fishery.

EXHIBIT

3

AGU PUBLICATIONS

Geophysical Research Letters

RESEARCH LETTER
10.1002/2015GL064924

Key Points:
- Warming since 1901 caused a significant trend toward drought in California
- Recent drought was naturally driven and modestly intensified by warming
- Warming has rapidly amplified the probability of severe drought

Supporting Information:
- Text S1, Table S1, and Figures S1–S7

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Contribution of anthropogenic warming to California drought during 2012–2014

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Abstract A suite of climate data sets and multiple representations of atmospheric moisture demand are used to calculate many estimates of the self-calibrated Palmer Drought Severity Index, a proxy for near-surface soil moisture, across California from 1901 to 2014 at high spatial resolution. Based on the ensemble of calculations, California drought conditions were record breaking in 2014, but probably not record breaking in 2012–2014, contrary to prior findings. Regionally, the 2012–2014 drought was record breaking in the agriculturally important southern Central Valley and highly populated coastal areas. Contributions of individual climate variables to recent drought are also examined, including the temperature component associated with anthropogenic warming. Precipitation is the primary driver of drought variability but anthropogenic warming is estimated to have accounted for 8–27% of the observed drought anomaly in 2012–2014 and 5–18% in 2014. Although natural variability dominates, anthropogenic warming has substantially increased the overall likelihood of extreme California droughts.

1. Introduction

During 2012–2014, drought in California (CA) caused water use restrictions, rapid drawdown of groundwater reserves [*Famiglietti*, 2014; *Harter and Dahlke*, 2014], fallowed agricultural fields [*Howitt et al.*, 2014], and ecological disturbances such as large wildfires and tree mortality [e.g., *Moore and Heath*, 2015; *Worland*, 2015]. The ultimate cause of the recent drought was a persistent ridge of high atmospheric pressure over the Northeast Pacific that blocked cold-season storms from reaching CA and stifled precipitation totals [e.g., *Seager et al.*, 2015]. Tree ring reconstructions from CA indicate that the resultant 3 year precipitation shortfall of 2012–2014 has been matched less than once per century over the past several hundred years [*Griffin and Anchukaitis*, 2014; *Diaz and Wahl*, 2015]. Dynamical studies agree that the Northeast Pacific ridge that caused the precipitation shortfall was part of an atmospheric wave train originating from the western tropical Pacific due to warm sea surface temperatures (SSTs) in that region [*Funk et al.*, 2014; *Seager et al.*, 2014a, 2015; *Wang and Schubert*, 2014; *Wang et al.*, 2014; *Hartmann*, 2015]. The observed ridging anomaly was stronger than the modeled response to tropical SST forcing [e.g., *Wang and Schubert*, 2014; *Seager et al.*, 2015], however, and leaves room for contributions from internal atmospheric variability or anthropogenic climate change. Although it has been suggested that anthropogenic emissions enhance the probability of *extreme* Northeast Pacific ridging events without necessarily affecting the long-term mean state [*Swain et al.*, 2014; *Wang et al.*, 2014, 2015], model projections of increased extremes in cold-season precipitation totals do not emerge as relevant until the second half of this century [*Berg and Hall*, 2015]. Furthermore, observed CA precipitation totals indicate no long-term trend despite cooccurring increases in western tropical Pacific SSTs [*Seager et al.*, 2015], climate models do not produce negative CA precipitation trends when forced by observed SST trends [*Funk et al.*, 2014], and future anthropogenic climate change is projected to result in slight *positive* trends in CA precipitation totals [*Neelin et al.*, 2013; *Seager et al.*, 2014b, 2015; *Simpson et al.*, 2015], all arguing against the likelihood of an anthropogenic role in the recent CA precipitation shortfall.

Importantly, there is widespread consensus that warmth has intensified the effects of the recent precipitation shortfall by enhancing potential evapotranspiration (PET) [*AghaKouchak et al.*, 2014; *Griffin and Anchukaitis*, 2014; *Diffenbaugh et al.*, 2015; *Mann and Gleick*, 2015; *Shukla et al.*, 2015]. Because warming is a well-understood and robustly modeled response to anthropogenic emissions of greenhouse gases, it is expected that warming-induced drying will continue for centuries to come [e.g., *Cook et al.*, 2015; *Diffenbaugh et al.*, 2015]. However, the degree to which anthropogenic warming and resultant increases in PET were responsible for the recent drought severity in CA is unknown.

Griffin and Anchukaitis [2014] used the Palmer Drought Severity Index (PDSI), a proxy for near-surface soil moisture [*Palmer*, 1965], to investigate the role of temperature in the recent drought, but they did not separate the influence of anthropogenic warming from natural temperature variability and their employed version of PDSI (from the National Oceanic and Atmospheric Administration (NOAA)) uses a simplified formulation of PET. *Mao et al*. [2015] attempted to isolate the anthropogenic component of warming using a more physically based PET calculation but focused only on the Sierra Nevada Mountain region and spring snowpack, and simply characterized anthropogenic warming as the observed linear trend in daily minimum temperatures. Other studies investigate the effect of warming on the likelihood of severe drought events in CA [e.g., *AghaKouchak et al*., 2014; *Diffenbaugh et al*., 2015; *Shukla et al*., 2015] but do not directly address the anthropogenic contribution to recent drought severity. Each study noted above considers only a single climate data product without addressing the structural uncertainty across different data products.

Here we quantify the severity of recent CA drought using an ensemble of data products and multiple PDSI formulations, determine the relative roles of individual components of the water balance, and determine the proportion of recent drought severity that can be attributed to increases in PET due to anthropogenic warming.

2. Methods

2.1. Palmer Drought Severity Index

We calculate monthly PDSI to characterize temporal and spatial variations in CA drought from 1901 to 2014: most humidity, wind speed, and insolation data sets do not extend prior to 1901. The PDSI is based on a simple two-layer soil moisture model and is locally normalized to reflect moisture anomalies relative to long-term mean conditions. PDSI is a primary tool used for drought monitoring in the United States [*Heim*, 2002; *Svoboda et al*., 2002] and generally agrees well with modeled and observed soil moisture anomalies [*Dai et al*., 2004; *Cook et al*., 2015; *Smerdon et al*., 2015; *Zhao and Dai*, 2015] and tree ring records [*Cook et al*., 2007]. While some recent studies have taken more complex modeling approaches to investigate the recent CA drought [*Mao et al*., 2015; *Shukla et al*., 2015], we use the PDSI because it allows efficient calculations of centennial-length records at high spatial resolution, which can be computed many hundreds of times with different climate variables, input data sets, and methodological schemes. The PDSI only reflects drought variability from a climatological perspective. Our results therefore do not explicitly reflect human water demand, stream flow and reservoir storage, or accessibility of groundwater. The PDSI also considers all precipitation to occur as rain, neglecting snow storage and subsequently delayed inputs to soil moisture and runoff. To assess implications of this latter simplification, PDSI is compared to modeled soil moisture by *Mao et al*. [2015] for the snow-dominated Sierra Nevada mountains.

Other studies also have used the PDSI to examine recent CA drought [*Griffin and Anchukaitis*, 2014; *Diffenbaugh et al*., 2015; *Robeson*, 2015]. A key difference between these studies, which use data developed by NOAA, and our study is the formulation of PET. The NOAA calculations involve the simplified Thornthwaite formula [*Thornthwaite*, 1948] that considers monthly mean temperature to be the only climatological driver of PET variability. This approach can overemphasize the influence of warmth when temperatures are high, and further inaccuracies are introduced by ignoring the nontemperature components of PET [e.g., *Hobbins et al*., 2008; *Hoerling et al*., 2012; *Sheffield et al*., 2012]. The more physically based Penman-Monteith (PM) formula [*Penman*, 1948; *Monteith*, 1965] considers the suite of variables affecting PET: mean daily maximum temperature (T_{max}), mean daily minimum temperature (T_{min}), humidity, wind speed, and net radiation. We use the PM formula and repeat calculations using Thornthwaite in some cases for comparison. Additionally, we use the newer self-calibrated PDSI ($PDSI_{sc}$), developed to make drought severity comparable among locations [*Wells et al*., 2004].

Consistent with several prior studies [e.g., *Cook et al*., 2004, 2007, 2010; *Griffin and Anchukaitis*, 2014], we focus on June–August (JJA). $PDSI_{sc}$ is an integration of hydroclimate over multiple months to several years [*Guttman*, 1998] and summer is the ideal season for characterizing drought intensity in CA for two reasons: (1) it is when drought effects tend to be most critical; and (2) it is when $PDSI_{sc}$ is most accurate in mountain regions because snowpack has melted or is at a minimum [e.g., *Dai et al*., 2004]. To facilitate interpretation, each grid cell's annual record of JJA $PDSI_{sc}$ is normalized so that two $PDSI_{sc}$ units equal a 1 standard deviation departure from the 1931–1990 mean, retaining a similar variance in the records of JJA $PDSI_{sc}$ as is in the monthly records. Again for interpretability, we renormalize statewide mean JJA $PDSI_{sc}$ records. We use a 1931–1990 calibration interval in all $PDSI_{sc}$ calculations to be consistent with NOAA methodology.

2.2. Climate Data

We calculate $PDSI_{sc}$ records for all 432 combinations of four precipitation, four temperature, three vapor pressure, three wind speed, and three insolation data sets. Data sets are listed with references in Table S1 in the supporting information and described in Text S1. We bilinearly interpolate each monthly climate field for each data set to the spatial resolution of the PRISM data set (0.04167°) [*Daly et al.*, 2004]. For each climate variable, data sets were calibrated so that climatological means and variances match during 1961–2010 (see Text S1). Uncertainties are high for humidity, wind speed, and insolation because they are largely based on models or observations of other variables [e.g., *Dai*, 2011]. Although consideration of multiple data products helps to characterize some of this uncertainty, data products are not all produced independently. Errors therefore may be recurrent in multiple data products (see Text S1).

2.3. Decomposition of PET and $PDSI_{sc}$

We calculate the influence of a given variable, or subset of variables, on PET as the PET anomaly calculated while holding all other variables at their mean annual cycles [e.g., *Cook et al.*, 2014; *Scheff and Frierson*, 2014; *Zhao and Dai*, 2015]. Mean annual cycles were always defined over 1961–2010. For $PDSI_{sc}$, the contribution of precipitation was defined as $PDSI_{sc\_P}$, calculated by holding PET at its mean annual cycle and only allowing precipitation to vary. The contribution of PET was calculated as the difference between $PDSI_{sc\_P}$ and a recalculation of $PDSI_{sc}$ in which both precipitation and PET vary. We isolated the influences of the temperature and nontemperature components of PET by applying versions of PET in which only the component of interest varies. Contributions of subcomponents of PET and $PDSI_{sc}$ anomalies were nearly perfectly additive, but all relative anomalies were rescaled to sum to exactly 100% of the total anomaly.

2.4. Effect of Anthropogenic Warming

Anthropogenic warming was isolated from that of natural temperature variability by considering four warming scenarios that are described in detail in the next two paragraphs. For each scenario, natural temperature variability is calculated as the observed temperature minus the anthropogenic trend. All records of anthropogenic warming and natural variability were calculated independently for T_{max} and T_{min}, each grid cell, and each month. For each warming scenario, we recalculated PET twice: once considering only the anthropogenic warming record and once considering the residual record of natural temperature variability. Methods were repeated from above to assess $PDSI_{sc}$ anomalies caused by anthropogenic warming and natural temperature variability.

The four anthropogenic warming scenarios are defined as follows: (1) linear trend, (2) 50 year low-pass filter (using a 10-point butterworth filter), (3) unadjusted mean trend from an ensemble of climate models, and (4) an adjusted version of #3. The first two warming scenarios represent empirical fits to the observed temperature records during 1895–2014. Although a linear trend is commonly used to represent the anthropogenic effect, a linear fit to a centennial temperature record may underestimate the human effect on temperature in recent decades because radiative forcing during this period has increased relatively rapidly [e.g., *Myhre et al.*, 2013]. The 50 year low-pass filter partially addresses this issue, but multidecadal natural temperature variability inhibits complete isolation of the anthropogenic effect with either the linear trend or the 50 year filter. Additionally, trends toward the end of the 50 year filter record are affected by boundary constraint assumptions. Although continued warming is likely, we pad the end of the temperature record with a repetition of the last 25 years in reverse order, likely leading to an underestimation of anthropogenic warming in the most recent years.

In the third and fourth warming scenarios, we use modeled records of T_{min} and T_{max} produced for the Coupled Model Intercomparison Project Phase 5 (CMIP5) [*Taylor et al.*, 2012] to represent anthropogenic warming trends for each month. Thirty-six models in the CMIP5 archive are used, based on the availability of T_{max} and T_{min} data for the historical (1850–2005) and future (2006–2099, RCP 8.5 [*van Vuuren et al.*, 2011]) simulations. For each model, T_{min} and T_{max} are each averaged across all available runs for the historical and future periods, bilinearly interpolated to the geographic resolution of PRISM, and bias corrected for each grid cell so that monthly means during 1961–2010 matched observational means. We calculate 50 year low-pass filtered time series for each month during 1850–2099 and average across the 36 models. The resultant ensemble mean records for 1895–2014 represent the CMIP5 records of anthropogenic warming used in the

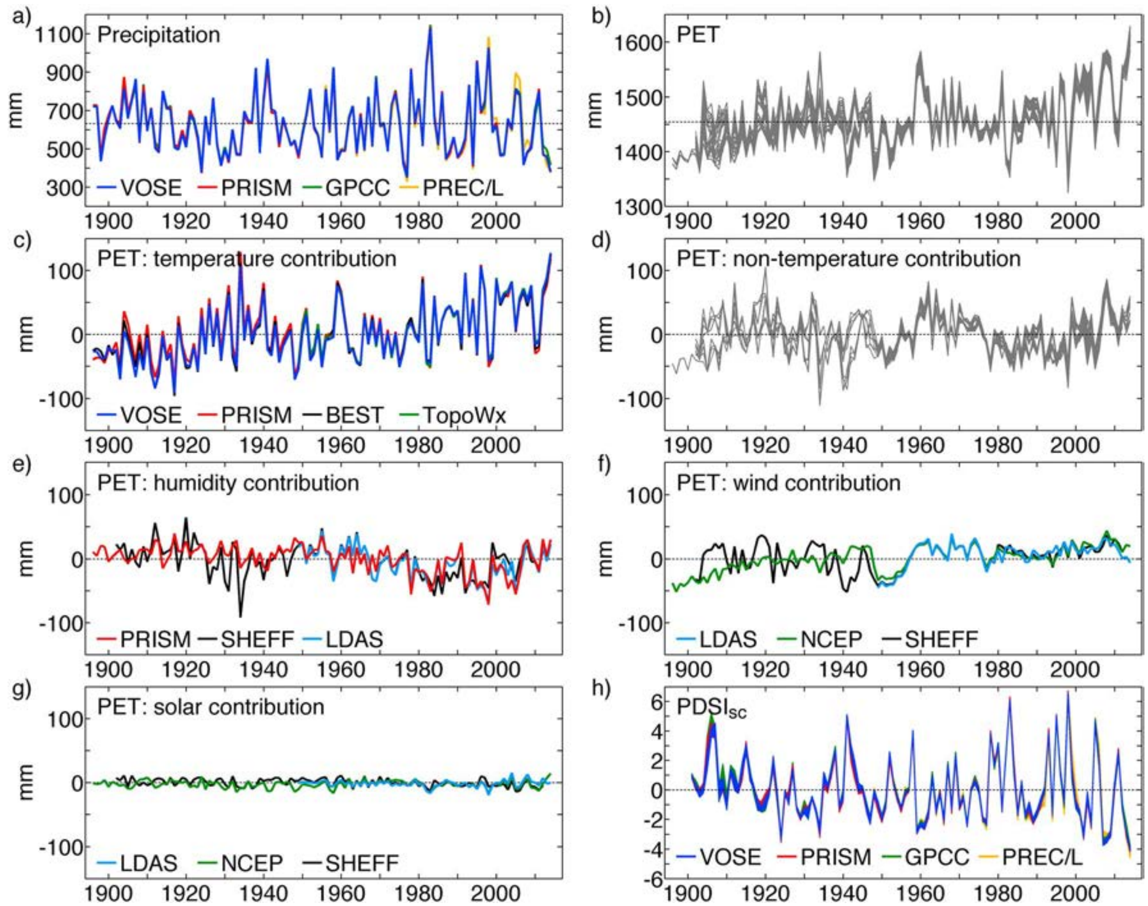

Figure 1. Contributors to interannual (water year) drought variability in CA, calculated from multiple data sets. (a) Precipitation. (b) PET totals, calculated using the PM equation for all combinations of four temperature, three humidity, three wind velocity, and three insolation data sets. (c) Temperature contribution to PET anomalies. Contributions of (d) all nontemperature variables, (e) humidity, (f) wind velocity, and (g) insolation to PET anomalies. (h) JJA $PDSI_{SC}$ calculated with all 432 combinations of the climate-variable data sets. Horizontal black lines: 1931–1990 means. Colors distinguish data products.

third warming scenario. For the fourth scenario, we linearly adjust these records to best fit the observations from 1895 to 2014. This approach reduces biases in the modeled trends but carries the implicit assumption that observed temperature trends are entirely anthropogenic in origin, which is a questionable assumption. For example, *Johnstone and Mantua* [2014a] indicate that some of the observed warming trend may be due to warming in the Northeast Pacific that is not linked to anthropogenic climate change, but also see *Abatzoglou et al*. [2014] and *Johnstone and Mantua* [2014b].

3. Results and Discussion

3.1. Recent Drought Conditions

Figure 1a shows annual water year (WY: October–September) CA precipitation totals for 1896–2014 and demonstrates general agreement among the four gridded data sets. The WY 2014 precipitation total was the third lowest (fourth lowest for Global Precipitation Climatology Centre (GPCC) [*Schneider et al*., 2014]) on record (behind WYs 1977 and 1924) and WY 2012–2014 precipitation was the lowest (third lowest for GPCC) 3 year running average on record (Figure S1a). The effects of the recent precipitation deficit have been amplified by positive PET anomalies. Figure 1b shows the 108 records of WY PET, calculated from all combinations of temperature, humidity, wind, and insolation data sets. Among the PET records, 32 include data for 2014. WY 2014 PET was 9–12% above average and the highest on record in every case. PET for WY 2012–2014 was 7–9% above average and either the highest or second highest (behind WY 2007–2009) on record (Figure S1b).

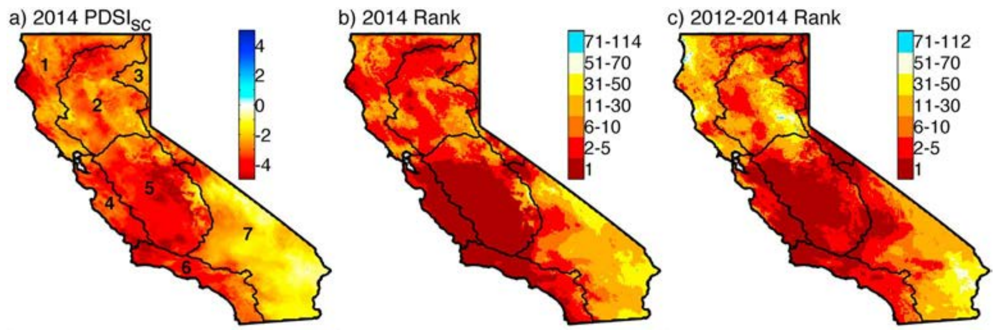

Figure 2. Maps of (a) JJA PDSI$_{sc}$ and ranking for (b) 2014 and (c) 2012–2014. Rankings are based on all years between 1901 and 2014, and a ranking of 1 indicates record-breaking drought. PDSI$_{sc}$ in this figure is based on VOSE precipitation and temperature, PRISM humidity, and LDAS [*Mitchell et al*., 2004; *Rodell et al*., 2004] wind speed and insolation. Polygons bound the seven NOAA climate divisions (division numbers shown in Figure 2a).

All PET data sets indicate positive and significant trends during WY 1949–2014, ranging from 8.2 to 13.7 mm/decade when considering linear trends. These trends are almost entirely due to warming. Since WY 1949, warming positively forced PET by 10–12 mm/decade (65–82 mm total), equivalent to 10–13% of the mean WY precipitation (Figure 1c). The VOSE [*Vose et al*., 2014], BEST [*Rohde et al*., 2013], and TopoWx (which only goes back to 1948 [*Oyler et al*., 2015]) data sets indicate that the temperature contribution to PET was highest on record in 2014 while PRISM indicates that the temperature contribution was higher in 1934. All four data sets agree that the temperature contribution to PET during WY 2012–2014 was substantially higher than that of any other 3 year period on record (Figure S1c).

Nontemperature variables account for approximately one third of WY PET variability (Figure 1d), although much uncertainty exists among the nontemperature data sets. Nearly all interannual variability and inter–data set spread in nontemperature PET (Figure 1d) are due to contributions from vapor pressure and wind speed (Figures 1e–1g). According to the data sets considered, positive wind speed trends contributed positively to PET (4.5 to 4.8 mm/dec), positive humidity trends contributed negatively (−3.5 to −4.0 mm/dec), and insolation had a minimal influence due to very low interannual variability in warm-season insolation relative to the mean. Prior to 1948, trends in the nontemperature components of PET are much less certain due to a nearly complete lack of pre-1948 observational data [e.g., *Dai*, 2011].

Within CA, PET trends were spatially heterogeneous, with much of the Central Valley experiencing reduced PET during the second half of the twentieth century due to suppressed daytime warming and increased humidity, consistent with the effects of increased irrigation [*Lobell and Bonfils*, 2008]. These results are broadly consistent with observed decreases in warm-season pan evaporation at sites in the Central Valley during 1951–2002 [*Hobbins et al*., 2004]. These agricultural trends appear distinct from the well-known global declines in pan evaporation that appear to have been caused by pollution-induced solar dimming during the 1950s–1980s and reductions in wind speed [*Roderick et al*., 2009]. While long-term records of insolation and wind speed are sparse in CA, those that exist indicate insignificant wind trends of inconsistent sign [*Pryor et al*., 2009; *Pryor and Ledolter*, 2010] and twentieth century insolation decreases that were too small to substantially affect statewide mean PET, similar to prior findings in Australia [*Roderick et al*., 2007].

Figure 1h shows all 432 records of JJA PDSI$_{sc}$ for 1901–2014 (128 records extend through 2014). Colors in Figure 1h indicate the precipitation product; spread among colors reflects disagreement among precipitation products and spread within colors reflects disagreement among PET products. All records indicate that 2014 JJA PDSI$_{sc}$ was the lowest on record (−4.64 to −3.67), with 25–37% of CA experiencing record-breaking drought locally. The year 2014 had the highest proportion of record-breaking drought area on record for all data sets, with the most severe anomalies centered in the southern Central Valley and the central and southern CA coasts (Figures 2a and 2b).

Considering 3 year running average PDSI$_{sc}$, 2012–2014 JJA drought intensity was found to be similar to, but generally not as severe as, that of 2007–2009 when averaged across CA, regardless of data sets used (Figure S1h). The similarity of mean PDSI$_{sc}$ during these two periods is interesting given that WY 2012–2014 had the lowest precipitation total on record and PET levels were comparable during each period. The difference

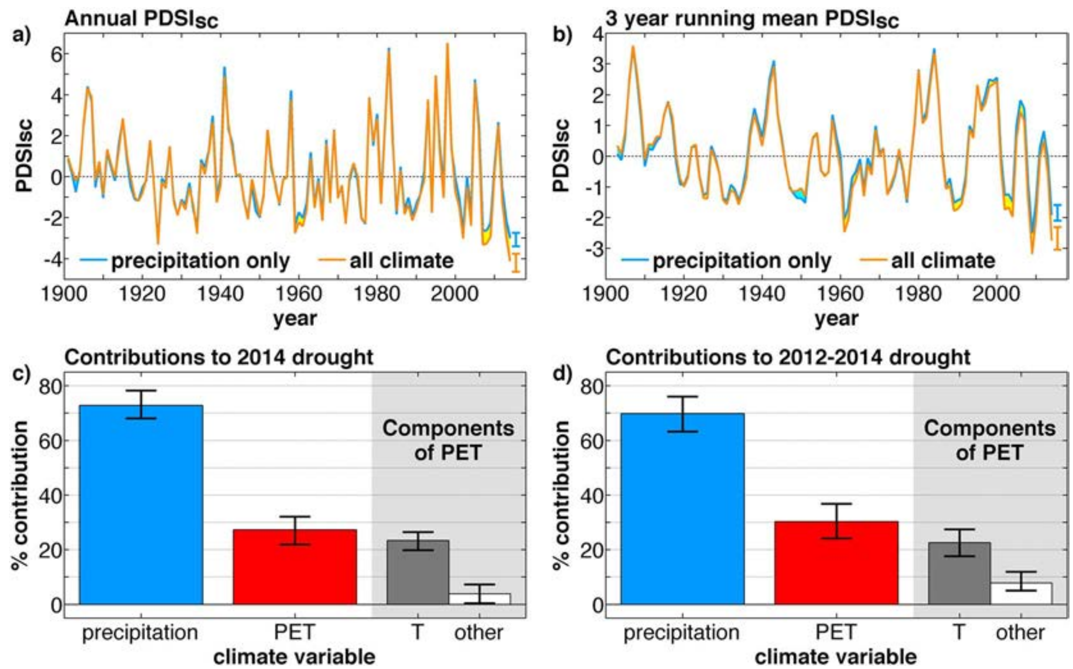

Figure 3. Contributions of precipitation and PET to drought variability. (a) Annual and (b) 3 year running mean JJA $PDSI_{sc}$ records calculated when (blue) only precipitation is allowed to vary from the climatological mean and (orange) when both precipitation and PET vary. Thus, departures of the blue line from zero are due to precipitation variability and departures of the orange line from the blue line are due to PET variability. Shading between lines in Figures 3a and 3b indicate periods when (cyan) low PET reduces drought and (yellow) high PET intensifies drought. Percent contributions of precipitation and PET to the (c) 2014 and (d) 2012–2014 $PDSI_{sc}$ anomalies. The bars in the shaded area of Figures 3c and 3d break the contribution of PET into contributions from temperature (*T*) and nontemperature (other: humidity, wind, and solar). Time series and bars represent mean conditions across all combinations of climate data products and whiskers bound all values from all combinations of data products.

was in the timing of precipitation. Unlike the 2012–2014 drought, which intensified over time, the 2007–2009 drought was most intense at the onset and the moisture deficit established in 2007 partially propagated into 2008 and 2009. Additionally, spring months for WY 2012-2014 were generally wetter than WY 2007–2009, contributing to soil moisture at a critical time immediately prior to summer (Figure S2).

The finding that the 2012–2014 $PDSI_{sc}$ was not as severe as that of 2007–2009 conflicts with prior findings based on NOAA PDSI (which is based on VOSE precipitation and temperature) that 2012–2014 was the most severe 3 year drought on record in CA [*Griffin and Anchukaitis*, 2014; *Robeson*, 2015]. This is attributable to the NOAA calculation of PDSI, which amplifies the effect of extreme heat anomalies in 2014 via the Thornthwaite PET equation (Figures S3 and S4). Importantly, while our calculations indicate that 2012–2014 was probably not a record-breaking drought event when averaged across CA, 2012–2014 drought severity *was* record breaking in much of the agriculturally important Central Valley (Figure 2c). In contrast, drought in 2007–2009 was most severe in the sparsely populated and already dry desert region of southeastern CA.

$PDSI_{sc}$ does not account for snowpack effects, which are important for human water supply, and our calculations of statewide $PDSI_{sc}$ may therefore not always accurately reflect drought from the perspective of human water supply, which is disproportionately linked to the Sierra Nevada Mountains. For that region, *Mao et al.* [2015] used the Variable Infiltration Capacity (VIC) hydrologic model [*Liang et al.*, 1994] to simulate hydrological dynamics during 1920–2014. Using the *Mao et al.* [2015] meteorological forcing to calculate $PDSI_{sc}$ for the Sierra Nevada Mountains, we find strong agreement (r = 0.93) with VIC JJA soil moisture (Figure S5). VIC soil moisture nevertheless indicates slightly more severe drought than $PDSI_{sc}$ during the most extreme drought years, likely due to early disappearance of snowpack [e.g., *Mote*, 2006; *Mankin and Diffenbaugh*, 2015] and subsequently reduced spring and summer melt-driven soil moisture inputs (Figure S6). Given that the calculation of $PDSI_{sc}$ neglects snowpack and therefore cannot capture the effect of early snowmelt on summer soil moisture, the warming effect on summer $PDSI_{sc}$ presented in the next section is likely conservative for snow-dominated areas.

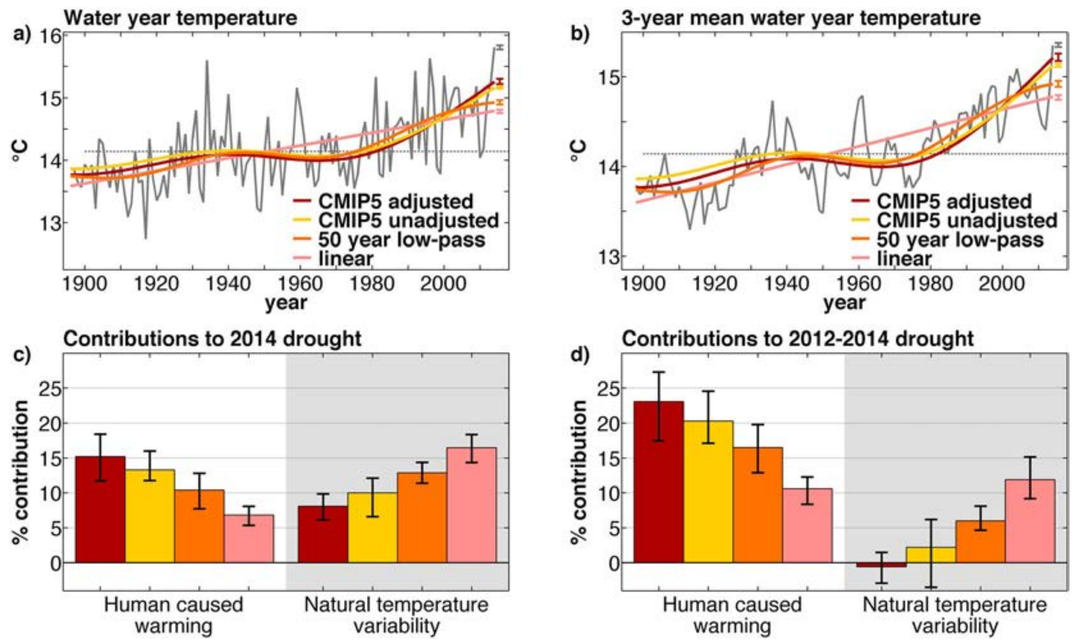

Figure 4. Contributions of anthropogenic warming and natural temperature variability to recent temperature and drought. (a) Annual and (b) 3 year running water year temperature records with four alternate scenarios of anthropogenic warming. Contributions of anthropogenic warming versus natural temperature variability to (c) 2014 and (d) 2012–2014 JJA $PDSI_{sc}$ anomalies, where bar colors correspond to the colors of the four anthropogenic warming trends in Figures 4a and 4b. For each of the anthropogenic warming scenarios, natural temperature variability is calculated as the observed temperature minus the warming trend. All time series and bars represent mean conditions across all combinations of climate products. Whiskers bound all values for all combinations of data products.

3.2. Effect of Warming on Recent Drought

Figures 3a and 3b compare $PDSI_{sc}$ (orange) to an alternate calculation in which only precipitation varies and PET is held at its mean annual cycle (blue). While there is no long-term trend in precipitation-driven $PDSI_{sc}$ since 1948 or 1901, trends in actual $PDSI_{sc}$ are significant and negative ($p < 0.05$ according to Spearman's Rho and Kendall's Tau) due to increasing PET. During 2014 and 2012–2014, PET anomalies accounted for 22–32% and 24–37% of the JJA $PDSI_{sc}$ anomalies, respectively (Figures 3c and 3d). Recalculating $PDSI_{sc}$ considering the temperature and nontemperature components of PET separately, we find that the intensifying effect of high PET on recent drought was nearly entirely caused by warmth (Figures 3c and 3d). High temperatures accounted for 20–26% and 18–27% of the JJA $PDSI_{sc}$ anomalies in 2014 and 2012–2014, respectively (Figures 3c and 3d).

The contribution of temperature is further separated into contributions from natural temperature variability and anthropogenic warming in Figure 4. Figures 4a and 4b show the WY temperature record and the four anthropogenic warming scenarios, which indicate an anthropogenic warming contribution in WY 2014 of 0.61–1.27°C relative to the 1931–1990 mean. The empirically derived trends suggest a weaker anthropogenic warming contribution in recent years than the CMIP5 trends because (1) the linear trend does not account for the nonlinear increase in anthropogenic forcing and (2) the 50 year low-pass filter trend indicates slowed warming in the past two decades that is partly due to our conservative smoothing approach and partly due to decadal climate variability. The CMIP5 trends represent the nonlinear increase in radiative forcing without being affected by decadal climate variability or smoothing artifacts. The similarity between the adjusted and unadjusted CMIP5 warming trends suggest that the CMIP5 provides a reasonable representation of the anthropogenic warming influence in CA despite having stronger warming trends than the conservatively designed empirical trends.

Breaking the temperature contributions to $PDSI_{sc}$ into anthropogenic and natural components, the four anthropogenic warming trends account for 5–18% of the JJA $PDSI_{sc}$ anomaly in 2014 and 8–27% of the anomaly in 2012–2014 (Figures 4c and 4d). Despite differences in these relative contributions of warming to drought during 2014 versus 2012–2014, the *absolute* contributions of anthropogenic warming to drought during these two periods were virtually identical. The absolute anthropogenic contribution does not change much interannually but instead acts as a gradually moving drought baseline upon which the effects of natural climate variability are superimposed (Figure S7a).

As of 2014, the anthropogenic warming forcing accounted for approximately −0.3 to -0.7 standardized $PDSI_{sc}$ units, depending on the anthropogenic warming scenario and combination of climate data sets considered (Figure S7a). To illustrate how this trend in background drought conditions affected the probability of severe drought as of 2014, we compare the probability distribution of 1901–2014 $PDSI_{sc}$ values calculated in the absence of anthropogenic warming to the same distributions shifted negative by 0.46, the 2014 $PDSI_{sc}$ forcing by the 50 year low-pass filter warming trend (Figure S7b, based on VOSE temperature and precipitation data). Comparing the two distributions, we find that severe summer droughts with $PDSI_{sc} \leq -3$ were approximately twice as likely under 2014 anthropogenic warming levels (Figure S7c). Although uncertainty in probabilities of extreme events is large when based on observed records [e.g., *Swain et al*., 2014], and the anthropogenic trend may not result in a perfectly uniform shift in the $PDSI_{sc}$ distribution, this analysis illustrates the general fact that the anthropogenic drying trend, while still small relative to the range of natural climate variability, has caused previously improbable drought extremes to become substantially more likely, consistent with the conclusions of other recent studies [e.g., *AghaKouchak et al*., 2014; *Cook et al*., 2015; *Diffenbaugh et al*., 2015; *Shukla et al*., 2015; *Williams et al*., 2013, 2014, 2015].

Regarding anthropogenic contributions, there are some important caveats. First, anthropogenic climate change has potentially affected more than just temperature in CA [e.g., *Swain et al*., 2014; *Wang et al*., 2014, 2015]. Lack of long-term observational data on wind speed and humidity in CA, and uncertainties in existing data, make it difficult to quantify anthropogenic influences on these variables. For CA precipitation, current models project a weak overall increase [*Neelin et al*., 2013; *Seager et al*., 2014b, 2015; *Simpson et al*., 2015], but no such precipitation trend has emerged. Hence, we only characterize anthropogenic effects on temperature in this study. Second, observed warming trends are affected by processes not related to greenhouse gas emissions such as land use (e.g., agriculture, urbanization) and natural low-frequency climate variability. While climate models provide a definition of anthropogenic warming that should be unbiased by observations, the accuracy of this approach, as in other attribution studies [e.g., *Bindoff et al*., 2013], is confined by the accuracy of climate models. Finally, our analyses do not account for snowpack, making our results a likely underestimation of the contribution of heat anomalies to recent drought in snow-dominated mountain areas and should be interpreted conservatively regarding the effects of warming on water resources for systems strongly affected by the timing of seasonal runoff from mountains.

4. Conclusions

Anthropogenic warming has intensified the recent drought as part of a chronic drying trend that is becoming increasingly detectable and is projected to continue growing throughout the rest of this century [e.g., *Cook et al*., 2015]. As anthropogenic warming continues, natural climate variability will become increasingly unable to compensate for the drying effect of warming. Instead, the soil moisture conditions associated with the current drought will become increasingly common. Impacts of drought on society may be increasingly intensified due to declining availability of groundwater reserves [e.g., *Famiglietti*, 2014]. The Central Valley may be particularly vulnerable to warming-driven drought if reductions in water supply cause reductions in irrigation, as irrigation has slowed warming in this region [*Lobell and Bonfils*, 2008]. The dramatic effects of the current drought in CA, combined with the knowledge that the background warming-driven drought trend will continue to intensify amidst a high degree of natural climate variability, highlight the critical need for a long-term outlook on drought resilience, even if wet conditions soon end the current drought in CA.

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Appendix 1E

Comments from Individuals and Responses

This section contains copies of comment letters from individuals on the Draft Environmental Impact Statement (EIS) for the Coordinated Long-term Operation of the Central Valley Project (CVP) and State Water Project (SWP). Each comment in the comment letters was assigned a number, in sequential order. The numbers were combined with the last name of the individual (example: Bartlett 1). The comments with the associated responses are arranged alphabetically by last name, and appear in the chapter in that order.

Copies of the comments are provided in Section 1E.1. Responses to each of the comments follow the comment letters, and are numbered in accordance with the numbers assigned in the letters. None of the comments from individuals included large attachments.

1E.1 Comments and Responses

The individuals listed in Table 1E.1 provided comments on the Draft EIS.

Table 1E.1. Individuals Providing Comments on the Draft Environmental Impact Statement

Abbreviation	Commenter
Bartlett	John Bartlett
Brobeck 1	James Brobeck
Brobeck 2	James Brobeck
Cardella	Nicolas Cardella
Cartwright	Ken Cartwright
Hoover	Michael Hoover
McDaniel	Daniel McDaniel
St. Amant	Tony St. Amant
Todenhagen	Nora Todenhagen

1E.1.1 John Bartlett

---------- Forwarded message ----------
From: **John Bartlett** <aufever@gmail.com>
Date: Fri, Jul 31, 2015 at 1:27 PM
Subject: Re; Salmon and Smelt Biologic Opinions
To: bcnelson@usbr.gov

Bartlett 1

The main problem is not with the salmon or smelt, but how the Striped Bass are managed. The California Department of Fish and Game in the past changed the daily limits to lower and the minimum size longer to increase the size and population of Striped Bass, while doing nothing to increase their food supply, so they eat what's available, Salmon Smolts and Delta Smelt. The main problem is the Striped Bass and how DFG manages the fishery. I have fished both coasts and fresh and salt water.

John Bartlett
1574 Bluejay Circle
Hanford, Ca. 93230
aufever@gmail.com

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Ben Nelson

Natural Resources Specialist

Bureau of Reclamation, Bay-Delta Office

916-414-2424

1E.1.1.1 Responses to Comments from John Bartlett

Bartlett 1: Two of the alternatives evaluated in the EIS, Alternatives 3 and 4, included modifications of the striped bass bag limits to reduce the predation potential on native species, as described in Sections 3.4.5.2 and 3.4.6.2 of Chapter 3, Description of Alternatives.

1E.1.2 James Brobeck – Number 1 Comment

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Public Meetings

Draft Environmental Impact Statement

for the Coordinated Long-Term Operation

of the Central Valley Project

and State Water Project

Thursday, September 10, 2015

Red Bluff Community Center

1500 S. Jackson St

Red Bluff, CA 96080

6:00 P.M.

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Reported By: Priscilla Steele, CSR No. 14052

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PUBLIC COMMENT SESSION

Brobeck1 1

JAMES BROBECK: I'm a water policy analyst for AquAlliance; one word with one A in the middle. It's an

Page 1

Brobeck1 1 continued

organization.

Brobeck1 2

My first comment is that the comment period needs to be extended. This is a voluminous document, and it was not distributed in a timely manner. I've been able to review some of it online, but online is very un-user-friendly as far as searching because it comes in so many segments. And it took over a week to receive one of these CDs in the mail for the entire project. I'm just getting one right now for the first time, leaving me two weeks to review this and compose legitimate comments. So I am asking the Bureau to extend the comment period another 30 days and to ask the Court for flexibility in issuing the FEIS and the record of decision, that the artificial deadline for the ROD makes it impossible for the public to fully analyze the alternatives and to compose valid comments. Would like to see a 30-day, if not a 60-day extension.

Brobeck1 3

I was very concerned that the presentation tonight gave the purpose of the action as what appeared to be maintaining the status quo on water deliveries, in contradiction to the hydrologic reality of the system.

The presentation disfavored reasonable reductions that would have perhaps protected the fishery, in favor of meeting so-called obligations to deliver water. I say "so-called" because these are not obligations. The Bureau is required to balance the public trust with the desires of the contract of those receiving the water. And the operations of the water projects have been in favor of the contractors, to the disadvantage of the public trust as clearly evidenced by the destruction of the delta smelt,

Brobeck1 3 continued

the destruction of the salmon in the Sacramento River.

Brobeck1 4

I'm outraged that last year's operations wiped out the winter and spring salmon before they spawned. And it appears that mismanagement is going to replicate the destruction of this year's salmon population, leading to a probable extinction of this species.

Brobeck1 5

I'm amazed that Alternative 1 and 4 are being presented, the alternatives the contractors sent because they clearly violate the court orders to protect the public trust.

Brobeck1 6

I think that this process is invalidated by the failure of the Department of Water Resources to create a CEQA equivalent document. There is no CEQA equivalent document for this project. There needs to be because the State Water Project is integral. This is the coordinated SDWP, State Department of Water Resources. And the CVP is the federal part. So here we are having the feds come up

with a draft document, but there is no document to cover the state side of it. There needs to be a sequel equivalent analysis.

Brobeck1 7

I'm upset that the Bureau's presentation tonight obfuscated the fact that the lawsuits they cited were lawsuits that were being presented by state water contractors. That obfuscation is unnecessary. It's important to know who is pushing this process. And it's not the public. It's a very small portion of the California population. The state water contractors and settlement contractors were the ones pushing to eliminate the BO and the RPA.

Brobeck1 8

The Central Valley Hydrologic model ends in 2003, omitting the most current 12 years. The model is therefore completely inadequate, and any

Brobeck1 8 continued

conclusions from the model are as well.

NORA TODENHAGEN: My concern with the project and the alternatives is that they are based on what is, really, incomplete data. We don't have a true analysis of the water coming into the systems if we assume continuation of the streams and tributaries, which have been drained due to groundwater extraction.

Also, the model on which these decisions or alternatives are based dates only to 2003. So that all of the data information on groundwater and surface water interactions from 2003 to the present has not been used in

creating these proposals.

JAMES BROBECK: Aqualliance is very concerned that the cumulative impacts to the aquifer system resulting from integrating the groundwater into the state water supply through groundwater substitution water transfers. And continued expansion of groundwater-dependent irrigated agriculture is not being revealed or analyzed. The inevitable de-watering of tributaries and extirpation of groundwater-dependent ecosystems, such as Valley Oak Groves, needs to be revealed and analyzed. For the Bureau to analyze only impacts associated with their demand on the groundwater to facilitate water deliveries throughout the state is unacceptable, if not illegal.

(Whereupon, the public comment session concluded at 7:45 p.m.)

1E.1.2.1 Responses to Comments from James Brobeck at the Public Meeting held in Red Bluff on September 10, 2015

Brobeck 1 1: Comment noted.

Brobeck 1 2: At the time the request for extension of the public review period was submitted, the Amended Judgement dated September 30, 2014 issued by the United States District Court for the Eastern District of California (District Court) in the *Consolidated Delta Smelt Cases* required Reclamation to issue a Record of Decision by no later than December 1, 2015. Due to this requirement, Reclamation did not have sufficient time to extend the public review period. On October 9, 2015, the District Court granted a very short time extension to address comments received during the public review period, and requires Reclamation to issue a Record of Decision on or before January 12, 2016. This current court ordered schedule does not provide sufficient time for Reclamation to extend the public review period.

Brobeck 1 3: The purpose of the action, as described in Chapter 2, Purpose and Need, of the EIS, is not biased because it includes a provision to enable Reclamation and DWR to satisfy their contractual obligations to the fullest extent possible in accordance with the authorized purposes of the CVP and SWP, as well as the regulatory limitations on CVP and SWP operations, including applicable state and federal laws and water rights.

Brobeck 1 4:

The population of winter-run Chinook salmon is at extreme risk. NMFS recently named Sacramento River winter-run Chinook salmon as one of the eight species most at-risk of extinction in the near future. Last year (2014), due to a lack of ability to regulate water temperatures in the Sacramento River in September and October, water temperature rose to greater than 60°F. This reduced early life stage survival (eggs and fry) from Keswick to Red Bluff from a recent average of approximately 27 percent (egg-to-fry survival estimates averaged 26.4 percent for winter-run Chinook salmon in 2002-2012) down to 5 percent in 2014. Consequently, 95 percent of the year class of wild winter-run Chinook was lost last year. Additional information regarding key components of the 2015 Shasta Temperature Management Plan is provided at: http://www.usbr.gov/mp/drought/docs/shasta-temp-mgmt-plan-key-components-06-18-15.pdf.

The 2014 spawning run of spring-run Chinook salmon returning to the upper Sacramento River system also experienced significant impacts due to drought conditions as well as elevated temperatures on the Sacramento River and other tributaries. Similar to winter-run, spring-run eggs in the Sacramento River experienced significant and potentially complete mortality due to high water temperatures downstream of Keswick Dam starting in early September 2014 when water temperatures exceeded 56° F. Extremely few juvenile spring-run Chinook salmon were observed this year migrating downstream of the Sacramento River during high winter flows, when spring-run originating from the upper Sacramento River, Clear Creek, and other northern tributaries are typically observed, indicating that the population was significantly impacted. Similar concerns for spring-run exist this year as for winter-run. While spring-run have greater distribution and inhabit locations in addition to the Sacramento River, conditions on those streams are also expected to be poor due to the drought. The conservation of storage expected as a result of the changes requested in the Temporary Urgency Change (TUC) Permit submitted by Reclamation and DWR in response to drought conditions are expected to also benefit spring-run this year. Additional information regarding CVP and SWP operations under a TUC Order issued on July 3, 2015, by the State Water Resources Control Board is provided at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/tucp/2015/tucp_order070315.pdf.

Brobeck 1 5: Alternatives 1 through 4 were selected as part of the range of alternatives evaluated in the EIS, as described in Section 3.4 of Chapter 3, Description of Alternatives. The commenter's opposition to Alternatives 1 through 4 is acknowledged.

Brobeck 1 6: The District Court required Reclamation to prepare a NEPA document upon the provisional acceptance of the RPA actions in the 2008 USFWS BO and 2009 NMFS BO. Reclamation is the lead agency for this action and the environmental document; therefore, the environmental document is being prepared only under the National Environmental Policy Act. Several State of California agencies are cooperating agencies for this EIS. Because compliance with the California Environmental Quality Act (CEQA) would be under DWR's purview, Reclamation consulted with DWR on this comment. On October 5, 2015, DWR provided the following response: "The District Court required Reclamation to comply with NEPA on the provisional acceptance of the RPA actions. There is no action for the State of California requiring California Environmental Quality Act (CEQA) review."

Brobeck 1 7: Recent ESA consultation activities and court rulings are discussed in Section 1.2.3.2 of Chapter 1, Introduction, of the EIS.

Brobeck 1 8: The CVHM model was used to support the EIS groundwater program because it was deemed to have the greatest resolution (vertically and spatially) and more robust calibration than any of the other available Central-Valley wide models. While the CVHM model simulation period ends at the end of 2003, none of the Central-Valley wide models that simulate groundwater conditions for more recent periods post-2003 were available or deemed adequate for the analysis at the time of preparation of the EIS. The 1961 through 2003 time period simulated by CVHM includes varying hydrologic conditions that range from extreme dry periods (such as 1987-92) and extreme wet periods (1983).

1E.1.3 James Brobeck – Number 2 Comment

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Public Meetings
Draft Environmental Impact Statement
for the Coordinated Long-Term Operation
of the Central Valley Project
and State Water Project

Thursday, September 10, 2015
Red Bluff Community Center
1500 S. Jackson St
Red Bluff, CA 96080
6:00 P.M.

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Reported By: Priscilla Steele, CSR No. 14052

Brobeck2 1

JAMES BROBECK: Aqualliance is very concerned that the cumulative impacts to the aquifer system resulting from integrating the groundwater into the state water supply through groundwater substitution water transfers. And continued expansion of groundwater-dependent irrigated agriculture is not being revealed or analyzed. The inevitable de-watering of tributaries and extirpation of groundwater-dependent ecosystems, such as Valley Oak Groves, needs to be revealed and analyzed. For the Bureau to analyze only impacts associated with their demand on the groundwater to facilitate water deliveries throughout the state is unacceptable, if not illegal.

(Whereupon, the public comment session concluded at 7:45 p.m.)

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1E.1.3.1 Responses to Comments from James Brobeck at the Public Meeting held in Red Bluff on September 10, 2015

Brobeck 2 1: The cumulative effects analysis discussion in Chapter 7, Groundwater Resources and Groundwater Quality, has been modified to provide more discussion of the potential effects of future projects.

1E.1.4 Nicolas Cardella

---------- Forwarded message ----------
From: **Nicolas Cardella** <ncardella@prlawcorp.com>
Date: Tue, Sep 22, 2015 at 5:05 PM
Subject: Question re Draft EIS for Coordinated Long-Term Operation of the CVP and SWP
To: bcnelson@usbr.gov
Cc: Alex Peltzer <apeltzer@prlawcorp.com>

Mr. Nelson:

Cardella 1

My name is Nicolas Cardella. We met at the Draft EIS presentation in Los Banos and I promised to write you a letter thanking you for all your hard work on the Draft EIS on condition that it be framed and prominently displayed in the Bay-Delta office. I would like to take this opportunity to assure you that I have not forgotten my promise. Regrettably, however, this is not that letter. For now, I have a question regarding the Draft EIS that I was hoping you could help me with.

Cardella 2

Chapter 5 shows the changes in CVP water deliveries under the Alternatives as compared to the No Action Alternative and the Second Basis of Comparison. For each comparison, the San Joaquin River Exchange Contractors, which are described as a "South of Delta" contractor, are shown to experience no change in CVP water deliveries. See Table 5.26 (5-93), 5.43 (5-122), 5.60 (5-150), 5.77 (5-176), 5.94 (5-203), 5.111 (5-231). My understanding is that the Exchange Contractors ordinarily receive water from the Delta but can, under certain circumstances, receive water from the San Joaquin and Kings Rivers. So my question is this: Are these tables saying that there would be no change to the Exchange Contractors' deliveries *from the Delta*, or that there would be no change to the Exchange Contractors' water deliveries *from all available sources*?

My concern is whether there has been some consideration of impacts to other CVP contractors resulting from the Exchange Contractors receipt of water from the San Joaquin and Kings Rivers, rather than the Delta.

Best,
Nic

Nicolas R. Cardella
Peltzer & Richardson LC
100 Willow Plaza, Suite 309, Visalia, CA 93291

P: 559-358-2713
E: ncardella@prlawcorp.com

1E.1.4.1 Responses to Comments from Nicolas Cardella

Cardella 1: Comment noted.

Cardella 2: The EIS analysis assumes all water deliveries to the San Joaquin River Exchange Contractors are conveyed through the Delta; and water deliveries from Millerton Lake would be similar under all alternatives and the Second Basis of Comparison in all water year types. However, it is recognized that during extreme droughts, water can be delivered to the San Joaquin River Exchange Contractors from Millerton Lake and CVP deliveries to users along the Friant and Madera canals can be reduced. Droughts have occurred throughout California's history, and are constantly shaping and innovating the ways in which Reclamation and DWR balance both public health standards and urban and agricultural water demands while protecting the Delta ecosystem and its inhabitants. The most notable droughts in recent history are the droughts that occurred in 1976-77, 1987-92, and the ongoing drought. More details have been included in Section

5.3.3 of Chapter 5, Surface Water Resources and Water Supplies, in the Final EIS to describe historical responses by CVP and SWP to these drought conditions, including recent deliveries of CVP water to the San Joaquin River Exchange Contractors.

1E.1.5 Ken Cartwright

To - Bureau of Reclamation

Subject: "Biologial opinions"

Cartwright 1

The opinions are designed to Keep water away from the Farmers in the valley, the environmentalist could care Less about the salmon OR smelt, thats the tool they use to Keep water away from Farmers.

to solve the water problem in Calif, hang the environmentalist and the fight for water is over. The environ have put thousands of people out of work and could Less.

Ken Cartwright
160 maple WAY
Hanford Ca. 93230

916-414-2439

1E.1.5.1 Responses to Comments from Ken Cartwright

Cartwright 1: Commenter's opposition to the biological opinions is noted. The EIS alternatives presented in Chapter 3, Description of Alternatives, represent a range of operations that result in different amounts of water for use by municipal, agricultural, and environmental beneficial uses in the CVP and SWP service areas and in water bodies affected by CVP and SWP operations.

1E.1.6 Michael Hoover

9/3/2015 DEPARTMENT OF THE INTERIOR Mail - Re: Comment for Reclamation

BISON CONNECT

Nelson, Benjamin <bcnelson@usbr.gov>

Re: Comment for Reclamation

Sierzputowski, Janet <jsierzputowski@usbr.gov> Mon, Aug 3, 2015 at 3:40 PM
To: mhoover27@comcast.net
Cc: Janet Sierzputowski <JSierzputowski@usbr.gov>, Benjamin Nelson <bcnelson@usbr.gov>

Good afternoon, Mr. Hoover.

Thank you very much for your email and for your close attention to detail as you were reading the article in the Hanford Sentinel. We will contact the newspaper and request a correction. Please note that the paper is not obliged to actually make the requested correction, but hopefully they will.

Sincerely, Janet 08/03/15

Janet Sierzputowski, Public Affairs Specialist
Bureau of Reclamation, Mid-Pacific Region
2800 Cottage Way, MP-140, Sacramento, CA 95825
Office 916-978-5112, Cell 916-943-6944

> From Michael Hoover (mhoover27@comcast.net) on 08/03/2015 at 01:08:38MSGBODY:
> Please note the following misinformation provided by the Hanford Sentinel:
>
> Hoover 1
>
> Feds seek input on salmon, smelt 'biological opinions' -- The federal Bureau of Reclamation wants public input on two fish "biological" opinions that affect the agricultural and municipal water supply coming from the Central Valley Project and the State Water Project. http://hanfordsentinel.com/news/local/fed-seek-input-on-salmon-smelt-biological-opinions/article_6fb7718d-423c-5398-99fe-675a30524995.html
>
> Agencies request public comment on their analyses as provided in a NEPA document prior to any associated decision, not on the validity of Biological Opinions as required by law. This is a legal issue that should be discussed with your Solicitor and clarified for and in the Hanford Sentinel.
>
> Previous Page: http://www.usbr.gov/main/comments.cfm

1E.1.6.1 Responses to Comments from Michael Hoover

Hoover 1: Comment noted.

1E.1.7 Daniel McDaniel

Daniel A. McDaniel
Post Office Box 1461
Stockton, California 95201

September 29, 2015

Via Email bcnelson@usbr.gov
and First Class Mail

Ben Nelson
Bay-Delta Office
U.S. Bureau of Reclamation
801 I Street, Suite 140
Sacramento, Ca 95814-2536

Re: Draft Environmental Impact Statement for the Coordinated Long-Term Operation of the Central Valley Project and State Water Project

Dear Mr. Nelson:

Please accept these comments on the Draft Environmental Impact Statement for the Coordinated Long-Term Operation of the Central Valley Project and State Water Project ("DEIS"). McDaniel 1

I have lived, worked, and recreated in the Delta region for my entire life. My family settled in the Central Valley in the 1800's. I have a special attachment to the Delta as a place. The lands and waterways within the Delta are dedicated to a multitude of uses, including agricultural, residential, recreational, environmental, and various commercial uses. The Delta is a home to over a half million people, with an annual economic output in excess of $26 billion per year as of 2008, and a multitude of species.

I am uniquely qualified to comment on the DEIS, since I have witnessed the Delta suffer the consequences of excessive state and federal project diversions and exports from the Delta, which are increased due to the coordinated operations of the state and federal projects. I recall when the Delta was a much healthier place when I was a child, in the 1950's.

Ben Nelson
September 29, 2015
Page 2

1. The Alternatives Should Include Independent Project Operation Without Coordinated Operations.

The most obvious alternative, operation of the projects without coordination, appears to have been overlooked or avoided. Operations without coordination would provide the only real alternative which could avoid the application of the biological opinions. The DEIS should have analyzed the separate operations of the projects without any coordination, and analyzed those operations as against the need for coordinated operations under the requirements imposed by the biological opinions. In particular, increased instream flows in the Delta in the absence of coordinated operations should be analyzed. McDaniel 2 McDaniel 3

2. Failure to evaluate the project and all alternatives for consistency and compliance with the CVPIA.

The CVPIA provides a clear mandate in section 3406(b) to the Bureau to conform its operations with all obligations under state and federal laws in effect at the time of enactment in 1992. That section also includes the fish doubling goal. McDaniel 4

The DEIS should include an analysis of how operations will achieve and enable compliance with the CVPIA, including but not limited to the doubling goals for all anadromous fish as specifically defined by the CVPIA to include Striped Bass and American Shad. The Anadromous Fish Restoration Program established a doubling goal for Striped Bass of 2,500,000 fish. The deadline for achieving that has long passed, yet Striped Bass are in catastrophic decline. The DEIS fails to mention any meaningful efforts being made to achieve the doubling goal, despite being 14 years overdue. The DEIS should evaluate the project and the alternatives for consistency and compliance with all CVPIA obligations, and all CVPIA objectives and goals.

3. Failure to Determine, Consider, Evaluate, and Mitigate Predation on Striped Bass.

As Striped Bass are an important sport fishing asset entitled to special attention and protection under the CVPIA, predation on Striped Bass by other species should be analyzed considered, evaluated and mitigated against. The DEIS notes the importance to Striped Bass of the salinity gradient and predation upon other species, but fails to consider predation upon Striped Bass by mammals, birds, and other fish. Further, the DEIS fails to analyze and to consider mitigation of salinity impacts on Striped Bass. McDaniel 5 McDaniel 6

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Ben Nelson
September 29, 2015
Page 3

Thank you for the opportunity to comment on the DEIS. We look forward to the receipt of a revised DEIS.

Very truly yours,

DANIEL A. McDANIEL

1E.1.7.1 Responses to Comments from Daniel McDaniel

McDaniel 1: Comment noted.

McDaniel 2: As described in Section 3.3.1 of Chapter 3, Description of Alternatives, in the EIS, Reclamation and California Department of Water Resources (DWR) are required to operate the CVP and SWP, respectively, in a coordinated manner under the conditions of the Coordinated Operations Agreement (COA). This agreement was signed by the United States Congress and the California Legislature in 1986 to define operational procedures and formulas to share joint responsibilities for meeting Delta standards and other legal uses of water in the Delta watershed. Therefore, all alternatives must include the coordinated long-term operation of the CVP and SWP.

McDaniel 3: Operations under the range of EIS alternatives result in a range of Delta inflows and Delta outflows, as shown in Figures 5.59 through 5.61 (Sacramento River at Freeport) and Figures 5.74 through 5.76 (Delta outflow) of Chapter 5, Surface Water Resources and Water Supplies. Additional details are provided in Appendix 5A, Section C, CalSim II and DSM2 Model Results.

McDaniel 4: A footnote has been added to Table 9.1 in Chapter 9, Fish and Aquatic Resources, of the EIS, to identify the fish species that are a focus of Section 3406(b)(1) of the Central Valley Project Improvement Act. Additional text also has been added in the impact assessment sections of Chapter 9 to indicate that increased bag limits for striped bass under Alternatives 3 and 4 could affect the ability to meet Section 3406(b)(1) goals for striped bass.

McDaniel 5: The continued operation of the CVP and SWP would not result in changes to land use or levees with terrestrial resources that support mammals, birds, and amphibians that prey upon striped bass during some of their life stages. Therefore, these terrestrial resources in relation to striped bass were not described in detail in the EIS because there would be no changes between the alternatives.

McDaniel 6: As described in Section 9.3.4.4.1 of Chapter 9, Fish and Aquatic Resources, of the EIS, most Striped Bass spawning occurs upstream of the salinity zone, and the adult Striped Bass move into the brackish and salt water of the Delta and San Francisco Bay in the summer and fall. Changes in the salinity zone between the alternatives are most evident in the fall months with smaller changes in April and May based upon conditions under the No Action Alternative and Alternatives 2 and 5, as compared to conditions under Alternatives 1, 3, and 4, as shown in the location of X2 (see Figures conditions C-16.2.1 through 16.2.6 of Appendix 5A, Section C, CalSim II and DSM2 Model Results).

The text has been modified in Section 9.4 of Chapter 9, Fish and Aquatic Resources, in the Final EIS to address the relationship of salinity gradients and abundance of Striped Bass.

1E.1.8 Tony St. Amant

From: **Tony St. Amant** <tsainta@hotmail.com>
Date: Fri, Sep 18, 2015 at 1:40 PM
Subject: DEIS Extension
To: bcnelson@usbr.gov

Dear Mr.Nelson,

St. Amant 1

Please extend for 30 days the comment period for the Bureau of Reclamation's Coordinated Long-Term Operation of the Central Valley Project and State Water Project Draft Environmental Impact Statement (DEIS). This is a particularly complicated topic and with the concurrent comment period on the DEIS/EIR for the California Water Fix (formerly BDCP), additional time to review this project is needed.

Tony St. Amant

Chico

Thanks,

--

Ben Nelson

Natural Resources Specialist

Bureau of Reclamation, Bay-Delta Office

916-414-2424

1E.1.8.1 Responses to Comments from Tony St. Amant

St. Amant 1: At the time the request for extension of the public review period was submitted, the Amended Judgement dated September 30, 2014 issued by the United States District Court for the Eastern District of California (District Court) in the *Consolidated Delta Smelt Cases* required Reclamation to issue a Record of Decision by no later than December 1, 2015. Due to this requirement, Reclamation did not have sufficient time to extend the public review period. On October 9, 2015, the District Court granted a very short time extension to address comments received during the public review period, and requires Reclamation to issue a Record of Decision on or before January 12, 2016. This current court ordered schedule does not provide sufficient time for Reclamation to extend the public review period.

1E.1.9 Nora Todenhagen

091015 Hearing.txt

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Public Meetings
Draft Environmental Impact Statement
for the Coordinated Long-Term Operation
of the Central Valley Project
and State Water Project

Thursday, September 10, 2015
Red Bluff Community Center
1500 S. Jackson St
Red Bluff, CA 96080
6:00 P.M.

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Reported By: Priscilla Steele, CSR No. 14052

Togenhagen 1

NORA TODENHAGEN: My concern with the project and the alternatives is that they are based on what is, really, incomplete data. We don't have a true analysis of the water coming into the systems if we assume continuation of the streams and tributaries, which have been drained due to groundwater extraction.

Also, the model on which these decisions or alternatives are based dates only to 2003. So that all of the data information on groundwater and surface water interactions from 2003 to the present has not been used in

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creating these proposals.

1E.1.9.1 Responses to Comments from Nora Todenhagen at the Public Meeting held in Red Bluff on September 10, 2015

Todenhagen 1: The CVHM model was used to support the EIS groundwater program because it was deemed to have the greatest resolution (vertically and spatially) and more robust calibration than any of the other available Central-Valley wide models. While the CVHM model simulation period ends at the end of 2003, none of the Central-Valley wide models that simulate groundwater conditions for more recent periods post-2003 were available or deemed adequate for the analysis at the time of preparation of the EIS. The 1961 through 2003 time period simulated by CVHM includes varying hydrologic conditions that range from extreme dry periods (such as 1987-92) and extreme wet periods (such as 1983).

Appendix 3A

No Action Alternative: Central Valley Project and State Water Project Operations

3A.1 Overview of the Central Valley Project and State Water Project

The Central Valley Project (CVP), operated by Bureau of Reclamation (Reclamation), and the State Water Project (SWP), operated by the California Department of Water Resources (DWR), are major interbasin water storage and delivery systems that divert water from the Sacramento River and San Joaquin River watersheds. These facilities also divert water from the southern portion of the Sacramento–San Joaquin River Delta (Delta) to areas located south and west of the Delta. Their operations store water, and divert and re-divert CVP and/or SWP water that has been stored in upstream reservoirs. The CVP and SWP operate pursuant to water right permits and licenses issued by the State Water Resources Control Board (SWRCB). These permits and licenses allow for appropriation of specific quantities of water for diversion to storage, releases from that storage later in the year, and/or direct diversion. As conditions of the water right permits and licenses, the CVP and SWP are required by SWRCB to meet specific water quality objectives. As a result, Reclamation and DWR closely coordinate CVP and SWP operations to meet these conditions.

The CVP was originally authorized by the Rivers and Harbors Act of 1935. It was reauthorized by the Rivers and Harbors Act of 1937 and again by the Central Valley Project Improvement Act (CVPIA) in 1992. The CVP is composed of nine divisions: Shasta and Trinity River Divisions, Sacramento River Division, American River Division, Delta Division, East Side Division, West San Joaquin Division, Friant Division, and the San Felipe Division. The CVP is composed of some 18 reservoirs with a combined storage capacity of more than 11 million acre-feet (MAF), 11 power plants, and more than 500 miles of major canals and aqueducts. These various facilities are generally operated as an integrated project, although they are authorized and categorized in divisions. Authorized project purposes include river regulation; flood control; navigation; provision of water for irrigation and domestic uses; fish and wildlife mitigation, protection, restoration, and enhancement; and power generation. However, not all facilities are operated to meet all of these purposes. As initially authorized, the primary CVP purpose was to provide water for irrigation throughout California's Central Valley. The CVPIA has amended CVP authorizations to include fish and wildlife mitigation, protection, and restoration; domestic uses; fish and wildlife enhancement; and power generation. The CVP's major storage facilities are Shasta Lake, Trinity

Lake, Folsom Reservoir, and New Melones Reservoir. The upstream reservoirs release water for delivery to in-basin users, flows in Delta tributaries to meet Delta water quality objectives and outflow criteria, and for delivery of CVP water through the C.W. Jones Pumping Plant (Jones Pumping Plant) to storage in San Luis Reservoir (jointly operated by Reclamation and DWR) or delivery through the Delta Mendota Canal (DMC).

The Burns-Porter Act, approved by the California voters in November 1960 (Water Code Sec. 12930-12944), authorized issuance of bonds for construction of the SWP. The principal facilities of the SWP are Oroville Reservoir and related facilities, San Luis Dam and related facilities, Delta facilities, the California Aqueduct, and North and South Bay Aqueducts. The SWP stores and distributes water for agricultural and municipal and industrial (M&I) uses in the northern Central Valley, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California. Other project functions include flood control, water quality maintenance, power generation, recreation, and fish and wildlife enhancement. In general, water is released from storage facilities for delivery to in-basin users, into Delta tributaries to meet Delta water quality objectives and outflow criteria, and for delivery of SWP water through the Harvey O. Banks Pumping Plant (Banks Pumping Plant) to storage in San Luis Reservoir or delivery through the California Aqueduct.

3A.2 Coordinated Operation of the Central Valley Project and State Water Project

The CVP and SWP are operated in accordance with the Coordinated Operation Agreement adopted by the Federal and state government and water rights permits issued by the SWRCB.

3A.2.1 Coordinated Operation Agreement

Reclamation and DWR have built water storage and water delivery facilities in the Central Valley in order to deliver water to CVP and SWP (Project) contractors, including senior water rights holders. Reclamation and DWR water rights are conditioned by SWRCB to protect the beneficial uses of water within the CVP and SWP and jointly for the protection of beneficial uses in the Sacramento Valley and the Sacramento–San Joaquin Delta Estuary. Reclamation and DWR coordinate and operate the CVP and SWP to meet water right and contract obligations upstream of the Delta, Delta water quality objectives, and CVP and SWP water right and contract obligations that depend upon diversions from the Delta.

The Coordinated Operation Agreement (COA), signed in 1986, defines the project facilities and their water supplies, coordinates operational procedures, identifies formulas for sharing joint responsibilities for meeting Delta standards (as the standards existed in SWRCB Water Right Decision 1485 [D-1485]) and other legal uses of water, identifies how unstored flow would be shared, establishes a framework for exchange of water and services between the CVP and SWP, and provides for periodic review of the agreement. DWR and Reclamation have operational arrangements to accommodate new facilities, water quality and flow objectives, the CVPIA, and Federal Endangered Species Act (ESA), but the COA has not been formally modified.

3A.2.1.1 Obligations for In-Basin Uses

In-basin uses are defined in the COA as legal uses of water in the Sacramento Basin, including the water required under the SWRCB Decision 1485 (D-1485) Delta standards (D-1485 ordered the CVP and SWP to guarantee certain conditions for water quality for agricultural, M&I, and fish and wildlife beneficial uses). Each project is obligated to ensure water is available for these uses, but the degree of obligation is dependent on several factors and changes throughout the year, as described below.

Balanced water conditions are defined in the COA as periods when it is mutually agreed that releases from upstream reservoirs plus unregulated flows approximately equals the water supply needed to meet Sacramento Valley in-basin uses plus exports. Excess water conditions are periods when it is mutually agreed that releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley in-basin uses plus exports. Reclamation's Central Valley Operations Office (CVOO) and DWR's SWP Operations Control Office (SWPOCO) jointly decide when balanced or excess water conditions exist.

During excess water conditions, sufficient water is available to meet all beneficial needs, and the CVP and SWP are not required to make additional releases. In excess water conditions, water accounting is not required and some of the excess water is available to CVP water contractors, SWP water contractors, and users located upstream of the Delta. However, during balanced water conditions, CVP and SWP share the responsibility in meeting in-basin uses.

When water must be withdrawn from reservoir storage to meet in-basin uses, 75 percent of the responsibility is borne by the CVP and 25 percent is borne by the SWP. When unstored water is available for export (i.e., Delta exports exceed storage withdrawals while balanced water conditions exist), the sum of CVP stored water, SWP stored water, and the unstored water for export is allocated 55/45 to the CVP and SWP, respectively. The percentages and ratios included in the COA were derived from negotiations between Reclamation and DWR for SWRCB D-1485 standards and CVP and SWP annual supplies existing at the time and projected into the future. Reclamation and DWR have continued to apply these ratios as new SWRCB standards and other statutory and regulatory changes have been adopted.

3A.2.1.2 Accounting and Coordination of Operations

Reclamation and DWR coordinate on a daily basis to determine target Delta outflow for water quality, reservoir release levels necessary to meet in-basin demands, schedules for joint use of the San Luis Unit facilities, and for the use of each other's facilities for pumping and wheeling.

During balanced water conditions, daily water accounting is maintained for the CVP and SWP obligations. This accounting allows for flexibility in operations and avoids the necessity of daily changes in reservoir releases that originate several days' travel time from the Delta. It also means adjustments can be made "after the fact," using actual observed data rather than by prediction for the variables of reservoir inflow, storage withdrawals, and in-basin uses. This iterative process of observation and adjustment results in a continuous truing up of the running COA account.

The accounting language of the COA provides the mechanism for determining the responsibility of each project for Delta outflow influenced standards; however, real-time operations dictate actions. For example, conditions in the Delta can change rapidly. Weather conditions combined with tidal action can quickly affect Delta salinity conditions, and therefore, the Delta outflow required to maintain standards. If, in this circumstance, it is decided the reasonable course of action is to increase upstream reservoir releases, then the response may be to increase Folsom Reservoir releases first because the released water will reach the Delta before flows released from other CVP and SWP reservoirs. Lake Oroville water releases require about 3 days to reach the Delta, while water released from Shasta Lake requires 5 days to travel from Keswick Reservoir to the Delta. As water from the other reservoirs arrives in the Delta, Folsom Reservoir releases can be adjusted downward. Any imbalance in meeting each Project's initial shared obligation would be captured by the COA accounting.

Reservoir release changes are one means of adjusting to changing in-basin conditions. Increasing or decreasing project exports can also immediately achieve changes to Delta outflow. As with changes in reservoir releases, imbalances in meeting each project's initial shared obligations are captured by the COA accounting.

During periods of balanced water conditions, when real-time operations dictate project actions, an accounting procedure tracks the initial sharing water obligations of the CVP and SWP. The CVP and SWP produce daily and accumulated accounting balances. The account represents the imbalance resulting from actual coordinated operations compared to the initial COA sharing of obligations and supply. The project that is "owed" water (i.e., either CVP or SWP provided more or exported less than its COA-defined share) may request the other Project adjust its operations to reduce or eliminate the accumulated account within a reasonable time.

The duration of balanced water conditions varies from year to year. Some very wet years have had no periods of balanced conditions, while very dry years have had long continuous periods of balanced conditions, and still other years may have had several periods of balanced conditions interspersed with excess water conditions. Account balances continue from one balanced water condition through the excess water condition and into the next balanced water condition. When the Project that is owed water enters into flood control operations, Shasta Lake and Folsom Reservoir for the CVP and Lake Oroville for the SWP, the accounting is zeroed out for that Project.

3A.2.1.3 Changes in Coordinated Operation Since 1986

Implementation of the COA principles has continuously evolved since 1986 as changes have occurred to CVP and SWP facilities, to Project operations criteria, and to the overall physical and regulatory environment in which the coordination of CVP and SWP operations takes place. Since 1986, new facilities have been incorporated into the operations that were not part of the original COA. New water quality objectives (SWRCB Water Quality Control Plan [WQCP] for the Bay-Delta in 1995 and 2006, as implemented through Water Right Decision 1641 [D-1641]) have been adopted by SWRCB; the CVPIA has changed how the CVP is operated; and finally, ESA responsibilities have affected both the CVP and SWP operations. The following describes the significant changes that have occurred since 1986. Included after each item is an explanation of how it relates to the COA and its general effect on the accomplishments of the Projects.

3A.2.1.3.1 Sacramento River Temperature Control Operations

Water temperature control operations have changed the pattern of storage and withdrawal of storage at Shasta Lake, Trinity Lake, and Whiskeytown Reservoir, for the purpose of improving temperature control and managing coldwater pool resources in the facilities. Water temperature operations have also constrained rates of flow and changes in rates of flow below Keswick Dam, in keeping with water temperature requirements. Such constraints have reduced the CVP's ability to respond efficiently to changes in Delta export or outflow requirements. Periodically, temperature requirements have caused the timing of the CVP releases to be significantly mismatched with Delta export capability, resulting in loss of water supply. The installation of a Shasta Lake temperature control device has significantly improved Reclamation's ability to match reservoir releases and Delta needs.

3A.2.1.3.2 Bay-Delta Accord, and Subsequent SWRCB Implementation of D-1641

The 1994 Bay-Delta Accord committed the CVP and SWP to a set of Delta habitat-protective objectives that were eventually incorporated into the 1995 Bay-Delta Water Quality Control Plan (WQCP), and later, along with the temporary Vernalis Adaptive Management Plan (VAMP) (since expired), were implemented through SWRCB D-1641 which amended the water rights of the

Projects. The actions taken by the CVP and SWP in implementing SWRCB D-1641 significantly reduced the export water supply of both Projects.

As described previously, Project operators must coordinate the day-to-day operations of the CVP and SWP to comply with the Projects' water right permits. The 1986 COA sharing formula has been used by Project operators for SWRCB D-1641 Delta outflow and salinity-based standards. SWRCB D-1641 contains significant new "export limitation" criteria such as the export to inflow (E/I) ratios. The 1986 COA framework neither contemplated nor addressed the application of such criteria to CVP and SWP permits. In most cases, when the E/I restrictions control Project operations, operators attempt is made to even out the rate of export over the restricted period. In some cases, a seasonal time shift of the SWP exports can help facilitate an equitable sharing of responsibilities. Until the COA is updated to reflect SWRCB D-1641 conditions, Project operators must continually work on a case-by-case basis in order to meet the Projects' water right requirements.

3A.2.1.3.3 North Bay Aqueduct

The North Bay Aqueduct (NBA) is a SWP feature that can convey up to about 175 cubic feet per second (cfs) diverted from the SWP's Barker Slough Pumping Plant. NBA diversions are conveyed to SWP water contractors in Napa and Solano Counties. The diversion is currently treated as an in-basin demand shared by both Projects.

3A.2.1.3.4 Freeport Regional Water Project

The Freeport Regional Water Project is a new facility that diverts up to a maximum of 286 cfs from the Sacramento River near Freeport for use in Sacramento County and by East Bay Municipal Utility District (EBMUD). EBMUD diverts water pursuant to its amended contract with Reclamation. The County diverts under their water rights and a CVP water service contract supply. This facility was not in the 1986 COA, and the diversions result in an increase of in-basin demands. The diversion is currently treated as an in-basin demand shared by both Projects.

3A.2.1.3.5 Loss of 195,000 Acre-Feet of D-1485 Condition 3 Replacement Pumping

The 1986 COA affirmed the SWP's commitment to provide replacement capacity at Banks Pumping Plant to the CVP at times when it would not reduce SWP yield, to make up for May and June pumping reductions at Jones Pumping Plant as imposed by striped bass protections under SWRCB D-1485 in 1978. In the evolution of COA operations since 1986, SWRCB D-1485 was superseded by SWRCB D-1641, and SWP water demand growth and other pumping constraints have reduced the available surplus capacity at Banks Pumping Plant. The CVP has not received replacement pumping since 1993. Since then there have been (and in the current operations environment there will continue to be) many years in which the CVP would be limited by insufficient Delta export capacity to convey its water supply. The loss of up to 195,000 acre-feet of replacement pumping capacity has diminished the water delivery anticipated by the CVP water users that receive water diverted from the Delta under the 1986 COA framework. The diminished water delivered results in an allocation, or charge, to CVPIA (b)(2) water.

3A.2.2 State Water Resources Control Board Water Rights

3A.2.2.1 Decision 1641

SWRCB adopted the 1995 WQCP on May 22, 1995, which was implemented, in part, through the SWRCB D-1641. SWRCB D-1641 (adopted on December 29, 1999 and revised on March 15, 2000) amends certain terms and conditions of the SWP and CVP water rights to impose flow and water quality objectives to assure protection of beneficial uses in the Delta and Suisun Marsh. SWRCB also grants conditional changes to points of diversion for each project with SWRCB D-1641.

The requirements in SWRCB D-1641 address the standards for fish and wildlife protection, M&I water quality, agricultural water quality, and Suisun Marsh salinity. These objectives include specific outflow requirements throughout the year, specific export limits in the spring, and export limits based on a percentage of estuary inflow throughout the year. The water quality objectives are designed to protect agricultural, M&I, and fishery uses, and vary throughout the year and by the wetness of the year.

SWRCB D-1641 also authorizes the SWP and CVP to jointly use each other's points of diversion in the southern Delta, with conditional limitations and required response coordination plans. This is described below in more detail. SWRCB D-1641 modified the Vernalis salinity standard under SWRCB Decision 1422 (D-1422) to the corresponding Vernalis salinity objective in the 1995 WQCP.

3A.2.2.2 Joint Points of Diversion

SWRCB D-1641 granted Reclamation and DWR the ability to divert water at either Project's south Delta intakes under certain conditions. The SWRCB conditioned the use of Joint Point of Diversion (JPOD) capabilities based on staged implementation and conditional requirements for each stage of implementation. The stages of JPOD in SWRCB D-1641 are:

- Stage 1—for water service to Cross Valley contractors, San Joaquin Valley National Cemetery and Musco Family Olive Company, and to recover export reductions taken to benefit fish.
- Stage 2—for any purpose authorized under the current Project water right permits.
- Stage 3—for any purpose authorized, up to the physical capacity of the diversion facilities.

Each stage of JPOD has regulatory terms and conditions that must be satisfied in order to implement JPOD.

All stages require a response plan to ensure water levels in the southern Delta would not be lowered to the injury of water users (Water Level Response Plan). All stages also require a response plan to ensure the water quality in the southern and central Delta would not be significantly degraded through operations of the JPOD to the injury of water users in the southern and central Delta.

Any JPOD diversion that causes the Delta to change from excess to balanced conditions is junior to Contra Costa Water District's (CCWD) water right permits for the Los Vaqueros Project. The SWRCB D-1641 also required that JPOD diversions not result in an upstream shift in the X2 location (where 2 parts per thousand salinity isopleth measured at 1 meter from the channel bottom occurs) west of certain compliance locations.

Stage 2 has an additional requirement to complete an operations plan that would protect fish and wildlife and other legal users of water. This is commonly known as the Fisheries Response Plan. A Fisheries Response Plan was approved by SWRCB in February 2007.

Stage 3 has an additional requirement to protect water levels in the southern Delta under the operational conditions of Phase II of the South Delta Improvements Program, along with an updated companion Fisheries Response Plan.

Reclamation and DWR intend to apply all response plan criteria consistently for JPOD uses as well as water transfer uses.

In general, JPOD capabilities are used to accomplish four basic CVP and SWP objectives:

- When wintertime excess pumping capacity becomes available during Delta excess conditions and total CVP and SWP San Luis storage is not projected to fill before the spring pulse flow period, the Project with the deficit in San Luis storage may elect to pursue the use of JPOD capabilities.
- When summertime pumping capacity is available at Banks Pumping Plant and CVP reservoir conditions can support additional releases, the CVP may elect to use JPOD capabilities to enhance annual CVP south of Delta water supplies.
- When summertime pumping capacity is available at Banks or Jones Pumping Plant to facilitate water transfers, JPOD may be used to further facilitate water transfers.
- During certain coordinated CVP and SWP operation scenarios for fishery entrainment management, JPOD may be used to shift CVP and SWP exports to the facility with the least fishery entrainment impact while minimizing export at the facility with the most fishery entrainment impact.

3A.2.2.3 Revisions to the SWRCB Bay-Delta Water Quality Control Plan

SWRCB undertook a proceeding under its water quality authority to amend the WQCP adopted in 1978 and amended in 1991 and in 1995. The SWRCB conducted a series of workshops in 2004 and 2005 to receive information on specific topics addressed in the WQCP.

The SWRCB adopted a revised WQCP on December 13, 2006. There were no changes to the Beneficial Uses from the 1995 Plan to the 2006 Plan, nor were any new water quality objectives adopted in the 2006 WQCP. A number of changes were made simply for readability. Consistency changes were also made to assure that sections of the WQCP reflected the current physical condition or current regulation.

The SWRCB "is in the process of developing and implementing updates to the WQCP and flow objectives for priority tributaries to the Delta to protect beneficial uses in the Bay-Delta watershed. Phase 1 of this work involves updating San Joaquin River flow and southern Delta water quality requirements included in the WQCP. Phase 2 involves other comprehensive changes to the WQCP to protect beneficial uses not addressed in Phase 1. Phase 3 involves changes to water rights and other measures to implement changes to the WQCP from Phases 1 and 2. Phase 4 involves developing and implementing flow objectives for priority Delta tributaries outside of the WQCP updates" (State Water Resources Control Board 2014).

3A.2.3 2008 U.S. Fish and Wildlife Service and 2009 National Marine Fisheries Service Biological Opinions on the Coordinated Operation of CVP and SWP

The most recent BOs regarding the long-term coordinated operation of the CVP and SWP were issued by the USFWS and NMFS in 2008 and 2009, respectively. Each BO included a Reasonable and Prudent Alternative (RPA). In December 2008, USFWS issued a BO for Delta Smelt and their critical habitat, and Reclamation provisionally accepted and implemented the BO, including the RPA. In June 2009, NMFS issued a new BO for Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Southern Resident Killer Whales and their critical habitat, and Reclamation provisionally accepted and implemented the BO, including the RPA. Under the 2008 USFWS and 2009 NMFS BOs, CVP and SWP operations include the previous operational requirements of SWRCB D-1641 and additional operational requirements, as described below.

3A.3 Operations Real-Time Decision Making

The goals for real-time decision making to assist fishery management are to minimize adverse effects for listed species while meeting permit requirements and contractual obligations for water deliveries.

Real-time decision making is a process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. High uncertainty exists regarding real time conditions that can change management decisions on methods to balance operations to meet beneficial uses in 2030.

Sources of uncertainty include the following.

- Hydrologic conditions
- Ocean conditions
- Listed species (presence, distribution, habitat, and other factors)
- Ecological conditions

3A.3.1 Process for Real-Time Decision Making

Decisions regarding CVP and SWP operations to avoid and minimize adverse effects on listed species must consider factors that include public health, safety, and water supply reliability. To facilitate such decisions, Reclamation and DWR (Project Agencies) and the fishery agencies (consisting of USFWS, NMFS, and the California Department of Fish and Wildlife [CDFW]) have developed and refined a set of processes for various fish species to collect data, disseminate information, develop recommendations, make decisions, and provide transparency. This process consists of three types of groups that meet on a recurring basis (Table 3A.1):

- The management team is made up of management staff from Reclamation, DWR, and the fishery agencies. SWRCB participates in management team meetings.
- Information teams are teams whose role is to disseminate and coordinate information among agencies and stakeholders.
- Fisheries and operations technical teams are made up of technical staff from state and Federal agencies.

These teams review the most up-to-date data and information on fish status and Delta conditions, and develop recommendations that fishery agencies' management can use in identifying actions to protect listed species.

The process to identify actions to protect listed species varies to some degree among species but abides by the following general outline. A Fisheries or Operations Technical Team compiles and assesses current information regarding species, such as stages of reproductive development, geographic distribution, relative abundance, and physical habitat conditions. It then provides a recommendation to the agency with statutory obligation to enforce protection of the species in question. The agency's staff and management reviews the recommendation and uses it as a basis for developing, in cooperation with Reclamation and DWR, a modification of water operations that would minimize adverse effects on listed species by the Projects. If the Project Agencies do not agree with the action, then the fishery agency(ies) would advise the Project

Agencies that the water management activity considered may cause harm to the listed species beyond that contemplated in the existing BO. Certain actions may require input from the SWRCB to assess impacts to the beneficial uses of the project water because actions can also affect the Projects' ability to comply with state water rights. In the event it is not possible or appropriate to refine the action, given the available resources, the Project Agencies would consult with the fishery agency(ies). The outcomes of protective actions that are implemented are monitored and documented, and this information informs future recommended actions.

Table 3A.1 Real-Time Decision Making Groups

Team Name	Abbreviation	Composition
Water Operations Management Team	WOMT	Reclamation, DWR, USFWS, NMFS, and CDFW. SWRCB participates
CALFED Bay-Delta Program (CALFED) Ops Group	CALFED Ops Group	Reclamation, DWR (Project Agencies), fishery agencies, SWRCB staff, and the USEPA
Data Assessment Team	DAT	Technical staff members from the Project Agencies and fishery agencies; stakeholders
Operations and Fishery Forum	OFF	Contact persons for their respective agencies or interest groups; works in concert with CALFED Ops Group
B2 Interagency Team	(b)(2)IT	Technical staff members from the Project Agencies
Sacramento River Temperature Task Group	SRTTG	Multiagency group
Smelt Working Group	SWG	USFWS, CDFW, DWR, USEPA, and Reclamation
Delta Condition Team	DCT	Scientists and engineers from the state and federal agencies, water contractors, and environmental groups
Delta Operations Salmonid and Sturgeon	DOSS	Reclamation, DWR, CDFW, USFWS, SWRCB, USGS, USEPA, and NMFS
American River Group	ARG	Reclamation, USFWS, NMFS, CDFW, and the Water Forum
Delta Cross Channel Project Work Team	DCC Project Work Team	Multiagency group
Stanislaus Operations Team	OT	To be developed as part of the New Melones revised plan of operations

3A.3.1.1 Salmon Decision Process

The Salmon Decision Process is used by the fishery agencies and Project operators to facilitate the often complex coordination issues surrounding Delta Cross Channel (DCC) gate operations and the purposes of fishery protection closures, Delta water quality, and/or export reductions. Inputs such as fish life stage and size development, current hydrologic events, fish indicators (such as the Knight's Landing Catch Index and Sacramento Catch Index), and salvage at the export facilities, as well as current and projected Delta water quality conditions, are used to determine potential DCC closures and/or export reductions. The Salmon Decision Process includes "Indicators of Sensitive Periods for Salmon," such as hydrologic changes, detection of spring-run salmon or spring-run salmon surrogates at monitoring sites or the salvage facilities, and turbidity increases at monitoring sites, which trigger the Salmon Decision Process. The coordination process has worked well during the recent fall and winter DCC operations and is expected to be used in the present or modified form in the future.

3A.3.2 Groups Involved in Real-Time Decision Making and Information Sharing

3A.3.2.1 Management Team

The Water Operations Management Team (WOMT) is composed of representatives from Reclamation, DWR, USFWS, NMFS, and CDFW. SWRCB participates in discussions. This management-level team was established to facilitate timely decision-support and decision making at the appropriate level. The WOMT first met in 1999, continues to meet to make management decisions. Although the goal of WOMT is to achieve consensus on decisions, the participating agencies retain their authorized roles and responsibilities.

3A.3.2.2 Information Teams

3A.3.2.2.1 CALFED Ops and Subgroups

The CALFED Bay-Delta Program (CALFED) Ops Group consists of the Project Agencies, the fishery agencies, SWRCB staff, U.S. Environmental Protection Agency (USEPA), and stakeholders. The CALFED Ops Group generally meets eight times a year in a public setting so that the agencies can inform each other and stakeholders about current operations of the CVP and SWP, implementation of the CVPIA and state and federal endangered species acts, and additional actions to contribute to the conservation and protection of state- and federally listed species. The CALFED Ops Group held its first public meeting in January 1995, and during the next six years the group developed and refined its process. The CALFED Ops Group has been recognized within SWRCB D-1641, and elsewhere, as one forum for coordination on decisions to exercise certain flexibility that has been incorporated into the Delta standards for protection of beneficial uses (e.g., E/I ratios, and some DCC closures). Several teams were established through the CALFED Ops Group process. These teams are described below.

3A.3.2.2.2 Data Assessment Team

The Data Assessment Team (DAT) consists of technical staff members from the Project Agencies and fishery agencies as well as stakeholders. The DAT meets frequently during the fall, winter, and spring. The purpose of the meetings is to coordinate and disseminate information and data among agencies and stakeholders that is related to water Project operations, hydrology, and fish surveys in the Delta.

3A.3.2.2.3 Operations and Fishery Forum

The Operations and Fishery Forum (OFF) was established as an ad-hoc stakeholder-driven process to disseminate information regarding recommendations and decisions about the operations of the CVP and SWP. OFF members are considered the contact persons for their respective agencies or interest groups when information regarding take of listed species, or other factors or urgent issues need to be addressed by the CALFED Ops Group. Alternatively, the CALFED Ops Group may direct the OFF to develop recommendations on operational responses for issues of concern raised by member agencies.

3A.3.2.3 B2 Interagency Team

The B2 Interagency Team [(b)(2)IT] was established in 1999 in accordance with CVPIA and consists of technical staff members from the Project Agencies. CALFED recognized this group to facilitate coordinated operations. The (b)(2)IT meets weekly to discuss implementation of Section 3406 (b)(2) of the CVPIA, which defines the dedication of CVP water supply for environmental purposes. It communicates with WOMT to ensure coordination with the other operational programs or resource-related aspects of Project operations, including flow and temperature issues.

3A.3.3 Operations and Fisheries Technical Teams

Several fisheries-specific teams have been established to provide guidance and recommendations on current operations (flow and temperature regimes), as well as resource management issues. These teams include the following.

3A.3.3.1 The Sacramento River Temperature Task Group

The Sacramento River Temperature Task Group (SRTTG) is a multiagency group formed pursuant to SWRCB Water Rights Orders 90-5 and 91-1, to assist with improving and stabilizing the Chinook Salmon population in the Sacramento River. Annually, Reclamation develops temperature operation plans for the Shasta and Trinity divisions of the CVP. These plans consider impacts on winter-run and other races of Chinook Salmon and associated Project operations. The SRTTG meets initially in the spring to discuss biological, hydrologic, and operational information, objectives, and alternative operations plans for temperature control. Once the SRTTG has recommended an operation plan for temperature control, Reclamation then submits a report to SWRCB, generally on or before June 1 each year.

After implementation of the operation plan, the SRTTG may perform additional studies. It holds meetings as needed, typically monthly through the summer and into fall, to develop revisions based on updated biological data, reservoir temperature profiles, and operations data. Updated plans may be needed for summer operations to protect winter-run, or in fall for the fall-run spawning season. If there are any changes in the plan, Reclamation submits a supplemental report to SWRCB.

3A.3.3.2 Smelt Working Group

The Smelt Working Group (SWG) consists of representatives from USFWS, CDFW, DWR, USEPA, and Reclamation. USFWS chairs the group, and a member is assigned by each agency. The SWG evaluates biological and technical issues regarding Delta Smelt and develops recommendations for consideration by USFWS. Since longfin smelt became a state candidate species in 2008, the SWG has also developed recommendations for CDFW to minimize adverse effects on longfin smelt.

The SWG compile and interpret the latest near real-time information regarding state- and federally listed smelt, such as stages of development, distribution, and salvage. After evaluating available information, if the SWG members agree that a protection action is warranted, the SWG submit its recommendations in writing to USFWS and CDFW.

The SWG may meet at any time at the request of USFWS, but generally meets weekly during the months of January through June, when smelt salvage at the CVP and SWP has occurred historically.

3A.3.3.3 Delta Condition Team

The existing SWG and WOMT advise USFWS on smelt conservation needs and water operations. In addition, a Delta Condition Team (DCT), consisting of scientists and engineers from the state and federal agencies, water contractors, and environmental groups, meet weekly to review the real time operations and Delta conditions, including data from new turbidity monitoring stations and new analytical tools such as the Delta Smelt behavior model. The members of the DCT provide their individual information to the SWG and the Delta Operations Salmonid and Sturgeon (DOSS) workgroup. SWG meet later on the day the DCT meets to assess risks to Delta Smelt based upon Delta conditions and the other factors set forth above. The SWG and individual members of the DCT may provide, in accordance with a process provided by the WOMT, their information to the WOMT for its consideration in developing a recommendation to the Project Agencies for actions to protect Delta Smelt and other listed fish. The WOMT supply information for Project Agencies to consider, including impacts on other species and on water supply.

3A.3.3.4 Delta Operations Salmonid and Sturgeon Workgroup

The DOSS workgroup is a technical team with relevant expertise from Reclamation, DWR, CDFW, USFWS, SWRCB, U.S. Geological Survey (USGS), USEPA, and NMFS that provides advice to WOMT and to NMFS on issues related to fisheries and water resources in the Delta and recommendations on measures to reduce adverse effects of Delta operations of the CVP and SWP to salmonids and Green Sturgeon. The purpose of DOSS is to provide recommendations for real-time management of operations to WOMT and NMFS; annually review Project operations in the Delta and the collected data from the different ongoing monitoring programs; and coordinate with the SWG to maximize benefits to all listed species.

3A.3.3.5 American River Group

In 1996, Reclamation established a working group for the Lower American River, known as the American River Group (ARG). Although open to the public, the ARG meetings generally include representatives from several agencies and organizations with ongoing concerns and interests regarding management of the Lower American River. The formal members of the group are Reclamation, USFWS, NMFS, CDFW, and the Water Forum.

The ARG convenes monthly or more frequently if needed, with the purpose of providing fishery updates and reports for Reclamation to help manage operations at Folsom Dam and Reservoir for the protection of fishery resources in the Lower American River, and with consideration of its other intended purposes (e.g., water and power supply).

3A.3.3.6 Delta Cross Channel Project Work Team

The DCC Project Work Team is a multiagency group. Its purpose is to determine and evaluate the effects of DCC gate operations on Delta hydrodynamics, water quality, and fish migration.

3A.4 Central Valley Project

3A.4.1 Project Management Objectives

Facilities are operated and maintained by local Reclamation area offices, with operations overseen by the CVOO at the Joint Operations Center in Sacramento, California. The CVOO is responsible for recommending CVP operating policy, developing annual operating plans, coordinating CVP operations with the SWP and other entities, establishing CVP-wide standards and procedures, and making day-to-day operating decisions.

3A.4.1.1 Central Valley Project Improvement Act

Public Law 102-575 (Reclamation Projects Authorization and Adjustment Act of 1992) was passed on October 30, 1992. Included in the law was Title 34, the Central Valley Project Improvement Act. The CVPIA amended previous authorizations of the CVP to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic water supply uses, and fish and wildlife enhancement as having an equal priority with power generation. Among the changes mandated by the CVPIA are:

- Dedicating 800 thousand acre-feet (TAF) annually to fish, wildlife, and habitat restoration
- Authorizing water transfers outside the CVP service area
- Facilitating water transfers
- Implementing an anadromous fish restoration program
- Creating a restoration fund financed by water and power users
- Providing for the Shasta Temperature Control Device
- Implementing fish passage measures at Red Bluff Pumping Plant
- Calling for planning to increase the CVP yield
- Mandating firm water supplies for Central Valley wildlife refuges
- Improving the Tracy Fish Collection Facility (TFCF)
- Meeting Federal trust responsibility to protect fishery resources (Trinity River)

The CVPIA is being implemented as authorized. The Final Programmatic Environmental Impact Statement (PEIS) for the CVPIA analyzed projected conditions in 2022, 30 years from the CVPIA's adoption in 1992. The Final PEIS was released in October 1999 and the CVPIA Record of Decision (ROD) was signed on January 9, 2001. The CVPIA BOs were issued on November 21, 2000.

3A.4.1.1.1 CVPIA Section 3406 (b)(2)

On May 9, 2003, the DOI issued its Decision on Implementation of Section 3406 (b)(2) (Decision) of the CVPIA. Dedication of CVPIA (b)(2) water occurs when Reclamation takes a fish, wildlife or habitat restoration action based on recommendations of USFWS (and in consultation with NMFS and CDFW), pursuant to Section 3406 (b)(2). Dedication and management of CVPIA (b)(2) water may also assist in meeting SWRCB WQCP fishery objectives and helps meet the needs of fish listed under the ESA as threatened or endangered since the enactment of the CVPIA.

The Decision describes the means by which the amount of dedicated CVPIA (b)(2) water is determined. Planning and accounting for CVPIA (b)(2) actions are done cooperatively and occur primarily through weekly meetings of the (b)(2)IT. The (b)(2)IT formulates recommendations for implementing upstream and Delta actions with CVP delivery capability. Actions usually take one of two forms—instream flow augmentation below CVP reservoirs or CVP Jones Pumping Plant pumping reductions in the Delta.

3A.4.2 Water Service Contracts, Allocations, and Deliveries

3A.4.2.1 Water Needs Assessment

Water needs assessments have been performed for each CVP water contractor eligible to participate in the CVP long-term contract renewal process. Water needs assessments confirm a contractor's past beneficial use and determine future CVP water supplies needed to meet the contractor's anticipated future demands. The assessments are based on a common methodology used to determine the amount of CVP water needed to balance a contractor's water demands with available surface and groundwater supplies.

3A.4.2.2 Water Allocation—CVP

In most years, the combination of carryover storage and runoff into CVP reservoirs and the Central Valley is not sufficient to provide the water to meet all CVP contractors' contractual demands. Since 1992, increasing constraints placed on operations by legislative and ESA requirements have removed significant operational flexibility to deliver water to all CVP contractors located both to the north and south of the Delta.

The water allocation process for the CVP begins in the fall when preliminary assessments are made of the next year's water supply possibilities, given current storage conditions combined with a range of hydrologic conditions. These preliminary assessments may be refined as the water year progresses. Beginning February 1, forecasts of water year runoff are prepared using precipitation to date, snow water content accumulation, and runoff to date. All of CVP's Sacramento River Settlement water rights contracts and San Joaquin River Exchange contracts require that contractors be informed no later than February 15 of any possible deficiency in their supplies. In recent years, February 20 has been the target date for the first announcement of all CVP contractors' forecasted water allocations for the upcoming contract year. Forecasts of runoff and operations plans are updated at least monthly between February and May.

Reclamation uses the 90 percent probability of exceedance forecast as the basis of water allocations. Furthermore, NMFS reviews the operations plans devised to support the initial water allocation, and any subsequent updates to them, for sufficiency with respect to the criteria for Sacramento River temperature control.

3A.4.2.3 CVP Municipal and Industrial Water Shortage Operational Assumptions

Reclamation is in the process of revising the current 2001 draft M&I water shortage policy. A draft EIS was released for public review in 2014. A description of 2001 draft M&I water shortage policy is provided below.

3A.4.2.3.1 Draft 2001 Municipal and Industrial Water Shortage Policy

The CVP has 253 water supply contracts (including water service contracts and Sacramento River Settlement Contracts). These water service contracts have had varying water shortage provisions (e.g., in some contracts, M&I and agricultural users have shared shortages equally; in most of the larger M&I contracts, agricultural water has been shorted 25 percent of its contract water before M&I water was shorted, after which both types of water contractors experience shortages with agricultural users experiencing greater shortages than M&I users, as described below).

The M&I minimum shortage allocation described above does not apply to contracts for the (1) Friant Division, (2) New Melones interim supply, (3) Hidden and Buchanan Units, (4) Cross Valley contractors, (5) Wildlife refuges, (6) San Joaquin River Exchange contractors, and (7) Sacramento River Settlement contractors. These contracts have separate shortage-related contractual provisions.

There is a minimum shortage allocation for M&I water supplies of 75 percent of a contractor's historical use (i.e., the last 3 years of water deliveries unconstrained by the availability of CVP water). Historical use can be adjusted for growth, extraordinary water conservation measures, and use of non-CVP water as those terms are defined in the proposed policy. Before the M&I water allocation is reduced, the irrigation water allocation would be reduced below 75 percent of contract water.

When the allocation of irrigation water is reduced below 25 percent of contract water, Reclamation would reassess the availability of CVP water and CVP water demand; however, due to limited water supplies during these times, M&I water allocation may be reduced below 75 percent of adjusted historical use during extraordinary and rare times such as prolonged and severe drought. Under these extraordinary conditions, allocation percentages for both South of Delta and North of Delta irrigation contractors are reduced below 25 percent to zero while the M&I contractors are reduced below 75 percent to 50 percent by the same increment, as described below.

Reclamation would attempt to deliver CVP water to all M&I contractors at not less than a public health and safety level if CVP water is available, if an emergency situation exists, but not exceeding 75 percent of contract total (and taking into consideration water supplies available to the M&I contractors from other sources). This is in recognition, however, that the M&I allocation may, nevertheless, fall to 50 percent as the irrigation allocation drops below 25 percent and approaches zero due to limited CVP supplies.

- Allocation Assumptions for Below Normal, Above Normal, and Wet Years:
  - Agricultural 100 percent to 75 percent — M&I is at 100 percent
  - Agricultural 70 percent — M&I 95 percent
  - Agricultural 65 percent — M&I 90 percent
  - Agricultural 60 percent — M&I 85 percent
  - Agricultural 55 percent — M&I 80 percent
  - Agricultural 50 to 25 percent — M&I 75 percent

- Allocation Assumptions for Dry and Critical Years:
  - Agricultural 20 percent M&I 70 percent
  - Agricultural 15 percent M&I 65 percent
  - Agricultural 10 percent M&I 60 percent
  - Agricultural 5 percent M&I 55 percent
  - Agricultural 0 percent M&I 50 percent

3A.4.3 Project Facilities

3A.4.3.1 Trinity River Division Operations

The Trinity River Division, completed in 1964, includes facilities to store and regulate water in the Trinity River, as well as facilities to divert water to the Sacramento River Basin. The Trinity River Division includes the Trinity River and Dam, Lewiston Dam, Whiskeytown Reservoir and Dam, Clear Creek, and Spring Creek and Debris Dam. Trinity Dam is located on the Trinity River and regulates the flow from a drainage area of approximately 720 square miles. The dam was completed in 1962, forming Trinity Lake, which has a maximum storage capacity of approximately 2.4 MAF.

Water is diverted from the Trinity River at Lewiston Dam via the Clear Creek Tunnel and passes through the Judge Francis Carr Powerhouse as it is discharged into Whiskeytown Lake on Clear Creek. From Whiskeytown Lake, water is released through the Spring Creek Power Conduit to the Spring Creek Power Plant and into Keswick Reservoir. All of the water diverted from the Trinity River, plus a portion of Clear Creek flows, is diverted through the Spring Creek Power Conduit into Keswick Reservoir.

Spring Creek also flows into the Sacramento River and enters at Keswick Reservoir. Flows on Spring Creek are partially regulated by the Spring Creek Debris Dam. Historically (1964–1992), an average annual quantity of 1,269 TAF of water has been diverted from Whiskeytown Lake to Keswick Reservoir. This annual quantity is approximately 17 percent of the flow measured in the Sacramento River at Keswick.

The mean annual inflow to Trinity Lake from the Trinity River is about 1.2 MAF per year. Historically, an average of about two-thirds of the annual inflow has been diverted to the Sacramento River Basin (1991–2003).

3A.4.3.1.1 Safety of Dams at Trinity Reservoir

Periodically, increased water releases are made from Trinity Dam consistent with Reclamation Safety of Dams criteria intended to prevent overtopping of Trinity Dam. Although flood control is not an authorized purpose of the Trinity River Division, flood control benefits are provided through normal operations.

The Safety of Dams release criteria specify that Carr power plant capacity be used as a first preference destination for Safety of Dams releases made at Trinity Dam. Trinity River releases are made as a second preference destination. During significant Northern California high-water flood events, the Sacramento River water stages are also often at concern levels. Under such high-water conditions, the water that would otherwise move through the Carr power plant is routed to the Trinity River. Total river releases are capped at 11,000 cfs from Lewiston Dam (under Safety of Dams criteria) due to local high water concerns in the floodplain and local bridge flow capacities. The Safety of Dams criteria provide seasonal storage targets and recommended releases November 1 to March 31. During the May 2006 event, the river flows were over 10,000 cfs for several days as part of the fishery restoration flows.

3A.4.3.1.2 Fish and Wildlife Requirements on Trinity River

Based on the Trinity River Main-stem Fishery Restoration ROD, dated December 19, 2000, 368.6 TAF to 815 TAF is allocated annually for Trinity River flows, depending on water year type. This amount is scheduled in coordination with USFWS to best meet habitat, temperature, and sediment transport objectives in the Trinity Basin.

Temperature objectives for the Trinity River are set forth in SWRCB Water Rights Order 90-5, as summarized in Table 3A.2. These objectives vary by reach and by season. Between Lewiston Dam and Douglas City Bridge, the daily average temperature should not exceed 60 degrees Fahrenheit (°F) from July 1 to September 14, and 56°F from September 15 to September 30. From October 1 to December 31, the daily average temperature should not exceed 56°F between Lewiston Dam and the confluence of the North Fork Trinity River. Reclamation consults with USFWS in establishing a schedule of releases from Lewiston Dam that can best achieve these objectives.

For the purpose of determining the Trinity Basin water year type, forecasts using the 50 percent exceedance as of April 1 are used. There are no make-up or increases for flows forgone if the water year type changes up or down from an earlier 50 percent forecast. In the modeling, actual historic Trinity inflows were used rather than a forecast. There is a temperature curtain in Lewiston Reservoir that provides for temperature management for the diversions to Clear Creek Tunnel.

Table 3A.2 Water Temperature Objectives for the Trinity River during the Summer, Fall, and Winter as Established by the California Regional Water Quality Control Board North Coast Region

Date	Temperature Objective (°F)	
	Douglas City (RM 93.8)	North Fork Trinity River (RM 72.4)
July 1 through September 14	60	–
September 15 through September 30	56	–
October 1 through December 31	–	56

3A.4.3.1.3 Transbasin Diversions

Diversion of Trinity water to the Sacramento Basin provides water supply and major hydroelectric power generation for the CVP and plays a key role in water temperature control in the Trinity River and upper Sacramento River. The amounts of the Trinity exports are determined by subtracting Trinity River scheduled flow and targeted carryover storage from the forecasted Trinity water supply.

The seasonal timing of Trinity exports is a result of determining how to make best use of a limited volume of Trinity export (in concert with releases from Shasta Lake) to help conserve cold water pools and meet temperature objectives on the upper Sacramento and Trinity Rivers, as well as power production economics. A key consideration in the export timing determination is the thermal degradation that occurs in Whiskeytown Lake due to the long residence time of transbasin exports in the lake.

To minimize the thermal degradation effects, transbasin export patterns are typically scheduled by an operator to provide an approximate 120 TAF volume to occur in late spring to create a thermal connection to the Spring Creek Powerhouse before larger transbasin volumes are scheduled to occur during the hot summer months. Typically, the water flowing from the Trinity Basin through Whiskeytown Lake must be sustained at fairly high rates to avoid warming and to function most efficiently for temperature control. The time period for which effective temperature control releases can be made from Whiskeytown Lake may be compressed when the total volume of Trinity water available for export is limited.

Export volumes from Trinity are made in coordination with the operation of Shasta Lake. Other important considerations affecting the timing of Trinity exports are based on the utility of power generation and allowances for normal maintenance of the diversion works and generation facilities.

Trinity Lake historically reached its greatest storage level at the end of May. With the present pattern of prescribed Trinity releases, maximum storage may occur by the end of April or in early May.

Reclamation maintains at least 600 TAF in Trinity Reservoir, except during the 10 to 15 percent of the years when Shasta Lake is also drawn down. Reclamation addresses end-of-water-year carryover on a case-by-case basis in dry and critically dry water year types with USFWS and NMFS through the WOMT and (b)(2)IT processes.

3A.4.3.1.4 Whiskeytown Reservoir Operations

Whiskeytown Reservoir is normally operated to (1) regulate inflows for power generation and recreation; (2) support upper Sacramento River temperature objectives; and (3) provide for releases to Clear Creek consistent with the CVPIA Anadromous Fish Restoration Program (AFRP) objectives. Although it stores up to 241 TAF, this storage is not normally used as a source of water supply. Two temperature curtains in Whiskeytown Reservoir were installed in 1993 to pass cold water through the reservoir and to help regulate the temperature range requirements of salmon eggs and sac-fry. The curtains were made of reinforced rubber sheets that form a continuous barrier under the water. The Oak Bottom Temperature Control Curtain or OBTCC is located in the upstream portion of the reservoir and causes inflowing cold water to sink to the bottom. The OBTCC was originally 600 feet long and reached a depth of 40 feet. However, the OBTCC was damaged and cannot be fully deployed. The curtain is estimated to be repaired by 2030 under the No Action Alternative, depending on available funding and subject to environmental compliance requirements. The Spring Creek curtain is located near Whiskeytown Dam to maximize cold water flows through the intakes into the Spring Creek Power Conduit. It was damaged significantly, and was replaced in 2011.

Implementation of 2009 National Marine Fisheries Service Biological Opinion

In accordance with the 2009 NMFS BO RPA Action I.1.5, Reclamation is required to manage Whiskeytown Lake releases to meet daily water temperatures in Clear Creek at Igo of:

- 60° F from June 1 through September 15
- 56° F from September 15 through October 31

3A.4.3.1.5 Historic Spillway Flows below Whiskeytown Lake

Whiskeytown Lake is annually drawn down by approximately 35 TAF of storage space during November through April to regulate flows for power generation. Heavy rainfall events occasionally result in spillway discharges to Clear Creek, as shown in Table 3A.3 below.

Table 3A.3 Days of Spilling below Whiskeytown and 40-30-30 Index from Water Year 1978 to 2012

Water Year	Days of Spilling	40-30-30 Index
1978	5	AN
1979	0	BN
1980	0	AN
1981	0	D
1982	63	W
1983	81	W
1984	0	W
1985	0	D
1986	17	W
1987	0	D
1988	0	C
1989	0	D
1990	8	C

Water Year	Days of Spilling	40-30-30 Index
1991	0	C
1992	0	C
1993	10	AN
1994	0	C
1995	14	W
1996	0	W
1997	5	W
1998	8	W
1999	0	W
2000	0	AN
2001	0	D
2002	0	D
2003	8	AN
2004	0	BN
2005	0	AN
2006	4	W
2007	0	D
2008	0	C
2009	0	D
2010	6	BN
2011	0	W
2012	0	BN

Notes: W = Wet Year Water Year Type; AN = Above Normal Water Year Type; BN = Below Normal Water Year Type; D = Dry Water Year Type; and C = Critical Dry Water Year Type.

Operations at Whiskeytown Lake during flood conditions are complicated by its operational relationship with the Trinity River, Sacramento River, and Clear Creek. On occasion, imports of Trinity River water to Whiskeytown Reservoir may be suspended to avoid aggravating high flow conditions in the Sacramento Basin. Joint temperature control objectives also similarly interact among the Trinity River, Clear Creek, and Sacramento River.

3A.4.3.1.6 Fish and Wildlife Requirements on Clear Creek

CVPIA (b)(2) operations and water rights permits issued by the SWRCB for diversions from Trinity River and Clear Creek specify minimum downstream releases from Lewiston and Whiskeytown Dams, respectively. The following agreements govern releases from Whiskeytown Lake.

- A 1960 Memorandum of Agreement (MOA) with CDFW established minimum flows to be released to Clear Creek at Whiskeytown Dam, as summarized in Table 3A.4.

- A 1963 release schedule for Whiskeytown Dam was developed with USFWS and implemented, but never finalized. Although this release schedule was never formalized, Reclamation has used this flow schedule for minimum flows since May 1963.
- Water rights permit modification in 2002 that allowed release of water from Whiskeytown Lake into Clear Creek for the purposes of maintenance of fish and wildlife resources as provided for in Provision 2.1 of Instream Flow Preservation Agreement by and among Reclamation, USFWS, and DFW, dated August 11, 2000.
- Dedication of (b)(2) water on Clear Creek provides instream flows below Whiskeytown Dam greater than the minimum flows (that would have occurred under pre-CVPIA conditions). Instream flow objectives are usually taken from the AFRP plan, in consideration of spawning and incubation of fall-run Chinook Salmon. Augmentation in the summer months is usually in consideration of water temperature objectives for steelhead and in late summer for spring-run Chinook Salmon.

Table 3A.4 Minimum Flows at Whiskeytown Dam

Period	Minimum flow (cfs)
1960 MOA with CDFW	
January 1–February 28(29)	50
March 1–May 31	30
June 1–September 30	0
October 1–October 15	10
October 16–October 31	30
November 1–December 31	100
1963 USFWS Proposed Normal year flow	
January 1–October 31	50
November 1–December 31	100
1963 USFWS Proposed Critical year flow	
January 1–October 31	30
November 1–December 31	70
2002 Water Right Modification for Critical year flow	
January 1–October 31	50
November 1–December 31	70

The 2009 NMFS BO RPA requires Reclamation to release spring attraction flows for adult spring-run Chinook Salmon (Action I.1.1) and channel maintenance flows in Clear Creek (Action I.1.2); and to continue gravel augmentation programs initiated under CVPIA. The spring attraction flows are to be released from Whiskeytown Lake into Clear Creek in at least two pulse flows of at least 600 cfs, each lasting at least 3 days, in May and June.

Under the 2009 NMFS BO RPA, the channel maintenance flows are to be released at a minimum flow of 3,250 cfs for 24 hours, which exceeds the 1,240 cfs capacity of the Whiskeytown Dam outlet to Clear Creek. This action is to occur seven times in a ten year period. Therefore, to provide channel maintenance flows, the Whiskeytown Lake water elevation must be increased to provide flow of water over the Glory Hole inlet. The Glory Hole is designed to operate with the higher water elevations expected during flood events. However, during non-flood periods, raising the water elevations and operating the Glory Hole inlet can cause safety concerns for recreationists along the Whiskeytown Lake shoreline.

3A.4.3.1.7 Spring Creek Debris Dam Operations

The Spring Creek Debris Dam (SCDD) is a feature of the Trinity Division of the CVP. It was constructed to regulate runoff containing debris and acid mine drainage from Spring Creek, a tributary to the Sacramento River that enters Keswick Reservoir. The SCDD can store approximately 5.8 TAF of water. Operation of SCDD and Shasta Dam has allowed some control of the toxic wastes with dilution criteria. In January 1980, Reclamation, CDFW, and SWRCB executed a Memorandum of Understanding (MOU) to implement actions that protect the Sacramento River system from heavy metal pollution from Spring Creek and adjacent watersheds. The MOU identifies agency actions and responsibilities, and establishes release criteria based on allowable concentrations of total copper and zinc in the Sacramento River below Keswick Dam.

The MOU states that Reclamation agrees to operate to dilute releases from SCDD (according to the criteria and schedules provided), that such operation would not cause flood control parameters on the Sacramento River to be exceeded, and would not unreasonably interfere with other Project requirements as determined by Reclamation. The MOU also specifies a minimum schedule for monitoring copper and zinc concentrations at SCDD and in the Sacramento River below Keswick Dam. Reclamation has primary responsibility for the monitoring; however, CDFW and RWQCB also collect and analyze samples on an as-needed basis. Due to more extensive monitoring, improved sampling and analysis techniques, and continuing cleanup efforts in the Spring Creek drainage basin, Reclamation now operates SCDD to target the more stringent Central Valley Region Water Quality Control Board Plan (CVRWQCB Basin Plan) criteria in addition to the MOU goals. Instead of the total copper and total zinc criteria contained in the MOU, Reclamation operates SCDD releases and Keswick dilution flows to not exceed the CVRWQCB Basin Plan standards of 0.0056 milligrams per liter (mg/L) dissolved copper and 0.016 mg/L dissolved zinc. Release rates are estimated from a mass balance calculation of the copper and zinc in the debris dam release and in the river.

In order to minimize the build-up of metal concentrations in the Spring Creek arm of Keswick Reservoir, releases from the debris dam are coordinated with releases from the Spring Creek Power Plant to keep the Spring Creek arm of Keswick Reservoir in circulation with the main water body of Keswick Lake.

The operation of SCDD is complicated during major heavy rainfall events. SCDD reservoir can fill to uncontrolled spill elevations in a relatively short time period, anywhere from days to weeks. Uncontrolled spills at SCDD can occur during major flood events on the upper Sacramento River and also during localized rainfall events in the Spring Creek watershed. During flood control events, Keswick releases may be reduced to meet flood control objectives at Bend Bridge when storage and inflow at Spring Creek Reservoir are high.

Because SCDD releases are maintained as a dilution ratio of Keswick releases to maintain the required dilution of copper and zinc, uncontrolled spills can and have occurred from SCDD. In this operational situation, high metal concentration loads during heavy rainfall are usually limited to areas immediately downstream of Keswick Dam because of the high runoff entering the Sacramento River, adding dilution flow. In the operational situation when Keswick releases are increased for flood control purposes, SCDD releases are also increased in an effort to reduce spill potential.

In the operational situation when heavy rainfall events would fill SCDD and Shasta Lake would not reach flood control conditions, increased releases from CVP storage may be required to maintain desired dilution ratios for metal concentrations. Reclamation has voluntarily released additional water from CVP storage to maintain release ratios for toxic metals below Keswick Dam. Reclamation has typically attempted to meet the CVRWQCB Basin Plan standards but these releases have no established criteria and are dealt with on a case-by-case basis. Since water released for dilution of toxic spills is likely to be in excess of other CVP requirements, such releases increase the risk of a loss of water for other beneficial purposes.

3A.4.3.2 Shasta Division and Sacramento River Division

The CVP's Shasta Division includes facilities that conserve water in the Sacramento River for:

- Flood control
- Navigation maintenance
- Agricultural water supplies
- M&I water supplies
- Hydroelectric power generation
- Conservation of fish in the Sacramento River
- Protection of the Delta from intrusion of saline ocean water.

The Shasta Division includes Shasta Dam, Lake, and Power Plant; Keswick Dam, Reservoir, and Power Plant, and the Shasta Temperature Control Device.

The Sacramento River Division was authorized after completion of the Shasta Division. The Sacramento River Division includes facilities for the diversion and conveyance of water to CVP contractors on the west side of the Sacramento River. The division includes the Sacramento Canals Unit, which was authorized in 1950 and consists of the Red Bluff Pumping Plant, the Corning Pumping Plant, and the Corning and Tehama-Colusa Canals. Total authorized diversions for the Sacramento River Division are approximately 2.8 MAF. Historically the total diversion has varied from 1.8 MAF in a critically dry year to the full 2.8 MAF in a wet year, including diversions by Sacramento River Settlement contractors and CVP water service contractors. Sacramento River Settlement contractors divert water under their own water rights and through their own facilities.

The Sacramento Canals Unit was authorized to supply irrigation water to over 200,000 acres of land in the Sacramento Valley, principally in Tehama, Glenn, Colusa, and Yolo counties. Black Butte Dam, which is operated by the U.S. Army Corps of Engineers (USACE), also provides supplemental water to the Tehama-Colusa Canals as it crosses Stony Creek. The operations of the Shasta and Sacramento River divisions are presented together because of their operational inter-relationships.

Shasta Dam is located on the Sacramento River just below the confluence of the Sacramento, McCloud, and Pit Rivers. The dam regulates the flow from a drainage area of approximately 6,649 square miles. Shasta Dam was completed in 1945, forming Shasta Lake, which has a maximum storage capacity of 4.552 MAF. Water in Shasta Lake is released through or around the Shasta Power Plant to the Sacramento River, where it is re-regulated downstream by Keswick Dam. A small amount of water is diverted directly from Shasta Lake for M&I uses by local communities.

Keswick Reservoir was formed by the completion of Keswick Dam in 1950. It has a capacity of approximately 23.8 TAF and serves as an afterbay for releases from Shasta Dam and for discharges from the Spring Creek Power Plant. All releases from Keswick Reservoir are made to the Sacramento River from Keswick Dam. The dam has a fish trapping facility that operates in conjunction with the Coleman National Fish Hatchery on Battle Creek.

3A.4.3.2.1 Flood Control

Flood control objectives for Shasta Lake require that releases be restricted to quantities that would not cause downstream flows or stages to exceed specified levels. These include a flow of 79,000 cfs at the tailwater of Keswick Dam, and a stage of 39.2 feet in the Sacramento River at Bend Bridge gauging station, which corresponds to a flow of approximately 100,000 cfs. Flood control operations are based on regulating criteria developed by the USACE pursuant to the provisions of the Flood Control Act of 1944. Maximum flood space reservation is 1.3 MAF, with variable storage space requirements based on an inflow parameter.

Flood control operation at Shasta Lake requires forecasting runoff conditions into Shasta Lake and runoff conditions of unregulated creek systems downstream from Keswick Dam as far in advance as possible. A critical element of upper Sacramento River flood operations is the local runoff entering the Sacramento River between Keswick Dam and Bend Bridge.

The unregulated creeks (major creek systems are Cottonwood Creek, Cow Creek, and Battle Creek) in this reach of the Sacramento River can be very sensitive to a large rainfall event and produce high rates of runoff into the Sacramento River in short time periods. During large rainfall and flooding events, the local runoff between Keswick Dam and Bend Bridge can exceed 100,000 cfs.

The travel time required for release changes at Keswick Dam to affect Bend Bridge flows is approximately 8 to 10 hours. If the total flow at Bend Bridge is projected to exceed 100,000 cfs, the release from Keswick Dam is decreased to maintain Bend Bridge flow below 100,000 cfs. As the flow at Bend Bridge is projected to recede, the Keswick Dam release is increased to evacuate water stored in the flood control space at Shasta Lake. Changes to Keswick Dam releases are scheduled to minimize rapid fluctuations in the flow at Bend Bridge.

The flood control criteria for Keswick releases specify that releases should not be increased more than 15,000 cfs or decreased more than 4,000 cfs in any 2-hour period. The restriction on the rate of decrease is intended to prevent sloughing of saturated downstream channel embankments caused by rapid reductions in river stage. In rare instances, the rate of decrease may have to be accelerated to avoid exceeding critical flood stages downstream.

3A.4.3.2.2 Fish and Wildlife Requirements in the Sacramento River

Reclamation operates the Shasta, Sacramento River, and Trinity River divisions of the CVP to meet (to the extent possible) the provisions of SWRCB Order 90-05. An April 5, 1960, MOA between Reclamation and CDFW originally established flow objectives in the Sacramento River for the protection and preservation of fish and wildlife resources. The agreement provided for minimum releases into the natural channel of the Sacramento River at Keswick Dam for normal and critically dry years (Table 3A.5). Since October 1981, Keswick Dam has operated based on a minimum release of 3,250 cfs for normal years from September 1 through the end of February, in accordance with an agreement between Reclamation and CDFW. This release schedule was included in SWRCB Order 90-05, which maintains a minimum release of 3,250 cfs at Keswick Dam and Red Bluff Pumping Plant from September through the end of February in all water years except critically dry years.

Table 3A.5 Minimum Flow Requirements and Objectives (cfs) on the Sacramento River below Keswick Dam

Period	MOA	Water Rights 90-5	MOA and Water Rights 90-5
Water Year Type	**Normal**	**Normal**	**Critically Dry**
January 1–February 28(29)	2,600	3,250	2,000
March 1–March 31	2,300	2,300	2,300
April 1–April 30	2,300	2,300	2,300
May 1–August 31	2,300	2,300	2,300
September 1–September 30	3,900	3,250	2,800
October 1–November 30	3,900	3,250	2,800
December 1–December 31	2,600	3,250	2,000

The 1960 MOA between Reclamation and CDFW provides that releases from Keswick Dam (from September 1 through December 31) are made with minimum water level fluctuation or change to protect salmon to the extent compatible with other operations requirements.

Reclamation usually attempts to reduce releases from Keswick Dam to the minimum fishery requirement by October 15 each year and to minimize changes in Keswick releases between October 15 and December 31. Releases may be increased during this period to meet downstream needs such as higher outflows in the Delta to meet water quality requirements, or to meet flood control requirements. Releases from Keswick Dam may be reduced when downstream tributary inflows increase to a level that would meet flow needs. Reclamation attempts to establish a base flow that minimizes release fluctuations to reduce impacts to fisheries and bank erosion from October through December.

The Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991 changed agricultural water diversion practices along the Sacramento River and has affected Keswick Dam release rates in the fall. This program is generally known as the Rice Straw Decomposition and Waterfowl Habitat Program. Prior to this change, the preferred method of clearing fields of rice stubble was to systematically burn it. Today, rice field burning has been phased out due to air quality concerns and has been replaced in some areas by a program of rice field flooding that decomposes rice stubble and provides additional waterfowl habitat. The result has been an increase in water demand to flood rice fields in October and November, which has increased the need for higher Keswick releases in all but the wettest of fall months.

3A.4.3.2.3 Minimum Flow for Navigation as Measured at Wilkins Slough

Historical commerce on the Sacramento River resulted in a CVP authorization to maintain minimum flows of 5,000 cfs at Chico Landing to support navigation in accordance with references to Sacramento River Division operations in the River and Harbors Act of 1935 and the Rivers and Harbors Act of 1937. Currently, there is no commercial traffic between Sacramento and Chico Landing, and USACE has not dredged this reach to preserve channel depths since 1972. However, long-time water users diverting from the river have set their pump intakes just below this level and cannot easily divert when lower river elevations occur with lower flows. Therefore, the CVP is operated to meet the navigation flow requirement of 5,000 cfs to Wilkins Slough, (gauging station on the Sacramento River), under all but the most critical water supply conditions, to facilitate pumping and use of screened diversions.

At flows below 5,000 cfs at Wilkins Slough, diverters have reported increased pump cavitation as well as greater pumping head requirements. Diverters are able to operate for extended periods at flows as low as 4,000 cfs at Wilkins Slough, but pumping operations become severely affected and some pumps become inoperable at flows lower than this. Flows may drop as low as 3,500 cfs for short periods while changes are made in Keswick releases to reach target levels at Wilkins Slough, but using the 3,500 cfs rate as a target level for an extended period would have major impacts on diverters.

Implementation of 2009 National Marine Fisheries Service Biological Opinion

The 2009 NMFS BO Action I.4 required Reclamation to evaluate approaches to provide minimum flows at Wilkins Slough of less than 5,000 cfs.

3A.4.3.2.4 Water Temperature Operations in the Upper Sacramento River

Water temperature on the Sacramento River system is influenced by several factors, including the relative water temperatures and ratios of releases from Shasta Dam and from the Spring Creek Power Plant. The temperature of water released from Shasta Dam and the Spring Creek Power Plant is a function of the reservoir temperature profiles at the discharge points at Shasta and Whiskeytown, the depths from which releases are made, the seasonal management of the deep cold water reserves, ambient seasonal air temperatures and other climatic conditions, tributary accretions and water temperatures, and residence time in Keswick, Whiskeytown and Lewiston Reservoirs, and in the Sacramento River. Water temperature in the upper Sacramento River is governed by current water rights permit requirements.

In 1990 and 1991, SWRCB issued Water Rights Orders 90-05 and 91-01 modifying Reclamation's water rights for the Sacramento River. The orders stated that Reclamation shall operate Keswick and Shasta Dams and the Spring Creek Power Plant to meet a daily average water temperature of 56°F as far downstream in the Sacramento River as practicable during periods when higher temperature would be harmful to fisheries. The optimal control point is the Red Bluff Pumping Plant.

Under the orders, the water temperature compliance point may be modified when the objective cannot be met at Red Bluff Pumping Plant. In addition, SWRCB Order 90-05 modified the minimum flow requirements initially established in the

1960 MOA for the Sacramento River below Keswick Dam. The water right orders also recommended the construction of a Shasta Temperature Control Device (TCD) to improve the management of the limited cold water resources.

Pursuant to SWRCB Orders 90-05 and 91-01, Reclamation configured and implemented the Sacramento-Trinity Water Quality Monitoring Network to monitor temperature and other parameters at key locations in the Sacramento and Trinity Rivers. SWRCB orders also required Reclamation to establish the SRTTG to formulate, monitor, and coordinate temperature control plans for the upper Sacramento and Trinity Rivers. This group consists of representatives from Reclamation, SWRCB, NMFS, USFWS, CDFW, Western, DWR, and the Hoopa Valley Indian Tribe.

Each year, with finite cold water resources and competing demands usually an issue, the SRTTG devise operation plans with the flexibility to provide the best protection consistent with the CVP's temperature control capabilities and considering the annual needs and seasonal spawning distribution monitoring information for winter-run and fall-run Chinook Salmon. In every year since SWRCB issued the orders, those plans have included modifying the Red Bluff Pumping Plant compliance point to make best use of the cold water resources based on the location of spawning Chinook Salmon. These modifications occurred in 2012. Reports are submitted periodically to SWRCB over the temperature control season defining our temperature operation plans. SWRCB has overall authority to determine if the plan is sufficient to meet water right permit requirements.

Implementation of 2009 National Marine Fisheries Service Biological Opinion

The 2009 NMFS BO RPA Action I.2.1 requires Reclamation to achieve the following carryover storage performance measures for Shasta Lake to maintain the cold water volume needed to meet downstream temperature requirements.

- 87 percent of the years: 2,200 TAF end-of-September storage
- 82 percent of the years: .2,200 TAF end-of-September storage and 3,800 TAF end-of-April storage in following year
- 40 percent of the years: 3,200 TAF end-of-September storage

The 2009 NMFS BO RPA requires Reclamation to achieve the following temperature requirements over a ten year running average.

- 95 percent of the years: Clear Creek temperature compliance
- 85 percent of the years: Ball's Ferry temperature compliance
- 40 percent of the years: Jelly's Ferry temperature compliance
- 15 percent of the years: Bend Bridge temperature compliance

From November through February, if the end-of-September storage in Shasta Lake is equal to or greater than 2,400 TAF by October 15, Reclamation is required to work with NMFS, and CDFW to develop a release schedule that would consider the need to maintain flood control space in Shasta Lake (which results in a maximum storage of 3,250 TAF at the end-of-November), and a the need to provide stable Sacramento River flows and elevations during this period. If the end-of-September storage in Shasta Lake is between 1,900 and 2,400 TAF, a monthly release schedule for this period must be developed to consider maintaining Keswick Reservoir releases between 3,250 and 7,000 cfs; flows to support fall-run Chinook Salmon in accordance with the CVPIA AFRP guidelines; and provide for conservative Keswick Reservoir releases in drier years. If end-of-September storage in Shasta Lake is less than 1,900 TAF, Keswick Reservoir releases are reduced to 3,250 cfs in early October unless the flows are needed for temperature compliance, and if needed, reduce discretionary deliveries; and develop projected monthly deliveries for the period to maintain releases of 3,250 cfs, and if needed, reduce CVP and SWP Delta exports to meet Delta outflow and other legal requirements.

From April 15 through May 15, water temperatures are to be maintained at 56° F between Ball's Ferry and Bend Bridge. In addition, in March, Reclamation uses projections of CVP water availability, based upon a 90 percent forecast, to project the ability to meet temperature compliance at Ball's Ferry and achieve an end-of-September storage in Shasta Lake of 2,200 TAF. If the projections indicate that only one of the objectives can be met, releases from Keswick Reservoir would be reduced to 3,250 cfs unless another release pattern is agreed upon with NMFS. The release pattern would consider actions to maintain monthly average flows for Reclamation's non-discretionary delivery obligations; provide flows for the biological needs of spring life stages of species addressed in the 2009 NMFS BO; and approaches, including reductions in Delta exports, to meet Delta outflow and other legal requirements while not reducing Keswick Reservoir releases. If the projections indicate that the Clear Creek temperature compliance point or the 1,900 TAF end-of-September Shasta Lake storage cannot be met, Reclamation would develop a plan to manage the cold water pool in Whiskeytown Reservoir and Shasta Lake through several operational changes, including a reduction in the Wilkins Slough flow criteria (discussed above) to 4,000 cfs.

For operations from May 15 through October, Reclamation would develop a Temperature Management Plan to achieve temperatures of 56° F or less at compliance locations between Ball's Ferry and Bend Bridge.

3A.4.3.2.5 Shasta Temperature Control Device

Construction of the TCD at Shasta Dam was completed in 1997. This device is designed for greater flexibility in managing the cold water reserves in Shasta Lake while enabling hydroelectric power generation to occur and to improve salmon habitat conditions in the upper Sacramento River. The TCD is also designed to enable selective release of water from varying lake levels through the power plant in order to manage and maintain adequate water temperatures in the Sacramento River downstream of Keswick Dam.

Prior to construction of the Shasta TCD, Reclamation released water from Shasta Dam's low-level river outlets to alleviate high water temperatures during critical periods of the spawning and incubation life stages of the winter-run Chinook Salmon stock. The release of water through the low-level river outlets was a major facet of Reclamation's efforts to control upper Sacramento River temperatures from 1987 through 1996. Releases through the low-level outlets bypass the power plant and result in a loss of hydroelectric generation at the Shasta Power Plant.

The seasonal operation of the TCD is generally as follows: during mid-winter and early spring the highest possible elevation gates are utilized to draw from the upper portions of the lake to conserve deeper colder resources (Table 3A.6). During late spring and summer, the operators begin the seasonal progression of opening deeper gates as Shasta Lake elevation decreases and cold water resources are utilized. In late summer and fall, the TCD side gates are opened to utilize the remaining cold water resource below the Shasta Power Plant elevation in Shasta Lake.

Table 3A.6 Shasta Temperature Control Device Gates with Elevation and Storage

TCD Gates	Shasta Elevation with 35 feet of Submergence (feet)	Shasta Storage (MAF)
Upper Gates	1,035	~3.65
Middle Gates	935	~2.50
Pressure Relief Gates	840	~0.67
Side Gates	720*	~0.01

Note:
*Low level intake bottom

The seasonal progression of the Shasta TCD operation is designed to maximize the conservation of cold water resources deep in Shasta Lake, until the time the resource is of greatest management value for fishery management purposes. Recent operational experience with the Shasta TCD has demonstrated significant operational flexibility improvement for cold water conservation and upper Sacramento River water temperature and fishery habitat management purposes. Recent operational experience has also demonstrated the Shasta TCD has significant leaks that are inherent to TCD design. Also, operational uncertainties cumulatively impair the seasonal performance of the Shasta TCD to a greater degree than was anticipated in previous analysis and modeling used to describe long-term Shasta TCD benefits.

3A.4.3.2.6 CVPIA 3406 (b)(2) Operations on the Upper Sacramento River

Dedication of (b)(2) water on the Sacramento River provides instream flows below Keswick Dam greater than those that would have occurred under pre-CVPIA conditions, e.g., the fish and wildlife requirements specified in SWRCB Order 90-5 and the temperature criteria formalized in the 1993 NMFS winter-run Chinook Salmon BO as the base. Instream flow objectives from October 1 to April 15 (typically April 15 is when water temperature objectives for winter-run Chinook Salmon become the determining factor) are usually selected to minimize dewatering of redds and provide suitable habitat for salmonid spawning, incubation, rearing, and migration.

3A.4.3.2.7 Anderson-Cottonwood Irrigation District Diversion Dam

Anderson Cottonwood Irrigation District (ACID) holds senior water rights and has diverted into the ACID Canal for irrigation along the west side of the Sacramento River between Redding and Cottonwood since 1916. The United States and ACID signed a contract providing for Project water service and agreement on diversion of water. ACID diverts to its main canal (on the right bank of the river) from a diversion dam located in Redding about 5 miles downstream from Keswick Dam.

Close coordination between Reclamation and ACID is required for regulation of river flows to ensure safe operation of ACID's diversion dam during the irrigation season. The irrigation season for ACID runs from April through October.

Keswick release rate decreases required for the ACID operations are limited to 15 percent in a 24-hour period and 2.5 percent in any one hour. Therefore, advance notification is important when scheduling decreases to allow for the installation or removal of the ACID diversion dam.

Red Bluff Pumping Plant

The Red Bluff Pumping Plant and Fish Screen were completed in August 2012 to replace the Red Bluff Diversion Dam and improve fish passage conditions on the Sacramento River at Red Bluff, California. The facility includes a 1,118-foot-long flat-plate fish screen, intake channel, 2,500 cfs capacity pumping plant and discharge conduit to divert water from the Sacramento River into the Tehama-Colusa and Corning canals.

In 2011, the dam gates were permanently placed in the open position for free migration of fish while ensuring continued water deliveries by way of the Red Bluff Pumping Plant.

3A.4.3.2.8 Tehama-Colusa Canal Authority Operations

The intake for the Tehama-Colusa Canal and the Corning Canal is located on the Sacramento River approximately 2 miles southeast of Red Bluff. Water is diverted through fish passage facilities along the Sacramento River and lifted by a 2,500 cfs pumping plant into a settling basin for continued conveyance in the Tehama-Colusa Canal and the Corning Canal. Reclamation operates the pumping plant in accordance with BOs issued by USFWS and NMFS specifically for the Red Bluff Pumping Plant.

The Tehama-Colusa Canal is a lined canal extending from the settling basin 111 miles south from the Red Bluff Pumping Plant and provides irrigation service on the west side of the Sacramento Valley in Tehama, Glenn, Colusa, and northern Yolo counties. Construction of the Tehama-Colusa Canal began in 1965, and it was completed in 1980.

The Corning Pumping Plant lifts water approximately 56 feet from the screened portion of the settling basin into the unlined, 21 mile-long Corning Canal. The Corning Canal was completed in 1959, to provide water to the CVP contractors in Tehama County that could not be served by gravity from the Tehama-Colusa Canal. The Tehama-Colusa Canal Authority (TCCA) operates both the Tehama-Colusa and Corning canals.

3A.4.3.3 American River Division

Reclamation's Folsom Reservoir, the largest reservoir in the American River watershed, has a capacity of 967 TAF. Folsom Dam, located approximately 30 miles upstream from the confluence with the Sacramento River, is operated as a major component of the CVP. The American River Division includes facilities that provide conservation of water on the American River for flood control, fish and wildlife protection, recreation, protection of the Delta from intrusion of saline ocean water, irrigation and M&I water supplies, and hydroelectric power generation. Initially authorized features of the American River Division included Folsom Dam, Lake, and Power Plant; Nimbus Dam and Power Plant, and Lake Natoma.

Table 3A.7 provides Reclamation's annual water deliveries for the period 2000 through 2010 in the American River Division. The totals reveal an increasing trend in water deliveries over that period. For this EIS under the No Action Alternative, the American River Division water demands are modeled assuming that water users can utilize their full contract/agreement values with average annual deliveries of about 800 TAF per year. However, the American River contractors are not currently using this volume. The modeled deliveries vary depending on modeled annual water allocations. The "present level of American River water demands" has been previously modeled at 325 TAF/year based upon information collected over 10 years ago. The recently completed Urban Water Management Plans (UWMPs) for the American River water users indicate that the current average annual water use is about 500 TAF/year. It is anticipated that due to fast growth and new water agreements, the actual usage (as projected by the UWMPs) could increase to about 650 to 800 TAF/year over the next 10 years, depending upon growth rates and implementation of water demand reduction measures.

Table 3A.7 Annual Water Delivery—American River Division

Year	Water Delivery (TAF)*
2000	174
2001	223
2002	221
2003	270
2004	266
2005	297
2006	280
2007	113
2008	233
2009	260
2010	125
2011	269
2012	279

Notes:
* Annual Water Delivery data has been enhanced and the annual totals include CVP contracts, water rights (including water rights for the City of Sacramento), and other deliveries (e.g., Folsom South Canal losses).

TAF = thousand acre-feet

Releases from Folsom Dam are re-regulated approximately 7 miles downstream by Nimbus Dam. This facility is also operated by Reclamation as part of the CVP. Nimbus Dam creates Lake Natoma, which serves as a forebay for diversions to the Folsom South Canal. This CVP facility serves water to M&I users in Sacramento County. Releases from Nimbus Dam to the American River pass through the Nimbus Power Plant, or, at flows in excess of 5,000 cfs, the spillway gates.

Although Folsom Reservoir is the main storage and flood control reservoir on the American River, numerous other small non-federal reservoirs in the upper basin provide hydroelectric generation and water supply. None of the upstream reservoirs have any specific flood control responsibilities. The total upstream reservoir storage above Folsom Reservoir is approximately 820 TAF. Ninety percent of this upstream storage is contained by five reservoirs: French Meadows (136 TAF); Hell Hole (208 TAF); Loon Lake (76 TAF); Union Valley (271 TAF); and Ice House (46 TAF). Reclamation has agreements with the operators of some of these reservoirs to coordinate operations for releases.

French Meadows and Hell Hole reservoirs, located on the Middle Fork of the American River, are owned and operated by the Placer County Water Agency (PCWA). The PCWA provides wholesale water to agricultural and urban areas within Placer County. For urban areas, PCWA operates water treatment plants and sells wholesale treated water to municipalities that provide retail delivery to their customers. The cities of Rocklin and Lincoln receive water from PCWA, Loon Lake, and Union Valley and Ice House reservoirs on the South Fork of the American River, are all operated by the Sacramento Municipal Utilities District (SMUD) for hydropower purposes.

3A.4.3.3.1 Flood Control

Flood control requirements and regulating criteria are specified by the USACE and described in the Folsom Dam and Lake, American River, California Water Control Manual (U.S. Army Corps of Engineers 1987). Flood control objectives for the Folsom unit require that the dam and lake be operated to:

- Protect the City of Sacramento and other areas within the Lower American River floodplain against reasonable probable rain floods.
- Control flows in the American River downstream from Folsom Dam to existing channel capacities, insofar as practicable, and reduce flooding along the lower Sacramento River and in the Delta in conjunction with other CVP Projects.
- Provide the maximum amount of water conservation storage without impairing the flood control functions of the reservoir.
- Provide the maximum amount of power practicable and be consistent with required flood control operations and the conservation functions of the reservoir.

From June 1 through September 30, no flood control storage restrictions exist. From October 1 through November 16 and from April 20 through May 31, reserving storage space for flood control is a function of the date only, with full flood reservation space required from November 17 through February 7. Beginning February 8 and continuing through April 20, flood reservation space is a function of both date and current hydrologic conditions in the basin.

If the inflow into Folsom Reservoir causes the storage to encroach into the space reserved for flood control, releases from Nimbus Dam are increased. Flood control regulations prescribe the following releases when water is stored within the flood control reservation space.

- Maximum inflow (after the storage entered into the flood control reservation space) of as much as 115,000 cfs, but not less than 20,000 cfs, when inflows are increasing.
- Releases would not be increased more than 15,000 cfs or decreased more than 10,000 cfs during any two-hour period.
- Flood control requirements override other operational considerations in the fall and winter period. Consequently, short-term changes in river releases may occur.

In February 1986, the American River Basin experienced a significant flood event. Folsom Dam and Folsom Reservoir moderated the flood event and performed the flood control objectives, but with serious operational strains and concerns in the Lower American River and for the overall protection of the communities in the floodplain areas. A similar flood event occurred in January 1997. Since then, significant review and enhancement of Lower American River flooding issues have occurred and are ongoing. A major element of those efforts has been the Sacramento Area Flood Control Agency (SAFCA)-sponsored flood control plan diagram for Folsom Reservoir.

Since 1996, Reclamation has operated according to modified flood control criteria, which reserve 400 to 670 TAF of flood control space in Folsom Reservoir in combination with three upstream reservoirs. This flood control plan, which provides additional protection for the Lower American River, is implemented through an agreement between Reclamation and SAFCA. The terms of the agreement allow some of the empty reservoir space in Hell Hole, Union Valley, and French Meadows to be treated as if it were available in Folsom Reservoir.

The SAFCA release criteria are generally equivalent to the USACE plan, except the SAFCA diagram may prescribe flood releases earlier than the USACE plan. The SAFCA diagram also relies on Folsom Dam outlet capacity to make the earlier flood releases. The outlet capacity at Folsom Dam is currently limited to 32,000 cfs based on lake elevation. However, in general the SAFCA plan diagram provides greater flood protection than the existing USACE plan for communities in the American River floodplain.

Required flood control space under the SAFCA diagram begin to decrease on March 1. Between March 1 and April 20, the rate of filling is a function of the date and available upstream space. As of April 21, the required flood reservation is about 225 TAF. From April 21 to June 1, the required flood reservation is a function of the date only, with Folsom Reservoir storage permitted to fill completely on June 1.

Reclamation and USACE are jointly working on construction of an auxiliary spillway at Folsom Dam that would assist in meeting the established flood damage reduction objectives for the Sacramento area while continuing to preserve and expedite safely passing the Probable Maximum Flood. This project is commonly referred as the Joint Federal Project. Other partners in this project include DWR and SAFCA.

USACE (and Reclamation as the National Environmental Policy Act [NEPA] cooperating agency) is also undertaking a Folsom Dam Reoperation Study to develop, evaluate, and recommend changes to the flood control operations of the Folsom Dam project that would further the goal of reduced flood risk for the Sacramento area. Operational changes may be necessary to fully realize the flood risk reduction benefits of the additional operational capabilities created by completion of the Joint Federal Project, and the increased system capabilities provided by the implemented and authorized features of the Common Features

Project (a project being carried out by USACE and designed to strengthen the American River levees so they can safely pass a flow of 160,000 cfs); and those anticipated to be provided by completion of the authorized Folsom Dam Mini-Raise Project. The Folsom Dam Reoperation Study would also consider improved forecasts from the National Weather Service. Once a modified flood operation plan is complete, USACE, in cooperation with Reclamation (and DWR as the California Environmental Quality Act [CEQA] lead and SAFCA as the local partner), would consult with USFWS and NMFS relative to any changes to American River and/or system-wide CVP operations that may result.

Additional information related to the flood control criteria for Folsom Dam operations is included by reference to documents prepared by the USACE and SAFCA.

3A.4.3.3.2 Fish and Wildlife Requirements in the Lower American River

The minimum allowable flows in the Lower American River are defined by SWRCB Water Right Decision 893 (D 893), which states that, in the interest of fish conservation, releases should not ordinarily fall below 250 cfs between January 1 and September 15 or below 500 cfs at other times. D-893 minimum flows are rarely the controlling objective of CVP operations at Nimbus Dam. Nimbus Dam releases are nearly always controlled during significant portions of a water year by either flood control requirements or are coordinated with other CVP and SWP releases to meet downstream SWRCB WQCP requirements and CVP water supply objectives. Power regulation and management needs occasionally control Nimbus Dam releases. Nimbus Dam releases are expected to exceed the D-893 minimum flows in all but the driest of conditions.

In July 2006, Reclamation, the Sacramento Area Water Forum and other stakeholders completed a draft technical report establishing a flow and temperature regime intended to improve conditions for fish in the lower American River (i.e., the Lower American River Flow Management Standard [FMS]). Reclamation began operating to the FMS immediately thereafter. The modeling assumptions herein include the operational components of the minimum Lower American River flows, consistent with the proposed FMS. The Sacramento Area Water Forum is currently investigating a revised FMS to better address temperature concerns on the Lower American River. Environmental compliance documentation is currently in the early stages of development. The FMS flows may be met by releases of water pursuant to Section 3406 (b)(2) of the CVPIA, if necessary.

Use of additional (b)(2) flows above the proposed flow standard is envisioned only on a case-by-case basis. Such additional use of (b)(2) flows would be subject to available resources and such use would be coupled with plans to not intentionally cause significantly lower river flows later in a water year. This case-by-case use of additional (b)(2) for minimum flows is not included in the modeling results.

Water temperature control operations in the Lower American River are affected by many factors and operational tradeoffs. These include available cold water resources, Nimbus release schedules, annual hydrology, Folsom power penstock shutter management flexibility, Folsom Dam Urban Water Supply TCD management, and Nimbus Hatchery considerations. Shutter and TCD management provide the majority of operational flexibility used to control downstream temperatures.

During the late 1960s, Reclamation designed a modification to the trashrack structures to provide selective withdrawal capability at Folsom Dam. Folsom Power Plant is located at the foot of Folsom Dam on the right abutment. Three 15-foot-diameter steel penstocks for delivering water to the turbines are embedded in the concrete section of the dam. The centerline of each penstock intake is at elevation 307.0 feet and the minimum power pool elevation is 328.5 feet. A reinforced concrete trashrack structure with steel trashracks protects each penstock intake.

The steel trashracks, located in five bays around each intake, extend the full height of the trashrack structure (between 281 and 428 feet). Steel guides were attached to the upstream side of the trashrack panels between elevation 281 and 401 feet. Forty-five 13-foot steel shutter panels (nine per bay), which are operated by a gantry crane, were installed in these guides to select the level of withdrawal from the reservoir. The shutter panels are attached to one another, in a configuration starting with the top shutter, in groups of three, two, and four.

Selective withdrawal capability on the Folsom Dam Urban Water Supply Pipeline (also known as the TCD) became operational in 2003. The centerline to the 84-inch-diameter Urban Water Supply intake is at elevation 317 feet. An enclosure structure extending from just below the water supply intake to an elevation of 442 feet was attached to the upstream face of Folsom Dam. A telescoping control gate allows for selective withdrawal of water anywhere between 331 and 401 feet elevation under normal operations.

The current objectives for water temperatures in the Lower American River address the needs for steelhead incubation and rearing during the late spring and summer, and for fall–run Chinook Salmon spawning and incubation starting in late October or early November.

A major challenge is determining the starting date at which time the objective is met. Establishing the start date requires a balancing between forecasted release rates, the volume of available cold water, and the estimated date at which time Folsom Reservoir turns over and becomes isothermic. Reclamation works to provide suitable spawning temperatures as early as possible (after November 1) to help avoid temperature related pre-spawning mortality of adults and reduced egg viability. Operations are balanced against the possibility of running out of cold water and increasing downstream temperatures after spawning is initiated and creating temperature-related effects on eggs already in the gravel.

In any given year at Folsom Reservoir, the available cold water resources needed to meet the stated water temperature goals are often insufficient. Only in wetter hydrologic conditions is the volume of cold water resources available sufficient to meet all the water temperature objectives. Therefore, significant operations tradeoffs and flexibilities are part of an annual planning process for coordinating an operation strategy that realistically manages the limited cold water resources available. Reclamation's coordination on the planning and management of cold water resources is done through the (b)(2)IT and ARG groups discussed above.

The management process begins in the spring as Folsom Reservoir fills. All penstock shutters are put in the down position to isolate the colder water in the reservoir below an elevation of 401 feet. The reservoir water surface elevation must be at least 25 feet higher than the sill of the upper shutter (426 feet) to avoid cavitation of the power turbines. The earliest this can occur is in the month of March, due to the need to maintain flood control space in the reservoir during the winter. The pattern of spring run-off is then a significant factor in determining the availability of cold water for later use. Folsom Reservoir inflow temperatures begin to increase and the lake starts to stratify as early as April. By the time the reservoir is filled or reaches peak storage (sometime in the May through June period), the reservoir is highly stratified, with surface waters too warm to meet downstream temperature objectives. There are, however, times during the filling process when use of the spillway gates can be used to conserve cold water.

In the spring of 2003, high inflows and encroachment into the allowable storage space for flood control required releases that exceeded the available capacity of the power plant. Under these conditions, Folsom Dam standard operations involve the use of the river outlets that draw upon the cold water pool. Reclamation reviewed the release requirements, Safety of Dams issues, reservoir water temperature conditions, and the cold water pool benefits, and determined that the spillway gates should be used to make the incremental releases above power plant capacity, thereby conserving cold water for later use. The ability and necessity to take similar actions are evaluated on a case-by-case basis.

The annual temperature management strategy and challenge is to balance conservation of cold water for later use in the fall with the more immediate needs of steelhead during the summer. The planning and forecasting process for the use of the cold water pool begins in the spring as Folsom Reservoir fills. Actual Folsom Reservoir cold water resource availability becomes significantly more defined through the assessment of reservoir water temperature profiles and more definite projections of inflows and storage. Technical modeling analysis begins in the spring for the projected Lower American River water temperature management plan. The significant variables and key assumptions in the analysis include:

- Cold Water Pool volume in March
- Starting reservoir temperature conditions
- Forecasted inflow and outflow quantities
- Assumed meteorological conditions

- Assumed inflow temperatures
- Assumed Folsom Dam Water Supply Intake TCD operations

A series of TCD shutter management scenarios are then incorporated into a model to gain a better understanding of the potential for meeting water temperature needs for both over-summer rearing steelhead and spawning Chinook Salmon in the fall. Most annual strategies contain significant tradeoffs and risks for water temperature management for steelhead and fall-run Chinook Salmon goals and needs due to the frequently limited coldwater resource. The planning process continues throughout the summer. New temperature forecasts and operational strategies are updated as more information on actual operations and ambient conditions is gained.

Meeting both the summer steelhead and fall salmon temperature objectives without negatively impacting other CVP project purposes requires the final shutter pull be reserved for use in the fall to provide suitable fall-run Chinook Salmon spawning temperatures. In most years, the volume of cold water is not sufficient to support strict compliance with the summer water temperature target at the downstream end of the compliance reach at the Watt Avenue Bridge; while at the same time reserving adequate water for fall releases to protect fall-run Chinook Salmon, or in some cases, continuing to meet steelhead over-summer rearing objectives later in the summer. A strategy used under these conditions is to allow the annual compliance location water temperatures to warm towards the upper end of the annual water temperature design value before making a shutter pull. This management flexibility is essential to the annual management strategy to extend the effectiveness of cold water management through the summer and fall months.

The Folsom Water Supply Intake TCD has provided additional flexibility to conserve cold water for later use. As anticipated, the TCD has been operated during the summer months and delivers water that is slightly warmer than that which could be used to meet downstream temperatures (60°F to 62°F), but not so warm as to cause significant treatment issues.

Water temperatures feeding the Nimbus Fish Hatchery were historically too high for hatchery operations during some dry or critical years. Water temperatures in the Nimbus Hatchery are generally in the desirable range of 42°F to 55°F, except for the months of June, July, August, and September. When temperatures get above 60°F during these months, the hatchery must begin to treat the fish with chemicals to prevent disease. When temperatures reach the 60°F to 70°F range, treatment becomes difficult and conditions become increasingly dangerous for the fish. In years when mean daily water temperatures are forecast to approach 70°F, a significant number of steelhead may be released early in the summer. Stocked fish have the opportunity to find suitable rearing habitat within the river and reduced densities result in lower mortality in the group of fish that remain in the hatchery.

Reclamation operates Nimbus Dam Fish Hatchery to maintain the health of the hatchery fish while minimizing the loss of the coldwater pool for fish spawning in the river during fall. Evaluation of Nimbus Dam operations is done on a case-by-case basis and is different in various months and year types. Water temperatures above 70°F in the hatchery usually mean the fish need to be moved to another hatchery or released to the river. The real-time implementation of flow objectives and meeting SWRCB D-1641 Delta standards with the limited water resources of the Lower American River requires a significant coordination effort to manage the cold water resources at Folsom Dam and Reservoir. Reclamation consults with USFWS, NMFS, and CDFW through (b)(2)IT when these types of difficult decisions are needed. In addition, Reclamation communicates with the ARG on real-time data and operational tradeoffs.

A fish diversion weir at the hatcheries blocks Chinook Salmon from continuing upstream and guides them to the hatchery fish ladder entrance. The fish diversion weir consists of eight piers on 30-foot spacing, including two riverbank abutments. Fish rack support frames and walkways are installed each fall using an overhead cable system. A pipe rack is then put in place to support the pipe pickets (0.75-inch steel rods spaced on 2.5-inch centers). The pipe rack rests on a submerged steel I-beam support frame that extends between the piers and forms the upper support structure for a rock-filled crib foundation. The rock foundation has deteriorated with age and is subject to annual scour, which can leave holes in the foundation that allow fish to pass if left unattended. Reclamation released the final environmental documentation in August 2011 that selected an alternative to extend the existing fishway up to Nimbus Dam as the solution to the issues associated with the weir. Construction of the new fishway is expected to be completed by 2030.

Fish rack supports and pickets are installed during early to mid-September of each year to correspond with the beginning of the fall-run Chinook Salmon spawning season. A release equal to or less than 1,500 cfs from Nimbus Dam is required for safety and to provide full access to the fish rack supports. It takes six people approximately 3 days to install the fish rack supports and pickets. In years after high winter flows have caused active scour of the rock foundation, a short period (less than 8 hours) of lower flow (approximately 500 cfs) is needed to remove debris from the I-beam support frames, seat the pipe racks, and fill holes in the rock foundation. Complete installation can take up to 7 days, but is generally completed in less time. The fish rack supports and pickets are usually removed at the end of fall-run Chinook Salmon spawning season (mid-January) when flows are less than 2,000 cfs. If Nimbus Dam releases are expected to exceed 5,000 cfs during the operational period, the pipe pickets are removed until flows decrease.

As described previously, Folsom Reservoir also is operated to release water to meet Delta water quality and flow objectives to improve fisheries conditions, including releases for salinity objectives. Weather conditions combined with tidal action can quickly affect Delta salinity conditions, and therefore, the Delta outflow required to maintain joint standards. If, in this circumstance, it is decided the reasonable course of action is to increase upstream reservoir releases, then the response would likely be to increase Folsom Reservoir releases first because the released water would reach the Delta before flows released from other CVP and SWP reservoirs. Lake Oroville water releases require about 3 days to reach the Delta, while water released from Shasta Lake requires 5 days to travel from Keswick Reservoir to the Delta. As water from the other reservoirs arrives in the Delta, Folsom Reservoir releases can be adjusted downward. These operational practices can reduce the amount of water in Folsom Reservoir, especially during a water year with limited snowpack. The water released from Folsom Reservoir cannot be replaced during the late winter and spring months if the snowpack is not adequate. When these conditions occur, there is a possibility of reduced water deliveries to CVP water service contractors that rely solely upon American River water supplies, including El Dorado County Water Agency, El Dorado Irrigation District, Sacramento Municipal Utility District, cities of Roseville and Folsom, PCWA, San Juan Water District, and Sacramento County Water Agency.

3A.4.3.3.3 CVPIA 3406 (b)(2) Operations on the Lower American River

Dedication of (b)(2) water on the American River provides instream flows below Nimbus Dam greater than those that would have occurred under pre-CVPIA regulations, e.g., the fish and wildlife requirements previously mentioned in the American River Division. Instream flow objectives from October through May generally aim to provide suitable habitat for salmon and steelhead spawning, incubation, and rearing, while considering impacts. Instream flow objectives for June to September endeavor to provide suitable flows and water temperatures for juvenile steelhead rearing, while balancing the effects on temperature operations into October and November.

Flow Fluctuation and Stability Concerns

Through CVPIA, Reclamation has funded studies by CDFW to better define the relationships of Nimbus release rates and rates of change criteria in the Lower American River to minimize the negative effects of necessary Nimbus release changes on sensitive fishery objectives. Reclamation is presently using draft criteria developed by CDFW. The draft criteria have helped reduce the incidence of anadromous fish stranding relative to past historic operations.

The primary operational coordination for potentially sensitive Nimbus Dam release changes is conducted through the (b)(2)IT process. The ARG is another forum to discuss criteria for flow fluctuations. Since 1996 the group has provided input on a number of operational issues and has served as an aid towards adaptively managing releases, including flow fluctuation and stability, and managing water temperatures in the Lower American River to meet the needs of salmon and steelhead.

3A.4.3.4 Delta Division and West San Joaquin Division

3A.4.3.4.1 CVP Facilities

The CVP's Delta Division consists of the DCC, the Contra Costa Canal and Pumping Plants, Contra Loma Dam, Martinez Dam, the Jones Pumping Plant (formerly Tracy Pumping Plant), the TFCF, and the DMC. Collectively these facilities divert water for irrigation and M&I use to the San Francisco Bay Area, the Central Valley, and for transport to Southern California. The DCC is a controlled diversion channel between the Sacramento River and Snodgrass Slough. The CCWD diversion facilities use CVP water resources to serve district customers directly and to operate CCWD's Los Vaqueros Project. The Jones Pumping Plant diverts water from the Delta to the head of the DMC.

3A.4.3.4.2 Delta Cross Channel Operations

The DCC is a gated diversion channel in the Sacramento River near Walnut Grove and Snodgrass Slough. Flows into the DCC from the Sacramento River are controlled by two 60-foot by 30-foot radial gates. When the gates are open, water flows from the Sacramento River through the cross channel to channels of the lower Mokelumne and San Joaquin Rivers toward the interior Delta. The DCC operation improves water quality in the interior Delta by improving circulation patterns of good quality water from the Sacramento River towards Delta diversion facilities.

Reclamation operates the DCC in the open position to (1) improve the movement of water from the Sacramento River to the export facilities at the Banks and Jones Pumping Plants, (2) improve water quality in the southern Delta, and (3) reduce salt water intrusion rates in the western Delta. During the late fall, winter, and spring, the gates are often periodically closed to protect out migrating salmonids from entering the interior Delta. In addition, whenever flows in the Sacramento River at Sacramento reach 20,000 to 25,000 cfs (on a sustained basis) the gates are closed to reduce potential scouring and flooding that might occur in the channels on the downstream side of the gates.

Flow rates through the gates are determined by Sacramento River stage and are not affected by export rates in the south Delta. The DCC also serves as a link between the Mokelumne River and the Sacramento River for small craft, and is used extensively by recreational boaters and fishermen whenever it is open. Because alternative routes around the DCC are quite long, Reclamation tries to provide adequate notice of DCC closures so boaters may plan for the longer excursion.

SWRCB D-1641 DCC standards provide for closure of the DCC gates for fisheries protection at certain times of the year. From November through January, the DCC may be closed for up to 45 days for fishery protection purposes. From February 1 through May 20, the gates are closed for fishery protection purposes. The gates may also be closed for 14 days for fishery protection purposes during the May 21 through June 15 time period. Reclamation determines the timing and duration of the closures after discussion with USFWS, CDFW, and NMFS. These discussions occur through WOMT as part of the weekly review of CVP and SWP operations.

WOMT typically relies on monitoring for fish presence and movement in the Sacramento River and Delta, the salvage of salmon at the Tracy and Skinner facilities, and hydrologic cues when considering the timing of DCC closures. However, the overriding factors are current water quality conditions in the interior and western Delta. From mid-June to November, Reclamation usually keeps the gates open on a continuous basis. The DCC is also usually opened for the busy recreational Memorial Day weekend, if this is possible from a fishery, water quality, and flow standpoint.

The Salmon Decision Process is used by the fishery agencies and Project operators to facilitate the often complex coordination issues surrounding DCC gate operations and the purposes of fishery protection closures, Delta water quality, and/or export reductions. Inputs such as fish life stage and size development, current hydrologic events, fish indicators (such as the Knight's Landing Catch Index and Sacramento Catch Index), and salvage at the export facilities, as well as current and projected Delta water quality conditions, are used to determine potential DCC closures and/or export reductions. The Salmon Decision Process includes "Indicators of Sensitive Periods for Salmon," such as hydrologic changes, detection of spring-run salmon or spring-run salmon surrogates at monitoring sites or the salvage facilities, and turbidity increases at monitoring sites, which trigger the Salmon Decision Process.

Implementation of 2009 National Marine Fisheries Service Biological Opinion

The 2009 NMFS BO RPA Action IV.1.2 requires Reclamation to close the DCC for additional days from October 1 through November 30; December 1 through December 14, unless closures cause adverse impacts on water quality conditions; and December 15 through January 31, if fish are present.

3A.4.3.4.3 Jones Pumping Plant

The CVP and SWP use the Sacramento River, San Joaquin River, and Delta channels to transport water to export pumping plants located in the south Delta. The CVP's Jones Pumping Plant, located about 5 miles north of Tracy, has six available pumps. The Jones Pumping Plant has a permitted diversion capacity of 4,600 cfs and sits at the end of an earth-lined intake channel about 2.5 miles long. With the completion of the Delta-Mendota Canal/California Aqueduct Intertie (described under Joint Project Facilities), this capacity is no longer limited. At the head of the intake channel, louver screens (that are part of the TFCF) intercept fish, which are then collected, held, and transported by tanker truck to release sites far away from the pumping plants. The CVP uses two release sites, one on the Sacramento River near Horseshoe Bend and the other on the San Joaquin River immediately upstream of the Antioch Bridge.

3A.4.3.4.4 Tracy Fish Collection Facility

The TFCF is located in the south-west portion of the Delta and uses behavioral barriers consisting of primary and secondary louvers, to guide entrained fish into holding tanks before transport by truck to release sites within the Delta. The TFCF was designed to handle smaller fish (<200 millimeters [mm]) that would have difficulty fighting the strong pumping plant induced flows since the intake is essentially open to the Delta and also impacted by tidal action.

The primary louvers are located in the primary channel just downstream of the trashrack structure. The secondary louvers are located in the secondary channel just downstream of the traveling water screen. The louvers allow water to pass through onto the pumping plant but the openings between the slats are tight enough and angled against the flow of water so as to prevent most fish from passing between them and instead enter one of four bypass entrances along the louver arrays.

Approximately 52 different species of fish are entrained into the TFCF each year; however, the total numbers are significantly different for the various species salvaged. Also, it is difficult if not impossible to determine exactly how many safely make it all the way to the collection tanks, to be transported back to the Delta. Hauling trucks used to transport salvaged fish to release sites inject oxygen and contain an eight parts per thousand salt solution to reduce stress.

When south Delta hydraulic conditions allow, and within the original design criteria for the TFCF, the louvers are operated with the D-1485 objectives of achieving water approach velocities: for striped bass of approximately 1 foot per second (ft/s) from May 15 through October 31, and for salmon of approximately 3 feet/second (ft/s) from November 1 through May 14.

Fish passing through the facility are sampled at intervals of no less than 20 minutes every 2 hours when listed fish are present, generally December through June. When few fish are present, sampling intervals are 10 minutes every 2 hours. Fish observed during sampling intervals are identified by species, measured to fork length, examined for marks or tags, and placed in the collection facilities for transport by tanker truck to the release sites in the North Delta away from the pumps. In addition, TFCF personnel monitor for the presence of spent female Delta Smelt in anticipation of expanding the salvage operations to include sub-20 millimeter (mm) larval Delta Smelt detection.

CDFW is leading studies of fish survival during the collection, handling, transportation, and release process, examining Delta Smelt injury, stress, survival, and predation. Thus far it has presented initial findings at various interagency meetings (Interagency Ecological Program [IEP], Central Valley Fish Facilities Review Team, and American Fisheries Society) showing relatively high survival and low injury. DWR has concurrently been conducting focused studies examining the release phase of the salvage process including a study examining predation at the point of release and a study examining injury and survival of Delta Smelt and Chinook Salmon through the release pipe. Based on these studies, improvements to release operations and/or facilities, including improving fishing opportunities in Clifton Court Forebay (CCF) to reduce populations of predator fish, are being implemented.

CDFW and USFWS evaluated pre-screen loss and facility/louver efficiency for juvenile and adult Delta Smelt at the Skinner Fish Facility of the SWP (described in Section 5, State Water Project). DWR also conducted pre-screen loss and facility efficiency studies for steelhead.

3A.4.3.4.5 Contra Costa Water District Diversion Facilities

The CCWD diverts water from the Delta for irrigation and M&I uses under its CVP contract and under its own water right permits and license, issued by SWRCB. CCWD's water system includes the Mallard Slough, Rock Slough, Old River, and Middle River (on Victoria Canal) intakes; the Contra Costa Canal and shortcut pipeline; and the Los Vaqueros Reservoir. The Rock Slough Intake facilities, the Contra Costa Canal, and the shortcut pipeline are owned by Reclamation, and operated and maintained by CCWD under contract with Reclamation. Reclamation completed construction of a fish screen at the Rock Slough intake in 2011; testing and the transfer of operation and maintenance of the fish screen to CCWD is ongoing. Mallard Slough Intake, Old River Intake, Middle River Intake, and Los Vaqueros Reservoir are owned and operated by CCWD.

The Mallard Slough Intake is located at the southern end of a 3,000-foot-long channel running south from Suisun Bay, near Mallard Slough (across from Chipps Island). The Mallard Slough Pump Station was refurbished in 2002, which included constructing a positive barrier fish screen at this intake. The Mallard Slough Intake can pump up to 39.3 cfs. CCWD's water right license and permit (License No. 10514 and Permit No. 19856) authorize diversions of up to 26,780 acre-feet per year at Mallard Slough. However, this intake is rarely used due to the generally high salinity at this location. Pumping at the Mallard Slough Intake since 1993 has on average accounted for about 3 percent of CCWD's total diversions. When CCWD diverts water at the Mallard Slough Intake, CCWD reduces pumping of CVP water at its other intakes.

The Rock Slough Intake is located about four miles southeast of Oakley, where water flows through a positive barrier fish screen into the earth-lined portion of the Contra Costa Canal. The fish screen at this intake was constructed by Reclamation in accordance with the CVPIA and the 1993 USFWS BO for the Los Vaqueros Project to reduce take of fish through entrainment at the Rock Slough Intake. The Canal connects the fish screen at Rock Slough to Pumping Plant 1, approximately four miles to the west. The Canal is earth-lined and open to tidal influence for approximately 3.7 miles from the Rock Slough fish screen. Approximately 0.3 miles of the Canal immediately east (upstream) of Pumping Plant 1 have been encased in concrete pipe, the first portion of the CCWD's Contra Costa Canal Encasement Project to be completed. When fully completed, the Canal Encasement Project would eliminate tidal flows into the Canal because the encased pipeline would be located below the tidal range elevation. Pumping Plant 1 has capacity to pump up to 350 cfs into the concrete-lined portion of the Canal. Diversions at Rock Slough Intake are typically taken under CVP contract. CCWD may divert approximately 30 percent to 50 percent of its total supply through the Rock Slough Intake depending upon water quality there.

Construction of the Old River Intake was completed in 1997 as a part of the Los Vaqueros Project. The Old River Intake is located on Old River near State Route 4. The intake has a positive-barrier fish screen and a pumping capacity of 250 cfs, and can pump water via pipeline either to the Contra Costa Canal or to Los Vaqueros Reservoir. Diversions at Old River to the Contra Costa Canal are typically taken under CVP contract. Pumping to storage in Los Vaqueros Reservoir is limited to 200 cfs by the terms of the Los Vaqueros Project BOs and by SWRCB Decision 1629, SWRCB water right decision for the Los Vaqueros Project (Permit 20749). Diversions to storage in Los Vaqueros Reservoir are typically taken under CVP contract or under the Los Vaqueros water right permit. The CCWD's water diversions that are not made at Rock Slough diverted at the Middle River and Old River intakes, as determined primarily by the CCWD water quality goals, described below.

In 2010, CCWD completed construction of the Middle River Intake (formerly referred to as Alternative Intake Project) on Victoria Canal. The Middle River Intake has a capacity of 250 cfs capacity, with positive-barrier fish screens and a conveyance pipeline to CCWD's existing conveyance facilities. Similar to the Old River Intake, the Middle River Intake can be used either to pump to the Contra Costa Canal or to fill the Los Vaqueros Reservoir. Diversions to the Contra Costa Canal are typically taken under CVP contract, while diversions to storage in the Los Vaqueros Reservoir can be taken either under CVP contract or under CCWD's Los Vaqueros water right (Permit 20749). The effects of the Middle River Intake on Delta Smelt are covered by the April 27, 2007 USFWS BO (amended on May 16, 2007). Effects on salmonids and Green Sturgeon are covered by the July 13, 2007 NMFS BO for this intake project.

CCWD operates the Middle River Intake together with its other intake facilities to meet its delivered water quality goals and to protect listed species. The choice of which intake to use at any given time is based in large part upon salinity at the intakes, consistent with fish protection requirements in the BOs for the Middle River Intake and the Los Vaqueros Project. The Middle River Intake was built as a project to improve the water quality delivered to the CCWD service area, and does not increase CCWD's average annual diversions from the Delta. However, it can alter the timing and pattern of CCWD's diversions, because Middle River Intake salinity tends to be lower in the late summer and fall than salinity at CCWD's other intakes. This allows CCWD to decrease winter and spring diversions while still meeting water quality goals in the summer and fall through use of the new intake.

Los Vaqueros Reservoir is an off-stream reservoir in the Kellogg Creek watershed to the west of the Delta. Originally constructed as a 100 TAF reservoir in 1997 as part of the Los Vaqueros Project, the facility is used to improve delivered water quality and emergency storage reliability for CCWD's customers. Los Vaqueros Reservoir is filled with Delta water from either the Old River Intake or the Middle River Intake, when salinity in the Delta is low. When Delta salinity is high, typically in the fall months, CCWD releases low salinity water from Los Vaqueros Reservoir to blend with direct diversions from the Delta to meet CCWD water quality goals. Releases from Los Vaqueros Reservoir are conveyed to the Contra Costa Canal via a pipeline.

In 2012, Los Vaqueros Reservoir was expanded from 100 TAF to a total storage capacity of 160 TAF to provide additional water quality and water supply reliability benefits, and maintain the initial functions of the reservoir. With the expanded reservoir, CCWD's average annual diversions from the Delta remain the same as they were with the 100 TAF reservoir. A feasibility study is ongoing to evaluate whether an additional expansion of this reservoir is in the federal interest.

CCWD diverts approximately 127 TAF per year in total. Approximately 110 TAF is CVP contract supply. In winter and spring months when the Delta is relatively fresh (generally January through July), deliveries to the CCWD service area are made by direct diversion from the Delta. In addition, when salinity is low enough, Los Vaqueros Reservoir is filled at a rate of up to 200 cfs from the Old River Intake and Middle River Intake. The BOs for the Los Vaqueros Project, CCWD's Incidental Take Permit issued by CDFW, and SWRCB D-1629 include fisheries protection measures consisting of a 75-day period during which CCWD does not fill Los Vaqueros Reservoir and a concurrent 30-day period during which CCWD halts all diversions from the Delta, provided that Los Vaqueros Reservoir storage is above emergency levels. The default dates for the no-fill and no-diversion periods are March 15 through May 31 and April 1 through April 30, respectively. USFWS, NMFS, and CDFW can change these dates to best protect the subject species. CCWD coordinates the filling of Los Vaqueros Reservoir with Reclamation and DWR to avoid water supply impacts on other CVP and SWP customers. During the no-diversion period, CCWD customer demand is met by releases from Los Vaqueros Reservoir.

In addition to the existing 75-day no-fill period (March 15 to May 31) and the concurrent no-diversion 30 day period, CCWD operates to an additional term in the Incidental Take Permit issued by CDFW. Under this term, CCWD shall not divert water to storage in Los Vaqueros Reservoir for 15 days from February 14 through February 28, provided that reservoir storage is at or above 90 TAF on February 1. If reservoir storage is at or above 80 TAF on February 1, but below 90 TAF, CCWD shall not divert water to storage in Los Vaqueros Reservoir for 10 days from February 19 through February 28. If reservoir storage is at or above 70 TAF on February 1, but below 80 TAF, CCWD shall not divert water to storage in Los Vaqueros Reservoir for 5 days from February 24 through February 28. These dates can be changed to better protect Delta fish species, at the direction of CDFW.

CCWD's operation of the diversion, storage, and conveyance facilities to divert water under CCWD's water rights meets the permitting requirements of the ESA through BOs issued by USFWS and NMFS that are specific to the CCWD system. The NMFS BO issued on March 18, 1993 and USFWS BO issued on September 9, 1993 address the operation of the Los Vaqueros Project, including the Los Vaqueros Reservoir and the Mallard Slough, Rock Slough, and Old River intakes. NMFS BO 2005/00122 issued on July 13, 2007, and USFWS BO issued on April 27, 2007 and amended on May 16, 2007, address the Middle River Intake operations. Concurrence that expansion of Los Vaqueros Reservoir to 160 TAF is not likely to adversely affect listed Delta fish species was provided by NMFS on October 15, 2010 and USFWS on November 1, 2010.

3A.4.3.4.6 Water Demands—Delta Mendota Canal and San Luis Unit

Water demands for the DMC and San Luis Unit are primarily composed of three separate types: CVP water service contractors, exchange contractors, and wildlife refuge contractors. Distinct relationships exists between Reclamation and each of these three groups. Exchange contractors "exchanged" their senior rights to water in the San Joaquin River for a CVP water supply generally provided from the Delta. Reclamation thus guaranteed the exchange contractors a firm water supply from the Delta or the San Joaquin River of 840 TAF per annum, with a maximum reduction under the Shasta critical year criteria to an annual water supply of 650 TAF.

Conversely, water service contractors do not have water rights senior to CVP. Agricultural water service contractors also receive their supply from the Delta, but their supplies are subject to the availability of CVP water supplies that can be developed and reductions in contractual supply can be as high as 100 percent. The CVP also contracts with refuges to provide water supplies to specific managed lands for wildlife purposes. These contracts may be reduced under Shasta critical year criteria up to 25 percent.

To achieve the best operation of the CVP, it is necessary to combine the contractual demands of these three types of contractors to achieve an overall pattern of requests for water. In most years, sufficient supplies are not available to meet all water demands because of reductions in CVP water supplies due to restricted Delta pumping capability. In some dry or critically dry years, water deliveries are limited because there is insufficient storage in northern CVP reservoirs to meet all instream fishery objectives, including water temperatures, and to make additional water deliveries via the Jones Pumping Plant. The scheduling of water demands, together with the scheduling of the releases of water supplies from the northern CVP to meet those demands, is a CVP operational objective that is intertwined with the Trinity, Sacramento, and American River operations.

3A.4.3.4.7 CVPIA 3406 (b)(2) Operations in the Delta

Export curtailments at the CVP Jones Pumping Plant and increased CVP reservoir releases required to meet SWRCB D-1641, as well as direct export reductions for fishery management using dedicated (b)(2) water at the CVP Jones Pumping Plant, is determined in accordance with the Interior Decision on Implementation of Section 3406 (b)(2) of the CVPIA. Direct Jones Pumping Plant export curtailments for fishery management protection is based on coordination with the weekly (b)(2)IT meetings and vetted through WOMT, as necessary.

3A.4.3.4.8 Implementation of 2008 USFWS and 2009 NMFS Biological Opinions

The 2008 USFWS BO and the 2009 NMFS BO restrict CVP and SWP diversions to reduce reverse flows in Old and Middle rivers (OMR). The 2008 USFWS BO also includes criteria for fall Delta outflow. The 2009 NMFS BO includes criteria for a San Joaquin River I:E ratio (Action IV.2.1), and additional criteria for closure of the Delta Cross Channel Gates.

2008 USFWS BO OMR Criteria

The 2008 USFWS BO limits reverse OMR flows as prescribed in the following three actions.

- Action 1: to protect adult Delta Smelt migration and entrainment. Limits exports so that the average daily OMR flow is no more negative than -2,000 cfs for a total duration of 14 days, with a 5-day running average no more negative than -2,500 cfs (within 25 percent).
  - December 1 to December 20 – Based upon turbidity data from turbidity stations (Prisoner’s Point, Holland Cut, and Victoria Canal) and salvage data from CVP and SWP fish handling facilities at the south Delta intakes, and other parameters important to the protection of Delta Smelt including, but not limited to, preceding conditions of X2, Fall Midwater Trawl (FMWT) Survey, and river flows.
  - After December 20 – The action would begin if the 3 day average turbidity at Prisoner’s Point, Holland Cut, and Victoria Canal exceeds 12 nephelometric turbidity units (NTU).
  - Triggers are based on:
    - Three-day average of 12 NTU or greater at all three turbidity stations; or
    - Three days of Delta Smelt salvage after December 20 at either facility or cumulative daily salvage count that is above a risk threshold based upon the “daily salvage index” approach reflected in a daily salvage index value of greater than or equal to 0.5 (daily Delta Smelt salvage is greater than one-half prior year FMWT index value). The window for triggering Action 1 concludes when either off-ramp condition described below is met. These off-ramp conditions may occur without Action 1 ever being triggered. If this occurs, then Action 3 is triggered, unless the Service concludes on the basis of the totality of available information that Action 2 should be implemented instead.

    - Action 1 offramps when water temperature reaches 12 degrees Celsius (°C) based on a three station daily mean at the temperature stations: Mossdale, Antioch, and Rio Vista; or the onset of spawning based upon the presence of spent females in the Spring Kodiak Trawl Survey or at the CVP or SWP fish handling facilities.

- Action 2: to protect adult Delta Smelt migration and entrainment. An action implemented using an adaptive process to tailor protection to changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions. The range of net daily OMR flows would be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions, specific OMR flows within this range are recommended by the USFWS Smelt Working Group (SWG) from the onset of Action 2 through its termination. The SWG would provide weekly recommendations based upon review of the sampling data, from real-time salvage data at the CVP and SWP, and utilizing most up-to-date technological expertise and knowledge relating population status and predicted distribution to monitored physical variables of flow and turbidity. The USFWS makes the final determination.
    - Action 2 begins immediately following Action 1. If Action 1 is not implemented based upon triggers, the SWG may recommend a start date for Action 2.
    - Action 2 is suspended when whenever a 3-day flow average is greater than or equal to 90,000 cfs in Sacramento River at Rio Vista and 10,000 cfs in San Joaquin River at Vernalis. Once such flows have abated, the OMR flow requirements of Action 2 are restarted.
    - Offramps for Action 2 are related to water temperature reaches 12°C based on a three-station daily average at the temperature stations: Rio Vista, Antioch, and Mossdale; or the onset of spawning based upon the presence of a spent female in the Spring Kodiak Trawl Survey or at the CVP or SWP fish handling facilities.
- Action 3: to protect larval and juvenile Delta Smelt. Minimize the number of larval Delta Smelt entrained at the facilities by managing the hydrodynamics in the Central Delta flow levels pumping rates spanning a time sufficient for protection of larval Delta Smelt. Net daily OMR flow would be no more negative than -1,250 to -5,000 cfs based on a 14-day running average with a simultaneous 5-day running average within 25 percent of the applicable requirement for OMR. Depending on extant conditions, specific OMR flows within this range are recommended by the SWG from the onset of Action 3 through its termination.
    - Action 3 begins when temperature reaches 12°C based on a three-station average at the temperature stations: Mossdale, Antioch, and Rio Vista; or onset of spawning based upon the presence of a spent female in the Spring Kodiak Trawl Survey or at the CVP or SWP fish handling facilities.

- Action 3 offramps by June 30; or if water temperature reaches a daily average of 25°C for three consecutive days 10 at Clifton Court Forebay.

2009 NMFS BO OMR Criteria

The 2009 NMFS BO includes OMR criteria (Action IV.2.3) to protect juvenile salmonids during winter and spring emigration downstream into the San Joaquin River, and to increase survival of salmonids and Green Sturgeon entering the San Joaquin River from Georgiana Slough and the lower Mokelumne River by reducing the potential for entrainment at the south Delta intakes. The action is implemented from January 1 through June 15 to limit negative flows to -2,500 to -5,000 cfs in Old and Middle Rivers, depending on the presence of salmonids. The reverse flow would be managed within this range to reduce flows toward the pumps during periods of increased salmonid presence. The negative flow objective within the range shall be determine based on the following decision tree:

Date	Action Triggers	Action Responses
January 1 – June 15	January 1 – June 15	-5,000 cfs
January 1 – June 15 First Stage Trigger (increasing level of concern)	Daily SWP/CVP older juvenile loss density (fish per TAF) 1) is greater than incidental take limit divided by 2000, with a minimum value of 2.5 fish per TAF, or 2) daily loss is greater than daily measured fish density divided by 12 TAF, or 3) Coleman National Fish Hatchery coded wire tag late-fall run or Livingston Stone National Fish Hatchery coded wire tag winter-run cumulative loss greater than 0.5%, or 4) daily loss of wild steelhead (intact adipose fin) is greater than the daily measured fish density divided by 12 TAF.	-3,500 cfs for minimum of 5 days; and up to -5,000 cfs other times
January 1 – June 15 Second Stage Trigger (analogous to high concern level)	Daily SWP/CVP older juvenile loss density (fish per TAF) is 1) greater than incidental take limit divided by 1000, with a minimum value of 2.5 fish per TAF, or 2) daily loss is greater than daily fish density divided by 8 TAF, or 3) Coleman National Fish Hatchery coded wire tag late-fall run or Livingston Stone National Fish Hatchery coded wire tag winter-run cumulative loss greater than 0.5%, or 4) daily loss of wild steelhead (intact adipose fin) is greater than the daily measured fish density divided by 8 TAF.	-2,500 cfs for minimum of 5 days; and up to -5,000 cfs other times
End of Triggers	Continue action until June 15 or until average daily water temperature at Mossdale is greater than 72°F (22°C) for 7 consecutive days (1 week), whichever is earlier.	No OMR restriction.

2009 NMFS BO San Joaquin River Inflow:Export Ratio

The 2009 NMFS BO Action IV.2.1 requires south Delta exports to be reduced during April and May to protect emigrating steelhead from the lower San Joaquin River into the south Delta channels and intakes. The inflow:export ratio from April 1 through May 31 specifies that Reclamation operates the New Melones Reservoir to maintain the 2009 NMFS BO flow schedule for the Stanislaus River at Goodwin in accordance with Action III.1.3 and Appendix 2-E of the BO. In addition, the CVP and SWP pumps are operated to meet the following ratios, based upon a 14-day running average.

San Joaquin Valley Classification	San Joaquin River flow at Vernalis (cfs):CVP and SWP combined export ratio (cfs)
Critically dry	1:1
Dry	2:1
Below normal	3:1
Above normal	4:1
Wet	4:1
Vernalis flow equal to or greater than 21,750 cfs	Unrestricted exports until flood recedes below 21,750 cfs.

During multiple dry years, the ratio would be limited to 1:1 if the New Melones Index related to storage is less than 1,000 TAF and the sum s of the “indicator” numbers established for water year classifications in SWRCB D-1641 (based on the San Joaquin Valley 60-20-20 Water Year Classification in SWRCB D-1641) is greater than 6 for the past two years and the current year. The indicator numbers are 1 for a critically dry year, 2 for a dry year, 3 for a below normal year, 4 for an above normal year, and 5 for a wet year.

Implementation of the inflow:export ratio under all conditions would allow a minimum pumping rate of 1,500 cfs to meet public health and safety needs of communities that solely rely upon water diverted from the CVP and SWP pumping plants.

2008 USFWS BO Fall X2 Criteria

The 2008 USFWS BO also includes an additional Delta salinity requirement in September through November in wet and above normal water years (Action 4). This requirement is frequently referred to as “Fall X2.” The action requires that in September and October, 2 Practical Salinity Units (psu) salinity is maintained at 74 kilometers (km) during wet years, and 81 km during above normal water years when the preceding year was wet or above normal based upon the Sacramento Basin 40-30-30 index in the SWRCB D-1641. In November of these years, there is no specific X2 requirement, however there is a requirement that all inflow into SWP and CVP upstream reservoirs be conveyed downstream to augment delta outflow to maintain X2 at the locations in September and October.

If storage increases during November under this action, the increased storage volume is to be released in December in addition to the requirements under SWRCB D-1641 net Delta Outflow Index.

3A.4.3.5 East Side Division

The East Side Division encompasses the Stanislaus and San Joaquin River Systems and includes New Melones Dam, Tulloch Dam, Goodwin Dam, and smaller Diversion Dams and associated Reservoirs.

3A.4.3.5.1 Factors Influencing New Melones Operations

The Stanislaus River originates in the western slopes of the Sierra Nevada and drains a watershed of approximately 900 square miles. The average unimpaired runoff in the basin is approximately 1.2 MAF per year; the median historical unimpaired runoff is 1.1 MAF per year. Snowmelt from March through early July contributes the largest portion of the flows in the Stanislaus River, with the highest runoff occurring in the months of April, May, and June. New Melones Reservoir is located approximately 60 miles upstream from the confluence of the Stanislaus River and the San Joaquin River.

Water Development Prior to Federal Actions

Agricultural water supply development in the Stanislaus River watershed began in the 1850s and has significantly altered the basin's hydrologic conditions. Prior to 1856, the San Joaquin Water Company constructed a diversion dam on the Stanislaus River immediately downstream of the present day location of Tulloch Dam and used the diversion dam to distribute water for irrigation and other uses in the Knights Ferry Area. Beginning in 1856, a series of water and power companies constructed several water supply and power facilities in the Stanislaus River watershed.

The San Joaquin Water Company was sold to the Tulloch family in the late 1800s, and in 1910, Oakdale Irrigation District (OID) and South San Joaquin Irrigation District (SSJID) bought the Tulloch water rights and physical distribution system. In 1913, OID and SSJID jointly constructed Goodwin Diversion Dam, an 80-foot tall double concrete arch dam, to divert Stanislaus River water (up to 1,816.6 cfs daily) into their respective canals for distribution into their respective service areas for irrigation. Despite its height, Goodwin Diversion Dam is a re-operating reservoir, not a storage reservoir, because a full reservoir is needed to allow diversion to these canals.

To address their lack of storage, OID and SSJID joined with The Pacific Gas and Electric Company (PG&E) in 1925 to construct the Melones Dam and Powerhouse (110 TAF capacity) approximately 12.3 river miles upstream of the Goodwin Diversion Dam. Water released from Melones was diverted at Goodwin Diversion Dam for delivery into OID and SSJID's distribution systems.

In 1955, OID and SSJID agreed to construct three new facilities, including the Donnells Dam and Reservoir (64,500 TAF capacity) and Beardsley Dam and Reservoir (97.5 TAF capacity) upstream of Melones Dam, and the Tulloch Dam and Reservoir (54.663 TAF capacity), downstream of Melones Dam. Construction of the three facilities, collectively referred to as the Tri-Dam Project, was completed in 1957 and the facilities became operational in 1958. As part of the construction of the Tri-Dam project, Goodwin Diversion Dam was raised to create an afterbay to regulate discharge from Tulloch. From 1985–1990, the Calaveras County Water District constructed the North Fork Stanislaus Hydroelectric Project, which included the construction of New Spicer Reservoir (189 TAF capacity) in 1989. This was a joint development project by Northern California Power Agency (NCPA) and Calaveras County Water District. Calaveras County Water District is the licensee and NCPA is the project operator.

Twenty ungauged tributaries contribute flow to the lower portion of the Stanislaus River below Goodwin Dam. These streams provide intermittent flows, occurring primarily during the months of November through April. Agricultural return flows, as well as operational spills from irrigation canals receiving water from both the Stanislaus and Tuolumne Rivers, enter the lower portion of the Stanislaus River. In addition, a portion of the flow in the lower reach of the Stanislaus River originates from groundwater accretions. There are also approximately 48 TAF of annual riparian water rights in the Stanislaus River downstream of Goodwin Dam.

Federal Water Development

In the Flood Control Act of December 1944, Congress authorized construction of a dam to replace Melones Dam to help alleviate serious flooding problems along the Stanislaus and Lower San Joaquin Rivers. In the Flood Control Act of October 1962, Congress reauthorized the project, and expanded it to be a multipurpose facility to be built by USACE and operated by the Secretary of the Interior as the New Melones Unit of the Eastside Division of the CVP. Dam and reservoir construction began in 1966 and, after being halted from 1972 to 1974, was completed by USACE in 1978, with a storage capacity of 2.4 MAF.

In 1972, Reclamation applied for the assignment of two state-filed water rights and two new water rights for the New Melones Project. These applications were protested by several parties and mostly resolved through protest settlement agreements. In 1973, SWRCB Decision 1422 (D-1422) initially approved less than 600 TAF in storage for power, senior water rights, water quality, and fish and wildlife protection and enhancement, citing a lack of demonstrated demand and protection of upstream recreation as a reason not to grant consumptive use rights for new demands without further demonstration of a demand for this water.

To demonstrate the consumptive use demands, in 1980 Reclamation produced a Stanislaus River Water Allocation and an EIS for the proposed water allocation of the New Melones Unit. The documents describe preferred and alternative boundaries of the Stanislaus River Basin, the anticipated project yield for 2020 conditions, the current and anticipated future needs of such basin, the determination of an available "interim" supply until the full buildup of in-basin needs, and an anticipated "firm yield" once full in-basin demand was established. The ROD described that New Melones Reservoir would generate a water supply yield of 230 TAF in 2000, and 180 TAF in 2020; assuming maximum annual releases of 70 TAF for water quality and 98 TAF for downstream fishery. For the interim supply, 85 TAF would be available in the year 2000, diminishing to zero at full in-basin demand. For the firm supply, the Secretary determined that there would be 49 TAF available in 2020 after in-basin demands were met. In 1983, Reclamation entered into a long-term water service contract with Central San Joaquin Water Conservation District for 49 TAF of firm supply and an interim supply of 31 TAF, and a long-term water service contract totaling 75 TAF of interim water with Stockton East Water District (SEWD). Reclamation then successfully applied to have D-1422 amended to allow up to full storage for demonstrated power and consumptive use demands in the same year, and New Melones briefly filled to its capacity of 2.4 MAF for the first time.

In 1984, Reclamation applied for the assignment of the direct diversion portion of one of the state water right filings, to be able to serve contracts water at times when New Melones is filling. The application was again protested, with protests largely settled through protest settlement agreements. The direct diversion right was granted in D-1616 in 1988. D-1616 continued water quality requirements and included a new fish and wildlife protest settlement agreement. A later revision added a requirement to study downstream steelhead/trout needs.

In 1995 and in 2000, water rights decisions related to updates of the San Francisco Bay/Sacramento–San Joaquin River Delta Water Quality Control Plan (WQCP) added flow requirements at Vernalis and partial responsibility for interior Delta water quality to CVP water rights.

Flood Control

The New Melones Reservoir flood control operation is coordinated with the operation of Tulloch Reservoir. The flood control objective is to maintain flood flows at the Orange Blossom Bridge at less than 8,000 cfs. When possible, however, releases from Tulloch Dam are maintained at levels that would not result in long-term downstream flows in excess of 1,500 cfs because of the past reported potential for seepage in agricultural lands adjoining the river associated with flows above this level. Up to 450 TAF of the 2.4 MAF storage volume in New Melones Reservoir is dedicated for flood control and 10 TAF of Tulloch Reservoir storage is set aside for flood control. Based upon the flood control diagrams prepared by USACE, part or all of the dedicated flood control storage may be used for conservation storage (storing allocated, excess waters), depending on the time of year and the current flood hazard.

Current Water Rights Requirements for New Melones Operations

The operating criteria for New Melones Reservoir are constrained by water rights requirements, flood control operations, contractual obligations, and federal requirements under the ESA and CVPIA.

Terms and conditions of Reclamation's water rights define the limitations within which Reclamation can directly divert water or divert water to storage, after senior water rights and in-basin demands are met. Senior water rights are both current and future upstream water right holders (whose priority is reserved in

D-1422 and D-1616 and through protest settlement agreements with Tuolumne and Calaveras Counties), and current downstream water right holders and riparian rights (whose priorities are either senior to Reclamation or senior to appropriative rights in general, respectively). In-basin, instream demands include water quality and flow in the lower Stanislaus River and in part in the lower San Joaquin River and Delta (in that the Stanislaus River contributes to these systems). Downstream demands are first met, to the degree possible, by bypassing natural inflow through New Melones Reservoir. When natural flow is insufficient, stored water is released to meet demands specified either through calculated riparian demand, downstream instream objectives, or protest settlement agreements. Whenever possible, multiple demands are met with the same flow.

Senior Water Rights: Protest Settlement Agreements

Reclamation's application for assignment of state water right filings in the early 1970s was protested by future in-basin users, senior water rights holders, and the CDFW. To resolve the senior water rights' protest, Reclamation entered into a 1972 Agreement and Stipulation with OID, and SSJID. The 1972 Agreement and Stipulation specifies that it satisfies the yield for consumptive purposes of the OID and SSJID water rights on the Stanislaus River, through the provision of up to a maximum of 654 TAF per year of either natural inflow to New Melones Reservoir or water stored in New Melones for diversion at Goodwin Dam for direct use by OID and SSJID and for storage in Woodward Reservoir (36 TAF capacity).

In 1988, following a year of low inflow to New Melones Reservoir, the Agreement and Stipulation among Reclamation, OID, and SSJID was renegotiated, resulting in an agreement that depended less on actual inflow and more on Reclamation's storage in New Melones, in order to provide a more reliable, albeit slightly smaller maximum, supply. The 1988 agreement commits Reclamation to provide water in accordance with a formula based on inflow and storage of up to 600 TAF each year for diversion at Goodwin Dam by OID and SSJID to meet their demands. The 1988 Agreement and Stipulation created a "conservation account" in which the difference between the entitled quantity and the actual quantity diverted by OID and SSJID in a year may be carried over for use in subsequent years, depending on storage/flood control conditions in New Melones. This conservation account has a maximum volume of 200 TAF, and withdrawals are constrained by criteria in the agreement.

In-Basin Requirements: Fish and Wildlife in the Lower Stanislaus River

Based on a protest settlement agreement between Reclamation and CDFW, SWRCB D-1422 required Reclamation to bypass or release 98 TAF of water per year (69 TAF in critical years) through New Melones Reservoir to the Stanislaus River on a distribution pattern to be specified each year by CDFW for fish and wildlife purposes. Based on a second protest settlement agreement in 1987, SWRCB D-1616 as amended required increased releases from New Melones to enhance fishery resources for an interim period, during which habitat requirements were to be better defined and a study of Chinook Salmon fisheries on the Stanislaus River would be completed.

During the study period, releases for instream flows were to range from 98.3 to 302.1 TAF per year. The exact quantity to be released each year was to be determined based on a formulation involving storage, projected inflows, projected water supply, water quality demands, projected CVP contractor demands, and target carryover storage. Because of dry hydrologic conditions during the 1987 to 1992 drought period, the ability to provide increased releases was limited. USFWS published the results of a 1993 study, which recommended a minimum instream flow on the Stanislaus River of 155.7 TAF per year for spawning and rearing (Aceituno 1993).

The study period is near completion with all but one study (outlined in the 1987 agreement) completed at the time of this document. Once this study period is completed, Reclamation is required to present the SWRCB with a revised plan of operations that incorporates the findings from the studies. This new plan is explained below and will replace the former CDFW downstream release requirements.

In-Basin Requirements: Fish and Wildlife in the Lower San Joaquin River

SWRCB D-1641 conditioned CVP water rights to meet flow requirements on the San Joaquin River at Vernalis from February to June to the extent possible. These flows are summarized in Table 3A.8.

Table 3A.8 San Joaquin Base Flows-Vernalis

Water Year Class	February–June Flow (cfs)*
Critical	710–1,140
Dry	1,420–2,280
Below Normal	1,420–2,280
Above Normal	2,130–3,420
Wet	2,130–3,420

Note:
*The higher flow required when X2 is required to be at or west of Chipps Island.

In-Basin Requirements: Water Quality in the Lower Stanislaus River

Reclamation's New Melones water rights require that water be bypassed through or released from New Melones Reservoir to maintain applicable dissolved oxygen (DO) standards to protect the salmon fishery in the Stanislaus River. The 2004 San Joaquin Basin 5C Plan (Central Valley Regional Water Quality Control Board) designates the lower Stanislaus River with cold water and spawning beneficial uses, which have a general water quality objective of no less than 7 mg/L DO. This objective is therefore applied through the water rights to the Stanislaus River near Ripon.

Although not part of the No Action Alternative, Reclamation is evaluating studies to support moving the DO compliance point upstream to Orange Blossom Bridge. The location would better correspond to steelhead rearing in the spring and summer months. If movement of the DO compliance point appears adequately protective, Reclamation would petition the SWRCB to modify New Melones water rights accordingly. The movement of the compliance point is considered in Alternative 3 in this EIS.

In-Basin Requirements: Water Quality in the Lower San Joaquin River

SWRCB D-1422 required Reclamation to operate New Melones to maintain average monthly levels of 500 parts per million (ppm) total dissolved solids (TDS) in the San Joaquin River at Vernalis as it enters the Delta. SWRCB D-1641 modified the water quality objectives at Vernalis to include the irrigation and non-irrigation season objectives contained in the 1995 WQCP: average monthly electric conductivity (EC) of 0.7 milliSiemens per centimeter (mS/cm) during the months of April through August and 1.0 mS/cm during the months of September through March.

1997 New Melones Interim Plan of Operations

In 1997, Reclamation developed the Interim Plan of Operations as a joint effort with USFWS and in conjunction with the Stanislaus River Basin Stakeholders (SRBS). The process of developing the plan began in 1995 with a goal to develop a long-term management plan with clear operating criteria, given a fundamental recognition by all parties that New Melones Reservoir water supplies are over-committed on a long-term basis, and consequently, unable to meet all the potential beneficial uses designated as purposes.

In 1996, the focus shifted to the development of an interim operations plan for 1997 and 1998. At an SRBS meeting on January 29, 1997, a final interim plan of operation was agreed to in concept. The Interim Plan of Operation (IPO) was transmitted to the SRBS on May 1, 1997. Although meant to be a short-term plan for non-low periods only, it continued to be the guiding operations criteria in effect for the annual planning to meet multiple beneficial uses from New Melones Reservoir storage. The plan limited released water based on the available water supply, known as the New Melones Index, as summarized in Tables 3A.9 and 3A.10.

Table 3A.9 Inflow/Storage Characterization for the New Melones IPO

Annual Water Supply Category	March–September Forecasted Inflow Plus End of February Storage (TAF)
Low	0–1,400
Medium-low	1,400–2,000
Medium	2,000–2,500
Medium-high	2,500–3,000
High	3,000–6,000

The IPO suggested available quantities for various categories of water supply based on storage and projected inflow, as summarized in Table 3A.10. The annual water categories are for in-stream fishery enhancement (1987 CDFW Agreement and CVPIA Section 3406(b)(2) management), SWRCB D-1641 San Joaquin River water quality requirements (Water Quality), SWRCB D-1641 Vernalis flow requirements (Bay-Delta), and use by CVP contractors.

Table 3A.10 New Melones Modified IPO Flow Objectives (in TAF)

Storage Plus Inflow		Fishery		Vernalis Water Quality		Bay-Delta		CVP Contractors	
From	To	From	To	From	To	From	To	From	To
1,400	2,000	98	125	70	80	0	0	0	0
2,000	2,500	125	345	80	175	0	0	0	59
2,500	3,000	345	467	175	250	75	75	90	90
3,000	6,000	467	467	250	250	75	75	90	90

Although SEWD/CSJWCD agreed to this plan for a 2-year period, they subsequently successfully litigated against Reclamation. As a consequence, Reclamation is now required to provide the full contract amount to the CVP contractors except during times of drought. This plan also assumed that the full responsibility of Vernalis objectives would fall to the Stanislaus River and New Melones Reservoir rather than be divided up among the other San Joaquin tributaries.

Water Temperatures

Water temperatures in the lower Stanislaus River are affected by many factors and operational tradeoffs. These include available cold water resources in New Melones reservoir, Goodwin release rates for fishery flow management, ambient air conditions, and residence time in Tulloch Reservoir, as affected by local irrigation demand.

CVPIA 3406 (b)(2) Operations on the Stanislaus River

2009 NMFS BO RPA flows described below are often accounted for dedication of (b)(2) water on the Stanislaus River below Goodwin Dam in addition to the CDFW requirements discussed previously in the East Side Division.

Implementation of 2009 National Marine Fisheries Service Biological Opinion

The 2009 NMFS BO RPA requires Reclamation to adaptively manage flows to meet minimum instream flow, ramping flow, pulse flow, floodplain inundation, and geomorphic and function flow patterns, through the following actions.

- Minimum base flows to optimize available steelhead habitat for adult migration, spawning, and juvenile rearing by water year type, as measured downstream of Goodwin Dam, as specified in Appendix 2-E of the 2009 NMFS BO RPA.

- Fall pulse flows to improve instream conditions.
- Winter instability flows to simulate natural variability in the winter hydrograph and to enhance access to varied rearing habitats.
- Channel forming and maintenance flows in the 3,000 to 5,000 cfs range in above normal and wet years to maintain spawning and rearing habitat quality after March 1 to protect incubating eggs and to provide outmigration flow cues and late spring flows.
- Outmigration flow cues to enhance likelihood of anadromy.
- Late spring flows for conveyance and maintenance of downstream migratory habitat quality in the lowest reaches and into the Delta.

Flows also are released to meet the following temperature requirements (see 2009 NMFS BO RPA for exception criteria) to protect steelhead.

- October 1 (or initiation of fall pulse flow) through December 31: 56° F at Orange Blossom Bridge
- January 1 through May 31: 52° F at Knights Ferry and below 55° F at Orange Blossom Bridge
- June 1 through September 30: 65° F at Orange Blossom Bridge

Reclamation also is required to evaluate an approach to operate New Melones Reservoir flow releases to achieve floodplain inundation flows and improved freshwater migratory habitat for steelhead.

3A.4.3.6 San Felipe Division

Construction of the San Felipe Division of the CVP was authorized in 1967. The San Felipe Division initiated operation in 1987 and provides a water supply in the Santa Clara Valley in Santa Clara County and the north portion of San Benito County.

The San Felipe Division delivers both irrigation and M&I water supplies. Water is delivered within the service areas not only by direct diversion from distribution systems, but also through instream and offstream groundwater recharge operations conducted by local water users. A primary purpose of the San Felipe Division in Santa Clara County is to provide supplemental water to help prevent land surface subsidence in the Santa Clara Valley. The majority of the water supplied to Santa Clara County is used for M&I purposes, either pumped from the groundwater basin or delivered from treatment plants. In San Benito County, a distribution system was constructed to provide water to about 19,700 arable acres.

The San Felipe Division facilities that serve Santa Clara and San Benito Counties include 54 miles of tunnels and conduits, two large pumping plants, and one reservoir (San Justo Reservoir in San Benito County). CVP water is conveyed from the Delta through the DMC, O'Neill Forebay, and San Luis Reservoir. A maximum of 480 cfs is lifted from San Luis Reservoir by the Pacheco Pumping Plant's twelve 2,000-horsepower pumps to a height varying from 85 to 300 feet into a regulating tank. Water flows from the regulating tank by gravity through the 5.2-mile long Pacheco Tunnel and 7.9-mile long Pacheco Conduit. The Pacheco Conduit terminates at a bifurcation structure, where the water is conveyed into Santa Clara and San Benito Counties.

In Santa Clara County, water flows from the bifurcation structure into the 1-mile long Santa Clara Tunnel. Water flows by gravity from the tunnel into a 20-mile long Santa Clara Conduit to the Coyote Pumping Plant for distribution of CVP water within Santa Clara County. In San Benito County, water flows from the bifurcation structure to the 19.1-mile long Hollister Conduit with a maximum capacity of approximately 93 cfs, terminating at the San Justo Reservoir.

Santa Clara Valley Water District operates the San Felipe Division facilities except for the Hollister Conduit and San Justo Reservoir, which are operated by San Benito County Water District under operating agreements with Reclamation.

The 9.906 TAF-capacity San Justo Reservoir is located about 3 miles southwest of the city of Hollister. The San Justo Dam is an earthfill structure 141 feet high with a crest length of 722 feet. This facility includes a dike structure 66 feet high with a crest length of 918 feet. This reservoir regulates San Benito County Water District's CVP water supplies, allows pressure deliveries to some of the agricultural lands in the service area, and provides storage for peaking of agricultural water.

3A.4.3.7 Friant Division

As described previously, Friant Division operations are not analyzed in this EIS. The information included below provides an understanding of how the Friant Division operations affect CVP and SWP operations.

Historically, this division was hydrologically disconnected from the rest of the CVP except in very wet years and was not integrated into the CVP Operations Criteria and Plan (OCAP). Friant Dam is located on the San Joaquin River, 25 miles northeast of Fresno where the San Joaquin River exits the Sierra Nevada foothills and enters the Central Valley. The drainage basin is 1,676 square miles with an average annual runoff of 1,774 TAF. Completed in 1942, the dam is a concrete gravity structure, 319 feet high, with a crest length of 3,488 feet. Although the dam was completed in 1942, it was not placed into full operation until 1951. The reservoir, Millerton Lake, first stored water on February 21, 1944. It has a total capacity of 524 TAF, a surface area of 4,900 acres, and is approximately 15 miles long. The lake's 45 miles of shoreline varies from gentle slopes near the dam to steep canyon walls farther inland. The reservoir provides boating, fishing, picnicking, and swimming.

The dam provides flood control on the San Joaquin River, provides downstream releases to meet senior water rights requirements above Mendota Pool, and provides conservation storage as well as diversion into Madera and Friant-Kern

Canals. Water is delivered to a million acres of agricultural land in Fresno, Kern, Madera, and Tulare Counties in the San Joaquin Valley via the Friant-Kern Canal south into Tulare Lake Basin and via the Madera Canal northerly to Madera and Chowchilla Irrigation Districts. A minimum of 5 cfs is required to pass the last water right holding located about 40 miles downstream of Friant Dam near Gravelly Ford. Before October 1, 2009, and the initiation of Interim Flows for the San Joaquin River Restoration Program (SJRRP), the Friant Division was generally hydrologically disconnected from the Delta. The San Joaquin River was dewatered in two reaches between Friant Dam and the confluence of the Merced River, except under flood conditions.

Flood control storage space in Millerton Lake is based on a complex formula, which considers upstream storage in the Southern California Edison reservoirs, forecasted snowmelt, and time of year. Flood management releases occur approximately every 3 years and are managed based on downstream channel design flow of approximately 8,000 cfs, to the extent possible. Under flood conditions, water is diverted into two bypass channels that carry flood flows to near the confluence of the Merced River. Flows staying in the mainstem are diverted into the Mendota Pool, and may be used to meet irrigation demands there.

3A.4.3.8 San Joaquin River Restoration Program

In 2006, parties to *NRDC, et al., v. Rodgers, et al.*, executed a stipulation of settlement that called for a comprehensive long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of the Merced River and a self-sustaining Chinook Salmon fishery while reducing or avoiding adverse water supply impacts. The SJRRP implements the Settlement consistent with the San Joaquin River Restoration Settlement Act in Public Law 111-11. Consultation with NMFS and USFWS under the ESA on implementation of the Settlement has occurred as part of the SJRRP and would continue to occur to evaluate the effects of implementation of settlement actions on listed species. USFWS issued a Programmatic BO (PBO) for the implementation of the SJRRP on August 21, 2012 and NMFS issued a PBO on September 18, 2012. The programmatic Biological Opinions include project-level consultation for SJRRP flow releases of up to 1,660 cfs from Friant Dam down the San Joaquin River. Programmatic ESA coverage is provided in both the USFWS and NMFS PBOs for flow releases from Friant Dam up to 4,500 cfs and all physical restoration and water management actions listed in the Settlement. Future flow increases from Friant Dam in excess of 1,660 cfs for the SJRRP would need to be coordinated and consulted on with the appropriate regulatory agencies to ensure ESA compliance.

The Settlement-required flow targets for releases from Friant Dam include six water year types for releases depending upon available water supply as measures of inflow to Millerton Lake. The releases from Friant Dam include the flexibility to reshape and retime releases forwards or backwards by 4 weeks during the spring and fall pulse periods. Flood flows may potentially occur and meet or exceed the Settlement flow targets. If flood flows meet the Settlement flow targets, then Reclamation would not release additional water. The San Joaquin River channel downstream of Friant Dam currently lacks the capacity to convey flows to the Merced River and releases are limited accordingly. Reclamation has initiated planning and environmental compliance activities to improve river channel conveyance and allow for the full release of SJRRP flows. Diversions and infiltration losses reduce the amount of Settlement flows reaching the San Joaquin and Merced River confluence. Flows that reach the Merced confluence are assumed to continue to the Delta.

3A.5 State Water Project

DWR holds contracts with 29 public agencies in Northern, Central, and Southern California for water supplies from the SWP. Water stored in the Lake Oroville facilities, along with excess water available in the Delta, is captured in the Delta and conveyed through several facilities to SWP water contractors.

The SWP is operated to provide flood control and water for agricultural, M&I, recreational, and environmental purposes. Water is conserved in Lake Oroville and released to serve three Feather River area water contractors and two water contractors served from the NBA, and 24 SWP contractors in the SWP service areas in the south San Francisco Bay Area, San Joaquin Valley, and Southern California. In addition to pumping water released from Lake Oroville, the Banks Pumping Plant diverts natural inflow available in the Delta.

3A.5.1 Project Management Objectives

The SWP is managed to maximize the capture of usable Delta supplies released from Lake Oroville storage as well as surplus supplies available in the Delta. The maximum daily pumping rate at Banks Pumping Plant is controlled by a combination of SWRCB D-1641, the requirements contained in the BOs, the adaptive management process, and permits issued by USACE that regulate the rate of diversion of water into CCF for pumping at Banks Pumping Plant. This diversion rate is normally restricted to 6,680 cfs as a 3-day average inflow to CCF and 6,993 cfs as a 1-day average inflow to CCF. CCF diversions may be greater than these rates between December 15 and March 15, when the inflow into CCF may be augmented by one-third of the San Joaquin River flow at Vernalis when those flows are equal to or greater than 1,000 cfs. Additionally, the SWP has a permit to export an additional 500 cfs between July 1 and September 30 based upon on Project losses for same water year to protect listed fish.

The CCF radial gates are closed during critical periods of the ebb/flood tidal cycle to protect water levels relied upon by local agricultural water diverters in the south Delta area.

Banks Pumping Plant is operated to minimize the impact on power loads on the California electrical grid to the extent practical, using CCF as a holding reservoir to allow that flexibility. Generally more pump units are operated during off-peak periods and fewer during peak periods. Because the installed capacity of the pumping plant is 10,300 cfs, the plant can be operated to reduce power grid impacts by running all available pumps at night and fewer during the higher energy-demand hours, even when CCF is diverting the maximum daily permitted rate.

There are some water years (primarily wetter years) when excess conditions exist for a sufficient portion of the year such that enough water can be diverted from the Delta to fill the SWP south of Delta reservoirs and meet all SWP Contractor demands without maximizing Banks Pumping Plant pumping capability every day of the year. However, CCF operations are more often supply limited. Under these conditions, CCF is typically operated to maximize the water captured, subject to the limitations of water quality, Delta standards, and a host of other variables, to meet SWP demands and fill storage south of the Delta.

San Luis Reservoir is an offstream storage facility located along the California Aqueduct downstream of Banks Pumping Plant. San Luis Reservoir is used by both Projects to augment deliveries to their contractors and water contractors during periods when Delta pumping is insufficient to meet downstream demands.

DWR stores water in San Luis Reservoir when Banks Pumping Plant pumping exceeds SWP Contractor demands, and releases water to the California Aqueduct system when Banks Pumping Plant pumping is insufficient to meet demands. The reservoir allows the SWP to meet peak-season demands that supplies available at Banks Pumping Plant.

San Luis Reservoir is generally filled in the spring or even earlier in some years. When all SWP demands are met, including diversion to storage facilities south of the Delta, and Table A demands, and the Delta is in excess conditions, DWR would use available excess pumping capacity at Banks Pumping Plant to make excess water supplies, called Article 21 water under the long-term SWP water supply contracts, available to the SWP Contractors.

Article 21 describes the conditions under which water can be delivered in addition to the amounts specified in Table A of the contracts.

Article 21 provides, in part: "Each year from water sources available to the project, the State shall make available and allocate interruptible water to contactors. Allocations of interruptible water in any one year may not be carried over for delivery in a subsequent year, nor shall the delivery of water in any year impact a contractor's approved deliveries of annual [Table A water] or the contractor's allocation of water for the next year. Deliveries of interruptible water in excess of a contractor's annual [Table A water] may be made if the deliveries do not adversely affect the State's delivery of annual [Table A water] to other contractors or adversely affect project operations…"

Unlike Table A water, which is an allocated annual SWP supply made available for scheduled delivery throughout the year, Article 21 water is an interruptible water supply made available only when certain conditions exist. However, while not a dependable supply, Article 21 water is an important part of the total SWP supplies provided to the SWP contractors. As with all SWP water, Article 21 water is pumped consistent with the existing terms and conditions of SWP water rights permits, and is pumped from the Delta under the same environmental, regulatory, and operational constraints that apply to all SWP operations.

When Article 21 water is only available as long as the required conditions exist as determined by DWR. Since Article 21 deliveries are in addition to scheduled Table A deliveries, this supply is delivered to SWP contractors that can, on relatively short notice, put it to beneficial use. SWP contractors have used Article 21 water to meet needs such as additional short-term irrigation demands, replenishment of local groundwater basins, short-term substitution of local supplies and storage in local surface reservoirs for later use by the requesting SWP contractor, all of which provide SWP contractors with opportunities for better water management through more efficient coordination with their local water supplies. Allocated Article 21 water to a SWP contractor cannot be transferred.

Article 21 water is typically offered to SWP contractors on a short-term (daily or weekly) basis when all of the following conditions exist: the SWP share of San Luis Reservoir is physically full, or projected to be physically full; other SWP reservoirs south of the Delta are at their storage targets or the SWP conveyance capacity to fill these reservoirs is maximized; the Delta is in excess condition; current Table A and SWP operational demands are being fully met; and Banks Pumping Plant has export capacity beyond that which is needed to meet all Table A and other SWP operational demands. The increment of available unused Banks Pumping Plant capacity is offered as the Article 21 delivery capacity. SWP contractors then indicate their desired rate of delivery of Article 21 water. DWR allocates the available Article 21 water in proportion to the requesting SWP contractors annual Table A amounts if requests exceed the amount offered. Deliveries can be discontinued at any time when SWP operations change. In the modeling for Article 21, deliveries are only made in months when the SWP share of San Luis Reservoir is full. In actual operations, Article 21 may be offered a short period in advance of actual filling.

By April or May, demands from both agricultural and M&I SWP Contractors usually exceed the pumping rate at Banks, and releases from San Luis Reservoir to the SWP facilities are needed to supplement the Delta pumping at Banks Pumping Plant to meet SWP contractor demands for Table A water

During the summer period, DWR is also releasing water from Lake Oroville to supplement Delta inflow and allow Banks Pumping Plant to export the stored Lake Oroville water to help meet demand. These releases are scheduled to maximize export capability and gain maximum benefit from the stored water while meeting fish flow requirements, temperature requirements, Delta water quality, and all other applicable standards in the Feather River and the Delta.

DWR must balance storage between Lake Oroville and San Luis Reservoirs carefully to meet flood control requirements, Delta water quality and flow requirements, and optimize the supplies to its SWP water contractors consistent with all environmental constraints. Lake Oroville may be operated to move water through the Delta to San Luis Reservoir via Banks Pumping Plant under different schedules depending on Delta conditions, reservoir storage volumes, and storage targets. Predicting those operational differences is difficult, as the decisions reflect operator judgment based on many real-time factors as to when to move water from Lake Oroville to San Luis Reservoir.

The SWP share of San Luis Reservoir is drawn down to meet SWP contractor demands and usually reaches its low point in late August or early September. From September through early October, demand for deliveries usually drops below the capacity of Banks Pumping Plant to divert from the Delta, and DWR can begin diverting water to San Luis Reservoir to begin refilling the reservoir. Unregulated flow reaching the Delta typically continues to decline throughout the fall until the first major storms occur, typically last fall or winter. Once the fall and winter storms increase runoff into the Delta, Banks Pumping Plant can increase its pumping rate and, in all but the driest years, eventually fill the state portion of San Luis Reservoir before April of the following year.

3A.5.2 Water Service Contracts, Allocations, and Deliveries

The following discussion presents DWR's practices for determining the overall amount of Table A water that can be allocated annually and the allocation process itself. Many variables control how much water the SWP can capture and provide to its SWP water contractors for beneficial use.

The allocations are developed from analysis of a broad range of variables that include the following.

- Volume of water stored in Lake Oroville.
- Flood operation restrictions at Lake Oroville.
- Volume of water stored in Lake Oroville.
- End-of- year target for water stored in Lake Oroville.
- Volume of water stored in San Luis Reservoir.
- End-of-month targets for water stored in San Luis Reservoir.
- Snow survey results.
- Forecasted runoff.
- Feather River flow requirements for fish habitat.
- Feather River service area delivery obligations.
- Anticipated Feather River downstream of Lake Oroville.
- Anticipated depletions in the Sacramento River basin.

- Anticipated Delta flow and water quality requirements.
- Precipitation and streamflow conditions since the last snow surveys and forecasts.
- SWP water contract delivery requests and delivery patterns.

From these and other variables, DWR staff estimates the SWP water supply available to meet Table A water deliveries SWP contractors and other SWP needs. The initial allocation announcement by the Director of DWR is made by December 1 of each year. The allocation of water is made with a conservative assumption of future precipitation, and generally in graduated steps, carefully avoiding over-allocating water before the hydrologic conditions are well defined for the year. The allocation of the available SWP supply to the SWP contractors is based on the SWP contractors' initial requests for Table A water. As the year proceeds and more information is available on the hydrologic conditions, the SWP contractors may revise their initial Table A water requests considering their actual local supplies.

Other influences affect the accuracy of estimates of annual demand for Table A water and the resulting allocation percentage. One factor is the contractual ability of SWP contractors to carry over allocated but undelivered Table A from one year to the next if capacity is available in San Luis Reservoir. SWP contractors would generally use their carryover supplies early in the calendar year if it appears that the capacity would be needed for SWP operations. Carryover supplies left in San Luis Reservoir by SWP contractors may result in higher storage levels in San Luis Reservoir at December 31 than would have occurred in the absence of carryover. The carryover program, when available, provides an opportunity for the SWP contractors to temporarily store allocated Table A water outside their service area. As Project pumping for SWP operations fills the SWP share of San Luis Reservoir, the SWP contractors are notified to take or lose their carryover supplies. If the SWP contractors are unable to take delivery of any of their carryover water, the carryover water converts to Project water as San Luis Reservoir fills. Article 21 water may become\s available for delivery to SWP Contractors if the demand for SWP operations are met.

The total water exported from the Delta and delivered by the SWP in any year is a function of a number of variables beyond those listed above that help determine Table A allocations.

The total amount of Article 21 water delivered does not provide a measure of the change in Delta diversions attributable to Article 21 deliveries. Instead, one must analyze the total exports from the Delta.

3A.5.2.1 Monterey Agreement

In 1994, DWR and certain representatives of the SWP water contractors negotiated a set of principles designed to modify the long-term SWP water supply contracts. This set of principles, which came to be known as the Monterey Agreement, helped to settle long-term water allocation disputes and to establish new water management strategies for the SWP. An Environmental Impact Report (EIR) was prepared on the Monterey Agreement and certified in 1995. Following certification of the EIR, 27 of the 29 SWP water contractors incorporated most of the principles into a contract amendment which is known as the Monterey Amendment. The Monterey Amendment was implemented in 1996. The 1995 EIR was subject to judicial challenge. In 2000, the EIR was found to be inadequate. DWR, the SWP water contractors, and the plaintiffs entered into a Settlement Agreement in 2003. As a result of the Settlement Agreement, the Court issued an order in June 2003 that the EIR be decertified and that DWR prepare a new EIR. The order also required DWR to continue to operate the SWP in accordance with the Monterey Amendment as it had done since 1996 and in accordance with the Settlement Agreement. A draft of the new EIR was released in October 2007. After incorporating over 600 comments, the final EIR was filed with the State Clearinghouse on May 5, 2010. After considering the final EIR and the alternatives, DWR approved the proposed project of continuing to operate under the existing Monterey Amendment and Settlement Agreement. The EIR, and the validity of the Monterey Amendment, was challenged in June 2010 and the issues raised in the complaints are currently being litigated.

3A.5.3 Project Facilities

3A.5.3.1 Oroville Field Division

Oroville Dam and related facilities comprise a multipurpose project. The reservoir stores winter and spring runoff, which is released into the Feather River to meet the Project's needs, Delta water quality, and fish and wildlife protection. It also provides p electrical generation, including pumpback operations, 750 TAF of flood control storage, and recreation opportunities.

The Oroville Project facilities include two small embankments, Bidwell Canyon and Parish Camp Saddle Dams and Oroville Dam which forms Lake Oroville. The lake has a surface area of 15,810 acres, a storage capacity of 3,538 TAF, and is fed by the North, Middle, and South forks of the Feather River. Average annual unimpaired runoff into the lake is about 4.5 MAF.

A maximum of 17,400 cfs can be released through the Edward Hyatt Power Plant, located underground near the left abutment of Oroville Dam. Three of the six units are conventional generators driven by vertical-shaft, Francis-type turbines. The other three are motor-generators coupled to Francis-type, reversible pump turbines. The latter units allow pumped storage operations. The intake structure has an overflow type shutter system that determines the level from which water is drawn.

Approximately 4 miles downstream of Oroville Dam and Edward Hyatt Power Plant is the Thermalito Diversion Dam. Thermalito Diversion Dam consists of a 625-foot-long, concrete gravity section with a regulated ogee spillway that releases water to the low flow channel of the Feather River. On the right abutment is the Thermalito Power Canal regulating headwork structure.

The purpose of the diversion dam is to divert water into the 2-mile long Thermalito Power Canal that conveys water in either direction and creates a tailwater pool (Thermalito Diversion Pool) for Edward Hyatt Power Plant. The Thermalito Diversion Pool acts as a forebay when Hyatt is pumping water back into Lake Oroville. On the left abutment is the Thermalito Diversion Dam Power Plant, with a capacity of 615 cfs that releases water to the low-flow section of the Feather River.

Thermalito Power Canal hydraulically links the Thermalito Diversion Pool to the Thermalito Forebay (11.768 TAF), which is the off-stream regulating reservoir for Thermalito Power Plant.

Thermalito Power Plant is a generating-pumping plant operated in tandem with the Edward Hyatt Power Plant. Water released to generate power in excess of local and downstream requirements is conserved in storage and, at times, pumped back through both power plants into Lake Oroville during off-peak hours. Energy price and availability are the two main factors that determine if a pumpback operation is economical. Pumpback operation typically occur during off-peak hours when energy prices are lower. The Oroville Thermalito Complex has a capacity of approximately 17,000 cfs through the power plants. Water is returned to the Feather River via the Thermalito Afterbay river outlet.

Five agricultural districts divert water directly from the Thermalito Afterbay under the terms of water right settlement agreement with DWR. The diversion facilities replace the historic river diversion used by the local districts prior to the construction of the Thermalito Complex. The total capacity of afterbay diversions during peak demands is 4,050 cfs.

The Feather River Fish Hatchery (FRFH), mitigation for the construction of Oroville Dam, rears Chinook Salmon and steelhead and is operated by CDFW. The NMFS FERC BO is being developed at this time, and is considered to be implemented under all of the alternatives and the Second Basis of Comparison in this EIS. Both indirect and direct take resulting from FRFH operations will be authorized through Section 4(d) of the Endangered Species Act, in the form of NMFS-approved Hatchery and Genetic Management Plans (HGMPs). DWR and CDFW are jointly preparing HGMPs for the spring and fall-run Chinook Salmon and steelhead production programs at the Feather River Fish Hatchery.

3A.5.3.1.1 Current Operations—Minimum Flows and Temperature Requirements

Operation of Lake Oroville would continue under existing criteria until DWR receives the new FERC license. The temperature of the water released from Oroville Dam is designed to meet the temperature requirements for the FRFH, under the August 1983 CDFW Agreement titled Concerning the Operation of the Oroville Division of the State Water Project for Management of Fish and Wildlife, and for Robinson Riffle while also conserving the coldwater pool in Lake Oroville. Current operation indicates that water temperatures at Robinson Riffle are almost always met when the hatchery objectives are met.

Water is withdrawn from Lake Oroville at depths that provide sufficiently cold water to meet the FRFH and Robinson Riffle temperature targets. The reservoir depth from which water is released initially determines the river temperatures, but atmospheric conditions, which fluctuate from day to day, influence downstream river temperatures. Altering the reservoir release depth requires installation or removal of shutters at the intake structures. Shutters are held at the minimum depth necessary to release water that meets the FRFH and Robinson Riffle criteria. In order to conserve the coldwater pool during dry years, DWR strives to meet the Robinson Riffle temperatures by increasing releases to the low flow channel (LFC) rather than releasing colder water.

Additionally, DWR maintains a minimum flow of 600 cfs within the Feather River LFC as required by the 1983 CDFW Agreement (except during flood events when flows are governed by USACE's Water Control Manual and under certain other conditions as described in the 1984 FERC order). Downstream of the Thermalito Afterbay Outlet, in the high flow channel (HFC), per the license and the 1983 CDFW Agreement, minimum releases for flows in the Feather River are 1,000 cfs from April through September and 1,700 cfs from October through March, when the April-to-July unimpaired runoff in the Feather River is greater than 55 percent of normal. When the April-to-July unimpaired runoff is less than 55 percent of normal, the minimum flow requirements are 1,000 cfs from March to September and 1,200 cfs from October to February (Table 3A.11). The 1983 CDFW Agreement also states that if the April 1 runoff forecast in a given year indicates that the reservoir level would be drawn down to 733 feet, water releases for fish may be reduced, but not by more than 25 percent.

In addition, according to the 1983 Agreement, during the period of October 15 to November 30, if the average highest 1-hour flow of combined releases exceeds 2,500 cfs, then the minimum flow must be no lower than 500 cfs less than that flow through the following March 31 (with the exception of flood management, accidents, or maintenance.) In practice, flows are maintained below 2,500 cfs from October 15 to November 30 to prevent spawning in the overbank areas.

Table 3A.11 Combined Minimum Instream Flow Requirements in the Feather River below Thermalito Afterbay Outlet When Lake Oroville Elevation is Projected to be Greater vs. Less than 733 Feet in the Current Water Year

Conditions	Period	Minimum Flows (cfs)
When Lake Oroville Elevation is Projected to be Greater Than 733 feet and the Preceding Water Year's April–July Water Conditions are > 55 percent of Normal[a]	October–February	1,700
	March	1,700
	April–September	1,000
When Lake Oroville Elevation is Projected to be Greater Than 733 feet and the Preceding Water Year's April–July Water Conditions are < 55 percent of Normal[a]	October–February	1,200
	March	1,000
	April–September	1,000
When Lake Oroville Elevation is Projected to be Less Than 733 feet in the Current Water Year[b]	October–February	900 < flow < 1,200
	March	750 < flow < 1,000
	April–September	750 < flow < 1,000

Notes:

a. Normal is defined as the Mean April–July Unimpaired Runoff of the Feather River near Oroville of 1,942 TAF (1911–1960).

b. In accordance with FERC's Order Amending License dated September 18, 1984, Article 53 was amended to provide a third tier of minimum flow requirements defined as follows: If the April 1 runoff forecast in a given water year indicates that, under normal operation of Project 2100, the reservoir level would be drawn to elevation 733 feet (approximately 1,500 TAF), releases for fish life in the above schedule may suffer monthly deficiencies in the same proportion as the respective monthly deficiencies imposed upon deliveries of water for agricultural use from the Project. However, in no case shall the fish water releases in the above schedule be reduced by more than 25 percent.

Current operations of the Oroville Facilities are governed by water temperature requirements at two locations: the FRFH and in the LFC at Robinson Riffle. DWR has taken various temperature management actions to achieve the water temperature requirements, including curtailing pumpback operations, removing shutters at the intakes of the Hyatt Pumping-Generating Plant, releasing flow through the river valves (for FRFH only), and redirecting flows at the Thermalito Diversion Dam to the LFC (for Robinson Riffle only).

To date, the river valves have been used infrequently. Prior to 1992, they were used twice: first in 1967 during the initial construction of the dam, and second in 1977 during the drought of record. Since 1992, the river valves have only been used for temperature control: in 2001, 2002, and 2008. DWR plans to manage its cold water storage and its intake shutters in order to meet its temperature obligations. Other than local diversions, outflow from the Oroville Project is to the Feather River at the LFC and Thermalito Afterbay. Combined outflow typically varies from spring seasonal highs averaging 8,000 cfs to between 1,200 cfs and 2,400 cfs in the fall. The average annual outflow from the Project is in excess of 3 MAF to support downstream water supply, environmental, and water quality needs.

Table 3A.12 shows an example of releases from Oroville Project Facilities for various downstream uses during dry hydrologic conditions (Water Years [WYs] 2008 and 2009). As a practical matter, water supply is released for exports only after all other Project obligations are met, including Delta requirements and deliveries to local settlement contractors. A portion of the water released for minimum instream requirements and may be exported in the Delta for other water supply purposes.

Table 3A.12 Historical Records of Releases from the Oroville Facilities in 2008 and 2009, by Downstream Use

Downstream Use	Water Year 2008 Release		Water Year 2009 Release	
	Volume (TAF)	Percentage	Volume (TAF)	Percentage
Feather River Service Area	1,039	47	1,077	40
Instream and Delta Requirements	1,043	47	1,140	42
Flood Management	0	0	0	0
Support of Exports	130	6	506	19
Total	**2,212**	**100**	**2,723**	**100**

Source: DWR SWP Operations Control Office.

3A.5.3.1.2 Low Flow Channel

The 1983 Agreement specifies that DWR release a minimum of 600 cfs into the Feather River from the Thermalito Diversion Dam for fishery purposes. This is the total volume of flows from the diversion dam outlet, diversion dam power plant, and FRFH pipeline.

3A.5.3.1.3 High Flow Channel

Based on the 1983 Agreement, Table 3A.13 summarizes the minimum flow requirement for the HFC when releases would not draw Lake Oroville below elevation 733 feet above mean sea level (ft msl).

Table 3A.13 High Flow Channel Minimum Flow Requirements as Measured Downstream from the Thermalito Afterbay Outlet

Forecasted April-through-July Unimpaired Runoff (Percent of Normal*)	Minimum Flow in HFC (cfs) October through February	Minimum Flow in HFC (cfs) March	Minimum Flow in HFC (cfs) April through September
55 percent or greater	1,700	1,700	1,000
Less than 55 percent	1,200	1,000	1,000

Source: 1983 Agreement.

Notes:
* The preceding water year's unimpaired runoff shall be reported in Licensee's Bulletin 120, Water Conditions in California-Fall Report. The term "normal" is defined as the April-through-July mean unimpaired runoff near Oroville of 1,942 TAF in the period of 1911 through 1960.

HFC = High Flow Channel.

If the April 1 forecast in a given water year indicates that Lake Oroville would be drawn down to elevation 733 feet mean sea level, minimum flows in the HFC may be diminished on a monthly average basis, in the same proportion as the respective monthly deficiencies imposed on deliveries for agricultural use of the Project. However, in no case shall the minimum flow releases be reduced by more than 25 percent. If between October 15 and November 30, the highest total 1-hour flow exceeds 2,500 cfs, DWR shall maintain a minimum flow within 500 cfs of that peak flow, unless such flows are caused by flood flows, or an inadvertent equipment failure or malfunction.

3A.5.3.2 Temperature Requirements

3A.5.3.2.1 Low Flow Channel

NMFS has established a water temperature requirement for steelhead trout and spring-run Chinook Salmon at Feather River RM 61.6 (Robinson Riffle in the LFC) from June 1 through September 30. The water temperature should be maintained at less than or equal to 65°F on a daily average basis.

3A.5.3.2.2 High Flow Channel

While no numeric temperature requirement currently exists for the HFC, the 1983 Agreement requires DWR to provide suitable Feather River water temperatures for fall-run salmon not later than September 15, and to provide for suitable water temperatures below the Thermalito Afterbay Outlet for shad, striped bass, and other warm water fish between May 1 and September 15.

Current FRFH intake water temperature, as required by the 1983 CDFW and DWR Agreement and the FERC license are in Table 3A.14.

Table 3A.14 Feather River Fish Hatchery Temperature Requirements

Period	Temperature (°F) (±4°F Allowed)
April 1 – November 30	
April 1–May 15	51
May 16–May 31	55
June 1–June 15	56
June 16–August 15	60
August 16–August 31	58
September 1–September 30	52
October 1–November 30	51
December 1–March 31	No greater than 55

3A.5.3.3 Flood Control

Flood control operations at Oroville Dam are conducted in coordination with DWR's Flood Operations Center and in accordance with the requirements set forth by USACE. The Federal Government shared the expense of Oroville Dam, which provides up to 750 TAF of flood control space. The spillway is located on the right abutment of the dam and has two separate elements: a controlled gated outlet and an emergency uncontrolled spillway. The gated control structure releases water to a concrete-lined chute that extends to the river. The uncontrolled emergency spill flows over natural terrain.

3A.5.3.4 Feather River Ramping Rate Requirements

Maximum allowable ramp-down release requirements are intended to prevent rapid reductions in water levels that could potentially cause redd dewatering and stranding of juvenile salmonids and other aquatic organisms. Ramp-down release requirements to the LFC during periods outside of flood management operations, and to the extent controllable during flood management operations, are shown in Table 3A.15.

Table 3A.15 Lower Feather River Ramping Rates

Releases to the Feather River Low Flow Channel (cfs)	Rate of Decrease (cfs)
5,000 to 3,501	1,000 per 24 hours
3,500 to 2,501	500 per 24 hours
2,500 to 600	300 per 24 hours

Source: National Marine Fisheries Service 2004.

3A.5.3.4.1 Federal Energy Regulatory Commission Relicensing of the Oroville Project

Until FERC issues the new license for the Oroville Project, DWR will not significantly change the operations of the facilities. When the FERC license is issued, it is assumed that the future flows will remain the same downstream of Thermalito Afterbay Outlet.

The original FERC license to operate the Oroville Project expired in January 2007. Since then, annual licenses have been issued, with DWR operating to the existing FERC license. FERC continues to issue an annual license until it is prepared to issue the new 50-year license. To prepare for the expiration of the FERC license, DWR began working on the relicensing process in 2001. As part of the process, DWR entered into an SA, signed in 2006, with state, federal, and local agencies, SWP water contractors, non-governmental organizations, Tribal governments, and others to implement improvements within the FERC boundary. The FERC boundary includes all of the Oroville Project facilities, extends upstream into the tributaries of Lake Oroville, includes portions of the LFC on the lower Feather River and downstream of the Thermalito Afterbay Outlet into the HFC. In addition to the SA, a Habitat Expansion Agreement was negotiated to address the fish passage issue over Oroville Dam and NMFS and USFWS's Section 18 Authority under the Federal Power Act.

FERC prepared a Final EIS for the Oroville FERC re-licensing and completed it in 2007. A Final EIR was prepared by DWR and completed in 2008. A draft BO was prepared by NMFS in 2009 but is not yet final. SWRCB issued the Clean Water Act Section 401 Certification (401 Certification) for the project in 2010. The new FERC license has not been adopted, but is anticipated to include the FERC license terms and conditions, the 401 Certification, and the terms and conditions therein; DWR will also comply with the requirements in the NMFS BO.

The new FERC license may include most if not all of the commitments from the SA. The SA does not change the flows in the HFC although there would be a proposed increase in minimum flows in the LFC. The SA includes habitat restoration actions such as side-channel construction, structural habitat improvement such as boulders and large woody debris, spawning gravel augmentation, a fish counting weir, riparian vegetation and floodplain restoration, and facility modifications to improve coldwater temperatures in the low and high flow channels. The SA, EIR, and the FERC Biological Assessment provide substantial detail on the SA restoration actions in the Lower Feather River.

3A.5.3.4.2 Minimum Flows in the Low Flow and High Flow Channels

The SA requires a minimum flow of 700 cfs to be released into the LFC. The minimum flow is 800 cfs from September 9 to March 31 of each year to accommodate spawning of anadromous fish, unless the NMFS, USFWS, CDFW, and SWRCB provide a written notice that a lower flow (between 700 cfs and 800 cfs) substantially meets the needs of anadromous fish. If DWR receives such a notice, it may operate consistent with the revised minimum flow. HFC flows would remain the same as the existing license, consistent with the 1983 DWR and CDFW Operating Agreement to continue to protect Chinook Salmon from redd dewatering (A108.2 of the SA [Appendix C]).

3A.5.3.4.3 Water Temperatures for the Feather River Fish Hatchery

When the FERC license is issued, DWR would use the temperatures in Table 3A.16 as targets, and would seek to achieve them through the use of operational measures described below.

Table 3A.16 Maximum Mean Daily Temperatures

Period	Maximum Mean Daily Temperature (°F)
September 1–September 30	56
October 1–May 31	55
June 1–August 31	60

The maximum mean daily temperatures are calculated by adding the hourly temperatures achieved each day and dividing by 24. DWR would strive to meet maximum mean daily temperatures through operational changes including but not limited to (1) curtailing pump-back operation; (2) removing shutters on Hyatt intake; and (3) altering river valve refurbishment. DWR would consider the use of the river valve up to a maximum of 1500 cfs; however these flows need not exceed the actual flows in the HFC, and should not be less than those specified in HFC minimum flows described above, which would not change with the new FERC license. During this interim period, DWR would not be in violation if the maximum mean daily temperatures are not achieved through operational changes.

Prior to FERC license implementation, DWR agreed to begin the necessary studies for the refurbishment or replacement of the river valve. On October 31, 2006, DWR submitted to specific agencies a Reconnaissance Study of Facilities Modification to address temperature habitat needs for anadromous fisheries in the LFC and the HFC. Under the provisions of SA Appendix B Section B108(a), DWR has begun a study to evaluate whether to refurbish or replace the river valve that may at times be used to provide cold water for the FRFH.

Upon completion of facilities modification(s) as provided in A108, and no later than the end of year ten following license issuance, the temperatures would become requirements, and DWR would not exceed the maximum mean daily temperatures for the remainder of the License term, except in Conference Years as referenced in A107.2(d).

During the term of the FERC license, DWR would not exceed the hatchery water temperatures in Table 3A.17. There would be no minimum temperature requirement except for the period of April 1 through May 31, during which the temperatures would not fall below 51°F.

Table 3A.17 Hatchery Water Temperatures

Period	Maximum Hatchery Water Temperature (°F)
September 1–September 30	56
October 1–November 30	55
December 1–March 31	55
April 1–May 15	55
May 16–May 31	59
June 1–June 15	60
June 16–August 15	64
August 16–August 31	62

Upon completion of facilities modification(s) as provided in A108 (discussed below), DWR may develop a new table for hatchery temperature requirements that is at least as protective as Table 3A.17. If a new table is developed, it would be developed in consultation with the Ecological Committee, including specifically USFWS, NMFS, CDFW, SWRCB, and RWQCBs. The new table would be submitted to FERC for approval, and upon approval shall become the temperature requirements for the hatchery for the remainder of the license term.

During Conference Years, as defined in A108.6, DWR would confer with USFWS, NMFS, CDFW, and SWRCB to determine proper temperature and hatchery disease management goals.

3A.5.3.4.4 Water Temperatures in the Lower Feather River

Under the SA, DWR is committing to a Feasibility Study and Implementation Plan to improve temperature conditions (facilities modification[s]) for spawning, egg incubation, rearing and holding habitat for anadromous fish in the LFC and HFC (A108.4). The Plan would recommend a specific alternative for implementation and would be prepared in consultation with the resource agencies.

Prior to the facilities modification(s) described in Article A108.4, if DWR does not achieve the applicable Robinson Riffle temperature (specified in Table 2-22 of the FERC license agreement) upon release of the specified minimum flow, DWR would singly, or in combination with other parties, perform the following actions:

- Curtail pump-back operation.
- Remove shutters on Hyatt Intake.
- Increase flow releases in the LFC up to a maximum of 1500 cfs, consistent with the minimum flow standards in the HFC and temperature targets specified in Table 2-22 of the FERC license agreement; and if the temperatures are not met there is no license violation.

If in any given year DWR anticipates that these measures would not achieve the temperatures in Table 3A.18, Low Flow Channel as Measured at Robinson Riffle, DWR would consult with the NMFS, USFWS, CDFW, and SWRCB to discuss potential approaches to best managing the remaining coldwater pool in Lake Oroville, which may result in changes in the way Licensee performs actions (1), (2), and (3) listed above.

Table 3A.18 Low Flow Channel as Measured at Robinson Riffle

Month	Daily Mean Value Temperature (°F)
January	56°F
February	56°F
March	56°F
April	56°F
May 1–15	56–63°F*
May 16–31	63°F
June 1–15	63°F
June 16–30	63°F
July	63°F
August	63°F
September 1–8	63–58°F*
September 9–30	58°F
October	56°F
November	56°F
December	56°F

Note:
* Indicates a period of transition from the first temperature to the second temperature.

After completing the facilities modification(s), DWR would no longer be required to perform the measures listed in (1), (2), and (3), unless temperatures in Table 3A.17, Hatchery Water Temperatures, are exceeded. DWR would operate the Project to meet temperature requirements, unless it is a Conference Year. The proposed water temperature objectives, measured at the southern FERC project boundary, would be evaluated for potential water temperature improvements in the HFC. DWR would study options for facilities modification(s) to achieve those temperature benefits.

There would be a testing period of at least 5 years to determine whether the HFC temperature benefits are being realized. At the end of the testing period, DWR would prepare a testing report that may recommend changes in the facilities, compliance requirements for the HFC and the definition of Conference Years (those years where DWR may have difficulties in achieving the temperature requirements due to hydrologic conditions.) The challenges of implementing temperatures objectives would require the phased development of water temperature objectives and likely, a revision to the objectives prior to values in Table 3A.19, High Flow Channel as Measured at Downstream Project Boundary, becoming a compliance obligation.

Table 3A.19 High Flow Channel as measured at Downstream Project Boundary

Month	Daily Mean Value Temperature (°F)
January	56
February	56
March	56
April	61
May	64
June	64
July	64
August	64
September	61
October	60
November	56
December	56

3A.5.3.4.5 Habitat Expansion Agreement

The Habitat Expansion Agreement is a component of the 2006 SA to address DWR obligations in regard to blockage and fish passage issues related to the construction of Oroville Dam. Because it deals with offsite mitigation, it will not be included in the new FERC license.

Construction of the Oroville Facilities and PG&E's construction of other hydroelectric facilities on the upper Feather River tributaries blocked passage and reduced available habitat for ESA listed anadromous salmonids Central Valley spring-run Chinook Salmon and steelhead. The reduction in spring-run habitat resulted in spatial overlap with fall-run Chinook Salmon and has led to increased redd superimposition, competition for limited habitat, and genetic introgression. FERC relicensing of hydroelectric projects in the Feather River basin has focused attention on the desirability of expanding spawning, rearing and adult holding habitat available for Central Valley spring-run Chinook Salmon and steelhead. The SA Appendix F includes a provision to establish a habitat enhancement program with an approach for identifying, evaluating, selecting and implementing the most promising action(s) to expand such spawning, rearing and adult holding habitat in the Sacramento River Basin as a contribution to the conservation and recovery of these species. The specific goal of the Habitat Expansion Agreement is to expand habitat sufficiently to accommodate an estimated net increase of 2,000 to 3,000 spring-run or steelhead for spawning (Habitat Expansion

Threshold). The population size target of 2,000 to 3,000 spawning individuals was selected because it is approximately the number of spring-run Chinook Salmon and steelhead that historically migrated to the upper Feather River. Endangered species issues will be addressed and documented on a specific project basis for any restoration actions chosen and implemented under the Habitat Expansion Agreement.

3A.5.3.4.6 Anadromous Fish Monitoring on the Lower Feather River

Until the new FERC license is issued and until a new monitoring program is adopted, DWR will continue to monitor anadromous fish in the Lower Feather River. As required in the SA (Article A101), within 3 years following the FERC license issuance, DWR will develop a comprehensive Lower Feather River Habitat Improvement Plan that will provide an overall strategy for managing the various environmental measures developed for implementation, including the implementation schedules, monitoring, and reporting. Each of the programs and components of the Lower Feather River Habitat Improvement Plan will be individually evaluated to assess the overall effectiveness of each action within the Lower Feather River Habitat Improvement Plan.

3A.5.3.5 Delta Field Division

SWP facilities in the southern Delta include CCF, John E. Skinner Fish Facility, and the Banks Pumping Plant. CCF is a 31 TAF reservoir located in the southwestern edge of the Delta, about 10 miles northwest of the city of Tracy. CCF provides storage to allow off-peak pumping of water exported through Banks Pumping Plant, moderates the effect of the pumps on the fluctuation of flow and stage in adjacent Delta channels, and collects sediment before it enters the California Aqueduct. Diversions from Old River into CCF are regulated by five radial gates.

3A.5.3.5.1 John E. Skinner Delta Fish Protective Facility

The John E. Skinner Delta Fish Protective Facility is located west of the CCF, 2 miles upstream of the Banks Pumping Plant. The Skinner Fish Facility screens fish away from the pumps that lift water into the California Aqueduct. Large fish and debris are directed away from the facility by a 388-foot long trash boom. Smaller fish are diverted from the intake channel into bypasses by a series of metal louvers, while the main flow of water continues through the louvers and towards the pumps. These fish pass through a secondary system of screens and pipes into seven holding tanks, where a subsample is counted and recorded. The salvaged fish are then returned to the Delta in oxygenated tank trucks.

3A.5.3.5.2 Harvey O. Banks Pumping Plant

The Banks Pumping Plant is in the south Delta, about 8 miles northwest of Tracy and marks the beginning of the California Aqueduct. The plant provides the initial lift of water 244 feet into the California Aqueduct by means of 11 pumps, including two rated at 375 cfs capacity, five at 1,130 cfs capacity, and four at

1,067 cfs capacity. The nominal capacity of the Banks Pumping Plant is 10,300 cfs.

Permits issued by the USACE regulate the rate of diversion of water into CCF for pumping at Banks. This diversion rate is normally restricted to 6,680 cfs as a three-day average inflow to CCF and 6,993 cfs as a one-day average inflow to CCF. CCF diversions may be greater than these rates between December 15 and March 15, when the inflow into CCF may be augmented by one-third of the San Joaquin River flow at Vernalis when those flows are equal to or greater than 1,000 cfs.

500 cfs Diversion Increase During July, August, and September

During the months of July, August, and September, the maximum allowable daily diversion rate into CCF was increased from 13,870 acre-feet to 14,860 acre-feet and 3-day average diversions from 13,250 acre-feet to 14,240 acre-feet (500 cfs per day equals 990 acre-feet per day). The increase in diversions was permitted in 2000, and was recently extended through 2016. The purpose of this diversion increase into CCF for use by the SWP is to recover export reductions made due to actions taken to benefit fisheries resources. The increased diversion rate does not result in any increase in water supply deliveries above those that would occur in the absence of the increased diversion rate. This increased diversion over the 3-month period could result in an amount not to exceed 90 TAF each year.

Variations to hydrologic conditions coupled with regulatory requirements may limit the ability of the SWP to fully utilize the proposed increased diversion rate. Also, facility capabilities may limit the ability of the SWP to fully utilize the increased diversion rate.

Implementation of this action is contingent on meeting the following conditions.

- The increased diversion rate would not result in greater annual SWP water supply allocations than would occur in the absence of the increased diversion rate. Water pumped due to the increased capacity would only be used to offset reduced diversions that occurred or would occur because of actions taken to benefit fisheries.
- Use of the increased diversion rate would be in accordance with all terms and conditions of existing BOs governing SWP operations.
- All three temporary agricultural barriers (Middle River, Old River near Tracy and Grant Line Canal) must be in place and operating when SWP diversions are increased.

Between July 1 and September 30, if the combined salvage of listed fish species reaches a level of concern, the relevant fish regulatory agency would determine whether the 500 cfs increased diversion is or continues to be implemented.

Other SWP-operated facilities in and near the Delta include the NBA, the South Bay Aqueduct (SBA), the Suisun Marsh Salinity Control Gates (SMSCG), Roaring River Distribution System (RRDS), and up to four temporary barriers in the south Delta.

3A.5.3.5.3 Clifton Court Forebay

Clifton Court Forebay Aquatic Weed Control Program

Dense growth of submerged aquatic weeds in CCF, predominantly Egeria densa, can cause severe head loss and pump cavitation at Banks Pumping Plant when the stems of rooted plants break free, combine into "mats," and drift into the trash racks. This mass of uprooted and broken vegetation essentially forms a watertight plug at the trash racks and vertical louver array. The resulting blockage necessitates a reduction in the water pumping rate to prevent potential equipment damage through pump cavitation. Cavitation creates excessive wear and deterioration of the pump impeller blades. Excessive floating weed mats also block the passage of fish into the Skinner Fish Facility, thereby reducing the efficiency of fish salvage operations. Ultimately, this all results in a reduction in the volume of water diverted by the SWP. Algal blooms in CCF are also problematic because they degrade drinking water quality through tastes and odors and production of algal toxins.

Beginning in 1995, DWR applied copper-based herbicide complexes to control aquatic weeds and algal blooms in CCF. These herbicides included copper sulfate pentahydrate, Komeen,® and Nautique®. These herbicides were applied on an as-needed basis. Komeen® is a chelated copper herbicide (copper-ethylenediamine complex and copper sulfate pentahydrate) and Nautique® is a copper carbonate compound (see Sepro product labels).

The operational procedures for aquatic herbicide applications in CCF include:

- Apply aquatic pesticides as needed between July 1 and August 31.
- Monitor the salvage of listed fish at the Skinner Facility prior to the application of the herbicides in CCF.
- Close the radial intake gates at the entrance to CCF 24 hours prior to the application of herbicides to allow fish to move out of the proposed treatment areas and towards the salvage facility.
- The radial gates would remain closed for 24 hours after treatment to allow for at least 24 hours of contact time between the herbicide and the treated vegetation in the forebay. Gates would be reopened after a minimum of 48 hours.
- Komeen® would be applied by boat, starting at the shore and moving sequentially farther offshore in its application. Application would be made by a certified water contractor under the supervision of a California Certified Pest Control Advisor.
- Application of the herbicides would be to the smallest area possible that provides relief to SWP operations.

- Monitoring of the water column concentrations of copper is proposed during and after herbicide application. No monitoring of the copper concentration in the sediment or detritus is proposed.

Due to concerns that the pesticide treatments may adversely affect Green Sturgeon, during 2006 DWR ceased using aquatic pesticides and employed the use of a mechanical aquatic weed harvester.

If DWR resumes herbicide treatments in the CCF, they would occur only in July and August on an as-needed basis dependent upon the level of vegetation biomass in the enclosure. It is not possible to predict future CCF conditions with climate change. However, the frequency of herbicide applications is not expected to occur more than twice per year, as demonstrated by the history of past applications. Herbicides are typically applied early in the growing season when plants are susceptible to them during rapid growth and formation of plant tissues; or later in the season, when plants are mobilizing energy stores from their leaves towards their roots for overwintering senescence.

Aquatic weed management problems in CCF have historically been limited to about 700 acres of the 2,180 total water surface acres. Application of the herbicide during 1995–2006 was limited to only those areas in CCF that require treatment. The copper-based herbicides, Komeen® or Nautique, were applied by helicopter or boat to only those portions where aquatic weeds presented a management problem to the State.

Historically, algal problems in CCF have been caused by attached benthic cyanobacteria that produce unpleasant tastes and odors in the domestic drinking water derived from the SWP operations. Copper sulfate is applied to the nearshore areas of CCF when results of solid phase microextraction (American Public Health Association, American Water Works Association, and Water Environment Federation 2005) analysis exceed the control tolerances (2-methylisoborneol [MIB] < 5 nanograms per liter [ng/L] and geosmin < 10 ng/L are not detected by consumers in drinking water supplies) (California Department of Water Resources 2013). Geosmin and MIB are natural byproducts of algal chlorophyll production. Highest biomass of taste- and odor-producing cyanobacteria was present in the nearshore areas but not limited to shallow benthic zone. Historically, application areas varied considerably based on the extent of the algal infestation in CCF.

DWR receives Clean Water Act pollutant discharge coverage under the National Pollutant Discharge Elimination System (NPDES) Permit No. CAG990005 (General Permit) issued by SWRCB for application of aquatic pesticides to the SWP's aqueducts, forebays, and reservoirs. SWRCB functions as the USEPA's non-federal representative for implementation of the Clean Water Act in California.

A Mitigated Negative Declaration was prepared by DWR to comply with CEQA requirements associated with regulatory requirements established by SWRCB. DWR, a public entity, was granted a Section 5.3 Exception by SWRCB (Water

Quality Order 2004-0009-DWQ). Under the exception, DWR is not required to meet the copper limitation in receiving waters defined in DWR's Aquatic Pesticide Application Plan as occurring on an as-needed basis during the year, after other options have been exhausted.

3A.5.3.5.4 Proposed Measures to Reduce Fish Mortality

DWR plans to implement a number of projects to reduce fish mortality, including (1) implementing the CCF Fishing Facility Project, (2) improving fish conditions at the Curtis Landing Fish Release Site, (3) constructing a Fish Science Building for fish studies, (4) building two new release sites, (5) developing a CVP and SWP coordinated fish release plan, and (6) improving herbicide application procedures to protect listed species.

DWR plans to implement the CCF Fishing Facility Project to reduce salmon and steelhead pre-screen losses in CCF by (a) building a concrete support pad to improve crane maintenance of the radial gates, (b) improve angler access and conditions to reduce the number of predators affecting listed species, and (c) increase security operations.

DWR plans to rebuild the Curtis Landing fish release site to reduce salmon predation by; (a) building a larger pump to more effectively flush salvaged fish, (b) screening the water pump to prevent fish entrainment, and (c) building two release sites with improved facilities to improve fish releases and lengthen time between using repeated release sites.

DWR plans to open a Fish Science Building and storage warehouse at Skinner Fish Salvage Facility in order to conduct fisheries studies in support of improving endangered species protection for the State Water Project. The facilities would support; (a) the CCF Predation Study, (b) the Skinner Release Site Efficiency Study, (c) Acoustic Tagging Study, and (d) future studies related to the State Water Project.

DWR plans to build two new fish release sites that will help lengthen out the rotation time between release locations and will assist in reducing listed species predation at release sites. Facilities were created at Little Baja and Manzo Ranch on Sherman Island.

If DWR resumes application of Komeen® (copper-ethylenediamine complex) or similar aquatic herbicides, it would be applied according to the manufacturer's instructions, following the operational procedures described in Table P-24, Section 6.6.3 of the 2009 NMFS BO, and in accordance with state and federal law. CCF elevation would be raised to +2 feet above mean sea level for an average depth of about 6 feet within the maximum 700-water surface acre treatment zone. The herbicide would be applied at a rate of 13 gallons per surface acre to achieve a final operational concentration in the water body of 0.64 mg/L Cu2+ (640 parts per billion [ppb]). The application rate of 13 gallons per surface acre is calculated based on mean depth. The product label allows applications up to 1 mg/L (1,000 ppb or 1 ppm). DWR would apply Komeen® in accordance with the product label that states, "If treated water is a source of potable water, the residue of copper must not exceed 1 ppm (mg/L)."

In 2005, 770 surface acres were treated with Komeen®. CCF has a mean depth of 6 feet at 2 feet above mean sea level; thus the volume treated was 4,620 af.

The calculated concentration of Cu^{2+} for the 2005 application was 0.65 mg/L Cu^{2+}. The copper level required to control Egeria densa (the main component of the CCF aquatic plant community) is 0.5–0.75 mg/L Cu^{2+}. Source: Komeen® Specimen Label.

Toxicity testing and literature review of LC-50 levels for salmon, steelhead, Delta Smelt, and Green Sturgeon were conducted. Copper-complexes are generally much less toxic to fish than the inorganic copper salts, including copper sulfate. Once applied, the initial stock copper concentration is reduced rapidly by dilution, plant uptake, and adsorption to particulate matter. The half-life for the commercial copper-complexes is very short for the copper-EDA complexes (0.07 to 0.18 days). Komeen® applied according to the Specimen Label (SePro Corporation) in the receiving water would achieve final concentration levels. Based on the treatment elevation of +2 feet, only about 20 percent (4,630 af) of the 22,665 acre-feet CCF would be treated. If herbicide treatments resume, the copper would be applied beginning on one side of the CCF allowing fish to move out of the treatment area. In addition, Komeen® would be applied from boats at a slower rate than in previous years when a helicopter was used.

3A.5.3.6 South Bay Aqueduct

The SBA conveys water from the Delta through over 40 miles of pipelines and canals to the Zone 7 Water Agency, Alameda County, and Santa Clara Valley Water Districts, which in turn provide service to the cities of Livermore, Dublin, Pleasanton, San Ramon, Freemont, Newark, Union City, Milpitas, Santa Clara, and San Jose. The SBA was the first conveyance facility constructed for the SWP and was designed for a capacity of 300 cfs. The facility is currently being upgraded to increase the capacity to 430 cfs to meet Zone 7 Water Agency's future needs and provide operational flexibility to reduce SWP peak power consumption. Modeling of this facility uses the full 430 cfs capacity.

3A.5.3.7 North Bay Aqueduct Intake at Barker Slough

The Barker Slough Pumping Plant (BSPP) diverts water from Barker Slough into the NBA for delivery to the Solano County Water Agency (SCWA) and the Napa County Flood Control and Water Conservation District (Napa County FC&WCD) (NBA water contractors).

The NBA intake is located approximately 10 miles from the main stem Sacramento River at the end of Barker Slough. Delta Smelt monitoring is required at Barker Slough.

The existing NBA system has several existing and potential future limitations, as described in the following section.

3A.5.3.7.1 Existing Limitations

Water Quality

Water quality in Barker Slough becomes degraded during winter and spring rainfall events. The Barker Slough drainage basin is characterized by grazing lands, erodible soils, and urban uses. Rainfall runoff can include elevated levels of coliform bacteria, organic matter, turbidity, and pollutants. The water is costly to treat to meet drinking water standards.

Pumping Restrictions

The NBA SWP water contractors have an existing water supply through the NBA of 131,181 acre-feet per year based on existing contracts and water right settlements. The 2008 USFWS BO limited the total SWP annual diversion at the BSPP to approximately 71 TAF. In 2009, an incidental take permit issued CDFW for the preservation of longfin smelt populations imposed further pumping restrictions at the BSPP of a maximum of 50 cfs (7-day average flows) during dry and critical dry years from January 15 to March 31.

Water Supply Delivery Limitations

The NBA system had the design capacity of 175 cfs, provided all 10 pumps were installed at BSPP. There are currently only nine pumps (seven large, two small) at BSPP. Installation of the tenth pump was deferred, resulting in the current design capacity of 162.5 cfs. However, until late 2011, the system delivered a maximum of only 140 cfs due to thick bio-film growth on the interior of the NBA pipeline, which reduced the effective diameter of the pipe. In October 2011, maximum allowable pumping at BSPP was further reduced to keep the pressure in the pipeline within acceptable limits.

3A.5.3.7.2 Potential Future Limitations

Pumping Restrictions

The pumping capacity of the existing NBA system could be subjected to additional restrictions in the future. In June 2009, NMFS issued a BO that included determinations for winter and spring-run Chinook Salmon, Central Valley Steelhead and North American Green Sturgeon of the southern distinct population segment. State and federal agencies working on ways to improve the Delta ecosystem and water supply conveyance, including work under the Bay Delta Conservation Plan (BDCP), have identified the Yolo Bypass and Cache Slough Complex as important Wetlands Restoration Opportunity Areas. Implementing these developing strategies would likely support increases in Delta Smelt, longfin smelt and salmonid populations in the Barker Slough area. The increased presence of these listed species could result in further pumping restrictions at the BSPP as resource agencies work to balance ecosystem restoration and water supply delivery goals.

Projected Water Delivery Demands

The NBA SWP water contractors project that by 2030 they would need the NBA to deliver their total water supply of 131,181 af/year (compared to current withdrawal of 71 TAF/year). To meet projected future demand, required peak flow through the NBA is estimated at 240 cfs.

3A.6 Coordinated Facilities of the CVP and SWP

3A.6.1 Joint Project Facilities

3A.6.1.1 Suisun Marsh

Since the early 1970s, the California Legislature, SWRCB, Reclamation, CDFW, Suisun Resource Conservation District (SRCD), DWR, and other agencies have worked to preserve beneficial uses of Suisun Marsh in mitigation for perceived impacts of reduced Delta outflow on the salinity regime. Early on, salinity standards were set by SWRCB to protect alkali bulrush production, a primary waterfowl plant food. The most recent standard under SWRCB D-1641 acknowledges that multiple beneficial uses deserve protection.

A contractual agreement among DWR, Reclamation, CDFW, and SRCD contains provisions for DWR and Reclamation to mitigate the effects on Suisun Marsh channel water salinity from SWP and CVP operations and other upstream diversions. The Suisun Marsh Preservation Agreement (SMPA) requires DWR and Reclamation to meet salinity standards, sets a timeline for implementing the Plan of Protection, and delineates monitoring and mitigation requirements. In addition to the contractual agreement, SWRCB D-1485 codified salinity standards in 1978, which have been carried forward to SWRCB D-1641.

There are two primary physical mechanisms for meeting salinity standards set forth in SWRCB D-1641 and the SMPA: (1) the implementation and operation of physical facilities in the Marsh; and (2) management of Delta outflow (i.e., facility operations are driven largely by salinity levels upstream of Montezuma Slough and salinity levels are highly sensitive to Delta outflow). Physical facilities (described below) have been operating since the early 1980s and have proven to be a highly reliable method for meeting standards. However, since Delta outflow cannot be actively managed by the Suisun Marsh Program, Marsh facility operations must be adaptive in response to changing salinity levels in the Delta.

3A.6.1.1.1 Suisun Marsh Wildlife Habitat Management, Preservation, and Restoration Plan

Reclamation, USFWS, CDFW, and federal and state agencies developed the Suisun Marsh Habitat Management, Preservation, and Restoration Plan (SMP). The SMP is to restore 5,000 to 7,000 acres of managed wetland activities in 30 years. The SMP preserves and enhances managed seasonal wetlands, implement a comprehensive levee protection/improvement program, and protect ecosystem and drinking water quality, while restoring habitat for tidal marsh-dependent sensitive species.

In June of 2013, USFWS issued a BO on the SMP based on the project description that includes program-level tidal wetland restoration of 5,000 to 7,000 acres. An overview of the expected outcomes of tidal restoration is presented, but specific site locations and other details are not included. As sites are identified, and there is sufficient detail about the nature, scope, location, and timing of the restoration actions, the USFWS will review that information. If the site-specific tidal restoration plans are consistent with the SMP and USFWS-issued biological opinions, USFWS will append the project to the PBO and provide an incidental take statement. If a tidal restoration project has potential effects on listed species beyond those analyzed in the PBO, planning efforts for those projects will include site-specific consultation under the ESA with USFWS.

Requirements for proposed tidal marsh restoration project to be appended to the PBO are as follows. The proposed tidal marsh restoration project must:

- Be within the SMP area.
- Not exceed the acreage evaluated in the SMP; Note, this project dos not preclude additional restoration activities from occurring in Suisun Marsh that are not specifically addressed in this BO. Separate environmental permitting would be needed for these projects.
- Follow the SMP site selection considerations.
- Follow the conservation measures and reporting (per the PBO).
- Be reviewed and approved by USFWS and CDFW.
- Be reviewed by the Suisun Adaptive Management Advisory Team and the SMP Principals.

3A.6.1.1.2 Suisun Marsh Salinity Control Gates

The SMSCG are located on Montezuma Slough about two miles downstream from the confluence of the Sacramento and San Joaquin Rivers, near Collinsville. The objective of Suisun Marsh Salinity Control Gate operation is to decrease the salinity of the water in Montezuma Slough. The gates control salinity by restricting the flow of higher salinity water from Grizzly Bay into Montezuma Slough during incoming tides and retaining lower salinity Sacramento River water from the previous ebb tide. Operation of the gates in this fashion lowers salinity in Suisun Marsh channels and results in a net movement of water from east to west.

When Delta outflow is low to moderate and the gates are not operating, tidal flow past the gate is approximately 5,000 to 6,000 cfs while the net flow is near zero. When operated, flood tide flows are arrested while ebb tide flows remain in the range of 5,000 to 6,000 cfs. The net flow in Montezuma Slough becomes approximately 2,500 to 2,800 cfs. The USACE permit for operating the SMSCG requires that it be operated between October and May only when needed to meet Suisun Marsh salinity standards. Historically, the gate has been operated as early as October 1, although in some years (e.g., 1996) the gate was not operated at all. When the channel water salinity decreases sufficiently below the salinity standards, or at the end of the control season, the project provides unrestricted movement through Montezuma Slough. Details of annual gate operations can be found in *Summary of Salinity Conditions in Suisun Marsh During Water Years* 1984–1992 (California Department of Water Resources 1994), or the Suisun Marsh Monitoring Program Data Summary produced annually by DWR's Division of Environmental Services.

The approximately 2,800 cfs net flow induced by SMSCG operation is effective at moving the salinity downstream in Montezuma Slough. Salinity is reduced by roughly 100 percent at Belden's Landing, and by lesser amounts farther west along Montezuma Slough. At the same time, the salinity field in Suisun Bay moves upstream as net Delta outflow (measured nominally at Chipps Island) is reduced by gate operation. Net outflow through Carquinez Strait is not affected.

The SMSCG are operated during the salinity control season, which spans from October to May. Operational frequency is affected by hydrologic conditions, weather, Delta outflow, tide, fishery considerations, and other factors. The gates have also been operated for scientific studies. After discussions with NMFS based on study findings, the boat lock portion of the gate is now held open at all times during SMSCG operation to allow for continuous salmon passage opportunity. Adaptive management of the gates continues to improve and salinity standards have been met with less frequent gate operation since 2006. In low outflow years gate operation was used from 35 to 42 days. The operation was limited to 17 to 69 days in 2009, 2010, 2011 and 2013. Assuming no significant long-term changes in the drivers mentioned above, it is expected that gate operations will remain at current levels (17 to 69 days per year) except perhaps during the most critical hydrologic conditions and other conditions that affect Delta outflow.

3A.6.1.1.3 SMSCG Fish Passage Study

The SMSCG were constructed and operate under USACE Permit 16223E58, which includes a special condition to evaluate the nature of delays to migrating fish. Ultrasonic telemetry studies in 1993 and 1994 showed that the physical configuration and operation of the gates during the control season have a negative effect on adult salmonid passage (Tillman et al. 1996; Edwards et al. 1996).

The Department coordinated additional fish passage studies in 1998, 1999, 2001, 2002, 2003, and 2004. Migrating adult fall-run Chinook Salmon were tagged and tracked by telemetry in the vicinity of the SMSCG to assess potential measures to increase the salmon passage rate and decrease salmon passage time through the gates.

Results in 2001, 2003, and 2004 indicate that leaving the boat lock open during the Control Season when the flashboards are in place at the SMSCG and the radial gates are tidally operated provides a nearly equivalent fish passage to the non-control season configuration when the flashboards are out and the radial gates are open. This approach minimizes delay and blockage of adult Sacramento River winter-run Chinook Salmon, Central Valley spring-run Chinook Salmon, and Central Valley Steelhead migrating upstream during the Control Season while the SMSCG is operating. However, the boat lock gates may be closed temporarily to stabilize flows to facilitate safe passage of watercraft through the facility.

Reclamation and DWR are continuing to coordinate with the SMSCG Steering Committee in identifying water quality criteria, operational rules, and potential measures to facilitate removal of the flashboards during the control season that would provide the most benefit to migrating fish. However, the flashboards would not be removed during the control season unless it was certain that standards would be met for the remainder of the control season without the flashboards installed.

3A.6.1.1.4 Roaring River Distribution System

The RRDS was constructed during 1979 and 1980 as part of the Initial Facilities in the Plan of Protection for the Suisun Marsh. The system was constructed to provide lower salinity water to 5,000 acres of private and 3,000 acres of CDFW managed wetlands on Simmons, Hammond, Van Sickle, Wheeler, and Grizzly Islands.

The RRDS includes a 40-acre intake pond that supplies water to Roaring River Slough. Motorized slide gates in Montezuma Slough and flap gates in the pond control flows through the culverts into the pond. A manually operated flap gate and flashboard riser are located at the confluence of Roaring River and Montezuma Slough to allow drainage back into Montezuma Slough for controlling water levels in the distribution system and for flood protection. DWR owns and operates this drain gate to ensure the Roaring River levees are not compromised during extremely high tides.

Water is diverted through a bank of eight 60-inch-diameter culverts equipped with fish screens into the Roaring River intake pond on high tides to raise the water surface elevation in RRDS above the adjacent managed wetlands. Managed wetlands north and south of the RRDS receive water, as needed, through publicly and privately owned turnouts on the system.

The intake to the RRDS is screened to prevent entrainment of fish larger than approximately 25 mm. DWR designed and installed the screens based on CDFW criteria. The screen is a stationary vertical screen constructed of continuous-slot stainless steel wedge wire. All screens have 3/32 inch slot openings. After the listing of Delta Smelt, RRDS diversion rates have been controlled to maintain an average approach velocity below 0.2 ft/s at the intake fish screen. Since 1996, the motorized slide gates have been operated remotely to allow hourly adjustment of gate openings to maximize diversion throughout the tide.

DWR conducts routine maintenance of the system, primarily maintaining the levee roads and fish screens. RRDS, like other levees in the marsh, have experienced subsidence since it was constructed in 1980. In 1999, DWR restored all 16 miles of levees to design elevation as part of damage repairs following the 1998 flooding in Suisun Marsh. In 2006, portions of the north levee were repaired to address damage following the January 2006 flooding.

3A.6.1.1.5 Morrow Island Distribution System

The Morrow Island Distribution System (MIDS) was constructed in 1979 and 1980 in the southwestern Suisun Marsh as part of the Initial Facilities in the Plan of Protection for the Suisun Marsh. The contractual requirement for Reclamation and DWR is to provide water to the ownerships so that lands may be managed according to approved local management plans. The system was constructed primarily to channel drainage water from the adjacent managed wetlands for discharge into Suisun Slough and Grizzly Bay. This approach increases circulation and reduces salinity in Goodyear Slough.

The MIDS is used year-round, but most intensively from September through June. When managed wetlands are filling and circulating, water is tidally diverted from Goodyear Slough just south of Pierce Harbor through three 48-inch culverts. Drainage water from Morrow Island is discharged into Grizzly Bay by way of the C-Line Outfall (two 36-inch culverts) and into the mouth of Suisun Slough by way of the M-Line Outfall (three 48-inch culverts), rather than back into Goodyear Slough. This helps prevent increases in salinity due to drainage water discharges into Goodyear Slough. The M-Line ditch is approximately 1.6 miles long and the C-Line ditch is approximately 0.8 miles long.

The 1997 USFWS BO issued for dredging of the facility included a requirement for screening the diversion to protect Delta Smelt. DWR and Reclamation are currently analyzing conservation alternatives to a fish screen in coordination with USFWS and CDFW to meet BO requirements.

Studies suggest that Goodyear Slough is a marginal, rarely used habitat for special-status fishes. Therefore, implementing other tidal restoration projects elsewhere may be more beneficial and practical than fish screening. Restoration of tidal wetland ecosystems is expected to aid in the recovery of several listed and special status species within the marsh and improve food availability for Delta Smelt and fish.

There are currently no plans to modify operations.

3A.6.1.2 South Delta Temporary Barriers Project

DWR initiated the South Delta Temporary Barrier Project (TBP) in 1991. Permit extensions under Section 404 of the Clean Water Act were granted in 1996, 2001, 2008 and 2011, when DWR obtained permits to extend the Temporary Barriers Project through 2016. The current TBP PBO issued in 2014 by USFWS to USACE allows for permit issuance for construction and demolition through 2017. This allows the USACE to issue a 5-year 505 permit for the agricultural barriers and Head of Old River Barrier. NMFS issued annual BOs to USACE to provide incidental take coverage for permitting the construction of the TBP in 2011 and 2012. In 2013 a PBO was issued to USACE providing incidental take coverage for permitting through 2017. State permits including the Incidental Take Permit and Streambed Alteration Agreement from CDFW and the 401 Water Quality Certification from the Regional Water Quality Control Board, provide coverage through 2016. The project consists of four rock barriers across south Delta channels. In various combinations, these barriers improve water levels and San Joaquin River salmon migration in the south Delta. The existing TBP consists of installation and removal of temporary rock barriers at the following locations.

- Middle River near Victoria Canal, about 0.5 miles south of the confluence of Middle River, Trapper Slough, and North Canal.
- Old River near Tracy, about 0.5 miles east of the DMC intake.
- Grant Line Canal near Tracy Boulevard Bridge, about 400 feet east of Tracy Boulevard Bridge.
- The head of Old River at the confluence of Old River and San Joaquin River.

The barriers on Middle River, Old River near Tracy, and Grant Line Canal are flow control facilities designed to improve water levels for agricultural diversions and are in place during the irrigation season. South Delta Temporary Barriers are operated based on San Joaquin flow conditions. Head of Old River Barrier is only installed from September 16th to November 30th and is no longer installed in the spring months per 2008 USFWS Delta Smelt BO Action 5. Operation of the agricultural barriers at Middle River and Old River near Tracy can begin as early as April 15. From May 16 to May 31 (if the barrier at the head of Old River is removed) the tide gates are tied open in the barriers in Middle River and Old River near Tracy. After May 31, the barriers in Middle River, Old River near Tracy, and Grant Line Canal are permitted to be operational until they are completely removed by November 30.

During the spring, the barrier at the head of Old River is designed to reduce the number of out-migrating salmon smolts entering Old River. During the fall, this barrier is designed to improve flow and DO conditions in the San Joaquin River for the immigration of adult fall-run Chinook Salmon. The barrier at the head of Old River barrier is typically in place from April 15 to May 15 for the spring, and from early September to late November for the fall. Installation and operation of the barrier at the head of Old River also depends on the San Joaquin River flow conditions.

In addition to permitting construction and removal of the barriers, the permits also give DWR coverage for scientific studies that may take endangered fish species. According to NMFS and USFWS BO requirements, actions for each upcoming year—including barrier type, timing, and any scientific studies planned—must be submitted to the USACE by October 1 of each year. USACE requests of NMFS and USFWS that the actions for the upcoming year be appended to the PBOs.

In 2009 and 2010, an experimental non-physical barrier was installed in lieu of the HOR spring rock barrier with the intention of deterring out-migrating juvenile salmonids from entering Old River. This experimental barrier is a patented technology using sound and light as a deterrent. Although high flows prohibited installation of the non-physical barrier in 2011, a without-barrier study of predator behavior was conducted. In 2012, a rock barrier with eight culverts was installed in the spring as a component of a fish-monitoring study designed to inform export operations. The rock barrier with eight culverts is expected to be installed each spring unless installation is prevented by high flows in the San Joaquin River, or if new studies conclude the spring HOR barrier does not provide salmonid protections previously assumed.

To improve water circulation and quality, DWR in coordination with the South Delta Water Agency and Reclamation, began in 2007 to manually tie open the culvert flap gates at the Old River near Tracy barrier to improve water circulation and untie them when water levels fell unacceptably. This operation is expected to continue in subsequent years as needed to improve water quality. In addition, DWR consulted with USACE and received USFWS and NMFS approval to raise the Middle River weir height by 1 foot. The weir height will be raised during the summer irrigation season only after Delta Smelt concerns have passed. The requested modification was approved late in the 2010 irrigation season. The weir was raised in 2012. It was not raised in 2011 due to high flow conditions in the south Delta.

In the absence of permanent operable gates, the TBP would continue as planned and permitted. Computer model forecasts, real-time monitoring, and coordination with local, state, and federal agencies and stakeholders would help determine if the temporary rock barriers operations need to be modified during the transition period.

3A.6.1.2.1 Conservation Strategies and Mitigation Measures

DWR has complied with the various measures and conditions required by regulatory agencies under past and current permits to avoid, minimize, and compensate for the TBP impacts. An ongoing monitoring plan is implemented each year the barriers are installed and an annual monitoring report is prepared to summarize the activities. The monitoring elements include fisheries monitoring and water quality analysis, salmon smolt survival investigations, barrier effects on SWP and CVP entrainment, Swainson's Hawk monitoring, water elevation, water quality sampling, and hydrologic modeling. DWR operates fish screens to offset TBP impacts at Sherman Island. Studies of predator behavior in the vicinity of the non-physical barrier began in 2011 as required by CDFW.

The 2008 NMFS BO for the TBP requires a fisheries monitoring program using biotelemetry techniques to examine the movements and survival of juvenile salmon and juvenile steelhead through the channels of the south Delta. The BO also requires that predation effects associated with the barriers be examined. Information gained as part of the 2009 pilot study was used to develop the full scale study that started in 2010. 2011 was the third and final year of the studies mandated in the 2008 BO. Any future telemetry studies at the barriers would be required from a subsequent BO.

The CDFW incidental take permit provides California Endangered Species coverage through 2016. This permit requires 6 acres of shallow water habitat that have been provided through a purchase from the Wildlands Liberty Island mitigation bank.

3A.6.2 Delta-Mendota Canal/California Aqueduct Intertie

The DMC/California Aqueduct Intertie was completed in 2012. The project consists of a pumping plant and pipeline connections between the DMC and the California Aqueduct. The DMC/California Aqueduct Intertie Pumping Plant is located at DMC milepost 7.2 where the DMC and the California Aqueduct are about 500 feet apart.

The DMC/California Aqueduct Intertie achieves multiple benefits, including meeting current water supply demands, allowing for the maintenance and repair of the CVP Delta export and conveyance facilities, and providing operational flexibility to respond to emergencies. The Intertie allows flow in both directions, which would provide additional flexibility to both CVP and SWP operations. The Intertie includes a pumping plant at the DMC that allows up to 467 cfs to be pumped from the DMC to the California Aqueduct. Up to 900 cfs can be conveyed from the California Aqueduct to the DMC using gravity flow.

The DMC/California Aqueduct Intertie is operated by the San Luis and Delta-Mendota Water Authority (Authority). Agreements between Reclamation, DWR, and the Authority identify the responsibilities and procedures during operation of the DMC/California Aqueduct Intertie.

3A.6.2.1 Operations

The DMC/California Aqueduct Intertie can be used under three different scenarios:

- Up to 467 cfs may be pumped from the DMC to the California Aqueduct to ease DMC conveyance constraints and help meet water supply demands of CVP contractors. This would allow Jones Pumping Plant to pump to its design capacity of up to 4,600 cfs, subject to all applicable export pumping restrictions for water quality and fishery protections.
- Up to 467 cfs may be pumped from the DMC to the California Aqueduct to minimize impacts on water deliveries due to temporary restrictions in flow or water levels on the lower DMC (south of the Intertie) or the upper California Aqueduct (north of the Intertie) for system maintenance or due to an emergency shutdown.
- Up to 900 cfs may be conveyed from the California Aqueduct to the DMC using gravity flow to minimize impacts on water deliveries due to temporary restrictions in flow or water levels on the lower California Aqueduct (south of

the Intertie) or the upper DMC (north of the Intertie) for system maintenance or for an emergency shutdown.

The DMC/California Aqueduct Intertie provides operational flexibility between the DMC and California Aqueduct. It would not result in any changes to authorized pumping capacity at Jones Pumping Plant or Banks Pumping Plant.

Water conveyed at the DMC/California Aqueduct Intertie to minimize reductions to water deliveries during system maintenance or an emergency shutdown on the DMC or California Aqueduct can include pumping of CVP water at Banks Pumping Plant or SWP water at Jones Pumping Plant through use of JPOD. In accordance with COA Articles 10(c) and 10(d), JPOD may be used to replace conveyance opportunities lost because of scheduled maintenance, or unforeseen outages. Use of JPOD for this purpose can occur under Stage 2 operations defined in SWRCB D-1641, or could occur as a result of a SWRCB Temporary Urgency request. Use of JPOD in this case does not result in any net increase in allowed exports at CVP and SWP export facilities. When in use, water within the DMC is conveyed to the California Aqueduct via the Intertie to O'Neill Forebay.

3A.6.3 Transfers

California Water Law and the CVPIA promote water transfers as important water resource management measures to address water shortages provided certain protections to source areas and users are incorporated into the water transfer. Parties seeking water transfers generally acquire water from sellers who have available surface water who can make the water available through releasing previously stored water, pump groundwater instead of using surface water; fallow crops or substitute a crop that uses less water in order to reduce normal consumptive use of surface diversions.

Water transfers (addressed in this document) occur when a water right holder within the Sacramento-San Joaquin River watershed undertakes actions to make water available for transfer. The SWP does not address the upstream operations that may be necessary to make water available for transfer. Nor does this document address the impacts of water transfers on terrestrial species.

Transfers requiring export from the Delta are done at times when pumping and conveyance capacity at the CVP or SWP export facilities is available to move the water to the buyer. Additionally, Reclamation and DWR must coordinate review of the transfer proposals and Project operations to assure that the Projects are not impacted including the ability to exercise their own water rights or to meet their legal and regulatory requirements are not diminished or limited in any way. To avoid impacts to Delta water quality the individual transfer is assessed a carriage water loss to account for flows required to avoid impacts to Delta water quality or flow objectives. All transfers would be in accordance with all existing regulations and requirements.

Purchasers of water for transfers may include Reclamation, CVP water contractors, DWR, SWP water contractors, other State and Federal agencies, and other parties. Reclamation and DWR have operated water acquisition programs in the past to provide water for environmental programs and additional supplies to CVP water contractors, SWP water contractors, and other parties. Past transfer programs include the following.

- DWR administered the 1991, 1992, 1994, and 2009 Drought Water Banks and Dry Year Programs in 2001 and 2002.
- Reclamation operated a forbearance program in 2001 by purchasing CVP contractors' water in the Sacramento Valley for CVPIA instream flows, and to augment water supplies for CVP contractors south of the Delta and wildlife refuges. Reclamation administers the CVPIA Water Acquisition Program for Refuge Level 4 supplies and fishery instream flows.
- DWR is a signatory to the Yuba River Accord Water Transfer Agreement through 2025 that provides fish flows on the Yuba River and also water supply that is exported at DWR and Reclamation Delta facilities for the CVP and SWP operations and for the SWP and CVP contractors.
- In the past, CVP contractors and SWP water contractors have independently acquired water and arranged for pumping and conveyance through SWP and CVP facilities.

3A.6.3.1 Lower Yuba River Accord

The Lower Yuba River Accord (Yuba Accord) consists of three sets of agreements designed to protect and enhance fisheries resources in the Lower Yuba River, increase local water supply reliability, provide DWR with increased operational flexibility for protection of Delta fisheries resources, and provide added dry-year water supplies to CVP and SWP water contractors. These agreements are:

- The Lower Yuba River Fisheries Agreement (Fisheries Agreement).
- Agreements for the Conjunctive Use of Surface and Groundwater Supplies (Conjunctive Use Agreements).
- Agreement for the Long-term Purchase of Water from Yuba County Water Agency by DWR (Water Purchase Agreement).

The Fisheries Agreement is the cornerstone of the Yuba Accord. It was developed by state, federal, and consulting fisheries biologists, fisheries advocates, policy representatives, and the Yuba County Water Agency (YCWA). Compared to the interim flow requirements of the SWRCB Revised Water Right Decision 1644 (RD-1644), the Fisheries Agreement establishes higher minimum instream flows during most months of most water years.

To assure that YCWA's water supply reliability is not reduced by the higher minimum instream flows and water transfers, it and seven of its member units have signed conjunctive use agreements. These agreements establish a conjunctive use program that facilitates the integration of the surface water and groundwater supplies of the seven local irrigation districts and mutual water companies that YCWA serves in Yuba County. Integration of surface water and groundwater allows YCWA to increase the efficiency of its water management.

Under the Water Purchase Agreement, DWR administers the water transfer activities. The Water Transfer Agreement allows DWR to purchase water from YCWA to generally offset water costs resulting from export restrictions in winter and spring each year to benefit Delta Smelt and out-migrating San Joaquin River salmonids. This quantity of water is known as "Component 1 Water" under the Water Purchase Agreement and is quantified as the first 60 TAF of surface water above a defined baseline that Yuba releases each year. Assuming a 20 percent carriage water cost, approximately 48 TAF would reach the export pumps to produce a mitigation offset of approximately 48 TAF of reduced exports.

Additional water supplies purchased by the SWP water contractors and/or CVP contractors under the Water Purchase Agreement are administered by DWR as a water transfer program in drier years. These supplies include: (a) Component 2 water (15 TAF per year [TAF/yr] in Dry Years and up to 30 TAF/yr in Critical Years); (b) Component 3 water (up to 40 TAF/yr in specified lower SWP or CVP allocation years); and (c) Component 4 water (additional water that YCWA makes available from surface-water supplies and its groundwater substitution program). The San Luis and Delta-Mendota Water Authority is a Participating Contractor to provide benefits to certain of its member CVP contractors.

CEQA review for all of the Yuba Accord agreements (Fisheries, Water Purchase, and Conjunctive Use) was completed in 2007 and these agreements were fully executed between late 2007 and early 2008. SWRCB approved the instream flow schedules and water transfer aspects of the Yuba River Accord, with some corrections, on March 18, 2008. The Fisheries Agreement will terminate when FERC issues a new long-term FERC license for the Yuba River Development Project (which will be sometime after April 30, 2016 when the present license expires). The Water Purchase Agreement will terminate on December 31, 2025, but the amounts of water that YCWA will transfer under the agreement after FERC issues a new long-term license for the Yuba River Development Project will be subject to negotiation by the parties to the agreement. The Conjunctive Use Agreements will terminate when the Fisheries Agreement and Water Purchase Agreement terminate. It is assumed in this EIS that the existing or similar agreements will be renewed by 2030.

3A.6.3.2 Transfer Capacity

It is expected that water transfer programs for environmental and water supply augmentation will continue in some form, and that in most years (all but the driest), the scope of annual water transfers of water exported through the Delta will be limited by available Delta pumping capacity, and exports for transfers will be limited to the months of July-September. As such, looking at an indicator of available transfer capacity in those months is one way of estimating an upper boundary to the effects of transfers on an annual basis.

The CVP and SWP may provide Delta export pumping for transfers using pumping capacity at Banks and Jones pumping plants beyond that which is being used to deliver Project water supply, up to the diversion capacity, consistent with existing operational and regulatory restrictions.

The surplus capacity available for transfers varies a great deal with hydrologic conditions. In general, as hydrologic conditions get wetter, surplus capacity diminishes because the CVP and SWP are more fully using export pumping capacity for Project supplies. The CVP's Jones Pumping Plant has little surplus capacity, except in the driest hydrologic conditions. The SWP has the most surplus capacity in critical and some dry years, less or sometimes none in most median hydrologic conditions, and some surplus again in some above normal and wet years when demands may be lower because some water users may have alternative supplies.

The availability of water for transfer and the demand for transferred water may also vary with hydrologic conditions. Accordingly, since many transfers are negotiated between willing buyers and sellers under prevailing market conditions, price of water also may be a factor determining how much is transferred in any year. This document does not attempt to identify how much of the available and useable surplus export capacity of the CVP and SWP would actually be used for transfers in a particular year, but given the recent history of water transfer programs and requests for individual water transfers, trends suggest a growing reliance on transfers to meet dry year water demands.

Under both the present and future conditions, capability to export transfers would often be capacity-limited, except in Critical and some Dry years. In Critical and some Dry years, both Banks and Jones pumping plants would likely have surplus capacity for transfers. As a result, export capacity is less likely to limit transfers in these years. During such years, low Project exports and high demand for water supply could make it possible to transfer significant amounts of transfer water when upstream water supplies are available.

3A.6.4 Proposed Exports for Transfers

Although transfers may occur at any time of year, the 2008 USFWS BO and 2009 NMFS BO address proposed exports for transfers during only the months July through September. For transfers outside those months, or in excess of the maximum amounts (listed below), separate consultations would be required with the USFWS and NMFS. Based on the estimates of available capacity for export of transfers during July through September, and in recognition of the many other possible operational contingencies and constraints that may limit actual use of that capacity for transfers, as follows.

- Critical Water Year: Maximum Transfer Amount is 600 TAF
- Dry Water Year following Critical Water Year: Maximum Transfer Amount is 600 TAF
- Dry Water Year following Dry Water Year: Maximum Transfer Amount is 600 TAF
- All Other Water Years: Maximum Transfer Amount is 360 TAF

3A.7 References

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Appendix 4A

Federal and State Policies and Regulations

4A.1 Federal Policies and Regulations

Federal policies and regulations presented in this appendix are related to requirements that affect surface water, biological, energy, agricultural, air quality, and cultural resources. Federal policies and regulations that affect operations of the Central Valley Project are included in Appendix 3A, No Action Alternative: Central Valley Project and State Water Project Operations, and are not included in this appendix.

4A.1.1 Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972, also known as the Clean Water Act (CWA), established the institutional structure for the U.S. Environmental Protection Agency (USEPA) to regulate discharges of pollutants into the waters of the United States, establish water quality standards, conduct planning studies, and provide funding for specific grant projects. The Clean Water Act was further amended through the Clean Water Act of 1977 and the Water Quality Act of 1987. The California State Water Resources Control Board (SWRCB) has been designated by the USEPA along with the nine Regional Water Quality Control Boards (RWQCBs) to develop and enforce water quality objectives and implementation plans in California, as described below under Section 4A.2, State Policies and Regulations.

Section 401 of the CWA requires water discharges into navigable waters of the United States to apply for a Federal license or permit and to certify that the discharge will be in compliance with specified provisions of the CWA. Federal permits that are issued related to disturbance of waters of the United States (such as streams and wetlands) also require a Water Quality Certification in accordance with CWA Section 401. In California, Section 401 water quality certifications are issued by the RWQCB and/or the SWRCB, in accordance with the California Code of Regulations Title 23, sections 3836, 3855, and 3856.

Section 402 established the National Pollutant Discharge Elimination System (NPDES) permit program to regulate point-source and nonpoint-source discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point and nonpoint sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements. The NPDES permits are issued for long-term discharges, including discharges from treatment plants, and temporary discharges, such as discharges during construction activities (e.g., General Permit for Storm Water Discharges Associated with Construction Activities).

Section 404 requires the U.S. Army Corps of Engineers (USACE) to issue permits for discharge of dredge or fill material into navigable waters, their tributaries, and associated wetlands. Activities regulated by 404 permits include, but are not limited to, dredging, bridge construction, flood control actions, and some fishing operations.

Section 303 requires preparation of basin plans that designate the beneficial uses of waters within each watershed basin and identify water quality objectives designed to protect the beneficial uses. Under Section 303(d), the USEPA identifies and ranks waterbodies for which existing pollution controls are insufficient to attain or maintain water quality standards based upon information prepared by all states, territories, and authorized Indian tribes. This list of impaired waters for each state comprises the state's 303(d) list. Each state must establish priority rankings and develop Total Maximum Daily Loads (TMDLs) for all impaired waters. TMDLs calculate the greatest pollutant load that a waterbody can receive and still meet water quality standards and designated beneficial uses.

The National Toxics Rule was established by USEPA in 1992 to provide ambient water quality criteria for priority toxic pollutants to protect aquatic life and human health in accordance with CWA Section 303.

The Secretary of the Interior established the first antidegradation policy in 1968. In 1975, USEPA included the antidegradation requirements in the Water Quality Standards Regulation (40 Code of Federal Regulations [CFR] 130.17, 40 CFR 55340-41). The requirements were included in the 1987 CWA amendment in Section 303(d)(4)(B). The Federal antidegradation policy requires states to develop regulations to allow increases in pollutant loadings or changes in surface water quality only if: (1) existing surface water uses are maintained and protected, and established water quality requirements are met; (2) if water quality requirements cannot be maintained by a project, water quality must be maintained to fully protect "fishable/swimmable" uses and other existing uses; and (3) for Outstanding National Resource Waters water quality criteria where "States may allow some limited activities which result in temporary and short-term changes in water quality" (Water Quality Standards Regulations) but would not impact existing uses or special use of these waters.

4A.1.2 Federal Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The SDWA authorizes USEPA to set national health-based standards for drinking water to protect against both naturally occurring and human-made contaminants that may be found in drinking water. The law was amended in 1986 and 1996, and requires many actions to protect drinking water and its sources, including rivers, lakes, reservoirs, springs, and groundwater wells.

4A.1.3 U.S. Army Corps of Engineers Public Notice 5820A

Section 10 of the Rivers and Harbors Act of 1899 requires that a letter of permission or permit be obtained from the USACE for the construction of structures in, over, or under; excavation of material from; and deposition of material into navigable waters of the United States regulated by USACE. “Navigable waters of the United States” is defined as those waters subject to the ebb and flow of the tide shoreward to the mean high-water mark or those that are used, have been used in the past, or may be susceptible to use in interstate or foreign commerce.

4A.1.4 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act, as amended in 1964, was enacted to protect fish and wildlife when Federal actions result in the control or modification of a natural stream or body of water. The statute requires Federal agencies to take into consideration the effect that water-related projects would have on fish and wildlife resources. Consultation and coordination with the U.S. Fish and Wildlife Service (USFWS) and state fish and game agencies are required to address ways to prevent loss of and damage to fish and wildlife resources and to further develop and improve these resources.

4A.1.5 Endangered Species Act

The Federal Endangered Species Act (ESA) applies to proposed Federal, state, and local projects that may result in the “take” of a fish or wildlife species that is federally listed as threatened or endangered and to actions that are proposed to be authorized, funded, or undertaken by a Federal agency and that may jeopardize the continued existence of any federally listed fish, wildlife, or plant species or which may adversely modify or destroy designated critical habitat for such species. “Take” is defined under the ESA as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct” (16 United States Code [U.S.C.] Section 1532(19)). Under Federal regulations, “harm” is defined as “an act which actually kills or injures wildlife,” including significant habitat modification or degradation where it actually results, or is reasonably expected to result, in death or injury to wildlife by substantially impairing essential behavioral patterns, including breeding, feeding, sheltering, spawning, rearing, and migrating (50 CFR sections 17.3, 222.102). “Harass” is defined similarly broadly. If there is a potential that implementing a project would result in take of a federally listed species, either a habitat conservation plan (HCP) and incidental take permit, under Section 10(a) of the ESA, or a Federal interagency consultation, under Section 7 of the ESA, is required.

Under the ESA, the National Marine Fisheries Service (NMFS) has jurisdiction over anadromous fish, marine fish and reptiles, and most marine mammals, and the USFWS has jurisdiction over all other species, including all terrestrial and plant species, freshwater fish species, and a few marine mammals (such as the California sea otter). Listed species within the project area are described in subsequent sections of this appendix.

Besides listing species within their respective jurisdictions as threatened or endangered, issuing incidental take permits, and conducting interagency consultations, USFWS and NMFS also are charged with designating "critical habitat" for threatened and endangered species, which the ESA defines as (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to a species' conservation, and those features may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation of the species (16 U.S.C. Section 1532(5)(A)). USFWS and NMFS also prepare draft recovery plans for the listed species.

4A.1.5.1 NMFS Public Draft Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead

The NMFS Public Draft Recovery Plan for the Evolutionarily Significant Units of Sacramento River Winter-run Chinook Salmon and Central Valley Spring-run Chinook Salmon and the Distinct Population Segment of Central Valley Steelhead provides a roadmap that describes the steps, strategy, and actions recommended to return winter-run Chinook Salmon, spring-run Chinook Salmon, and Steelhead to viable status in the Central Valley, thereby ensuring their long-term persistence and evolutionary potential. The general near-term strategic approach to recovery includes the following elements:

- Secure all extant populations.
- Begin collecting distribution and abundance data for Steelhead in habitats accessible to anadromous fish.
- Minimize straying from hatcheries to natural spawning areas.
- Conduct critical research on fish passage above rim dams, reintroductions, and climate change.

The long-term approach to recovery includes the following elements:

- Ensure that every extant diversity group has a high probability of persistence.
- Until all evolutionarily significant unit viability criteria have been achieved, no population should be allowed to deteriorate in its probability of persistence.
- High levels of recovery should be attempted in more populations than identified in the diversity group viability criteria because not all attempts will be successful.
- Individual populations within a diversity group should have persistence probabilities consistent with a high probability of diversity group persistence.
- Within a diversity group, the populations to be restored/maintained at viable status should be selected.

- Allow for normative metapopulation processes, including the viability of core populations, which are defined as the most productive populations.
- Allow for normative evolutionary processes, including the retention of genetic diversity and an increase in genetic diversity through the addition of viable populations in historical habitats.
- Minimize susceptibility to catastrophic events.

4A.1.5.2 USFWS Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes

The Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes, released in 1996, addresses the recovery needs for several fishes that occupy the Sacramento-San Joaquin Delta, including Delta Smelt, Sacramento Splittail, Longfin Smelt, Green Sturgeon, Chinook Salmon (spring-run, late fall-run, and San Joaquin fall-run), and Sacramento Perch (believed to be extirpated). The objective of the plan is to establish self-sustaining populations of these species that will persist indefinitely. This objective would be accomplished by managing the estuary to provide better habitat for aquatic life in general and for the fish addressed by the plan. Recovery actions include tasks such as increasing freshwater flows; reducing fish entrainment losses to water diversions; reducing the effects of dredging, contaminants, and harvest; developing additional shallow-water habitat, riparian vegetation zones, and tidal marsh; reducing effects of toxic substances from urban nonpoint sources; reducing the effects of introduced species; and conducting research and monitoring.

4A.1.6 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act (Public Law 104 to 297), requires that all Federal agencies consult with NMFS on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect Essential Fish Habitat (EFH) for commercially managed marine and anadromous fish species. EFH includes specifically identified waters and substrate necessary for fish spawning, breeding, feeding, or growing to maturity. EFH also includes all habitats necessary to allow the production of commercially valuable aquatic species, to support a long-term sustainable fishery, and to contribute to a healthy ecosystem (16 U.S.C. Section 1802(10)).

In addition to riverine reaches supporting Chinook Salmon, the Pacific Fishery Management Council (PFMC) has designated the Sacramento-San Joaquin Delta (Delta), San Francisco Bay, and Suisun Bay as EFH to protect and enhance habitat for coastal marine fish and macroinvertebrate species that support commercial fisheries such as Pacific salmon. Chinook Salmon and Coho Salmon are Actively Managed Species under the Pacific Coast Salmon Plan. Because EFH applies only to commercial fisheries, Chinook and Coho Salmon habitats are included, but not those of Steelhead.

Three fishery management plans—Pacific Salmon, Coastal Pelagic, and Groundfish—have been issued by the PFMC for several species that occur in the project area. The Northern Anchovy and Starry Flounder are identified by the PFMC as Monitored Species in the Coastal Pelagic Species Fishery Management Plan and the Pacific Coast Groundfish Fishery Management Plan, respectively, and are subject to EFH consultation as a result. Pacific Sardine are classified as an Actively Managed Species in the Coastal Pelagic Species Fishery Management Plan.

4A.1.7 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) was enacted in 1972. All marine mammals are protected under the MMPA. The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. It defines "take" to mean "to hunt harass, capture, or kill" any marine mammal or attempt to do so. Exceptions to the moratorium can be made through permitting actions for take incidental to commercial fishing and other nonfishing activities; for scientific research; and for public display at licensed institutions such as aquaria and science centers.

4A.1.8 National Invasive Species Act of 1996

The National Invasive Species Act (Public Law 104-332) reauthorizes and amends the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 to mandate regulations to reduce environmental and economic impacts from invasive species and to prevent introduction and spread of aquatic nuisance species, primarily through ballast water. As the primary Federal law regulating ballast water discharges, the act calls primarily for voluntary ballast water exchange by vessels entering the United States after operating outside the 200-nautical-mile Exclusive Economic Zone of the United States.

The authority to regulate ballast water discharges in the United States has recently shifted to include the USEPA in addition to the U.S. Coast Guard. Since February 2009, the USEPA must regulate ballast water and other discharges incidental to normal vessel operations under Section 402 of the CWA. U.S. Coast Guard regulations, developed under authority of the revised and reauthorized act, also require ballast water management (i.e., ballast water exchange) for vessels entering United States waters from outside the Exclusive Economic Zone, with certain exceptions. The act also authorized funding for research on aquatic nuisance species prevention and control in San Francisco Bay, the Delta, the Pacific Coast, and other areas of the United States.

4A.1.8.1 Executive Order 13112: Invasive Species

Executive Order (EO) 13112 (February 3, 1999) directs all Federal agencies to prevent and control the introduction and spread of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their effects on economic, ecological, and human health. The executive order was intended to build on existing laws, such as National Environmental Policy Act (NEPA), the

Nonindigenous Aquatic Nuisance Prevention and Control Act, the Lacey Act, the Plant Pest Act, the Federal Noxious Weed Act, and the ESA. EO 13112 established a national Invasive Species Council made up of Federal agencies and departments, and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and Advisory Committee oversee and facilitate implementation of the executive order, including preparation and revision of the National Invasive Species Management Plan.

4A.1.9 Wild and Scenic Rivers Act

Congress created the National Wild and Scenic Rivers Act in 1968 (Public Law 90-542; U.S.C. 1271 et seq.) to preserve rivers and outstanding natural, cultural, or recreational features in a free-flowing condition. High priority is placed on visual resource management of these rivers to preserve or restore their scenic characteristics. Under this act, a Federal agency may not assist the construction of a water resources project that would have a direct and adverse effect on the free-flowing, scenic, and natural values of a wild or scenic river. If the project would affect the free-flowing characteristics of a designated river or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area, such activities should be undertaken in a manner that would minimize adverse impacts and should be developed in consultation with the National Park Service.

4A.1.10 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements a series of international treaties that provide migratory bird protection. The MBTA authorizes the Secretary of the Interior to regulate the taking of migratory birds, and the act provides that it shall be unlawful, except as permitted by regulations, "to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird" (16 U.S.C. Section 703). This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA was published in the March 10, 2010, *Federal Register* (*Federal Register*, Volume 75, page 9282 [75 FR 9282]).

4A.1.10.1 Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds

EO 13186 (January 10, 2001) directs Federal agencies that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding with USFWS to promote the conservation of migratory bird populations. The memorandum of understanding should include implementation actions and reporting procedures that would be followed through each agency's formal planning process, such as resource management plans and fisheries management plans.

4A.1.10.2 North American Waterfowl Management Plan and Central Valley Joint Venture

In 1986, the North American Waterfowl Management Plan (NAWMP) was signed by the United States and Canada. It provides a broad framework for waterfowl management through 2000 and includes recommendations for wetland and upland habitat protection, restoration, and enhancement. Implementing the NAWMP is the responsibility of designated joint ventures. The Central Valley Habitat Joint Venture, formally organized in 1988, was one of the original six priority joint ventures formed under the NAWMP. Renamed the Central Valley Joint Venture in 2004, it is composed of 21 Federal and state agencies, conservation organizations, and Pacific Gas and Electric Company (PG&E).

4A.1.11 Executive Order 11990: Protection of Wetlands

EO 11990 (May 24, 1977) established the protection of wetlands and riparian systems as the official policy of the Federal government. It requires all Federal agencies to consider wetland protection as an important part of their policies and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

4A.1.12 Federal Power Act

The Federal Power Act, 16 U.S.C. § 791-828(c), passed in 1920 and amended in 1935 and 1986, created what is now the Federal Energy Regulatory Commission (FERC), an independent regulatory agency that oversees the natural gas, oil, and electricity markets, regulates the transmission and sale of these energy resources (except for oil), provides licenses for non-federal hydroelectric plants, and addresses environmental matters arising in any of the areas above. The agency is governed by a five-member commission appointed by the President with the advice and consent of the Senate. The Electric Consumers Protection Act of 1986 amended the Federal Power Act of 1920 to require FERC to give equal consideration to non-power-generating values such as the environment, recreation, fish, and wildlife, as is given to power and development objectives when making hydroelectric project licensing decisions.

4A.1.13 Western Area Power Administration

The Western Area Power Administration (Western) is one of four power marketing administrations within the U.S. Department of Energy that markets and transmits electricity from multi-use water projects to retail power distribution companies and public authorities. Western markets and delivers hydroelectric power and related services within a 15-state region of the central and western United States. The transmission system carries electricity from 55 hydropower plants operated by Reclamation, USACE, and the International Boundary and Water Commission. Together, these plants have a capacity of 10,600 megawatts.

Western sells excess Central Valley Project (CVP) capacity and energy that are supplementary to CVP internal needs to municipal utilities, irrigation districts, and institutions and facilities such as wildlife refuges, schools, prisons, and military bases at rates designed to recover CVP costs. As part of its marketing function, Western ensures that CVP project use loads are met at all times by using a mix of generation resources including CVP generation and other purchased resources. In marketing power surplus to the CVP project needs, Western follows a formal procedure for allocating CVP energy to preference customers.

Preference power customers have 20-year contracts for their share of the CVP energy that is in excess of CVP needs.

In addition to preference power customers, there are also first preference customers. First preference customers are a special class of customers who are statutorily entitled to up to 25 percent of the generation built in their counties. The two CVP projects whose enabling legislation provided for first preference power are New Melones Dam, located in Tuolumne and Calaveras counties, and Trinity and Lewiston dams, located in Trinity County.

4A.1.14 Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) directs Federal agencies to consider the effects of Federal programs or activities on farmland, and ensure that such programs, to the extent practicable, are compatible with state, local, and private farmland protection programs and policies. The FPPA is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that, to the extent possible, Federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency. Activities that may be subject to the FPPA include (among others) reservoir and hydroelectric projects, Federal agency projects that convert farmland, and other projects completed with Federal assistance. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) implements the FPPA. The NRCS has established a rating process under the FPPA to assess options for land use on an evaluation of productivity weighed against commitment to urban development.

4A.1.15 Coastal Zone Management Act

Congress passed the Coastal Zone Management Act (CZMA) in 1972 in response to the challenges of growth in coastal areas of the United States. The act is intended to “preserve, protect, develop, and where possible, to restore or enhance the resources of the nation’s coastal zone.” The CZMA is administered by the National Oceanic and Atmospheric Administration’s Office of Ocean and Coastal Resource Management (OCRM), and provides incentives for states to manage and protect their coastal resources. The CZMA encourages states to prepare coastal zone management programs that meet specified requirements and submit them to the OCRM for approval. States with approved coastal management programs become eligible for Federal funding assistance and other benefits. Applicants for Federal permits and licenses and Federal agencies proposing specific activities in the coastal zone are required by the CZMA to obtain a consistency certification from the state’s coastal management agency.

The California Coastal Commission is the lead agency for the Coastal Zone Management Program in California. In California, the Coastal Zone Management Program includes the Pacific Ocean coast and the area within San Francisco Bay and Suisun Marsh under the jurisdiction of the San Francisco Bay Conservation and Development Commission.

4A.1.16 Federal Water Project Recreation Act

The Federal Water Project Recreation Act (16 U.S.C. sections 460(L)(12)–460(L)(21)) declares the intent of Congress that recreation and fish and wildlife enhancement be given full consideration as purposes of Federal water development projects if non-federal public bodies agree to: (1) bear not less than one-half the separable costs allocated for recreational purposes or 25 percent of the cost for fish and wildlife enhancement; (2) administer project land and water areas devoted to these purposes; and (3) bear all costs of operation, maintenance and replacement. Where Federal lands or authorized Federal programs for fish and wildlife conservation are involved, cost-sharing is not required.

This act also authorizes the use of Federal water project funds for land acquisition in order to establish refuges for migratory waterfowl when recommended by the Secretary of the Interior, and authorizes the Secretary to provide facilities for outdoor recreation and fish and wildlife at all reservoirs under Department of the Interior (DOI) control, except those within national wildlife refuges.

4A.1.17 Federal Land and Water Conservation Fund Act

The Land and Water Conservation Fund was established by Congress in 1964 and is administered by the National Park Service. The fund provides money to Federal, state, and local agencies as well as to six territories to purchase lands, waters, and wetlands for the benefit of all Americans. Lands and waters purchased through the Land and Water Conservation Fund are used to:

- Provide recreational opportunities
- Provide clean water
- Preserve wildlife habitat
- Enhance scenic vistas
- Protect archaeological and historical sites
- Maintain the pristine nature of wilderness areas

4A.1.18 Bureau of Land Management Resource Management Plans

Under the Federal Land Policy and Management Act of 1976, DOI Bureau of Land Management (BLM) is responsible for managing public lands for multiple uses and sustained yield, ensuring that the scenic values of these public lands are considered, and avoiding land uses that may have negative impacts. Resource management plans for public lands are developed to guide BLM actions to protect ecological and scientific values; preserve public lands in their natural condition, where appropriate; provide food and habitat for fish and wildlife and domestic animals; provide for outdoor recreation and human occupancy and use; and recognize the nation’s need for natural resources from the public lands, such as minerals, food, timber, and fiber.

4A.1.19 Federal Clean Air Act

National air quality policies are regulated through the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 amendments. Basic elements of the CAA include national ambient air quality standards (NAAQS) for criteria air pollutants, hazardous air pollutants standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

4A.1.19.1 National Ambient Air Quality Standards and Federal Air Quality Designations

Pursuant to the CAA, the USEPA establishes NAAQS for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur oxides (SOx), particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), particulate matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$), and lead (Pb). These pollutants are referred to as criteria pollutants because numerical health-based criteria have been established that define acceptable levels of exposure for each pollutant.

The USEPA has revised the NAAQS several times since their original implementation and will continue to do so as the health effects of exposure to pollution are better understood. As new NAAQS are adopted, ambient air quality monitoring data are reviewed by the regulatory agencies for each geographic area, and the USEPA uses the findings to designate the area's pollutant-specific attainment status.

The USEPA designates areas as attainment, nonattainment, or unclassified for individual criteria pollutants depending on whether the area achieves (i.e., attains) the applicable NAAQS for each pollutant. An area can be designated as attainment for one pollutant (for example, NO_2) and nonattainment for others (for example, O_3 and PM_{10}). Areas that lack monitoring data are designated as unclassified areas. Unclassified areas are treated as attainment areas for regulatory purposes.

For some pollutants, there are numerous classifications of the nonattainment designation, depending on the severity of an area's nonattainment status. For example, the O_3 nonattainment designation has eight subclasses: basic, transitional, marginal, moderate, serious, severe 15, severe 17, and extreme.

Under the 1977 CAA amendments, states (or areas within states) with ambient air quality concentrations that do not meet the NAAQS are required to develop and maintain state implementation plans (SIPs). These plans constitute a federally enforceable definition of the state's approach and schedule for the attainment of the NAAQS.

Areas that were designated as nonattainment in the past but have since achieved the NAAQS are further classified as attainment maintenance areas. The maintenance classification remains in effect for 20 years from the date when the area is determined by the USEPA to meet the NAAQS. States must obtain USEPA approval of maintenance plans to ensure continued attainment over these 20-year time frames.

4A.1.19.2 Federal General Conformity Requirements

The 1977 CAA amendments state that the Federal government is prohibited from engaging in, supporting, providing financial assistance for, licensing, permitting, or approving any activity that does not conform to an applicable SIP. In the 1990 CAA amendments, the USEPA included provisions requiring Federal agencies to ensure that actions undertaken in nonattainment or attainment maintenance areas are consistent with applicable SIPs. The process of determining whether a Federal action is consistent with applicable SIPs is called "conformity" determination.

These conformity provisions were put in place to ensure that Federal agencies would contribute to and not undermine efforts to attain the NAAQS. The USEPA has issued two conformity regulations: (1) a transportation conformity regulation that applies to transportation plans, programs, and projects and (2) a general conformity regulation that applies to all other Federal actions. A conformity determination is a process that demonstrates how an action would conform to the applicable SIP, and is required only for the project alternative that is ultimately selected and approved. If a project's emissions cannot be reduced sufficiently and if air dispersion modeling cannot demonstrate conformity, then either a plan for mitigating or a plan for offsetting the emissions would need to be developed. The general conformity determination is submitted in the form of a written finding that is issued after a minimum 30-day public comment period on the draft determination.

The USEPA general conformity regulation applies only to Federal actions that result in emissions of "nonattainment or maintenance pollutants" or their precursors in federally designated nonattainment or maintenance areas. The general conformity regulation establishes a process to demonstrate that Federal actions would be consistent with applicable SIPs and would not cause or contribute to new violations of the NAAQS, increase the frequency or severity of existing violations of the NAAQS, or delay the timely attainment of the NAAQS. The emission thresholds that trigger requirements of the general conformity regulation for Federal actions emitting nonattainment or maintenance pollutants, or their precursors, are called *de minimis* levels.

4A.1.19.3 Prevention of Significant Deterioration/New Source Review and New Source Performance Standards

The CAA and amendments also include regulations intended to prevent significant deterioration of air quality in attainment or maintenance areas, to provide for New Source Review (NSR) of major sources and modifications in nonattainment areas, and to establish emission performance standards for new stationary sources or New Source Performance Standards (NSPS). Federal Prevention of Significant Deterioration (PSD)/NSR regulations apply to major stationary sources of emissions in attainment and maintenance areas. NSPS apply to various types of new, modified, or reconstructed emissions units, and apply to such units regardless of whether these units are located at facilities that are "major" sources of emissions for PSD/NSR purposes.

4A.1.19.4 Federal Regulations for Hazardous Air Pollutants

Hazardous air pollutants (HAPs) are defined as air pollutants that may cause serious human health effects, including mortality, but which are not regulated through issuance of a national ambient air quality standard.

The USEPA has developed regulations to evaluate and, if necessary, mitigate HAPs emissions sources. Prior to the 1990 CAA amendments, the USEPA established pollutant-specific National Emission Standards for Hazardous Air Pollutants (NESHAPs). NESHAPs were established for benzene, vinyl chloride, radionuclides, mercury, asbestos, beryllium, inorganic arsenic, radon 222, and coke oven emissions. The 1990 CAA amendments list 189 total pollutants that are defined as HAPs. For this list of pollutants, the USEPA is required to set standards for categories and subcategories of sources that emit HAPs, rather than for the pollutants themselves. USEPA began issuing the new standards, referred to as Maximum Achievable Control Technology (MACT) standards, in November 1994. NESHAPs set before 1991 remain applicable.

The applicability of MACT standards is typically determined by each facility's Potential To Emit (PTE) HAPs from all applicable sources. The facility-wide PTE HAP applicability threshold values are 10 tons per year (tpy) for a single HAP and 25 tpy for any two or more HAPs.

4A.1.19.5 Federal Standards for Mobile Sources

The USEPA's Office of Transportation and Air Quality regulates air pollution from motor vehicles and engines and the fuels used to operate them. The USEPA defines "mobile sources" to include cars, light-duty trucks, heavy-duty trucks, buses, recreational vehicles (such as dirt bikes and snowmobiles), farm and construction machines, lawn and garden equipment, marine engines, aircraft, and locomotives.

Starting in the 1970s, the USEPA has established progressively more stringent standards for CO, hydrocarbons, nitrogen oxides (NOx), and particulate matter (PM) emissions from on-road vehicles. Since the early 1990s, USEPA has developed similar standards for non-road engines and equipment, and also set tighter limits on sulfur allowed in fuels used for mobile sources. Emission standards set limits on the amount of pollution a vehicle or engine can emit, and are designed to force future vehicles and engines to meet stricter standards.

4A.1.20 Federal Policies and Regulations for Greenhouse Gas Emissions

Currently, no Federal regulations or standards specifically regulate greenhouse gas (GHG) emissions for the purposes of addressing climate change. The Council on Environmental Quality (CEQ) has issued draft NEPA guidance on GHG and climate change. USEPA, through the CAA, regulates emissions of certain GHGs through its mobile source standards and stationary source permitting regulations. The U.S. Supreme Court in Massachusetts v. USEPA (Supreme Court Case 05-1120) found that USEPA has the authority to list GHGs as pollutants and to regulate emissions of GHGs under the CAA.

4A.1.20.1 CEQ Guidance Related to Greenhouse Gas Emissions

The CEQ has issued updated draft NEPA guidance on the consideration of the effects of climate change and GHG emissions. Issued on December 18, 2014, this guidance advises Federal agencies that they should consider the GHG emissions caused by Federal actions, adapt their actions to consider climate change effects throughout the process, and address these issues in their agency procedures. Where applicable, the scope of the NEPA analysis should cover the GHG emissions effects of a proposed action and alternative actions, as well as the relationship of climate change effects, on a proposed action or alternatives. The CEQ guidance is still considered draft as of the writing of this document and is not an official CEQ policy document.

4A.1.20.2 Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, USEPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule applies to most entities that emit 25,000 metric tpy of carbon dioxide equivalents (CO2e) or more. Starting in 2010, owners of facilities of sufficient size were required to submit an annual GHG emissions report with detailed calculations of GHG emissions from specified sources, such as stationary source fuel combustion. The Reporting Rule mandates recordkeeping, and administrative requirements allow USEPA to verify the annual GHG emissions reports.

4A.1.20.3 Environmental Protection Agency Endangerment and Cause and Contribute Findings

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator found that the current and projected atmospheric concentrations of six key GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of GHGs from new motor vehicles and new motor vehicle engines contribute to GHG pollution, which threatens public health and welfare.

In addition, USEPA has formally recognized climate change as a threat to water supply in their National Water Program strategy for response to climate change.

4A.1.20.4 Greenhouse Gas Tailoring Rule

On May 13, 2010, the USEPA issued the Tailoring Rule to address GHG emissions from stationary sources under the CAA permitting programs for major sources. This final rule set the thresholds for Steps 1 and 2 of a phase-in approach to regulating GHG emissions under the PSD/NSR and Title V Operating Permit programs. Neither of these major source permitting programs is applicable to the Transfer Project or the Proposed Project or any of the alternatives.

4A.1.20.4.1 Light-Duty Vehicle Greenhouse Gas Emission Standards and Fuel Economy Standards

On May 7, 2010, the USEPA and the National Highway and Traffic Safety Administration issued a joint final rule for Light-Duty Vehicle GHG Emission Standards and Corporate Average Fuel Economy Standards. The standards have been developed to reduce GHG emissions from mobile sources and improve fuel economy.

4A.1.21 Antiquities Act of 1906

The Antiquities Act of 1906 (16 U.S.C. sections 431–433) was the first Federal legislation promulgated to protect cultural resources on Federal lands. The act establishes a permit program for qualified institutions and provides fines or imprisonment for unpermitted persons convicted of appropriating, excavating, injuring, or destroying historic or prehistoric resources or objects of antiquity on lands controlled or managed by the Federal government.

4A.1.22 The Archaeological Resources Protection Act of 1979

The Archaeological Resources Protection Act of 1979 (16 U.S.C. sections 470aa-470mm) was adopted to strengthen the enforcement and penalties of the Antiquities Act. It regulates and permits the excavation of archaeological sites on Federal and Indian lands, and governs the removal and management of archaeological collections from these sites. It allows for enforcement of criminal and civil penalties against those who loot, vandalize, or illegally buy or sell archaeological resources (defined as items of at least 100 years of age).

4A.1.23 National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act of 1966 (NHPA) and its implementing regulations (36 CFR Part 800) require Federal agencies to consider the effects of their undertakings on cultural resources that are, or that may be, eligible for listing in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation an opportunity to comment. NRHP-eligible resources are considered to be "significant." The criteria used to evaluate eligibility for listing in the NRHP are further discussed in the next subsection.

The Section 106 process that is typically associated with NEPA compliance requires consultation of the Federal lead agency with other Federal, state, and local agencies, the Advisory Council on Historic Preservation, the State Historic Preservation Officer, Indian tribes, and interested members of the public, such as historical societies. Throughout the Section 106 process, the Federal lead agency and consulting parties work together to identify adverse impacts on sites of cultural significance or historic properties, and seek ways to avoid, minimize, or mitigate the adverse effects. A Memorandum of Agreement or Programmatic Agreement is issued by the participating parties that includes the measures agreed upon to avoid or reduce (i.e., mitigate) adverse effects. For large or complex undertakings, a Programmatic Agreement may also be negotiated to develop a phased approach to historic properties management or alternative Section 106 processes through consultations. Thus, impacts to cultural resources that are identified in a NEPA document are addressed through Section 106.

Section 110 of the NHPA sets out the broad responsibilities of Federal agencies for identifying and protecting historic properties under their jurisdiction, and for avoiding unnecessary damage to them. It is intended to ensure that an historic preservation program is fully integrated into the ongoing program of each Federal agency. Section 110 allows the costs of preservation activities as eligible project costs in all undertakings conducted or assisted by a Federal agency. Federal agencies are directed to withhold grants, licenses, approvals, or other assistance to applicants who intentionally damage or adversely affect historic properties in an effort to avoid the Section 106 process.

4A.1.24 National Register of Historic Places

The NRHP was authorized under the NHPA to identify, evaluate, and protect historic and archaeological resources. The National Park Service, under the Secretary of the Interior, administers the NRHP through the consultation and review functions of the Advisory Council on Historic Preservation. Properties listed in the NRHP include districts, sites, buildings, structures, and objects that are significant to American history, architecture, archaeology, engineering, and culture. These resources contribute to an understanding of the historical and cultural foundations of the nation. The NRHP eligibility criteria are presented in 36 CFR Section 60.4.

4A.1.25 American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 protects the rights of Native Americans to freedom of expression of traditional religions (24 U.S.C. Section 1996). This act established “the policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions… including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.”

4A.1.26 Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act provides a systematic process for determining the rights of lineal descendants and recognized Indian tribes and Native Hawaiian organizations to claim and recover Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. Native American descendants, tribes, and organizations are to be consulted when such items are inadvertently discovered or intentionally excavated on Federal or tribal lands. Regulations in 43 CFR Part 10, Section 10.4, outline requirements for notification of inadvertent discoveries, ceasing activity, consultation, disposition of the items, and resumption of activity. The act also covers claims and recovery of Native American human remains and burial artifacts held by the Federal government or federally funded museums.

4A.1.27 Indian Trust Asset Policies

Indian trust assets (ITAs) are legal interests in property held in trust by the U.S. Government for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITAs can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the U.S. is the trustee. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historical treaty provisions.

The Federal government, through treaty, statute, or regulation, may take on specific, enforceable fiduciary obligations that give rise to a trust responsibility to federally-recognized tribes and individual Indians possessing trust assets. Courts have recognized an enforceable Federal fiduciary duty with respect to Federal supervision of Indian money or natural resources, held in trust by the Federal government, where specific treaties, statutes or regulations create such a fiduciary duty.

Consistent with President William J. Clinton's 1994 memorandum, "Government-to-Government Relations with Native American Tribal Governments," Bureau of Reclamation (Reclamation) assesses the effect of its programs on tribal trust resources and federally-recognized tribal governments. Reclamation is tasked to actively engage federally-recognized tribal governments and consult with such tribes on government-to-government level when its actions affect ITAs (*Federal Register*, Vol. 59, No. 85, May 4, 1994, pages 22951–22952). The DOI Departmental Manual Part 512.2 ascribes the responsibility for ensuring protection of ITAs to the heads of bureaus and offices. DOI is required to carry out activities in a manner that protects ITAs and avoids adverse effects whenever possible.

4A.1.28 Indian Sacred Sites on Federal Land

EO 13007 provides that in managing Federal lands, each Federal agency with statutory or administrative responsibility for management of Federal lands shall, to the extent practicable and as permitted by law, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

4A.1.29 Federal Policies and Regulations Related to Environmental Justice

4A.1.29.1 Executive Order 12898

EO 12898, issued by President Clinton in 1994, requires that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations….” In his memorandum transmitting EO 12898 to Federal agencies, President Clinton further specified that, “each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by the National Environmental Policy Act [NEPA] of 1969.” Guidance on how to implement EO 12898 and conduct an Environmental Justice analysis has been issued by the President’s Council on Environmental Quality.

4A.1.29.2 Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 states that “No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” Title VI bars intentional discrimination, but also unjustified disparate impact discrimination resulting from policies and practices that are neutral on their face (i.e., there is no evidence of intentional discrimination) but have the effect of discrimination on protected groups.

4A.1.29.3 Council on Environmental Quality Guidance for Environmental Justice

The CEQ issued guidance in 1997 entitled “Environmental Justice: Guidance under the National Environmental Policy Act” that established the role of EO 12898 as it relates to actions subject to NEPA. The guidance also established the criteria for identifying environmental justice populations and how to consider the involvement of environmental justice groups throughout phases of the NEPA process.

4A.2 State Policies and Regulations

State policies and regulations presented in this appendix are related to requirements that affect surface water, biological, energy, agricultural, air quality and cultural resources. State policies and regulations that affect operations of the Central Valley Project and State Water Project are included in Appendix 3A, No Action Alternative: Central Valley Project and State Water Project Operations, and are not included in this appendix.

4A.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) established surface water and groundwater quality guidelines and provided the authority for the SWRCB to protect the state’s surface water and groundwater. Nine RWQCBs have been established to oversee and implement specific water quality activities in their geographic jurisdictions.

The Porter-Cologne Act also requires that each RWQCB develop basin plans that establish and periodically review the beneficial uses and water quality objectives for groundwater and surface waterbodies within its jurisdiction. Water quality objectives developed by the regional boards provide specific water quality guidelines to protect groundwater and surface water to maintain designated beneficial uses. The SWRCB, through its RWQCBs, is the permitting authority in California to administer NPDES permits and Waste Discharge Requirements permits for regulation of waste discharges in the respective jurisdictions.

4A.2.1.1 Regional Water Quality Control Board Basin Plans

The RWQCBs are required to formulate and adopt basin plans for all areas under their jurisdiction under the Porter-Cologne Act. Each basin plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the basin plans.

Section 13050(f) of the Porter-Cologne Act lists the beneficial uses of the waters of the state that may be protected against water quality degradation, which include but are not limited to: domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Basin plans must designate and protect beneficial uses in the region. A uniform list of beneficial uses is defined by the SWRCB; however, each RWQCB may identify additional beneficial uses specific to local waterbodies.

Basin plans must adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. These water quality standards include: designated beneficial uses; water quality objectives to protect the beneficial uses; implementation of the Federal and state policies for antidegradation; and general policies for application and implementation.

The basin plans are subject to modification, considering applicable laws, policies, technologies, water quality conditions, and priorities. Basin plans must be assessed every 3 years for the appropriateness of existing standards and evaluation and prioritization of basin planning issues. In California, however, waterbodies are assessed every 2 years for CWA 303(d) and 305(b) requirements. Revisions are accomplished through basin plan amendments. Once a basin plan amendment is adopted in noticed public hearings, it must be approved by the SWRCB Office of Administrative Law and, in some cases, the USEPA.

4A.2.1.2 State Antidegradation Policy

California’s Antidegradation Policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Waters in California (State Water Board Resolution No. 68-16), restricts degradation of surface waters and groundwaters. In particular, this policy protects waterbodies where existing quality is higher than necessary for the protection of beneficial uses. Under the Antidegradation Policy, any actions that can adversely affect water quality in all surface waters and groundwaters must:

- Meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the state will be maintained;

- Not unreasonably affect present and anticipated beneficial use of the water; and
- Not result in water quality less than that prescribed in water quality plans and policies.

The state Antidegradation Policy meets the requirements of the Federal antidegradation policy.

4A.2.1.3 California Toxics Standards

The Policy for Implementing Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California is referred to as the State Implementation Policy. This state policy for water quality control, adopted by the SWRCB on March 2, 2000, and effective by May 22, 2000, applies to discharges of toxic pollutants into the inland surface waters, enclosed bays, and estuaries of California subject to regulation under the State's Porter-Cologne Act (Division 7 of the Water Code) and the Federal CWA. Such regulation may occur through the issuance of NPDES permits, or other relevant regulatory approaches. The policy establishes: (1) implementation provisions for priority pollutant criteria promulgated by the USEPA through the National Toxics Rule (40 CFR 131.36) (promulgated on December 22, 1992, and amended on May 4, 1995) and through the California Toxics Rule (40 CFR 131.38) (promulgated on May 18, 2000, and amended on February 13, 2001), and for priority pollutant objectives established by RWQCBs in their water quality control plans; (2) monitoring requirements for 2,3,7,8-tetrachlorodibenzodioxin equivalents; and (3) chronic toxicity control provisions. In addition, this policy includes special provisions for certain types of discharges and factors that could affect the application of other provisions in the policy.

The California Toxics Rule is applicable to all state waters, as are the USEPA advisory National Recommended Water Quality Criteria. Central Valley and Delta areas are subject to the 2006 Bay-Delta Water Quality Control Plan, and the Central Valley, Tulare Basin, and San Francisco Bay regional plans. Freshwater criteria apply to waters of salinity less than 1 parts per thousand 95 percent or more of the time, seawater criteria are for water greater than 10 parts per thousand 95 percent or more of the time, and estuarine waters use the more stringent of the two possible criteria, in absence of estuary-specific criteria.

The regulation of mercury contamination is approached through bioaccumulation to fish. In addition to fish fillets protective of human health, the Delta TMDL recommended concentration for mercury in small, whole-body fish to be protective of wildlife is not to exceed 0.03 mg/kg mercury wet weight. Although selenium is regulated through water quality standards, fish and bird egg tissue concentration benchmarks have been developed for use in San Francisco Bay and Delta TMDLs.

For evaluation of risks to human health, analyses of fish fillets are most common and were used in California to establish Fish Contaminant Goals and Advisory Tissue Levels, although the fish should be analyzed in the form that people may eat (for example, for some species or ethnic groups, whole-body analyses may be appropriate).

4A.2.1.4 Long-term Irrigated Lands Regulatory Program

The SWRCB and the RWQCBs implement the Irrigated Lands Regulatory Program to regulate discharges to prevent agricultural runoff from impairing surface waters. To protect these waters, the SWRCB and the RWQCBs issue conditional waivers of waste discharge requirements to growers that contain conditions requiring water quality monitoring of receiving waters and corrective actions when impairments are found.

4A.2.1.5 Nonpoint Source Implementation and Enforcement Policy

California's Nonpoint Source Implementation and Enforcement Policy describes how its nonpoint source plan is to be implemented and enforced, in compliance with Section 319 of the CWA, Coastal Zone Act Reauthorization Amendments, and the Porter-Cologne Act. In contrast to point-source pollution that enters waterbodies from discrete conveyances, nonpoint-source pollution enters waterbodies from diffuse sources, such as land runoff, seepage, or hydrologic modification. Nonpoint-source pollution is controlled through implementation of management measures. The nonpoint source program contains recommended management measures for developing areas and construction sites, as well as wetland and riparian areas. Requirements for soil erosion and sediment controls to prevent nonpoint-source sediment discharges to waterways may be incorporated into permits issued by the San Francisco Bay Conservation and Development Commission or other regulatory entities.

4A.2.1.6 California 303(d)/305(b) Integrated Report

The California 303(d)/305(b) Integrated Report is updated biennially, as required by the USEPA, for inclusion in the USEPA's national Water Quality Inventory Report to Congress. The report is composed of the current California 303(d) list and all current listing decisions for contaminants in impaired waterbodies. The statewide report is the compilation of 303(d)/305(b) Integrated Reports submitted by each RWQCB. The final California 303(d) list must be submitted to and approved by the USEPA before it becomes effective.

4A.2.1.7 Central Valley Salinity Alternatives for Long-term Sustainability (CV-SALTS)

In 2006, the Central Valley RWQCB, the SWRCB, and stakeholders began a joint effort to address salinity and nitrate problems in California's Central Valley and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. This effort is referred to as the CV-SALTS Initiative. The goal of CV-SALTS is to develop a comprehensive region-wide Salt and Nitrate Management Plan (SNMP) describing a water quality protection strategy that will be implemented through a mix of voluntary and regulatory efforts. The SNMP may include recommendations for numeric water quality objectives, beneficial use designation refinements, and/or other refinements, enhancements, or basin plan revisions. The SNMP will serve as the basis for amendments to the three basin plans that cover the Central Valley Region (the Sacramento River and San Joaquin River Basin Plan, the Tulare Lake Basin Plan, and the Sacramento/San Joaquin Rivers Bay-Delta Plan). The Basin Plan Amendments will likely establish a comprehensive implementation plan to achieve water quality objectives for salinity (including nitrate) in the region's surface waters and groundwater, and the SNMP may include recommendations for numeric water quality objectives, beneficial use designation refinements, and/or other refinements, enhancements, or basin plan revisions.

4A.2.2 California Safe Drinking Water Act

In 1976, California enacted its own Safe Drinking Water Act, requiring the Department of Public Health Services to regulate drinking water, including setting and enforcing Federal and state drinking water standards, administering water quality testing programs, and administering permits for public water system operations. The Federal Safe Drinking Water Act allows the state to enforce its own standards in lieu of the Federal standards so long as they are at least as protective as the Federal standards. Substantial amendments to the California Act in 1989 incorporated the new Federal Safe Drinking Water Act requirements into California law, provided for the state to set more stringent standards, and recommended public health levels for contaminants

4A.2.2.1 Central Valley Regional Water Quality Control Board Drinking Water Policy

A multi-year effort is underway to develop a drinking water policy for surface waters in the Central Valley. As water flows out of the Sierra foothills and into the valley, pollutants from a variety of urban, industrial, agricultural, and natural sources affect the quality of water, which leads to drinking water treatment challenges and potential public health concerns. Existing policies and plans lack water quality objectives for several known drinking water constituents of concern, such as disinfection byproduct precursors and pathogens, and do not include implementation strategies to provide effective source water protection. The Central Valley RWQCB committed to development of the Policy in Resolution R5-2004-0091 and later in Resolution R5-2010-0079. The 2010 Resolution also documented progress to date, provided direction for future actions and set deadlines for interim deliverables associated with policy development by July 2013.

4A.2.3 Area of Origin Groundwater Statute

California Water Code 1220 prohibits the pumping of groundwater “for export within the combined Sacramento and Delta–Central Sierra Basins…unless the pumping is in compliance with a groundwater management plan that is adopted by [county] ordinance.” The statute enables, but does not require, the board of supervisors of any county within any part of the combined Sacramento and Delta–Central Sierra Basin to adopt groundwater management plans (GWMPs).

4A.2.4 Groundwater Management Act

Assembly Bill (AB) 3030 (1992, California Water Code sections 10750–10756) enables water agencies to develop and implement GWMPs to manage the groundwater resources in the jurisdiction of the participating parties. The state does not maintain a statewide program or mandate its implementation, but the legislation provides the guidelines and common framework through which groundwater management can be implemented. Groundwater management legislation was amended in 2002 with the passage of Senate Bill (SB) 1938, which provided additional groundwater management components supporting eligibility to obtain public funding for groundwater projects. In 2000, AB 3030 enabled the development of the Local Groundwater Assistance grant program to support local water agencies developing groundwater management programs.

4A.2.5 Groundwater Basin Adjudication Processes

Basin adjudications occur through a court decision at the end of a lawsuit. The final court decision determines the groundwater rights of all the groundwater users overlying the basin. In addition, the court decides who the extractors are and how much groundwater those well owners are allowed to extract, and appoints a Watermaster whose role is to ensure that the basin is managed in accordance with the court's decree. The Watermaster must report periodically to the court. There are currently 23 adjudicated groundwater basins in California, most of which are located in Southern California.

4A.2.6 California Statewide Groundwater Elevation Monitoring Program

SBX7 6, enacted in November 2009, mandates a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California's groundwater basins. This amendment to the Water Code requires the collaboration between local monitoring entities and Department of Water Resources (DWR) to collect groundwater elevation data. To achieve this goal, DWR developed the California Statewide Groundwater Elevation Monitoring (CASGEM) Program to establish a permanent, locally managed program of regular and systematic monitoring in all of the state's alluvial groundwater basins.

The law requires that local agencies monitor and report the elevation of their groundwater basins. DWR is required by the law to establish a priority schedule for monitoring groundwater basins, and to report to the Legislature on the findings from these investigations (Water Code Section 10920 et seq.). DWR is developing an online system for a monitoring entity to submit groundwater elevation data, which will be compatible with DWR's Water Data Library.

4A.2.7 Sustainable Groundwater Management Act

In September 2014, the Sustainable Groundwater Management Act (SGMA) was enacted. The SGMA establishes a new structure for locally managing California's groundwater in addition to existing groundwater management provisions established by AB 3030 (1992), SB 1938 (2002), and AB 359 (2011), as well as SBX7 6 (2009).

The SGMA includes the following key elements:

- Provides for the establishment of a Groundwater Sustainability Agency (GSA) by one or more local agencies overlying a designated groundwater basin or subbasin, as established by DWR Bulletin 118-03.
- Requires all groundwater basins found to be of "high" or "medium" priority to prepare Groundwater Sustainability Plans (GSPs).
- Provides for the proposed revisions, by local agencies, to the boundaries of a DWR Bulletin 118 basin, including the establishment of new subbasins.
- Provides authority for DWR to adopt regulations to evaluate GSPs, and review the GSPs for compliance every 5 years.
- Requires DWR to establish best management practices and technical measures for GSAs to develop and implement GSPs.
- Provides regulatory authorities for the SWRCB for developing and implementing interim GWMPs under certain circumstances (such as lack of compliance with development of GSPs by GSAs).

The SGMA defines sustainable groundwater management as "the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results." Undesirable results are defined as any of the following effects.

- Chronic lowering of groundwater levels (not including overdraft during a drought if a basin is otherwise managed).
- Significant and unreasonable reduction of groundwater storage.
- Significant and unreasonable seawater intrusion.
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.
- Significant and unreasonable land subsidence that substantially interferes with surface land uses.
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

The SGMA requires the formation of GSPs in groundwater basins or subbasins that DWR designates as medium or high priority based upon groundwater conditions identified using the CASGEM results by 2022. Sustainable groundwater operations must be achieved within 20 years following completion of the GSPs.

4A.2.8 California Endangered Species Act

California Fish and Game Code sections 2050–2115.5, otherwise known as the California Endangered Species Act (CESA), state that all native species of fish, wildlife, and plants that are in danger of or threatened with extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors, are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. The CESA also states that the conservation, protection, and enhancement of these species and their habitat is of statewide concern (Fish and Game Code Section 2051).

An "Endangered" species is a native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (Fish and Game Code Section 2062). A "threatened" species is a native species or subspecies of bird, mammal, fish, amphibian, reptile, or plant that, although not currently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts (Fish and Game Code Section 2067). The California Fish and Game Commission is responsible for listing species under CESA, and the California Department of Fish and Wildlife (DFW) is responsible for implementing and enforcing and issuing permits under CESA.

CESA strictly prohibits the "take" of any threatened or endangered fish, wildlife or plant species or species listed as threatened or endangered under CESA. Under Section 2081 of the Fish and Game Code, an incidental take permit from DFW is required for projects that could result in the "take" of a species that is state-listed as threatened or endangered, or that is a candidate for listing. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include "harm" or "harass," as the definition of ESA does. As a result, the threshold for take under CESA may be higher than under the ESA.

Under Fish and Game Code Section 2080.1, applicants can notify DFW that they have been issued an incidental take statement/permit pursuant to the ESA for species that are listed under both the ESA and CESA, and can request a consistency determination. If DFW determines that the conditions specified in the Federal incidental take statement/permit are consistent with CESA, a consistency determination can be issued, which allows for incidental take under CESA under the same provisions as under the Federal incidental take statement/permit.

4A.2.9 Natural Community Conservation Planning Act

Sections 2800–2835 of the Fish and Game Code, otherwise known as the Natural Community Conservation Planning Act (NCCP Act), detail the state's policies on the conservation, protection, restoration, and enhancement of the state's natural resources and ecosystems. The intent of the legislation is to provide for conservation planning as an officially recognized policy that can be used as a tool to eliminate conflicts between the protection of the state's natural resources and the need for growth and development. In addition, the legislation promotes conservation planning as a means of coordination and cooperation among private interests, agencies, and landowners, and as a mechanism for multi-species and multi-habitat management. The NCCP Act provides an alternative means for DFW to authorize the incidental take of species listed as threatened or endangered or which are candidates for listing under CESA.

4A.2.10 California Fish and Game Code Section 1600 (Streambed Alterations)

Sections 1600–1616 of the Fish and Game Code state that it is unlawful for any person or agency to (1) substantially divert or obstruct the natural flow of the bed, channel, or bank of any river, stream, or lake; (2) substantially change the bed, channel, or bank of any river, stream, or lake; (3) use any material from the bed, channel, or bank of any river, stream, or lake; or (4) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake in California, without first notifying DFW. With certain exceptions, a Streambed Alteration Agreement must be obtained if DFW determines that substantial adverse effects on existing fish and wildlife resources are expected to occur. The Streambed Alteration Agreement must include measures designed to protect the affected fish and wildlife and associated riparian resources. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks, and that body of water supports wildlife, fish, or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. DFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

4A.2.11 California Wild and Scenic Rivers Act

In addition to the National Wild and Scenic Rivers System, California has its own system of protected rivers. The California Wild and Scenic Rivers System consists of rivers and river segments established by legislative action because of the scenic, recreational, fishery, or wildlife values that the rivers or segments possess in their free-flowing condition. Sections 5093.50–5093.70 of the Public Resources Code, as established by the Wild and Scenic Rivers Act in 1972, with amendments, state that: "It is the policy of the State of California that certain rivers which possess extraordinary scenic, recreational, fishery, or wildlife values will be preserved in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state." The California Natural Resources Agency must coordinate activities involving the State Wild and Scenic Rivers with Federal, state, and local agencies.

All rivers designated as wild, scenic, or recreational by the Federal or state government are regarded as having high scenic quality. The Lower American River, from Nimbus Dam to the Sacramento River, and portions of the Trinity River, downstream of Lewiston Dam, have been designated under both the National and California Wild and Scenic Rivers Systems. The Lower American

River is listed by the California Natural Resources Agency as "recreational," with trail, boating, rafting, and fishing opportunities. The Trinity River downstream of Lewiston Dam is also listed by California as "recreational," offering fishing, rafting, kayaking, and canoeing.

4A.2.12 Heritage and Wild Trout Program

The California Fish and Game Commission established the Heritage and Wild Trout Program in 1971 to protect and enhance high quality wild strains of trout and their habitat. The program designates waters that are managed to protect the wild strains of trout. Generally, these areas are available for public fishing without overcrowding and are able to support naturally sustainable trout populations to allow for appropriate levels of fishing. Management plans are prepared for the designated wild trout waters to avoid planting of domestic strains of catchable-sized trout and minimize the potential for planting of hatchery-produced trout.

4A.2.13 The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act

The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act (Fish and Game Code Section 6900-6903.5) was enacted in 1988 in response to DFW reporting that the natural production of salmon and steelhead in California had declined dramatically since the 1940s, primarily as a result of lost stream habitat on many streams in the state. The Salmon, Steelhead Trout, and Anadromous Fisheries Program Act declares that it is the policy of the State of California to increase the state's salmon and steelhead resources, and directs DFW to develop a plan and program that strives to double the salmon and steelhead resources (Fish and Game Code Section 6902(a)). It is also the policy of the state that existing natural salmon and steelhead habitat shall not be diminished further without offsetting the impacts of lost habitat (Fish and Game Code Section 6902(c)).

4A.2.14 Marine Invasive Species Act

The Marine Invasive Species Act of 2003 (AB 433) revised and expanded the Ballast Water Management for Control of Nonindigenous Species Act of 1999 to more effectively address the threat of nonindigenous species introductions. The law charged the California State Lands Commission with oversight of the state's program to prevent or minimize the introduction of nonindigenous species from commercial vessels. The current State Lands Commission regulations provide vessel owners with various options for managing ballast water, including retention, exchange in mid-ocean waters, treatment, or discharge at the same location where the ballast water originated.

4A.2.15 California Aquatic Invasive Species Management Plan

Developed by the DFW Invasive Species Program, the California Aquatic Invasive Species Management Plan provides information that state agencies and other entities can use to collaborate on addressing aquatic invasive species. The plan proposes management actions for addressing aquatic invasive species threats to the state of California. It focuses on the nonnative algae, crabs, clams, fish, plants, and other species that continue to invade California's creeks, wetlands, rivers, bays, and coastal waters. The plan has the following eight major objectives.

- Improve coordination and collaboration among the people, agencies, and activities involved with aquatic invasive species.
- Minimize and prevent the introduction and spread of aquatic invasive species into and throughout the waters of California.
- Develop and maintain programs that ensure the early detection of new aquatic invasive species and the monitoring of existing aquatic invasive species.
- Establish and manage systems for rapid response and eradication.
- Control the spread of aquatic invasive species and minimize their impacts on native habitats and species.
- Increase education and outreach efforts to ensure awareness of aquatic invasive species threats and management priorities throughout California.
- Increase research on the baseline biology of aquatic invasive species, the ecological and economic impacts of invasions, and control options to improve management.
- Ensure state laws and regulations promote the prevention and management of aquatic invasive species introductions.

Each objective is supported by a series of strategic actions. The plan meets Federal requirements to develop statewide Nonindigenous Aquatic Nuisance Species Management Plans under Section 1204 of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (amended as the National Invasive Species Act of 1996). Article 2, Section 64, of the Harbors and Navigation Code authorizes the California Department of Boating and Waterways to manage aquatic weeds impeding the navigation and use of state waterways.

4A.2.16 California Fish and Game Code—Native Plant Protection Act

Sections 1900–1913 of the Fish and Game Code codify the Native Plant Protection Act of 1977 (NPPA), which is intended to preserve, protect, and enhance endangered or rare native plants in the state. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is present in such small numbers throughout its range that it may become endangered if its environment worsens. The California Fish and Game Commission has the authority to designate native plants as "endangered" or "rare," and DFW has authority to implement and enforce the NPPA. Like CESA, the NPPA strictly prohibits the take of endangered and rare plant species. However, the NPPA contains certain exceptions to this take prohibition that are not included within CESA.

DFW maintains a Special Vascular Plants, Bryophytes, and Lichens List for California as part of the California Natural Diversity Database. The list is updated quarterly and is reviewed and updated by rare plant status review groups (more than 300 botanical experts from government, academia, nongovernment organizations, and the private sector) managed jointly by DFW and California Native Plant Society (CNPS). Plant species, subspecies, or varieties are assigned a California Rare Plant Rank (CRPR) based on their level of endangerment. Plants with CRPR 1A, 1B, or 2 meet the definitions of Section 1901 of the Fish and Game Code and may qualify for state listing. For plants with a CRPR 3 rank, DFW and CNPS lack sufficient information to assign them another code. CRPR 4 plants are those of limited distribution and/or those that are infrequently found within a broader range in California. CNPS believes that CNPR 3 and 4 plants are uncommon enough to justify their regular monitoring.

4A.2.17 California Fish and Game Code—Fully Protected Species

Sections 3505, 3511, 3513, 3800, 4700, 5050, and 5515 of the Fish and Game Code pertain to fully protected wildlife species (birds in Sections 3505 through 3800, mammals in Section 4700, reptiles and amphibians in Section 5050, and fish in Section 5515) and strictly prohibit the take of fully protected species. With certain narrow exceptions, DFW cannot issue a take permit for fully protected species; therefore, avoidance measures may be required to avoid take.

4A.2.18 California Energy Commission

California's primary energy policy and planning agency, the California Energy Commission, was created by the Legislature (the Warren-Alquist Act) in 1974. The California Energy Commission forecasts future energy needs, promotes energy efficiency and conservation by setting the state's appliance and building efficiency standards; supports public interest energy research; develops renewable energy resources and alternative renewable energy technologies for buildings, industry, and transportation; licenses thermal power plants that are 50 megawatts or larger; and plans and directs state response to energy emergencies.

4A.2.19 California Department of Conservation

The California Department of Conservation administers policies to promote environmental health, economic vitality, informed land use decisions, and management of the state's natural resources, including agricultural resources. One of the programs is implemented in accordance with the Williamson Act to discourage conversion of agricultural land to non-agricultural use by offering landowners tax incentives for entering into a minimum 10-year contract to preserve no less than 100 acres of agricultural land.

As part of the Land Inventory and Monitoring program, definitions were established for designations of Important Farmlands which include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Farmland maps are created by the Farmland Mapping and Monitoring Program under the direction of the USDA. Prime Farmland is defined by soil quality, groundwater elevation, water supplies, flooding, erodibility, permeability, rock fragment content, and rooting depth to produce sustained high crop yields. Farmland of Statewide Importance includes lands not designated as Prime Farmland that have a good combination of most of the physical and chemical characteristics for the production of crops. Unique Farmland includes particular characteristics for high quality and/or high yield of a specific crop (e.g., rice).

4A.2.20 Delta Protection Act of 1992

The Delta Protection Act (Public Resources Code Section 21080.22) includes a series of findings and declarations related to the quality of the Delta environment and emphasizes the national, state, and local importance of protecting the unique resources of the Delta. The act mandated a state-level planning effort to address the needs of Delta communities. The Delta Protection Commission (DPC) was made a permanent state agency in 2000 because a need for continued planning and management was identified. The DPC has planning jurisdiction over portions of five counties: Contra Costa, Sacramento, San Joaquin, Solano, and Yolo. It was charged with developing a comprehensive regional plan to guide land use and resource management, including wildlife habitat and recreation. The resulting Land Use and Resource Management Plan for the Primary Zone of the Delta was initially adopted by the DPC in February 1995 and updated in November 2010. The plan has eight policy areas: Environment, Utilities and Infrastructure, Land Use and Development, Water and Levees, Agriculture, Recreation and Access, Marine Patrol, and Boater Education and Safety Programs. With the adoption of the management plan, all local governments with incorporated areas in the Delta Primary Zone must submit proposed amendments to their general plans to the DPC. The DPC then reviews the proposed amendments to ensure they are consistent with the Land Use and Resource Management Plan for the Primary Zone of the Delta.

4A.2.21 Sacramento-San Joaquin Delta Reform Act of 2009

In November 2009, the California Legislature enacted SBX7 1, one of several bills passed at that time related to water supply reliability, ecosystem health, and the Delta. SBX7 1 took effect on February 3, 2010. Division 35 of this legislation, also known as the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act), requires the development of a legally enforceable, comprehensive, long-term management plan for the Delta, referred to as the Delta Plan. The Delta Stewardship Council was established as an independent state agency by the Delta Reform Act.

The Delta Stewardship Council's primary responsibility is to develop, adopt, and implement the Delta Plan, a legally enforceable, comprehensive, long-term management plan for the Delta and the Suisun Marsh that achieves the coequal goals (Water Code Section 85300(a)) of (1) providing a more reliable water supply for California and (2) protecting, restoring and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place (Water Code Section 85054).

Achieving the coequal goals is a primary and fundamental purpose of the Delta Plan. Additionally, the Delta Reform Act (Water Code Section 85020 et seq.) states that the policy of the state is "to achieve the following objectives as inherent in the coequal goals for the management of the Delta:

- Manage the Delta's water and environmental resources and the water resources of the state over the long term.
- Protect and enhance the unique cultural, recreational, and agricultural values of the California Delta as an evolving place.
- Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem.
- Promote statewide water conservation, water use efficiency, and sustainable water use.
- Improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta.
- Improve the water conveyance system and expand statewide water storage.
- Reduce risks to people, property, and state interests in the Delta by effective emergency preparedness, appropriate land uses, and investments in flood protection.
- Establish a new governance structure with the authority, responsibility, accountability, scientific support, and adequate and secure funding to achieve these objectives."

4A.2.22 McAteer-Petris Act and the San Francisco Bay Plan

The McAteer-Petris Act, enacted on September 17, 1965, was designed to preserve San Francisco Bay from indiscriminate filling and established the San Francisco Bay Conservation and Development Commission (BCDC) as a temporary state agency charged with preparing a plan for the long-term use of the bay and regulating development in and around the bay. To this end, BCDC prepared the San Francisco Bay Plan. In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the San Francisco Bay Plan into state law. Bay Plan maps and policies guide the protection of the San Francisco Bay and its tributary waterways, marshes, managed wetlands, salt ponds, and shoreline. Plan maps identify areas designated for "priority uses" that include wildlife refuges, waterfront parks, beaches, water-related industry, and ports. The Bay Plan also identifies other land designations, such as tidal marshes, salt ponds, and managed wetlands.

BCDC's Suisun Marsh Protection Plan contains findings that recognize the value of the aesthetic resources of the Suisun Marsh, as well as adjacent upland grasslands, cultivated areas, and seasonal marshes. The plan is intended "to preserve the integrity and assure continued wildlife use" and establishes that the Suisun Marsh "represents a unique and irreplaceable resource to the people of the state and nation." The plan includes specific building and landscape criteria for development along the eastern boundary of the Suisun Marsh in southern Solano County.

4A.2.23 State Lands Commission

The California State Lands Commission (SLC) was established in 1938 with authority under Division 6 of the California Public Resources Code. The SLC provides stewardship of the California lands and waterways entrusted to its care. Nearly 4 million acres of "sovereign lands" are owned by the state. This includes the beds of navigable streams, rivers, and lakes, tidal waterways, and tidelands up to the ordinary high water mark and submerged lands along the coastline extending from the shoreline out to 3 miles offshore. SLC may lease sovereign lands for any public trust purpose, including open space, fisheries, commerce, recreation, and navigation. A public or private entity must lease sites for marinas and recreational piers that are within sovereign lands. SLC also issues permits for dredging lands within its jurisdiction.

4A.2.24 California Mulford-Carrell Act

The 1969 Mulford-Carrell Act established the California Air Resources Board (ARB). The ARB's mission is to promote and protect public health, welfare, and ecological resources through improved air quality. The ARB oversees the activities of local and regional air quality districts.

4A.2.25 California Clean Air Act

The California Clean Air Act (CCAA) provides the state with a comprehensive framework for air quality planning regulation. Prior to passage of the act, Federal law contained the only comprehensive planning framework. The CCAA requires attainment of state ambient air quality standards by the earliest practicable date.

4A.2.25.1 California Ambient Air Quality Standards and State Air Quality Designations

The ARB administers air quality policy in California, establishes statewide standards, and administers the state's mobile-source emissions control program, which is described below. In addition, the ARB oversees air quality programs established by state statute. The ARB oversees programs to achieve the California Ambient Air Quality Standards (CAAQS), which were established in 1969 pursuant to the Mulford-Carrell Act. These standards are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility-reducing particulates, hydrogen sulfide, and sulfates.

4A.2.25.2 State Implementation Plans

Federal clean air laws require nonattainment areas with unhealthy levels of criteria air pollutants to develop plans to detail actions that will be undertaken to achieve the NAAQS. These comprehensive plans are known as State Implementation Plans, or SIPs. In addition, the CCAA requires local air districts in nonattainment areas of the state to prepare and maintain Air Quality Management Plans (AQMPs) to achieve compliance with CAAQS. These

AQMPs also serve as a basis for preparing the SIP for the state of California, which must ultimately be approved by the USEPA and codified in the CFR.

SIPs are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, and permitting), district rules, state regulations, and Federal control requirements. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel standards and requirements, and limits on emissions from consumer products. State law establishes the ARB as the lead agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair, prepare SIP elements and submit them to the ARB for review and approval. The ARB forwards SIP revisions to the USEPA for approval and publication in the *Federal Register*. CFR Title 40, Chapter I, Part 52, Subpart F, Section 52.220 lists all the items included in the California SIP. The promulgation of the new national 8-hour ozone standard and $PM_{2.5}$ standards has resulted in additional statewide air quality planning efforts. The California Regional Haze Plan has been drafted to reduce regional haze and improve visibility in national parks and wilderness areas. Many additional California SIP submittals are pending USEPA approval.

In addition to the SIPs aimed at attainment of the NAAQS, the CCAA requires nonattainment areas to achieve and maintain the CAAQS by the earliest practicable date. Local air districts must develop plans to attain the state ozone, CO, sulfur dioxide, and NO_2 standards. The CCAA also requires that, by the end of 1994 and once every 3 years thereafter, the local air districts must assess their progress toward attaining the air quality standards. The triennial assessment is to report the extent of air quality improvement and the amounts of emission reductions achieved from control measures for the preceding 3-year period. The districts must review and revise their attainment plans, if necessary, to correct for deficiencies in meeting progress, incorporate new data or projections, mitigate ozone transport, and expedite adoption of all feasible control measures. In addition to the triennial progress assessment requirement, local air districts must prepare an annual progress report and submit the report to the ARB by December 31 of each year. At a minimum, the annual progress report contains the proposed and actual dates for the adoption and implementation of each measure listed in the previous 3-year plan.

4A.2.25.3 Air Toxics Programs

In addition to the criteria pollutants, concern about non-criteria pollutants has increased in recent years. AB 1807 (the Tanner Bill, passed in 1983) established the California Air Toxics Program for identifying and developing emissions control and reduction methods for toxic air contaminants (TACs). The bill formally designated 18 substances as TACs. In 1993, the 189 HAPs identified by the USEPA were incorporated into California law as TACs. Other pollutants have been added more recently, such as PM emissions from diesel-fueled engines (diesel PM), designated by California as a carcinogen. The California Air Toxics Program also includes provisions for public awareness and risk reduction.

Local agencies, such as air districts, are responsible for evaluating and controlling TAC emissions, especially when these emissions are released from projects near sensitive receptors. For example, AB 3205 requires that new or modified sources of TACs near schools provide public notice to the parents of schoolchildren before a permit to emit air pollutants is issued. One air toxics control measure adopted by ARB in 2004 prohibited operation of diesel-fueled backup engines within 500 feet of a school during school hours, unless used in an emergency.

The Air Toxics "Hot Spots" Information and Assessment Act was enacted in September 1987. The act requires that toxic air emissions from stationary sources (facilities) be quantified and compiled into an inventory, that risk assessments be conducted according to methods developed by the California Office of Environmental Health Hazard Assessment, and that the public be notified of significant risks posed by nearby facilities. Facilities that pose a potentially significant health risk to the public are required to reduce their risks.

4A.2.25.4 Mobile-Source Emission Control Programs

The ARB is responsible for developing statewide programs and strategies to reduce the emission of smog-forming pollutants and TACs by mobile sources. To attain the CAAQS, the CCAA mandates that the ARB achieve the maximum degree of emission reductions from all on- and off-road mobile sources. On-road sources include passenger cars, motorcycles, trucks, and buses; off-road sources include heavy-duty construction equipment, recreational vehicles, marine vessels, lawn and garden equipment, and small utility engines. On-road vehicle emission control programs overseen by the ARB include vehicle inspections, idling restrictions, requirements for clean vehicle fleets, voluntary vehicle retirement programs, and engine emissions standards.

Additionally, exhaust emission standards have been adopted by the ARB and the USEPA for off-road engines. The ARB has extensive statewide programs underway to reduce diesel PM.

4A.2.26 State Policies and Regulations Related to Greenhouse Gas Emissions

A summary of state regulations and standards related to GHG emissions is provided below. California Senate and Assembly bills and executive orders, such as SB 1771, AB 1493, SB 1078, SB 107, EOs S-14-08 and S-1-07, SB 1368, SB 97, and SB 375 have been developed to define various aspects of GHG recordkeeping and implementation of GHG emission reduction measures, such as the California Renewables Portfolio Standard Program for statewide energy supplies and the Low Carbon Fuel Standard. These bills and orders are not discussed further in this document because they are not directly applicable to the Proposed Project or any of the alternatives. Other bills, executive orders, and plans, such as AB 32, EO S 3-05, the Climate Change Scoping Plan, the Climate Change Adaptation Strategy, and California Environmental Quality Act (CEQA) guidance, are discussed further. These bills and plans generally define the regulatory setting for projects that emit GHGs in California and describe regulatory agency goals for statewide GHG emissions reductions and climate change adaptation.

4A.2.26.1 Executive Order S-3-05 (California)

EO S-3-05 was signed into law in 2005 and calls for a reduction of GHG emissions to 2000 levels by 2010, a reduction of GHG emissions to 1990 levels by 2020, and a reduction of GHG emissions to 80 percent below 1990 levels by 2050. The order directs the California Environmental Protection Agency (CalEPA) Secretary to coordinate development and implementation of strategies to achieve the GHG reduction targets in conjunction with the Secretary of the Business, Transportation, and Housing Agency; the Secretary of the Department of Food and Agriculture; the Secretary of the Natural Resources Agency; the Chairperson of ARB; the Chairperson of the California Energy Commission; and the President of the California Public Utilities Commission. CalEPA developed the Climate Action Team made up of representatives from the agencies listed above to implement the strategies to reduce GHG emissions. The order also includes a requirement for CalEPA to report annually to the Governor and Legislature. The first report, Climate Action Team Proposed Early Actions to Mitigate Climate Change in California, was released in March 2006, and reports have been published each year since. ARB released its Expanded List of Early Action Measures in October 2007.

4A.2.26.2 California Global Warming Solutions Act of 2006 (Assembly Bill 32)

On September 20, 2006, California adopted the California Global Warming Solutions Act of 2006 (generally referred to as AB 32 and codified at Section 1, Division 25.5, and Section 38500 et seq. of the California Health & Safety Code). This law requires ARB to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020 (representing a 25 percent reduction). AB 32 does not directly amend other environmental laws, such as CEQA. Instead, it creates a program to identify GHG sources, prioritize sources for regulation based on significance of contributions to California GHG emissions, and regulate priority sources. Under AB 32, ARB is required to complete certain actions. As of May 2012, ARB has:

- Determined that the statewide GHG emissions inventory in 1990 was approved as a statewide GHG emissions limit to be achieved by 2020.
- Identified significant sources or categories of sources of each GHG and established protocols and procedures for monitoring, quantifying, and reporting such emissions.
- Issued a scoping plan to achieve emission reductions from specific sources or categories of sources by January 1, 2009.
- Adopted and begun enforcement of regulations to implement a suite of discrete actions by January 1, 2010.

- Adopted GHG emissions limits and reduction measures by January 1, 2011.
- Enforced GHG emission limits and reduction measures, beginning on January 1, 2012.

California lead agencies have relied upon local air pollution control districts to provide guidance on the evaluation of air pollutants under CEQA. As a result of AB 32, both ARB and the local air districts will have regulatory jurisdiction over GHG emissions in California. AB 32 identifies ARB as the state agency responsible for the design and implementation of emissions limits, regulations, and other measures to meet targets.

In December 2007, ARB approved the 2020 emission limit (1990 level) of 427 million tpy CO2e of GHGs. The 2020 target requires the reduction of 169 million tpy CO2e, or approximately 30 percent below the state's projected "business-as-usual" 2020 emissions of 596 million tpy CO2e.

4A.2.26.3 Climate Change Scoping Plan

On December 11, 2008, pursuant to AB 32, ARB adopted the Climate Change Scoping Plan. This plan outlines how emissions reductions will be achieved from significant sources of GHGs via regulations, market mechanisms, and other actions. Six key elements, outlined in the scoping plan, are identified to achieve emissions reduction targets:

- Expand and strengthen existing energy efficiency programs and building and appliance standards;
- Achieve a statewide renewable energy mix of 33 percent;
- Develop a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establish targets for transportation-related GHG emissions for regions throughout California, and pursue policies and incentives to achieve those targets;
- Adopt and implement measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Create targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

The Climate Change Scoping Plan also recommended 39 measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving our natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately impact low-income and minority communities. These measures also put the state on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. In 2011, the Functional Equivalent Document for the Scoping Plan was amended.

The Scoping Plan was reapproved by the ARB on August 24, 2011, including the Final Supplement to the Functional Equivalent Document. According to the Final Supplement, the majority of additional measures in the Climate Change Scoping Plan were adopted (as of 2012) and are currently in place.

4A.2.26.4 Executive Order S-13-08, Climate Change Adaptation Strategy

EO S-13-08, issued November 14, 2008, directs the California Natural Resources Agency, DWR, Office of Planning and Research, California Energy Commission, SWRCB, State Parks Department, and California's coastal management agencies to participate in a number of planning and research activities to advance California's ability to adapt to the impacts of climate change. The order specifically directs agencies to work with the National Academy of Sciences to initiate the first California Sea Level Rise Assessment and to review and update the assessment every 2 years after completion, immediately assess the vulnerability of the California transportation system to sea level rise, and to develop a California Climate Change Adaptation Strategy.

Prepared in cooperation and partnership with multiple state agencies, the 2009 California Climate Adaptation Strategy summarizes the best known science on climate change impacts in seven specific sectors (public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure) and provides recommendations on how to manage those threats.

4A.2.26.5 California Greenhouse Gas Cap-and-Trade Program

On October 20, 2011, ARB adopted the final cap-and-trade program for California. The California cap-and-trade program creates a market-based system with an overall emissions limit for affected sectors. The program is currently proposed to regulate more than 85 percent of California's emissions and will stagger compliance requirements according to the following schedule: (1) electricity generation and large industrial sources by 2012; and (2) fuel combustion and transportation by 2015.

4A.2.27 California Register of Historical Resources

The California Register of Historical Resources (CRHR) includes resources that are listed in or formally determined eligible for listing in the NRHP and some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (California Public Resources Code Section 5024.1; Title 14, California Code of Regulations Section 4850). The eligibility criteria for listing in the CRHR are similar to those for NRHP listing but focus on the relevance of the resources to California history and heritage. A cultural resource may be eligible for listing in the CRHR if it has significance under one or more of the following criteria:

- Associated with events or patterns of events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
- Associated with the lives of persons important to local, California, or national history.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master, or possesses high artistic values.
- Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

To be eligible, a resource must also have integrity. The CRHR definition of "integrity" is slightly different than that for the NRHP. Integrity is defined as "the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." The Office of Historic Preservation guidance further states that eligible resources must "retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance" and lists the same seven aspects of integrity used for evaluating properties under the NRHP criteria. The CRHR's special considerations for certain property types are limited to: (1) moved buildings, structures, or objects; (2) historical resources achieving significance within the past 50 years; and (3) reconstructed buildings (14 California Code of Regulations Section 4852).

4A.2.28 Native American Heritage Commission

The duties and role of the Native American Heritage Commission (NAHC), which is located in Sacramento, are described in Public Resources Code (PRC) sections 5097.9 through 5097.991. State and local agencies are required by the PRC to cooperate with the NAHC regarding disposition of Native American resources.

The NAHC maintains a catalog of places of special religious or social significance to Native Americans. This database, known as the Sacred Lands File, includes information on known Native American graves and cemeteries on private lands and other places of cultural or religious significance to the Native American community.

The NAHC also performs other duties regarding the preservation and accessibility of sacred sites and burials and the disposition of Native American human remains and burial items as described below.

4A.2.29 California Public Resources Code and California Health and Safety Code Provisions Regarding Human Remains

In California, when human remains are discovered outside of a cemetery, the relevant county coroner determines whether the remains are archaeological in nature or represent evidence of a crime (which would require the coroner to determine cause of death). When the coroner determines that the remains are of prehistoric Native American origin, he or she contacts the NAHC (Health and Safety Code Section 7050.5(b) and (c)).

The following procedures only apply to Native American remains found in California on non-federal lands. When the NAHC receives notification of a discovery of Native American human remains from a county coroner, it notifies those persons it believes to be the most likely descendants of the deceased Native American. The descendants may, with the permission of the landowner or his or her authorized representative, inspect the site of the discovery of the Native American human remains and recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descendants must complete their inspection and make recommendations or express preferences for treatment within 48 hours of being granted access to the site.

Upon the discovery of Native American remains, the landowner is required to ensure that the immediate vicinity of the find is not damaged or disturbed by further development activity until the most likely descendants make their recommendations. The landowner (and, necessarily, the archaeological team) must confer with the descendants on all reasonable options regarding the descendants' preferences for treatment. The preferences may include, but not be limited to, at the descendants' discretion, further archaeological excavation and scientific study of the remains, immediate removal by the descendants to a site of their choice for reburial in accordance with their traditions, or scientific exhumation and study followed by reburial by the descendants.

4A.2.30 Fire Hazard Severity Zones

In accordance with PRC sections 4201–4204 and Government Code sections 51175–51189, the California Department of Forestry and Fire Prevention (CAL FIRE) has mapped areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. The zones are referred to as Fire Hazard Severity Zones and represent the risks associated with wildland fires. Under CAL FIRE regulations, areas within very high fire-hazard risk zones must comply with specific building and vegetation requirements intended to reduce property damage and loss of life within these areas.

4A.2.31 Mosquito Abatement Act

In 1915, the State Legislature enacted the Mosquito Abatement Act, which allowed local mosquito abatement organizations to form into specific special districts. Mosquito abatement districts use a combination of abatement procedures to control mosquitoes. Generally, mosquito control methods used selectively, singly, or in combination include biological agents, such as mosquitofish, which eat mosquito larvae; source reductions, such as draining the waterbodies that produce mosquitoes; pesticides; ecological manipulations of mosquito breeding habitat; and public education on preventive measures.

4A.2.32 California Vector Control Laws and Regulations

In California, local vector control agencies have the authority to conduct surveillance for vectors, prevent the occurrence of vectors, and abate production of vectors (California Codes: Health and Safety Code Section 2040). Vector control agencies also have authority to participate in review, comment, and make recommendations regarding local, state, or Federal land use planning and environmental quality processes, documents, permits, licenses, and entitlements for projects and their potential effects with respect to vector production (California Codes: Health and Safety Code Section 2041).

Additionally, agencies have broad authority to influence landowners to reduce or "abate" the source of a vector problem. Actions may include imposing civil penalties of up to $1,000 per day plus costs associated with controlling the vector. Agencies have authority to "abate" vector sources on private and publicly owned properties (California Codes: Health and Safety Code sections 2060–2065).

Mosquito and vector control programs that enter into a cooperative agreement with the California Department of Health Services are exempted from some pesticide-related laws under Title 3 of the California Code of Regulations Section 6620. Specifically, these agencies are exempted from "Consent to Apply" (Title 3 California Code of Regulations Section 6616), "Notice" (Title 3 California Code of Regulations Section 6618), and the "Protection of Persons, Animals, and Property" (Title 3 California Code of Regulations Section 6614). Essentially, these provisions allow the vector control agency to apply a pesticide to a property in the interest of preserving the public health, without notifying or obtaining permission from the landowner beforehand.

A vector control technician working at a vector control agency must be a "certified technician" or work under the direct supervision of a "certified technician" to apply pesticides. Vector control technicians achieve certification through an examination process administered by the California Department of Health Services.

Vector control agencies cannot use any pesticide not registered for use in California, and are required to keep detailed records of each pesticide application, including date, location, and amount applied. All pesticides must be applied in accordance with the labeling of the product as registered with the USEPA.

4A.2.33 California Environmental Justice Policies

4A.2.33.1 Environmental Justice – Senate Bill 115

SB 115 established the State of California as the first state to define environmental justice. Senate Bill 115 defines environmental justice as "the fair treatment of people of all races, cultures and income with respect to development, adoption and implementation of environmental laws, regulations and policies." SB 115 added this language to California Government Code Section 65040.12 and to Division 34 of the Public Resources Code relating to environmental quality. Finally, it also established the Governor's Office of Planning and Research as the coordinating agency for state programs and requested that

CalEPA establish a model environmental justice policy for its boards, departments, and offices.

4A.2.33.2 California Natural Resources Agency Environmental Justice Policy

The California Natural Resources Agency defines “environmental justice” in a manner consistent with the State of California as “the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” The agency states that its environmental justice policy is that the fair treatment of all people shall be considered during the planning, decision making, development, and implementation of its programs. The California Natural Resources Agency intends for its policy “to ensure that the public, including minority and low-income populations, are informed of opportunities to participate in the development and implementation of all Resources Agency programs, policies and activities, and that they are not discriminated against, treated unfairly, or caused to experience disproportionately high and adverse human health or environmental effects from environmental decisions.”

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Appendix 5A

CalSim II and DSM2 Modeling

This appendix provides information about the methods and assumptions used for the Remanded Biological Opinions on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) environmental consequences analysis using the CalSim II and DSM2 models. This appendix is organized in three main sections:

- CalSim II and DSM2 Modeling Methodology
- CalSim II and DSM2 Modeling Simulations and Assumptions
- CalSim II and DSM2 Modeling Results

An outline is provided at the beginning of each section.

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Appendix 5A, Section A

CalSim II and DSM2 Modeling Methodology

This section summarizes the modeling methodology used to analyze the No Action Alternative, Second Basis of Comparison, and other alternatives in this Environmental Impact Statement (EIS). It describes the overall analytical framework and contains descriptions of the key analytical tools and approaches used in the environmental consequences evaluation for the alternatives.

Appendix 5A, Section A is organized as follows:

- Introduction
- Overview of the Modeling Approach
  - Analytical Tools
  - Key Components of the Analytical Framework
  - Climate Change and Sea-Level Rise
- Hydrology and System Operations
  - CalSim II
  - Artificial Neural Network for Flow-Salinity Relationship
  - Application of CalSim II to Evaluate EIS Alternatives
  - Output Parameters
  - Appropriate Use of CalSim II Results
  - Linkages to Other Models
- Delta Hydrodynamics and Water Quality
  - Overview of Hydrodynamics and Water Quality Modeling Approach
  - Delta Simulation Model (DSM2)
  - Application of DSM2 to Evaluate EIS Alternatives
  - Output Parameters
  - Modeling Limitations
  - Linkages to Other Models
- Climate Change and Sea-Level Rise
  - Climate Change
  - Sea-Level Rise
  - Incorporating Climate Change and Sea-Level Rise in EIS Simulations
  - Climate Change and Sea-Level Rise Modeling Limitations
- References

5A.A.1 Introduction

This EIS includes identifying effects of operations considered until Year 2030 and the hydrologic response of the system to those operations. For modeling purposes, the alternatives are simulated at Year 2030; and in the evaluation of all alternatives at Year 2030, climate change and sea-level rise of 15 centimeters (cm) were assumed to be inherent.

The analytical framework and the tools used for the environmental consequences analysis are described in this section. Modeling assumptions for all the alternatives are provided in Section B of this appendix.

5A.A.2 Overview of the Modeling Approach

To support the impact analysis of the alternatives, numerical modeling of physical variables (or "physically based modeling"), such as river flows and water temperature, is required to evaluate changes to conditions affecting resources in the Central Valley including the Sacramento-San Joaquin Delta (Delta). A framework of integrated analyses including hydrologic, operations, hydrodynamics, water quality, and fisheries analyses is required to provide information for the comparative National Environmental Policy Act (NEPA) assessment of several resources, such as water supply, surface water, groundwater, and aquatic resources.

The alternatives include operational changes in the coordinated operation of the Central Valley Project (CVP) and State Water Project (SWP). Both these operational changes and other external factors such as climate and sea-level changes influence the future conditions of reservoir storage, river flow, Delta flows, exports, water temperature, and water quality. Evaluation of these conditions is the primary focus of the physically based modeling analyses.

Figure 5A.A.1 shows the analytical tools applied in these assessments and the relationship between these tools. Each model included in Figure 5A.A.1 provides information to the subsequent model in order to provide various results to support the impact analyses.

Changes to the historical hydrology related to the future climate are applied in the CalSim II model and combined with the assumed operations for each alternative. The CalSim II model simulates the operation of the major CVP and SWP facilities in the Central Valley and generates estimates of river flows, exports, reservoir storage, deliveries, and other parameters.

Agricultural and municipal and industrial deliveries resulting from CalSim II are used for assessment of changes in groundwater resources and in agricultural, municipal, and regional economics. Changes in land use reported by the agricultural economics model are subsequently used to assess changes in air quality.

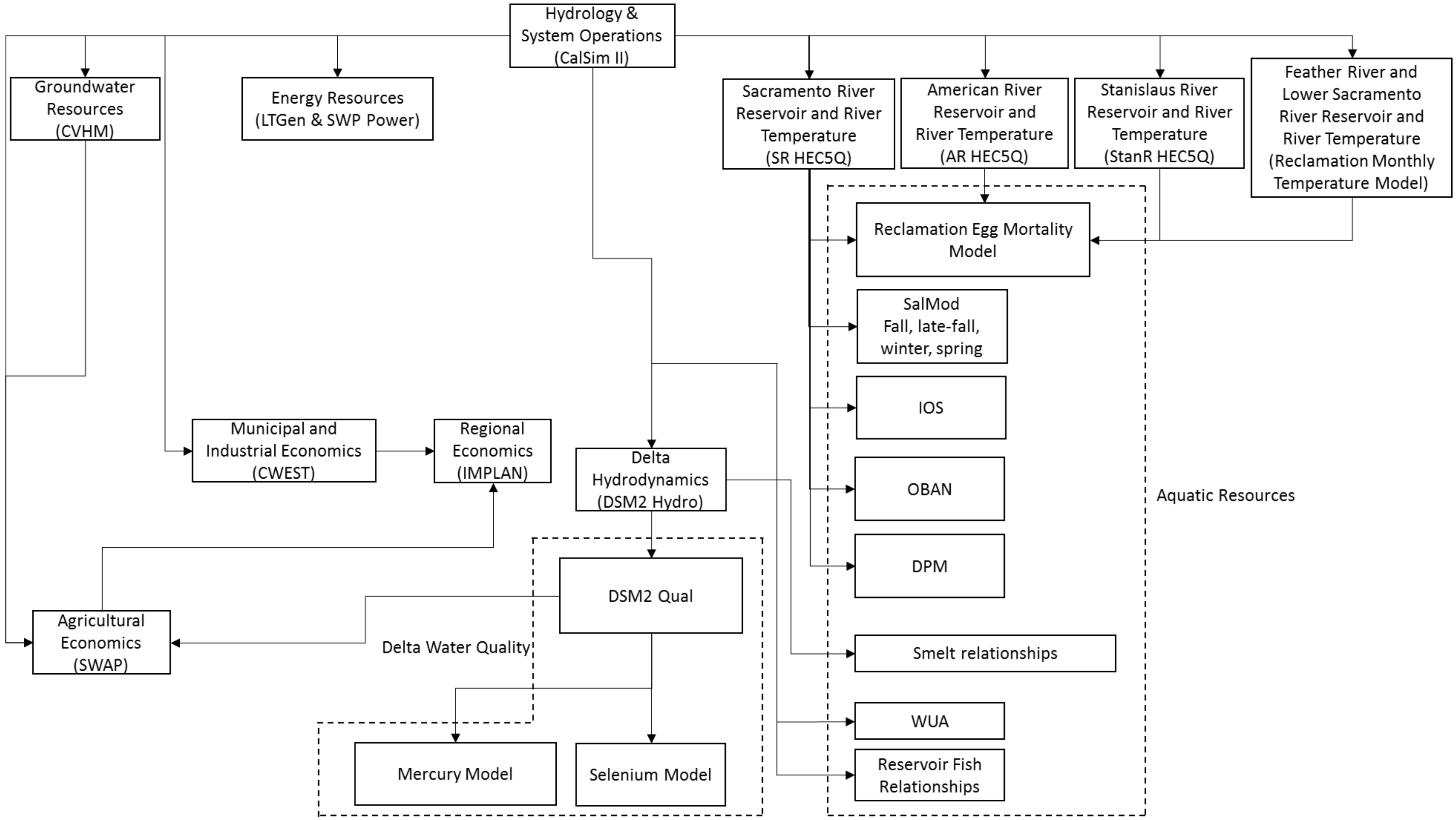

Figure 5A.A.1 Analytical Framework Used to Evaluate Impacts of the Alternatives

The Delta boundary flows and exports from CalSim II are used to drive the DSM2 Delta hydrodynamic and water quality models for estimating tidally based flows, stage, velocity, and salt transport within the estuary. DSM2 water quality and volumetric fingerprinting results are used to assess changes in concentrations of selenium and methylmercury in Delta waters.

Power generation models use CalSim II reservoir levels and releases to estimate power use and generation capability of the projects.

Temperature models for the primary river systems use the CalSim II reservoir storage, reservoir releases, river flows, and meteorological conditions to estimate reservoir and river temperatures under each scenario.

Results from these temperature models are further used as an input to fisheries models (e.g., SalMod, Reclamation Egg Mortality Model, and IOS) to assess changes in fisheries habitat due to flow and temperature. CalSim II and DSM2 results are also used for fisheries models (IOS, DPM) or aquatic species survival/habitat relationships developed based on peer-reviewed scientific publications.

The results from this suite of physically based models are used to describe the effects of each individual scenario considered in the EIS.

5A.A.2.1 Analytical Tools

A brief description of the hydrologic and hydrodynamic models discussed in Chapter 5, Surface Water Resources and Water Supplies, is provided below. All other subsequent models to CalSim II presented in the analytical framework are described in detail in appendices of the respective chapters where their results are used.

5A.A.2.1.1 CalSim II

The CalSim II planning model was used to simulate the coordinated operation of the CVP and SWP over a range of hydrologic conditions. CalSim II is a generalized reservoir-river basin simulation model that allows for specification and achievement of user-specified operating rules or goals (Draper et al. 2004). CalSim II represents the best available planning model for the CVP and SWP system operations and has been used in previous system-wide evaluations of CVP and SWP operations (Reclamation 2008a).

Hydrologic inputs to CalSim II include water diversion requirements (demands), stream accretions and depletions, rim basin inflows, irrigation efficiencies, return flows, non-recoverable losses, and groundwater operations. Sacramento Valley and tributary rim basin hydrologies are developed using a process designed to adjust the historical sequence of monthly stream flows over an 82-year period (1922 to 2003) to represent a sequence of flows at a particular level of development.

Adjustments to historical water supplies are determined by imposing a defined level of land use on historical meteorological and hydrologic conditions. The resulting hydrology represents the water supply available from Central Valley streams to the CVP and SWP at that defined level of development.

CalSim II produces outputs for river flows and diversions, reservoir storage, Delta-channel flows and exports, Delta inflow and outflow, deliveries to project and non-project users, and controls on project operations. Reclamation's 2008 Biological Assessment on the Continued Long-term Operations of the Central Valley Project and the State Water Project (2008 LTO BA) Appendix D provides more information about CalSim II (Reclamation 2008a). CalSim II output provides the basis for multiple other hydrologic, hydrodynamic, and biological models and analyses. CalSim II results feed into other models as described above.

5A.A.2.1.2 Artificial Neural Network for Flow-Salinity Relationships

An artificial neural network (ANN) that mimics the flow-salinity relationships as modeled in DSM2 and transforms this information into a form usable by the CalSim II model has been developed (Sandhu et al. 1999; Seneviratne and Wu, 2007). The ANN is implemented in CalSim II to constrain the operations of the upstream reservoirs and the Delta export pumps in order to satisfy particular salinity requirements in the Delta. The current ANN predicts salinity at various locations in the Delta using the following parameters as input: Sacramento River inflow, San Joaquin River inflow, Delta Cross Channel gate position, and total exports and diversions. Sacramento River inflow input accounts for Sacramento River flow, Yolo Bypass flow, and combined flow from the Mokelumne, Cosumnes, and Calaveras rivers (east side streams) andNorth Bay Aqueduct and Vallejo diversions. Total exports and diversions include SWP Banks Pumping Plant, CVP Tracy Pumping Plant, and Contra Costa Water District (CCWD) diversions including diversion to Los Vaqueros Reservoir. The ANN model approximates DSM2 model-generated salinity at the following key locations for the purpose of modeling Delta water quality standards: X2, Sacramento River at Emmaton, San Joaquin River at Jersey Point, Sacramento River at Collinsville, and Old River at Rock Slough. In addition, the ANN is capable of providing salinity estimates for Clifton Court Forebay, CCWD Alternate Intake Project, and Los Vaqueros diversion locations. A more detailed description of the ANNs and their use in the CalSim II model is provided in Wilbur and Munévar (2001). In addition, the California Department of Water Resources (DWR) Modeling Support Branch website (http://baydeltaoffice.water.ca.gov/modeling/) provides ANN documentation.

5A.A.2.1.3 DSM2

DSM2 is a one-dimensional hydrodynamic and water quality simulation model used to simulate hydrodynamics, water quality, and particle tracking in the Sacramento-San Joaquin Delta. DSM2 represents the best available planning model for Delta tidal hydraulic and salinity modeling. It is appropriate for describing the existing conditions in the Delta, as well as performing simulations for the assessment of incremental environmental impacts caused by future facilities and operations.

The DSM2 model has three separate components: HYDRO, QUAL, and PTM. HYDRO simulates velocities and water surface elevations and provides the flow input for QUAL and PTM. DSM2-HYDRO outputs are used to predict changes in flow rates and depths, and their effects on covered species, as a result of the EIS and climate change.

The QUAL module simulates fate and transport of conservative and non-conservative water quality constituents, including salts, given a flow field simulated by HYDRO. Outputs are used to estimate changes in salinity, and their effects on covered species, as a result of the EIS and climate change. The QUAL module is also used to simulate source water fingerprinting, which allows determining the relative contributions of water sources to the volume at any specified location. Reclamation's 2008 LTO BA Appendix F provides more information about DSM2 (Reclamation 2008b).

DSM2-PTM simulates pseudo 3-D transport of neutrally buoyant particles based on the flow field simulated by HYDRO. It simulates the transport and fate of individual particles traveling throughout the Delta. The model uses velocity, flow, and stage output from the HYDRO module to monitor the location of each individual particle using assumed vertical and lateral velocity profiles and specified random movement to simulate mixing. Additional information on DSM2 can be found on the DWR Modeling Support Branch website at http://baydeltaoffice.water.ca.gov/modeling/.

5A.A.2.2 Key Components of the Analytical Framework

Components of the EIS modeling relevant to Chapter 5, Surface Water Resources and Water Supplies, are described in this appendix in separate sections, including hydrology and systems operations modeling and delta hydrodynamics and water quality. Each section describes in detail the key tools used for modeling, data interdependencies, and limitations. It also includes descriptions of how the tools are applied in a long-term planning analysis such as evaluating the alternatives and describes any improvements or modifications performed for application in EIS modeling.

Section 5A.A.3, Hydrology and Systems Operations Modeling, describes the application of the CalSim II model to evaluate the effects of hydrology and system operations on river flows, reservoir storage, Delta flows and exports, and water deliveries. Section 5A.A.4, Delta Hydrodynamics and Water Quality, describes the application of the DSM2 model to assess effects of the operations considered in the EIS and resulting effects to tidal stage, velocity, flows, and salinity.

5A.A.2.3 Climate Change and Sea-Level Rise

The modeling approach applied for the EIS integrates a suite of analytical tools in a unique manner to characterize changes to the system from "atmosphere to ocean." Figure 5A.A.2 illustrates the general flow of information for incorporating climate and sea-level change in the modeling analyses. Climate and sea level can be considered the most upstream and most downstream boundary forcings on the system analyzed in the modeling for the EIS. However, these forcings are outside the influence of the EIS and are considered external forcings. The effects of these forcings are incorporated into the key models used in the analytical framework.

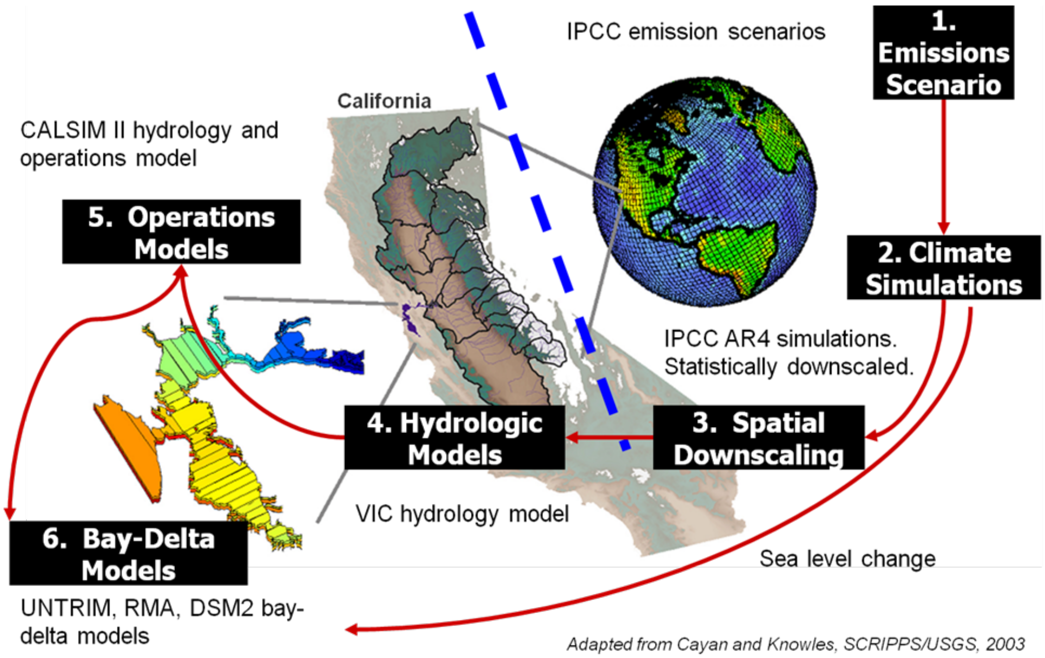

Figure 5A.A.2 Characterizing Climate Impacts from Atmosphere to Oceans

For the selected future climate scenario, regional hydrologic modeling was performed with the Variable Infiltration Capacity (VIC) hydrology model using temperature and precipitation projections of future climate. The VIC model (Liang et al. 1994; Liang et al. 1996; Nijssen et al. 1997) is a spatially distributed hydrologic model that solves the water balance at each model grid cell. The VIC model incorporates spatially distributed parameters describing topography, soils, land use, and vegetation classes. VIC is considered a macro-scale hydrologic model in that it is designed for larger basins with fairly coarse grids. In this manner, it accepts input meteorological data directly from global or national gridded databases or from general circulation model (GCM) projections. To compensate for the coarseness of the discretization, VIC is unique in its incorporation of subgrid variability to describe variations in the land parameters as well as precipitation distribution. Parameterization within VIC is performed primarily through adjustments to parameters describing the rates of infiltration and baseflow as a function of soil properties, as well as the soil layers depths. When simulating in water balance mode, as done for this California application, VIC is driven by daily inputs of precipitation, maximum and minimum temperature, and windspeed. The model internally calculates additional meteorological forcings such short-wave and long-wave radiation, relative humidity, vapor pressure and vapor pressure deficits. Rainfall, snow, infiltration, evapotranspiration, runoff, soil moisture, and baseflow are computed over each grid cell on a daily basis for the entire period of simulation. An offline routing tool then processes the individual cell runoff and baseflow terms and routes the flow to develop streamflow at various locations in the watershed.

In addition to a range of hydrologic process information, the VIC model generates natural stream flows under each assumed climate condition (DWR et al. 2013). Section 5A.A.5 provides more detailed information on climate change and sea-level rise modeling approach followed for the EIS.

5A.A.3 Hydrology and System Operations

The hydrology of the Central Valley and coordinated operation of the CVP and SWP systems is a critical element in any assessment of changed conditions in the Central Valley and the Delta. Changes to conveyance, flow patterns, demands, regulations, or Delta configuration will influence the operations of the CVP and SWP reservoirs and export facilities. The operations of these facilities, in turn, influence Delta flows, water quality, river flows, and reservoir storage. The interaction between hydrology, operations, and regulations is not always intuitive and detailed analysis of this interaction often results in new understanding of system responses. Modeling tools are required to approximate these complex interactions under future conditions.

This section describes in detail the use of CalSim II and the methodology used to simulate hydrology and system operations for evaluating the effects of the EIS.

5A.A.3.1 CalSim II

The CalSim II planning model was used to simulate the operation of the CVP and SWP over a range of regulatory conditions. CalSim II incorporates major CVP and SWP facilities as well as key local (or non-project) facilities. A list of major modeled facilities is located in Table 5A.B.20.

The CalSim II simulation model uses single time-step optimization techniques to route water through a network of storage nodes and flow arcs based on a series of user-specified relative priorities for water allocation and storage. Physical capacities and specific regulatory and contractual requirements are input as linear constraints to the system operation using the water resources simulation language (WRESL). The process of conveying water through the channels and storing water in reservoirs is performed by a mixed-integer linear-programming solver. For each time step, the solver maximizes the objective function to determine a solution that delivers or stores water according to the specified priorities and satisfies all system constraints. The sequence of solved linear-programming problems represents the simulation of the system over the period of analysis.

CalSim II includes an 82-year modified historical hydrology (water years 1922-2003) developed jointly by Reclamation and DWR. Water diversion requirements (demands), stream accretions and depletions, rim basin inflows, irrigation efficiencies, return flows, nonrecoverable losses, and groundwater operations are components that make up the hydrology used in CalSim II. Sacramento Valley and tributary rim basin hydrologies are developed using a process designed to adjust the historical observed sequence of monthly stream flows to represent a sequence of flows at a future level of development. Adjustments to historic water supplies are determined by imposing future level land use on historical meteorological and hydrologic conditions. The resulting hydrology represents the water supply available from Central Valley streams to the system at a future level of development. Figure 5A.A.3 shows the valley floor depletion regions, which represent the spatial resolution at which the hydrologic analysis is performed in the model.

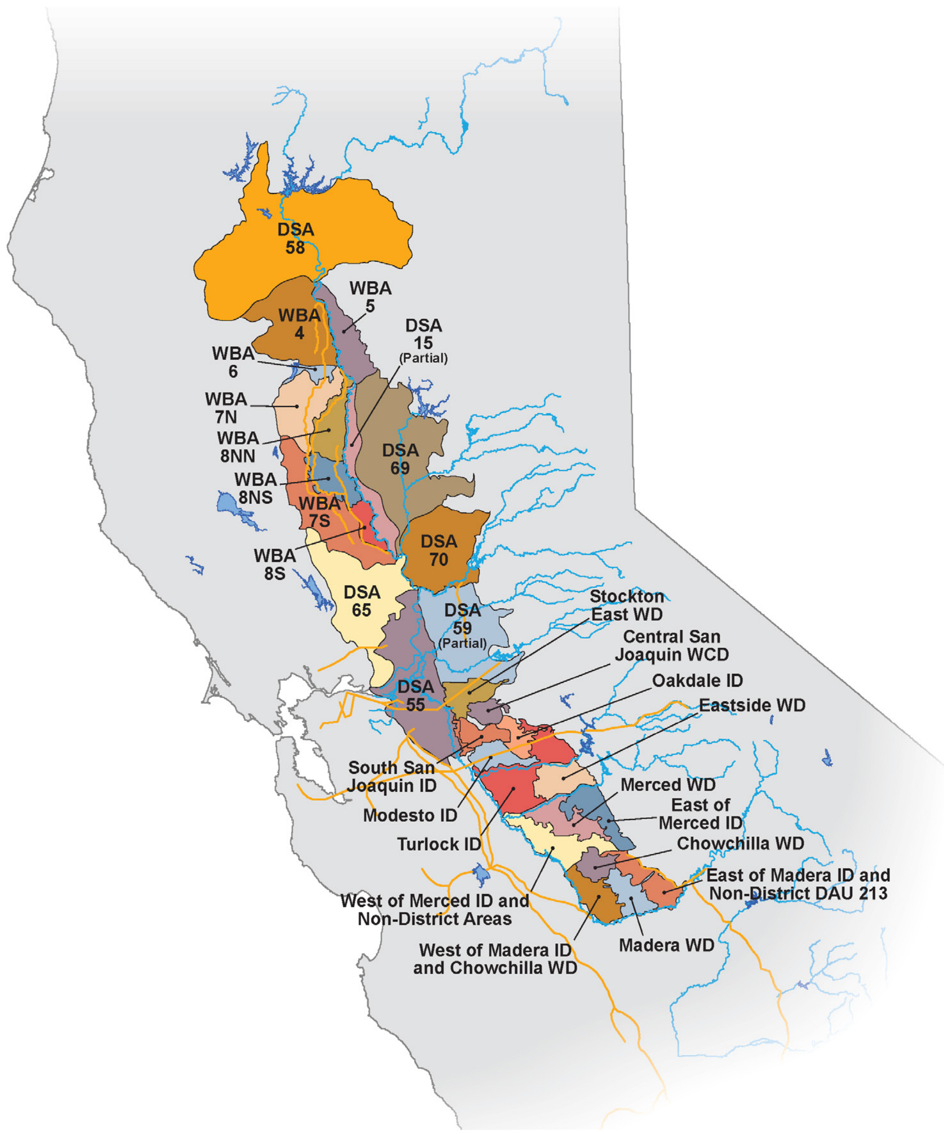

Figure 5A.A.3 CalSim II Depletion Analysis Regions

CalSim II uses rule-based algorithms for determining deliveries to north-of-Delta and south-of-Delta CVP and SWP contractors. This delivery logic uses runoff forecast information, which incorporates uncertainty and standardized rule curves. The rule curves relate storage levels and forecasted water supplies to project delivery capability for the upcoming year. The delivery capability is then translated into CVP and SWP contractor allocations that are satisfied through coordinated reservoir-export operations.

The CalSim II model utilizes a monthly time step to route flows throughout the river-reservoir system of the Central Valley. Although monthly time steps are reasonable for long-term planning analyses of water operations, a component of the EIS conveyance and conservation strategy includes operations that are sensitive to flow variability at scales less than monthly (i.e., the operation of the Fremont Weir). Initial comparisons of monthly versus daily operations at these facilities indicated that weir spills were likely underestimated and diversion potential was likely overstated using a monthly time step. For these reasons, a monthly to daily flow disaggregation technique was included in the CalSim II model for the Fremont Weir and the Sacramento Weir. The technique applies historical daily patterns, based on the hydrology of the year, to transform the monthly volumes into daily flows. Reclamation's 2008 LTO BA Appendix D provides more information about CalSim II (Reclamation 2008a).

5A.A.3.2 Artificial Neural Network for Flow-Salinity Relationship

Determination of flow-salinity relationships in the Sacramento-San Joaquin Delta is critical to both project and ecosystem management. Operation of the CVP and SWP facilities and management of Delta flows is often dependent on Delta flow needs for salinity standards. Salinity in the Delta cannot be simulated accurately by the simple mass-balance routing and coarse time step used in CalSim II. Likewise, the upstream reservoirs and operational constraints cannot be modeled in the DSM2 model. An ANN has been developed (Sandhu et al. 1999) that attempts to mimic the flow-salinity relationships as simulated in DSM2, but provide a rapid transformation of this information into a form usable by the CalSim II operations model. The ANN is implemented in CalSim II to constrain the operations of the upstream reservoirs and the Delta export pumps in order to satisfy particular salinity requirements. A more detailed description of the use of ANNs in the CalSim II model is provided in Wilbur and Munévar (2001).

The ANN developed by DWR (Sandhu et al. 1999, Seneviratne and Wu 2007) attempts to statistically correlate the salinity results from a particular DSM2 model run to the various peripheral flows (Delta inflows, exports, and diversions), gate operations, and an indicator of tidal energy. The ANN is calibrated or trained on DSM2 results that may represent historical or future conditions using a full-circle analysis (Seneviratne and Wu 2007). For example, a future reconfiguration of the Delta channels to improve conveyance may significantly affect the hydrodynamics of the system. The ANN would be able to represent this new configuration by being retrained on DSM2 model results that included the new configuration.

The current ANN predicts salinity at various locations in the Delta using the following parameters as input: Northern flows, San Joaquin River inflow, Delta Cross Channel gate position, total exports and diversions, Net Delta Consumptive Use (an indicator of the tidal energy), and San Joaquin River at Vernalis salinity.

Northern flows include Sacramento River flow, Yolo Bypass flow, and combined flow from the Mokelumne, Cosumnes, and Calaveras rivers (East Side Streams) minus North Bay Aqueduct and Vallejo exports. Total exports and diversions include SWP Banks Pumping Plant, CVP Jones Pumping Plant, and CCWD diversions, including diversions to Los Vaqueros Reservoir. A total of 148 days of values for each of these parameters is included in the correlation, representing an estimate of the length of memory of antecedent conditions in the Delta. The ANN model approximates DSM2 model-generated salinity at the following key locations for the purpose of modeling Delta water quality standards: X2, Sacramento River at Emmaton, San Joaquin River at Jersey Point, Sacramento River at Collinsville, and Old River at Rock Slough. In addition, the ANN is capable of providing salinity estimates for Clifton Court Forebay, and the CCWD Alternate Intake Project and Los Vaqueros diversion locations.

The ANN may not fully capture the dynamics of the Delta under conditions other than those for which it was trained. It is possible that the ANN will exhibit errors in flow regimes beyond those for which it was trained. Therefore, a new ANN is needed for any new Delta configuration or under sea-level rise conditions that may result in changed flow-salinity relationships in the Delta.

5A.A.3.3 Application of CalSim II to Evaluate EIS Alternatives

Typical long-term planning analyses of the Central Valley system and operations of the CVP and SWP have applied the CalSim II model to analyze system responses. CalSim II simulates future CVP and SWP project operations based on an 82-year monthly hydrology derived from the observed 1922-2003 period. Future land use and demands are projected for the appropriate future period. The system configuration of facilities, operations, and regulations forms the input to the model and defines the limits or preferences for operation. The configuration of the Delta, while not simulated directly in CalSim II, informs the flow-salinity relationships and several flow-related regressions for interior Delta conditions (e.g., X2 and OMR) included in the model. The CalSim II model is simulated for each set of hydrologic, facility, operations, regulations, and Delta configuration conditions. Some refinement of the CVP and SWP operations related to delivery allocations and San Luis target storage levels are generally necessary to have the model reflect suitable north-south reservoir balancing under future conditions. These refinements are generally made by experienced modelers in coordination with project operators.

The CalSim II model produces outputs of river flows, exports, water deliveries, reservoir storage, water quality, and several derived variables such as X2, Delta salinity, OMR (combined Old and Middle River flows), and QWEST (westerly flow on the San Joaquin River past Jersey Point). The CalSim II model is most appropriately applied for comparing one alternative to another and drawing comparisons among the results. This is the method applied for the EIS.

The No Action Alternative simulation assumes continuation of operations under the current regulatory environment with existing facilities for future climate and sea-level conditions (projected to the Year 2030).

The Second Basis of Comparison is developed due to the identified need during scoping comments for a basis of comparison to operations that would occur "without" the reasonable and prudent alternatives (RPAs). The Second Basis of Comparison assumptions do not include most of the RPAs. The Second Basis of Comparison does, however, include actions that are constructed (e.g., Red Bluff Pumping Plant), implemented (e.g., the Suisun Marsh Habitat Management, Preservation, and Restoration Plan), legislatively mandated (e.g., the San Joaquin River Restoration Plan), and have made substantial progress (e.g., Yolo Bypass Salmonid Habitat Restoration and Fish Passage).

Each alternative is compared to the No Action Alternative and the Second Basis of Comparison to evaluate areas in which the project changes conditions and the seasonality and magnitude of such changes. The change in hydrologic response or system conditions is important information that informs the impact analysis related to water-dependent resources in Sacramento-San Joaquin watersheds.

5A.A.3.3.1 ANN Retraining

ANNs are used for simulating flow-salinity relationships in CalSim II. They are trained on DSM2 outputs and therefore emulate DSM2 results. ANN requires retraining whenever the flow-salinity relationship in the Delta changes. As mentioned earlier, EIS analysis assumes a 15-cm sea-level rise. An ANN developed to simulate salinity conditions with 15-cm sea-level rise was developed by and obtained from DWR. The ANN retraining process is described in Section 5A.A.4.3.1.

5A.A.3.3.2 Incorporation of Climate Change

Climate and sea level change are incorporated into the CalSim II model in two ways: changes to the input hydrology and changes to the flow-salinity relationship in the Delta due to sea-level rise. In this approach, changes in runoff and stream flow are simulated through VIC modeling under representative climate scenarios. These simulated changes in runoff are applied to the CalSim II inflows as a fractional change from the observed inflow patterns (simulated future runoff divided by historical runoff). These fraction changes are first applied for every month of the 82-year period consistent with the VIC simulated patterns. A second order correction is then applied to ensure that the annual shifts in runoff at each location are consistent with that generated from the VIC modeling. A spreadsheet tool has been prepared to process this information and generate adjusted inflow time series records for CalSim II. Once the changes in flows have been resolved, water year types and other hydrologic indices that govern water operations or compliance are adjusted to be consistent with the new hydrologic regime. This spreadsheet tool has been updated for the EIS analysis to accommodate the needs of the CalSim II version used in this study.

The effect of sea-level rise on the flow-salinity response is incorporated in the respective ANN.

The following input parameters are adjusted in CalSim II to incorporate the effects of climate change:

- Inflow time series records for all major streams in the Central Valley
- Sacramento and San Joaquin valley water year types
- Runoff forecasts used for reservoir operations and allocation decisions
- Delta water temperature as used in triggering Biological Opinion Smelt criteria
- A modified ANN to reflect the flow-salinity response under 15-cm sea-level change

Section 5A.A.5 provides more detailed information on climate change and sea-level rise modeling approaches followed for the EIS.

The CalSim II simulations do not consider future climate change adaptations that may manage the CVP and SWP system in a different manner than today to reduce climate impacts. For example, future changes in reservoir flood control reservation to better accommodate a seasonally changing hydrograph may be considered under future programs, but are not considered under the EIS. Thus, the CalSim II EIS results represent the risks to operations, water users, and the environment in the absence of dynamic adaptation for climate change.

5A.A.3.4 Output Parameters

The hydrology and system operations models produce the following key parameters on a monthly time step:

- River flows and diversions
- Reservoir storage
- Delta flows and exports
- Delta inflow and outflow
- Deliveries to project and non-project users
- Controls on project operations

Some operations have been informed by the daily variability included in the CalSim II model for the EIS and, where appropriate, these results are presented. However, it should be noted that CalSim II remains a monthly model. The daily variability inputs to the CalSim II model help to better represent certain operational aspects, but the monthly results are utilized for water balance.

5A.A.3.5 Appropriate Use of CalSim II Results

CalSim II is a monthly model developed for planning level analyses. The model is run for an 82-year historical hydrologic period, at a projected level of hydrology and demands, and under an assumed framework of regulations. Therefore, the 82-year simulation does not provide information about historical conditions, but it does provide information about variability of conditions that would occur at the assumed level of hydrology and demand with the assumed operations, under the same historical hydrologic sequence. Because it is not a physically based model, CalSim II is not calibrated and cannot be used in a predictive manner. CalSim II is intended to be used in a comparative manner, which is appropriate for a NEPA analysis.

In CalSim II, operational decisions are made on a monthly basis, based on a set of predefined rules that represent the assumed regulations. The model has no capability to adjust these rules based on a sequence of hydrologic events such as a prolonged drought, or based on statistical performance criteria such as meeting a storage target in an assumed percentage of years.

Although there are certain components in the model that are downscaled to daily time step (simulated or approximated hydrology) such as an air-temperature-based trigger for a fisheries action, the results of those daily conditions are always averaged to a monthly time step (for example, a certain number of days with and without the action is calculated and the monthly result is calculated using a day-weighted average based on the total number of days in that month), and operational decisions based on those components are made on a monthly basis. Therefore, reporting sub-monthly results from CalSim II or from any other subsequent model that uses monthly CalSim results as an input is not considered an appropriate use of model results.

Appropriate use of model results is important. Despite detailed model inputs and assumptions, the CalSim II results may differ from real-time operations under stressed water supply conditions. Such model results occur due to the inability of the model to make real-time policy decisions under extreme circumstances, as the actual (human) operators must do. Therefore, these results should only be considered an indicator of stressed water supply conditions under that alternative, and should not be considered to reflect what would occur in the future. For example, reductions to senior water rights holders due to dead-pool conditions in the model can be observed in model results under certain circumstances. These reductions, in real-time operations, may be avoided by making policy decisions on other requirements in prior months. In actual future operations, as has always been the case in the past, the project operators would work in real time to satisfy legal and contractual obligations given the current conditions and hydrologic constraints. Chapter 5, Surface Water Resources and Water Supplies, provides appropriate interpretation and analysis of such model results. Section 5.3.3 of Chapter 5, describes historical responses by CVP and SWP to recent drought conditions.

Reclamation's 2008 LTO BA Appendix W (Reclamation 2008c) included a comprehensive sensitivity and uncertainty analysis of CalSim II results relative to the uncertainty in the inputs. This appendix provides a good summary of the key inputs that are critical to the largest changes in several operational outputs. Understanding the findings from this appendix may help in better understanding the alternatives.

5A.A.3.6 Linkages to Other Models

The hydrology and system operations models generally require input assumptions relating to hydrology, demands, regulations, and flow-salinity responses. Reclamation and DWR have prepared hydrologic inputs and demand assumptions for a future (2030) level of development (future land use and development assumptions) based on historical hydroclimatic conditions. Regulations and associated operations are translated into operational requirements. The flow-salinity ANN, representing appropriate sea-level rise, is embedded into the system operations model.

As mentioned previously in this appendix, changes to the historical hydrology related to future climate are applied in the CalSim II model and combined with the assumed operations for each alternative. The CalSim II model simulates the operation of the major CVP and SWP facilities in the Central Valley and generates estimates of river flows, exports, reservoir storage, deliveries, and other parameters.

Agricultural and municipal and industrial deliveries resulting from CalSim II are used in other models for assessing changes to groundwater resources and agricultural, municipal, and regional economics. Changes in land use reported by the agricultural economics model are subsequently used to assess changes in air quality.

The Delta boundary flows and exports from CalSim II are then used to drive the DSM2 Delta hydrodynamic and water quality models for estimating tidally based flows, stage, velocity, and salt transport within the estuary. DSM2 water quality and volumetric fingerprinting results are used to assess changes in concentration of selenium and methylmercury in Delta waters.

Power generation models use CalSim II reservoir levels and releases to estimate power use and generation capability of the projects.

River and temperature models for the primary river systems use the CalSim II reservoir storage, reservoir releases, river flows, and meteorological conditions to estimate reservoir and river temperatures under each scenario.

Results from these temperature models are further used as an input to fisheries models (e.g., SalMod, Reclamation Egg Mortality Model, and IOS) to assess changes in fisheries habitat due to flow and temperature. CalSim II and DSM2 results are also used for fisheries models (IOS, DPM) or aquatic species survival/habitat relationships developed based on peer-reviewed scientific publications.

The results from this suite of physically based models are used to describe the effects of each individual scenario considered in the EIS.

5A.A.4 Delta Hydrodynamics and Water Quality

Hydrodynamics and water quality modeling is essential to understanding the impacts of operation of the CVP and SWP on the Delta. The analysis of the hydrodynamics and water quality changes as a result of operational changes is critical in understanding the impacts on the habitats, species, and water users that depend on the Delta.

This section describes the methodology used for simulating Delta hydrodynamics and water quality for evaluating the alternatives. It discusses the primary tool (DSM2) used in this process.

5A.A.4.1 Overview of Hydrodynamics and Water Quality Modeling Approach

There are several tools available to simulate hydrodynamics and water quality in the Delta. Some tools simulate detailed processes, but are computationally intensive and have long runtimes. Other tools approximate certain processes and have short runtimes, while only compromising slightly on the accuracy of the results. For a planning analysis, it is ideal to understand the resulting changes over several years to cover a range of hydrologic conditions. So, a tool that can simulate the changed hydrodynamics and water quality in the Delta accurately with a short runtime is desired. DSM2 is a one-dimensional hydrodynamics and water quality model that serves this purpose.

DSM2 has a limited ability to simulate two-dimensional features such as tidal marshes and three-dimensional processes such as gravitational circulation, which is known to increase with sea-level rise in the estuaries. Therefore, it must be recalibrated or corroborated based on a data set that accurately represents the conditions in the Delta under sea-level rise. Because the proposed conditions are hypothetical, the best available approach to estimate the Delta hydrodynamics is to simulate higher dimensional models that can resolve the two- and three-dimensional processes well. These models would generate the data sets needed to corroborate or recalibrate DSM2 under those conditions so that it can simulate the hydrodynamics and salinity transport with reasonable accuracy. For the purposes of this EIS, a DSM2 model that was corroborated for 15-cm sea-level rise is used.

5A.A.4.2 Delta Simulation Model

DSM2 is a one-dimensional hydrodynamics, water quality, and particle-tracking simulation model used to simulate hydrodynamics, water quality, and particle tracking in the Sacramento-San Joaquin Delta (Anderson and Mierzwa 2002). DSM2 represents the best available planning model for Delta tidal hydraulics and salinity modeling. It is appropriate for describing the existing conditions in the Delta, as well as performing simulations for the assessment of incremental environmental impacts caused by future facilities and operations. The DSM2 model has three separate components: HYDRO, QUAL, and PTM. HYDRO simulates one-dimensional hydrodynamics including flows, velocities, depth, and water surface elevations. HYDRO provides the flow input for QUAL and PTM. QUAL simulates one-dimensional fate and transport of conservative and non-conservative water quality constituents given a flow field simulated by HYDRO. PTM simulates pseudo 3-D transport of neutrally buoyant particles based on the flow field simulated by HYDRO.

DSM2 v8.0.6 was used in modeling of the EIS No Action Alternative, Second Basis of Comparison, and the other alternatives using a period of simulation consistent with the CalSim II model (water years 1922 to 2003).

DSM2 hydrodynamics and salinity (electrical conductivity, or EC) were initially calibrated in 1997 (DWR 1997). In 2000, a group of agencies, water users, and stakeholders recalibrated and validated DSM2 in an open process resulting in a model that could replicate the observed data more closely than the 1997 version (DSM2PWT 2001). In 2009, DWR performed a calibration and validation of DSM2 by including the flooded Liberty Island in the DSM2 grid, which allowed for an improved simulation of tidal hydraulics and EC transport in DSM2 (DWR 2009). The model used for evaluating the EIS scenarios was based on this latest calibration.

Simulation of dissolved organic carbon (DOC) transport in DSM2 was successfully validated in 2001 by DWR (Pandey 2001). The temperature and dissolved oxygen (DO) calibration was initially performed in 2003 by DWR (Rajbhandari 2003). Recent development efforts by Resource Management Associates, Inc. (RMA) in 2009 allowed for improved calibration of temperature, DO, and the nutrient transport in DSM2.

5A.A.4.2.1 DSM2-HYDRO

The HYDRO module is a one-dimensional, implicit, unsteady, open-channel flow model that DWR developed from FOURPT, a four-point finite difference model originally developed by the U.S. Geological Survey (USGS) in Reston, Virginia. DWR adapted the model to the Delta by revising the input-output system, including open-water elements, and incorporating water project facilities, such as gates, barriers, and the Clifton Court Forebay. HYDRO simulates water surface elevations, velocities, and flows in the Delta channels (Nader-Tehrani 1998). HYDRO provides the flow input necessary for QUAL and PTM modules.

The HYDRO module solves the continuity and momentum equations using a fully implicit scheme. These partial differential equations are solved using a finite difference scheme requiring four points of computation. The equations are integrated in time and space, which leads to a solution of stage and flow at the computational points. HYDRO enforces an "equal stage" boundary condition for all the channels connected to a junction. The model can handle both irregular cross-sections derived from the bathymetric surveys and trapezoidal cross-sections. Even though, the model formulation includes a baroclinic term, the density is generally held constant in the HYDRO simulations.

HYDRO allows the simulation of hydraulic gates in the channels. A gate may have several associated hydraulic features (e.g., radial gates, flash boards, and boat ramps), each of which may be operated independently to control flow. Gates can be placed either at the upstream or downstream end of a channel. Once the location of a gate is defined, the boundary condition for the gated channel is modified from "equal stage" to "known flow," with the calculated flow. The gates can be opened or closed in one or both directions by specifying a coefficient of zero or one.

Reservoirs are used to represent open bodies of water that store flow. Reservoirs are treated as vertical-walled tanks in DSM2, with a known surface area and bottom elevation and are considered instantly well-mixed. The flow interaction between the open water area and one or more of the connecting channels is determined using the general orifice formula. The flow in and out of the reservoir is controlled using the flow coefficient in the orifice equation, which can be different in each direction. DSM2 does not allow the cross-sectional area of the inlet to vary with the water level.

DSM2 v8 includes a new feature called "operating rules" under which the gate operations or the flow boundaries can be modified dynamically when the model is running based on the current value of a state variable (flow, stage, or velocity). The change can also be triggered based on a time series that is not currently simulated in the model (e.g., daily averaged EC) or based on the current time step of the simulation (for example, a change can occur at the end of the day or end of the season). The operating rules include many functions that allow derivation of the quantities to be used as trigger from the model data or outside time series data. Operating rules allow a change or an action to occur when the trigger value changes from false to true.

5A.A.4.2.2 DSM2-QUAL

The QUAL module is a one-dimensional water quality transport model that DWR adapted from the Branched Lagrangian Transport Model originally developed by the USGS. DWR added many enhancements to the QUAL module, such as open water areas and gates. A Lagrangian feature in the formulation eliminates the numerical dispersion that is inherently in other segmented formulations, although the tidal dispersion coefficients must still be specified. QUAL simulates fate and transport of conservative and nonconservative water quality constituents given a flow field simulated by HYDRO. It can calculate mass transport processes for conservative and nonconservative constituents including salts, water temperature, nutrients, DO, and trihalomethane formation potential.

The main processes contributing to the fate and transport of the constituents include flow-dependent advection and tidal dispersion in the longitudinal direction. Mass-balance equations are solved for all quality constituents in each parcel of water using the tidal flows and volumes calculated by the HYDRO module. Additional information and the equations used are specified in the 19th annual progress report by DWR (Rajbhandari 1998).

The QUAL module is also used to simulate source water fingerprinting, which allows determining the relative contributions of water sources to the volume at any specified location. It is also used to simulate constituent fingerprinting, which determines the relative contributions of conservative constituent sources to the concentration at any specified location. For fingerprinting studies, six main sources are typically tracked: Sacramento River, San Joaquin River, Martinez, Eastside Streams (Mokelumne, Cosumnes and Calaveras combined), agricultural drains (all combined), and Yolo Bypass. For source water fingerprinting, a tracer with constant concentration is assumed for each source tracked, while the concentrations at other inflows are kept as zero. For constituent (e.g., EC) fingerprinting analysis, the concentrations of the desired constituent are specified at each tracked source, while the concentrations at other inflows are kept as zero (Anderson 2003).

5A.A.4.2.3 DSM2 Input Requirements

DSM2 requires input assumptions relating to physical description of the system (e.g., Delta channel, marsh, and island configuration); description of flow control structures such as gates; initial estimates for stage, flow, and EC throughout the Delta; and time-varying input for all boundary river flows and exports, tidal boundary conditions, gate operations, and constituent concentrations at each inflow. Figure 5A.A.4 illustrates the hydrodynamic and water quality boundary conditions required in DSM2. For long-term planning simulations, output from the CalSim II model generally provides the necessary input for the river flows and exports.

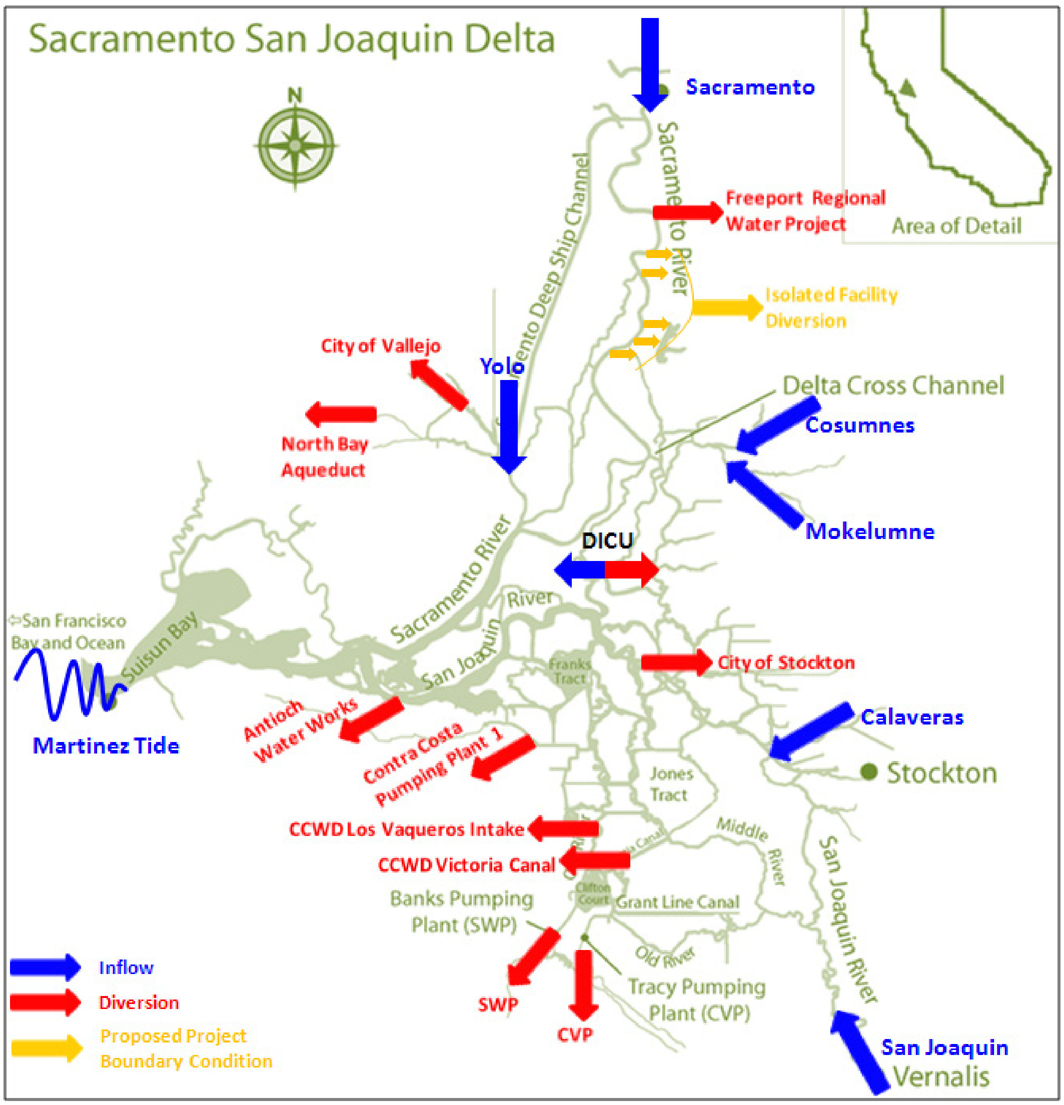

Figure 5A.A.4 Hydrodynamic and Water Quality Boundary Conditions in DSM2

Assumptions relating to Delta configuration and gate operations are directly input into the hydrodynamic models. Adjusted astronomical tide (Ateljevich 2001a) normalized for sea-level rise (Ateljevich and Yu 2007) is forced at the Martinez boundary. Constituent concentrations are specified at the inflow boundaries, which are estimated from either historical information or CalSim II results. The EC boundary condition at Vernalis is derived from the CalSim II results. The Martinez EC boundary condition is derived based on the simulated net Delta outflow from CalSim II and using a modified G-model (Ateljevich 2001b).

The major hydrodynamic boundary conditions are listed in Table 5A.A.1, and the locations at which constituent concentrations are specified for the water quality model are listed in Table 5A.A.2.

Table 5A.A.1 DSM2 HYDRO Boundary Conditions

Boundary Condition	Location/Control Structure	Typical Temporal Resolution
Tide	Martinez	15 minutes
Delta Inflows	Sacramento River at Freeport	1 day
	San Joaquin River at Vernalis	1 day
	Eastside Streams (Mokelumne and Cosumnes Rivers)	1 day
	Calaveras River	1 day
	Yolo Bypass	1 day
Delta Exports/Diversions	Banks Pumping Plant (SWP)	1 day
	Jones Pumping Plant (CVP)	1 day
	Contra Costa Water District Diversions at Rock Slough, Old River at Highway 4 and Victoria Canal	1 day
	North Bay Aqueduct	1 day
	City of Vallejo	1 day
	Antioch Water Works	1 day
	Freeport Regional Water Project	1 day
	City of Stockton	1 day
	Isolated Facility Diversion	1 day
Delta Island Consumptive Use	Diversion	1 month
	Seepage	1 month
	Drainage	1 month
Gate Operations	Delta Cross Channel	Irregular time series

Gate Operations (continued)	South Delta Temporary Barriers	Dynamically operated on 15-minute step
	Montezuma Salinity Control Gate	Dynamically operated on 15-minute step

Table 5A.A.2 DSM2 QUAL Boundary Conditions Typically Used in a Salinity Simulation

Boundary Condition	Location/Control Structure	Typical Temporal Resolution
Ocean Salinity	Martinez	15 minutes
Delta Inflows	Sacramento River at Freeport	Constant
	San Joaquin River at Vernalis	1 month
	Eastside Streams (Mokelumne and Cosumnes Rivers)	Constant
	Calaveras River	Constant
	Yolo Bypass	Constant
Delta Island Consumptive Use	Drainage	1 month (repeated each year)

Note: For other water quality constituents, concentrations are required at the same locations.

5A.A.4.3 Application of DSM2 to Evaluate EIS Alternatives

For EIS purposes, DSM2 was run for the 82-year period from water year 1922 to water year 2003 consistent with CalSim II, on a 15-minute time step. Inputs needed for DSM2—inflows, exports, and Delta Cross Channel (DCC) gate operations—were provided by the 82-year CalSim II simulations. The tidal boundary condition at Martinez was provided by an adjusted astronomical tide (Ateljevich and Yu 2007). Monthly Delta channel depletions (i.e., diversions, seepage, and drainage) were estimated using DWR's Delta Island Consumptive Use model (Mahadevan 1995).

CalSim II provides monthly inflows and exports in the Delta. Traditionally, the Sacramento and San Joaquin river inflows are disaggregated to a daily time step for use in DSM2, either by applying rational histosplines or by assuming that the monthly average flow is constant over the whole month. The splines allow a smooth transition between the months. The smoothing reduces sharp transitions at the start of the month, but still results in constant flows for most of the month. Other inflows, exports, and diversions were assumed to be constant over the month.

DCC gate operation input in DSM2 is based on CalSim II output. For each month, DSM2 assumes the DCC gates are open for the "number of the days open" simulated in CalSim II, from the start of the month.

The operation of the south Delta temporary barriers is determined dynamically in using the operating rules feature in DSM2. These operations generally depend on the season, San Joaquin River flow at Vernalis, and tidal condition in the south Delta. Similarly, the Montezuma Slough salinity control gate operations are determined using an operating rule that sets the operations based on the season, Martinez salinity, and tidal condition in the Montezuma Slough.

For salinity, EC at Martinez is estimated using the G-model on a 15-minute time step, based on the Delta outflow simulated in CalSim II and the pure astronomical tide at Martinez (Ateljevich 2001a). The monthly averaged EC for the San Joaquin River at Vernalis estimated in CalSim II for the 82-year period is used in DSM2. For other river flows, which have low salinity, constant values are assumed. Monthly average values of the EC associated with Delta agricultural drainage and return flows were estimated for three regions in the Delta based on observed data identifying the seasonal trend. These values are repeated for each year of the simulation.

5A.A.4.3.1 ANN Retraining

ANNs are used for flow-salinity relationships in CalSim II. They are trained on DSM2 outputs and therefore emulate DSM2 functionality. ANN requires retraining whenever the flow-salinity relationship in the Delta changes. EIS analysis assumes 15-cm sea-level rise at Year 2030 that results in a different flow-salinity relationship in the Delta and therefore required an ANN retrained for the 15-cm sea-level rise by DWR Bay-Delta Modeling Support Branch staff.

The ANN retraining process involves the following steps:

- The DSM2 model is corroborated for each scenario (changed sea level or Delta physical configuration).
- A range of example long-term CalSim II scenarios is used to provide a range of boundary conditions for DSM2 models.
- Using the grid configuration and the correlations from the corroboration process, several 16-year planning runs are simulated based on the boundary conditions from the identified CalSim II scenarios to create a training data set for each new ANN.
- ANNs are trained using the Delta flows and DCC operations from CalSim II, EC results from DSM2, and the Martinez tide.
- The training data set is divided into two parts; one is used for training the ANN, and the other to validate.
- Once the ANN is ready, a full-circle analysis is performed to assess the performance of the ANN.

Detailed description of the ANN training procedure and the full-circle analysis is provided in DWR's 2007 annual report (Seneviratne and Wu 2007).

5A.A.4.4 Output Parameters

DSM2 HYDRO provides the following outputs on a 15-minute time step:

- Tidal flow
- Tidal stage
- Tidal velocity

The following variables can be derived from the above outputs:

- Net flows
- Mean sea level, mean higher high water, mean lower low water, and tidal range
- Water depth
- Tidal reversals
- Flow splits, etc.

DSM2 QUAL provides the following outputs on a 15-minute time step:

- Salinity (EC)
- DOC
- Source water and constituent fingerprinting

The following variables can be derived from the above QUAL outputs:

- Bromide, chloride, and total dissolved solids
- Selenium and mercury

In a planning analysis, the flow boundary conditions that drive DSM2 are obtained from the monthly CalSim II model. The agricultural diversions, return flows, and corresponding salinities used in DSM2 are on a monthly time step. The implementation of DCC gate operations in DSM2 assumes that the gates are open from the beginning of a month, irrespective of the water quality needs in the south Delta.

The input assumptions stated earlier should be considered when DSM2 EC results are used to evaluate performance of a baseline or an alternative against the standards. Even though CalSim II releases sufficient flow to meet the standards on a monthly average basis, the resulting EC from DSM2 may be over the standard for part of a month and under the standard for part of the month, depending on the spring/neap tide and other factors (for example, simplification of operations). It is recommended that the results are presented on a monthly basis. Frequency of compliance with a criterion should be computed based on monthly average results. Averaging on a sub-monthly (14-day or more) scale may be appropriate as long as the limitations with respect to the compliance of the baseline model are described in detail and the alternative results are presented as an incremental change from a baseline model.

In general, it is appropriate to present DSM2 QUAL results including EC, DOC, volumetric fingerprinting, and constituent fingerprinting on a monthly time step. When comparing results between two scenarios, computing differences based on these mean monthly statistics is appropriate.

5A.A.4.5 Modeling Limitations

DSM2 is a one-dimensional model with inherent limitations in simulating hydrodynamic and transport processes in a complex estuarine environment such as the Delta. DSM2 assumes that velocity in a channel can be adequately represented by a single average velocity over the channel cross-section, meaning that variations both across the width of the channel and through the water column are negligible. DSM2 does not have the ability to model short-circuiting of flow through a reach, where a majority of the flow in a cross-section is confined to a small portion of the cross-section. DSM2 does not conserve momentum at the channel junctions and does not model the secondary currents in a channel. DSM2 also does not explicitly account for dispersion due to flow accelerating through channel bends. It cannot model the vertical salinity stratification in the channels.

It has inherent limitations in simulating the hydrodynamics related to the open water areas. Since a reservoir surface area is constant in DSM2, it impacts the stage in the reservoir and thereby impacts the flow exchange with the adjoining channel. Due to the inability to change the cross-sectional area of the reservoir inlets with changing water surface elevation, the final entrance and exit coefficients were fine-tuned to match a median flow range. This causes errors in the flow exchange at breaches during the extreme spring and neap tides. Using an arbitrary bottom elevation value for the reservoirs representing the proposed marsh areas to get around the wetting-drying limitation of DSM2 may increase the dilution of salinity in the reservoirs. Accurate representation of tidal marsh areas, bottom elevations, location of breaches, breach widths, cross-sections, and boundary conditions in DSM2 is critical to the agreement of corroboration results.

For open waterbodies DSM2 assumes uniform and instantaneous mixing over the entire open water area. Thus, it does not account for any salinity gradients that may exist within the open waterbodies. Significant uncertainty exists in flow and EC input data related to in-Delta agriculture, which leads to uncertainty in the simulated EC values. Caution needs to be exercised when using EC outputs on a sub-monthly scale. Water quality results inside the waterbodies representing the tidal marsh areas were not validated specifically, and because of the bottom elevation assumptions, preferably should not be used for analysis.

5A.A.4.6 Linkages to Other Models

The Delta boundary flows and exports from CalSim II are used to drive the DSM2 Delta hydrodynamic and water quality models for estimating tidally based flows, stage, velocity, and salt transport within the estuary. DSM2 water quality and volumetric fingerprinting results are used to assess changes in concentration of selenium and methylmercury in Delta waters.

DSM2 results are also used for fisheries models (IOS, DPM) or aquatics species survival/habitat relationships developed based on peer-reviewed scientific publications.

5A.A.5 Climate Change and Sea-Level Rise

The EIS uses a representation of potential climate change and sea-level rise change in numerical models that simulate hydrologic and hydrodynamic conditions in the study area in addition to changes in river flows due to changes in operations and diversions. This approach is based upon the methods used in development of BDCP EIR/EIS (DWR et al 2013).

This section provides brief information on methods used for this EIS.

5A.A.5.1 Climate Change

A growing body of evidence indicates that Earth's atmosphere is warming. Records show that surface temperatures have risen about 0.7°C since the early twentieth century and that 0.5°C of this increase has occurred since 1978 (NAS 2006). Observed changes in oceans, snow and ice cover, and ecosystems are consistent with this warming trend (NAS 2006, IPCC 2007). The temperature of Earth's atmosphere is directly related to the concentration of atmospheric greenhouse gases. Growing scientific consensus suggests that climate change will be inevitable as the result of increased concentrations of greenhouse gases and related temperature increases (IPCC 2007, Kiparsky and Gleick 2003, Cayan et al. 2009, USGRP 2013).

Observed climate and hydrologic records indicate that more substantial warming has occurred since the 1970s and that this is likely a response to the increases in greenhouse gas (GHG) increases during this time. The recent suite of global climate models (GCMs), a part of the Coupled Model Intercomparison Project Phase 3 (CMIP3)[1] and Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4), when simulated under future GHG emission scenarios and current atmospheric GHGs, exhibit warming globally and regionally over California. In the early part of the twenty-first century, the amount of warming produced by the higher-emission A2 scenario is not very different from the lower-emission B1 scenario, but becomes increasingly larger through the middle and especially the latter part of the century. Six GCMs selected for the 2009 scenarios project by the California Climate Action Team project a mid-century temperature increase of about 1°C to 3°C (1.8°F to 5.4°F), and an end-of-century increase from about 2°C to 5°C (3.6°F to 9°F) (Cayan et al. 2009). Precipitation in most of California is dominated by extreme variability, seasonally, annually, and over decade time scales. The GCM simulations of

[1] At the time of methods selection for the EIS, Coupled Model Intercomparison Project Phase 3 (CMIP3) projections were the most recently available ensembles. Even though Coupled Model Intercomparison Project Phase 5 (CMIP5) was released by the IPCC (after the methods selection for the EIS) in 2013, the use of CMIP3 ensembles are deemed appropriate because the differences in the projected changes in annual precipitation and temperature between the CMIP3 and CMIP5 projections are relatively small over the Central Valley by the end of 2030.

historical climate capture the historical range of variability reasonably well (Cayan et al. 2009), but historical trends are not well captured in these models. Projections of future precipitation are much more uncertain than those for temperature. As climate changes, California is expected to be subjected to alterations in natural hydrologic conditions, including changes in snow accumulation and stream flow availability.

5A.A.5.2 Sea-Level Rise

Global and regional sea levels have been increasing steadily over the past century and are expected to continue to increase throughout this century. Over the past several decades, sea level measured at tide gages along the California coast has risen at a rate of about 17 to 20 cm (6.7 to 7.9 inches) per century (Cayan et al. 2009). While there is considerable variability among the gages along the Pacific Coast, primarily reflecting local differences in vertical movement of the land and length of gage record, this observed rate in mean sea level is similar to the global mean trend (NOAA 2012). Global estimates of sea-level rise made in the most recent assessment by the IPCC (2007) indicate a range of 18 to 59 cm (7.1 to 23.2 inches) this century. However, since the release of the IPCC AR4, advances have occurred in the understanding of sea-level rise. These advances in the science have led to criticism of the approach used by the IPCC. Recent work by Rahmstorf (2007), Vermeer and Rahmstorf (2009), and others suggests that the sea-level rise may be substantially greater than the IPCC projections.

Empirical models based on the observed relationship between global temperatures and sea levels have been shown to perform better than the IPCC models in reconstructing recent observed trends. Rahmstorf (2007) and Vermeer and Rahmstorf (2009) demonstrated that such a relationship, when applied to the range of emission scenarios of IPCC (2007), results in a mid-range rise this century of 70 to 100 cm (28 to 39 inches), with a full range of variability of 50 to 140 cm (20 to 55 inches). The CALFED Science Program (CALFED 2007), State of California, and others have made assessments of the range of potential future sea-level rise throughout 21st century.

In 2011, the United States Army Corps of Engineers (USACE) issued guidance on incorporating sea-level change in civil works programs (USACE 2011). The guidance document reviews the existing literature and suggests use of a range of sea-level change projections, including the “high probability” of accelerating global sea-level rise. The ranges of future sea-level rise were based on the empirical procedure recommended by the National Research Council and updated for recent conditions (NRC 1987). The three scenarios included in the USACE guidance suggest end-of-century sea-level rise in the range of 50 to 150 cm (20 to 59 inches), consistent with the range of projections by Rahmstorf (2007) and Vermeer and Rahmstorf (2009). The USACE Bulletin expired in September 2013.[2]

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[2] At the time of methods selection for the EIS, USACE 2011 was the most recent guidance. Current most recent guidance (USACE 2013) suggests evaluation of a low, medium, and high sea-level rise. The projected mean sea level rise ranges between 10 cm and 14 cm at 2030 relative to year 2000 based on the recent NRC

The recent NRC study (NRC 2012) on west coast sea-level rise relies on estimates of the individual components that contribute to sea-level rise and then sums those to produce the projections. The recent NRC sea-level rise projections for California have wider ranges, but the upper limits are not as high as those from Vermeer and Rahmstorf's (2009) global projections. The California State Sea-Level Rise Guidance Document (CO-CAT 2013) was updated in March 2013 with the scientific findings of the 2012 NRC report.

As sea-level rise progresses during the century, the hydrodynamics of the San Francisco Bay-Sacramento-San Joaquin Delta estuary will change, causing the salinity of water in the Delta estuary to increase. This increasing salinity will most likely have significant impacts on water management throughout the Central Valley and other regions of the state.

5A.A.5.3 Incorporating Climate Change and Sea-Level Rise in EIS Simulations

Incorporation of climate change in water resources planning continues to be an area of evolving science, methods, and applications. Several potential approaches exist for incorporating climate change in the resources impact analyses. Currently, there is no standardized methodology that has been adopted by either the State of California or the Federal agencies for use in impact assessments. The courts have ruled that climate change must be considered in the planning of long-term water management projects in California, but have not been prescriptive in terms of methodologies to be applied. Climate change could be addressed in a qualitative and/or quantitative manner, could focus on global climate model projections or recent observed trends, and could explore broader descriptions of observed variability by blending paleoclimate information into this understanding.

5A.A.5.3.1 Incorporating Climate Change

The climate change scenarios were developed from an ensemble of 112 bias-corrected, spatially downscaled GCM simulations from 16 climate models for SRES emission scenarios A2, A1B, and B1 from the CMIP3 that are part of the IPCC AR4. The future projected changes over the 30-year climatological period centered on 2025 (i.e., 2011-2040 to represent 2025 timeline) were combined with a set of historically observed temperatures and precipitation to generate climate sequences that maintain important multi-year variability not always reproduced in direct climate projections.

In an effort to summarize these 112 scenarios, five statistically representative climate change scenarios were developed to characterize the central tendency, and the range of the ensemble uncertainty.

(2012) study and using the USACE Sea Level Change Curve Calculator (2015.46) located at http://www.corpsclimate.us/ccaceslcurves.cfm. The mean projected sea-level rise is similar to the EIS assumption of 15 cm at Year 2030. Due to the considerable uncertainty in the future sea-level change projections and the state of sea-level rise science, the use of 15 cm sea-level rise for the EIS was deemed reasonable.

Since the ensemble is made up of many projections, it is useful to identify the median (50th percentile) change of both annual temperature and annual precipitation. In doing so, the state of climate change at this point in time can be broken into quadrants representing (1) drier, less warming, (2) drier, more warming, (3) wetter, more warming, and (4) wetter, less warming than the ensemble median (Q1 through Q4). In addition, a fifth region (Q5) can be described that samples from inner-quartiles (25th to 75th percentile) of the ensemble and represents a central region of climate change. In each of the five regions the sub-ensemble of climate change projections, made up of those contained within the region bounds, is identified. The Q5 scenario is derived from the central tending climate projections and thus favors the consensus of the ensemble.

Through extensive coordination with the State and Federal teams involved in the BDCP, the bounding scenarios Q1-Q4 were refined in April 2010 to reduce the attenuation of climate projection variability that comes about through the use of larger ensembles. A sensitivity analysis was prepared for the bounding scenarios (Q1-Q4) using sub-ensembles made up of different numbers of downscaled climate projections. The sensitivity analysis was prepared using a "nearest neighbor" (k-NN) approach. In this approach, a certain joint projection probability is selected based on the annual temperature change-precipitation change (i.e. 90th percentile of temperature and 90th percentile of precipitation change). From this statistical point, the "k" nearest neighbors (after normalizing temperature and precipitation changes) of projections are selected and climate change statistics are derived. Consistent with the approach applied in 2008 LTO BA, the 90th and 10th percentile of annual temperature and precipitation change were selected as the bounding points. The sensitivity analysis considered using the 1-NN (single projection), 5-NN (5 projections), and 10-NN (10 projections) sub-ensemble of projections. These were compared to the original quadrant scenarios which commonly are made up of 25-35 projections and are based on the direction of change from 50th percentile statistic. The very small ensemble sample sizes exhibited month by month changes that were sometimes dramatically different than that produced by adding a few more projections to the ensemble. The 1-NN approach was found to be inferior to all other methods for this reason. The original quadrant method produced a consensus direction of change of the projections, and thus produced seasonal trends that were more realistic, but exhibited a slightly smaller range due to the inclusion of several central tending projections. The 5-NN and 10-NN methods exhibited slightly wider range of variability than the quadrant method which was desirable from the "bounding" approach. In most cases the 5-NN and 10-NN projections were similar, although they differed at some locations in representation of season trend. The 10-NN approach was found to be preferable in that it best represented the seasonal trends of larger ensembles, retained much of the "range" of the smaller ensembles, and was guaranteed to include projections from at least two GCM-emission scenario combinations (in the CMIP3 projection archive, up to 5 projections – multiple simulations – could come from one GCM-emission scenario combination). The State and Federal representatives agreed to utilize the following climate scenario selection process for BDCP: (1) the use of the original quadrant approach for Q5 (projections within the 25th to 75th percentile bounding box) as it provides the best estimate of the consensus of climate projections and (2) the use of the 10-NN method to developing the Q1-Q4 bounding scenarios. An automated process was developed that generates the monthly and annual statistics for every grid cell within the Central Valley domain and identifies the members of the sub ensemble for consideration in each of the five scenarios.

For the purposes of this EIS, Q5 climate change scenario for the period centered on 2025 is used for all alternatives analyses and represents conditions at 2030. The Q5 scenario was derived from the central tending “consensus” of the climate projections and thus represents the median ensemble projection. Figures 5A.A.5 through 5A.A.8 present projected changes in temperature and precipitation for the 2025 timeline for select locations that represent Sacramento, San Joaquin, and Delta systems.

The modified temperature and precipitation inputs were used in the VIC hydrology model to simulate hydrologic processes on the 1/8th degree scale to produce watershed runoff (and other hydrologic variables) for the major rivers and streams in the Central Valley.

To compute watershed runoff, the VIC model was simulated in water balance mode. In this mode, a complete land surface water balance is computed for each grid cell on a daily basis for the entire model domain. Unique to the VIC model is its characterization of sub-grid variability. Sub-grid elevation bands enable more detailed characterization of snow-related processes. Five elevation bands are included for each grid cell. In addition, VIC also includes a sub-daily (1 hour) computation to resolve transients in the snow model. The soil column is represented by three soil zones extending from land surface in order to capture the vertical distribution of soil moisture. The VIC model represents multiple vegetation types as uses NASA’s Land Data Assimilation System (LDAS) databases as the primary input data set.

The VIC model computes the water balance over each grid cell on a daily basis for the entire period of simulation. For the simulations performed for the BDCP, water balance variables such as precipitation, evapotranspiration, runoff, baseflow, soil moisture, and snow water equivalent were included as output. In order to facilitate understanding of these watershed process results, nine locations throughout the in the watershed were selected for more detailed review. These locations are representative points within each of the following hydrologic basins: Upper Sacramento River, Feather River, Yuba River, American River, Stanislaus River, Tuolumne River, Merced River, and Upper San Joaquin River. The flow in these main rivers were included in the Eight River Index which is the broadest measure of total flow contributing to the Delta. A ninth location was selected to represent conditions within the Delta.

Streamflow was routed to 21 locations that generally align with long-term gauging stations throughout the watershed. The flow at these locations also allowed for assessment of changes in various hydrologic indices used in water management in the Sacramento-San Joaquin Delta. Flows were output in both daily and monthly time steps. Only the monthly flows were used in subsequent analyses. It is important to note that VIC routed flows were considered "naturalized" in that they do not include effects of diversions, imports, storage, or other human management of the water resource. Figures 5A.A.9 through 5A.A.18 present projected changes in watershed runoff for the major rivers and streams in the Central Valley for the 2025 timeline.

These simulated changes in runoff were applied to the CalSim II inflows as a fractional change from the observed inflow patterns (simulated future runoff divided by historical runoff). These fraction changes were first applied for every month of the 82-year period consistent with the VIC simulated patterns. A second correction was then applied to ensure that the annual shifts in runoff at each location are consistent with that generated from the VIC modeling.

Once the changes in flows had been resolved, water year types and other hydrologic indices that govern water operations or compliance were adjusted to be consistent with the new hydrologic regime. The changes in reservoir inflows, key valley floor accretions, and water year types and hydrologic indices were translated into modified input time series for the CalSim II model.

For the BDCP EIR/EIS, the CalSim II model was simulated with each of the five climate change hydrologic conditions (including effects of sea level rise) in addition to the historical hydrologic conditions for the No Project/No Action Alternative and one other alternative to understand the sensitivity of projected operations to the range of climate change scenarios. The results of that analysis indicated that the incremental differences between the No Action Alternative and the other alternative were consistent at Q1 through Q5 conditions, although absolute values were different (DWR et al, 2013).

5A.A.5.3.2 Incorporation of Sea-Level Rise

For sea-level rise simulation, using the work conducted by Rahmstorf, it was assumed the projected sea-level rise at the early long-term timeline (2025) would be approximately 12 to 18 cm (5 to 7 inches). At the late long-term timeline (2060), the projected sea-level rise was assumed to be approximately 30 to 60 cm (12 to 24 inches).

These sea-level rise estimates were consistent with those outlined in the recent USACE guidance circular for incorporating sea-level changes in civil works programs (USACE 2013). Due to the considerable uncertainty in these projections and the state of sea-level rise science, it was proposed to use the mid-range of the estimates of 15 cm (6 inches) by 2025 and 45 cm (18 inches) by 2060.For the purposes of the EIS, the sea-level rise scenario for the period centered on 2025 is used (DWR et al. 2013). This period is considered because the EIS extends only up to 2030. These changes were simulated in Bay-Delta hydrodynamics models, and their effect on the flow-salinity relationship in the Bay-Delta was incorporated into CalSim II modeling through the use of ANNs that were developed for the BDCP EIR/EIS (DWR et al 2013) for the same sea-level rise and physical Delta conditions.

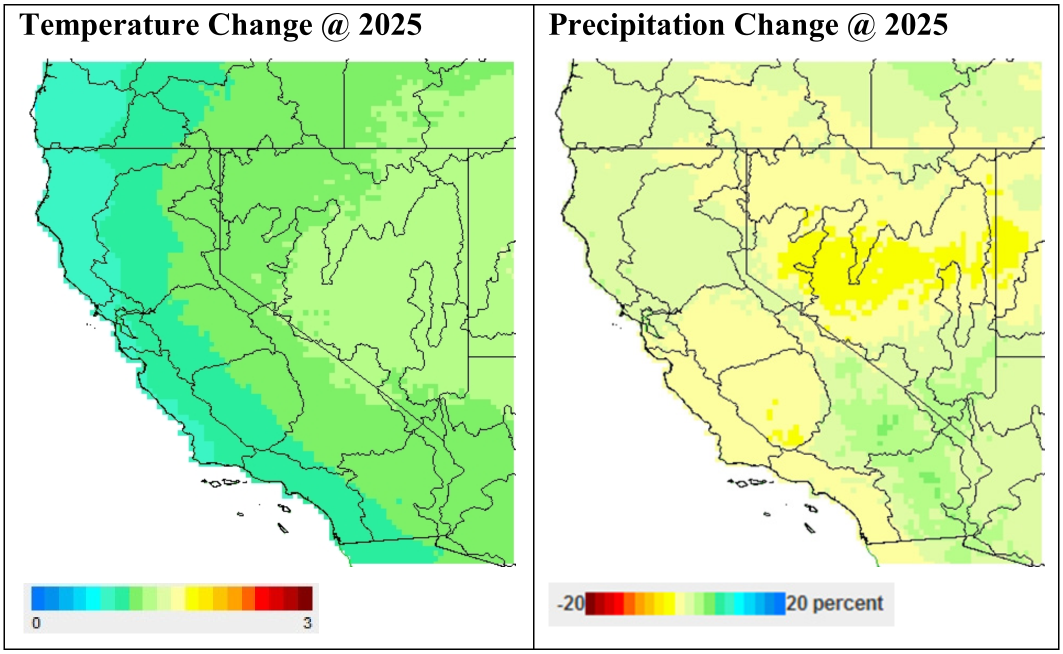
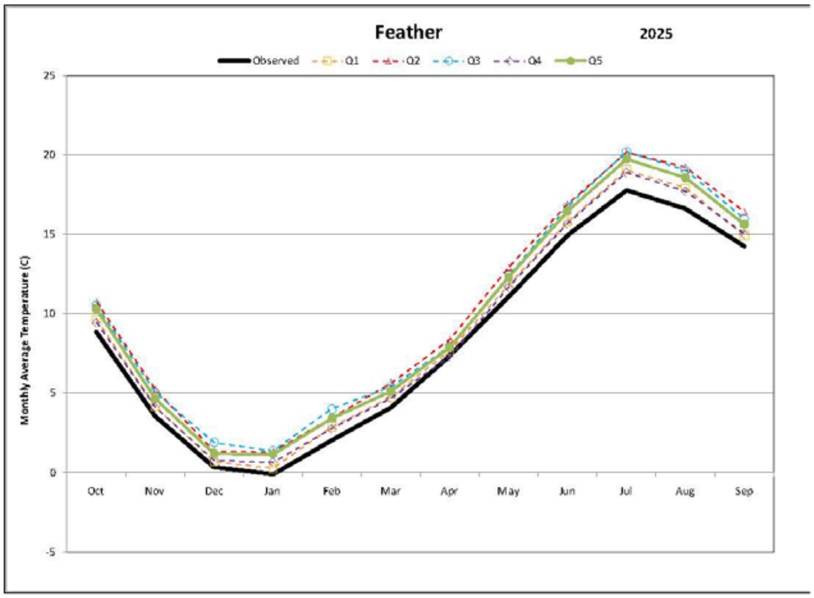


Figure 5A.A.5 Projected Changes in Annual Temperature (as degrees C) and Precipitation (as percent change) for the Period 2011-2040 (2025) as Compared to the 1971-2000 Historical Period

Derived from Daily Gridded Observed Meteorology (Maurer et al. 2002).



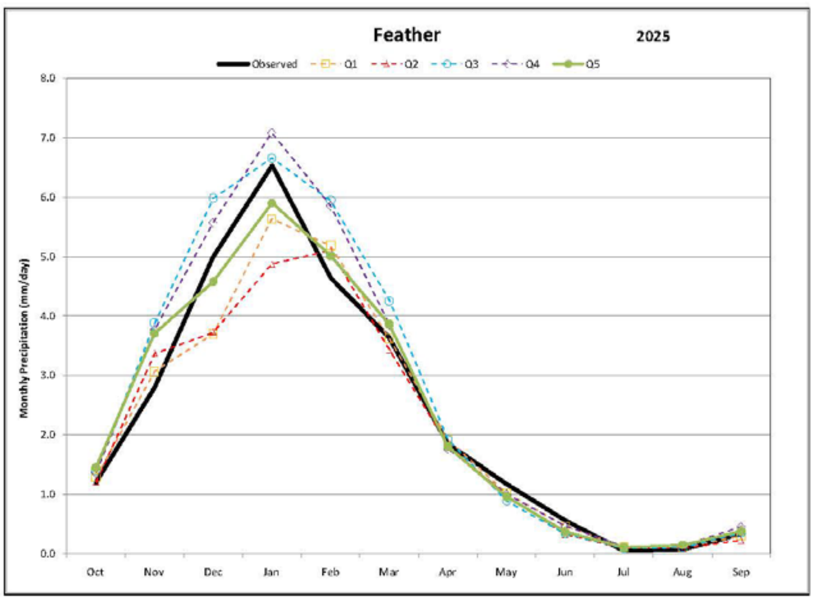
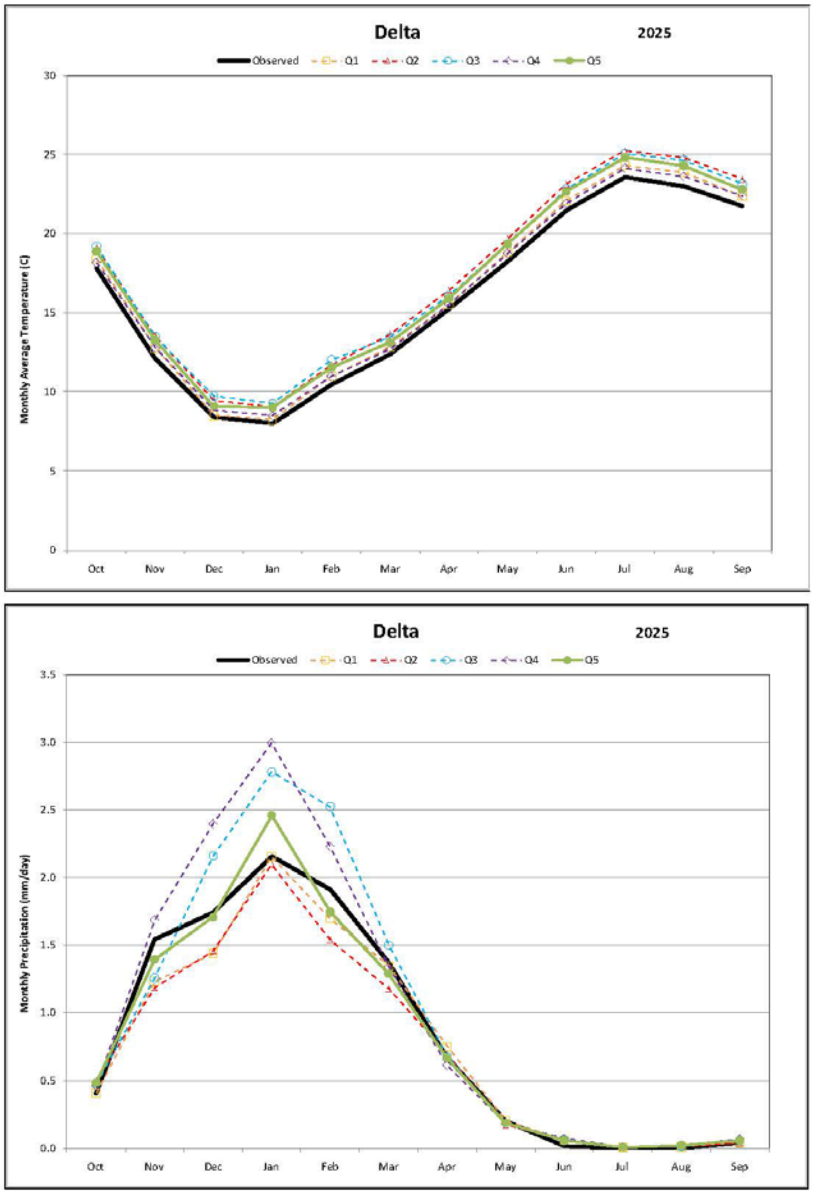
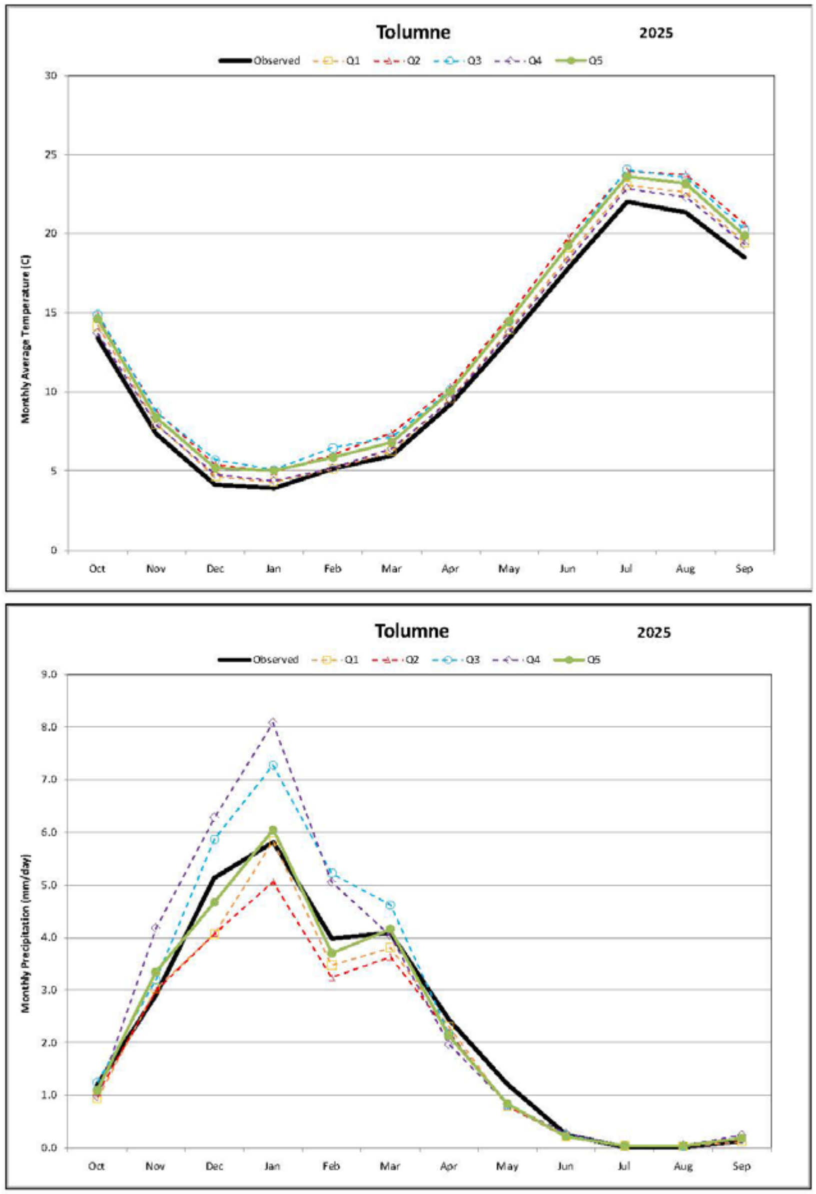


Figure 5A.A.6 Projected Changes in Seasonal Temperature (top) and Precipitation (bottom) for a Grid Cell in the Feather River Basin



1 **Figure 5A.A.7 Projected Changes in Seasonal Temperature (top) and Precipitation**
2 **(bottom) for a Grid Cell in the Delta**



1 **Figure 5A.A.8 Projected Changes in Seasonal Temperature (top) and Precipitation**
2 **(bottom) for a Grid Cell in the Tuolumne River Basin**

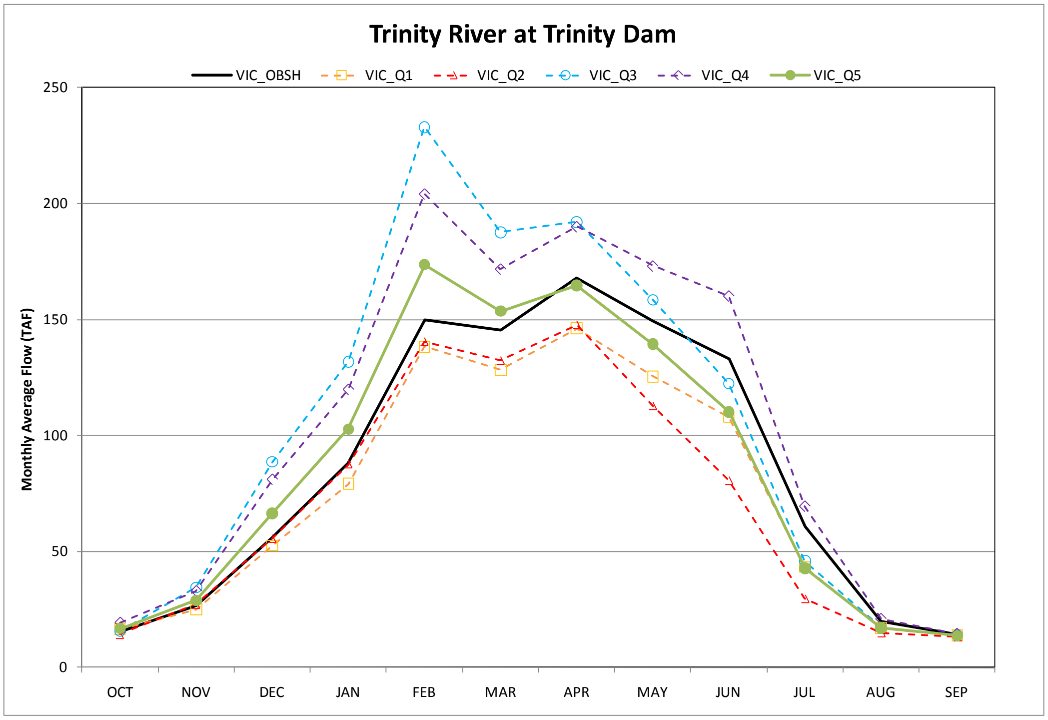


Figure 5A.A.9 Simulated Changes in Monthly Natural Streamflow for Trinity River at Trinity Dam (for the 2025 timeline)

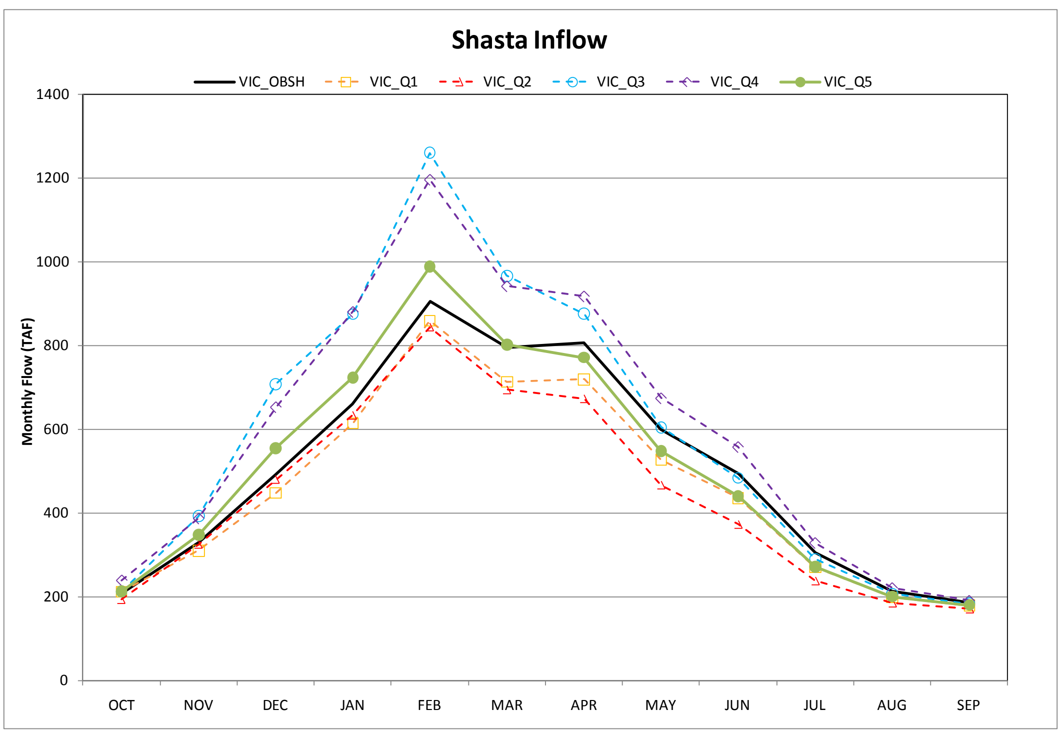


Figure 5A.A.10 Simulated Changes in Monthly Natural Streamflow for Shasta Inflow (for the 2025 timeline)

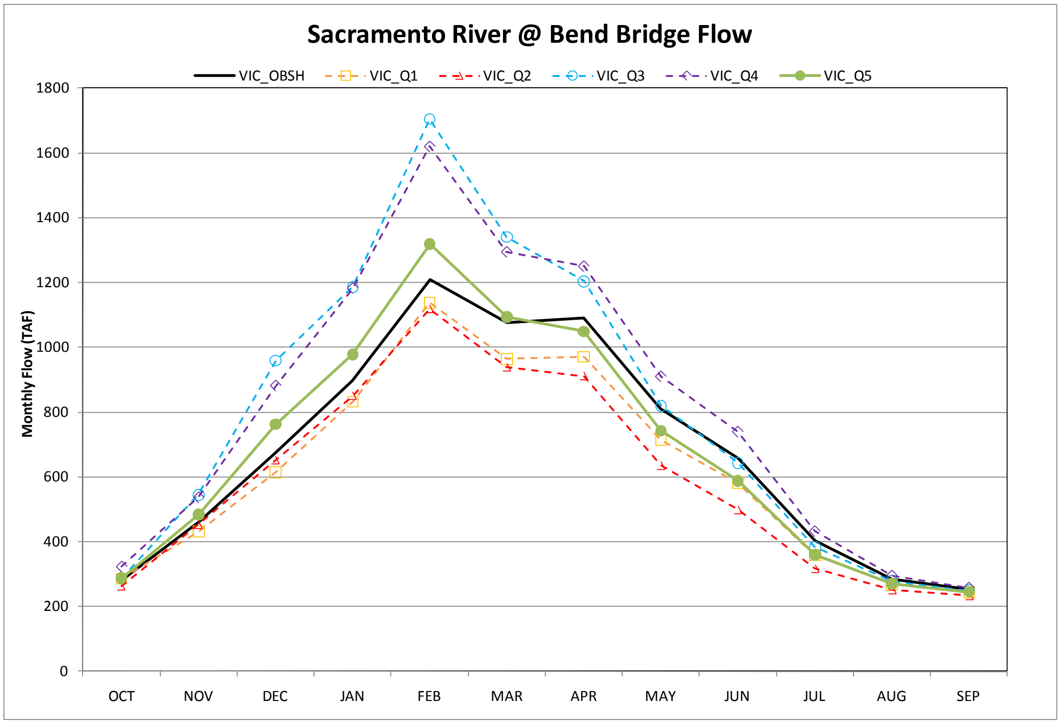


Figure 5A.A.11 Simulated Changes in Monthly Natural Streamflow for Sacramento River at Bend Bridge (for the 2025 timeline)

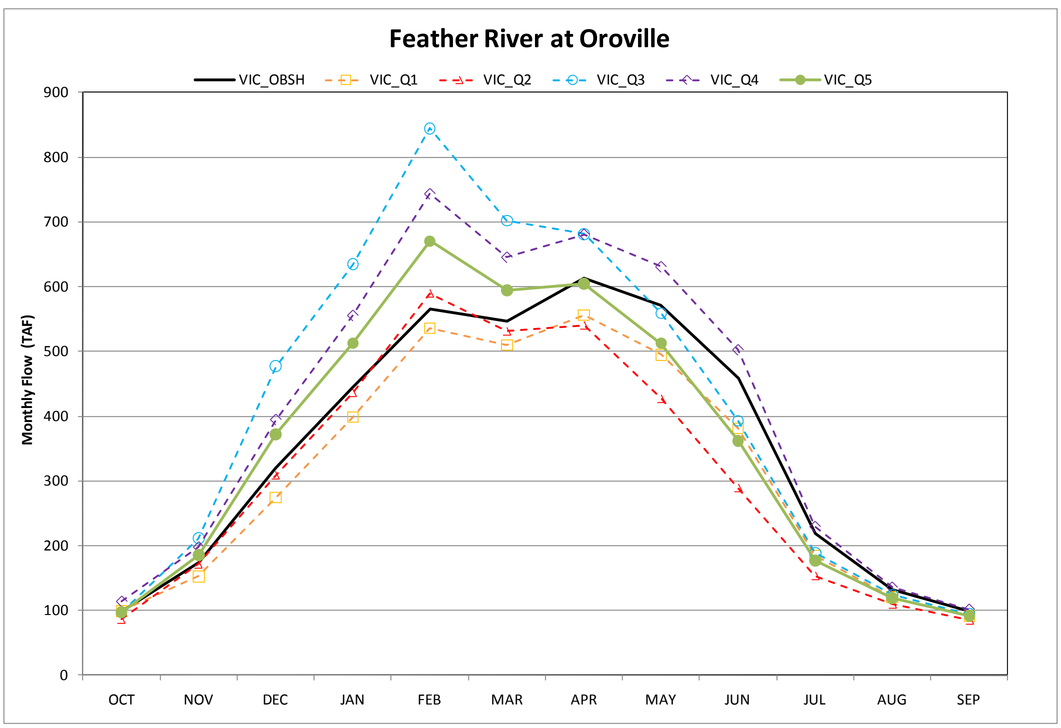


Figure 5A.A.12 Simulated Changes in Monthly Natural Streamflow for Feather River at Oroville (for the 2025 timeline)

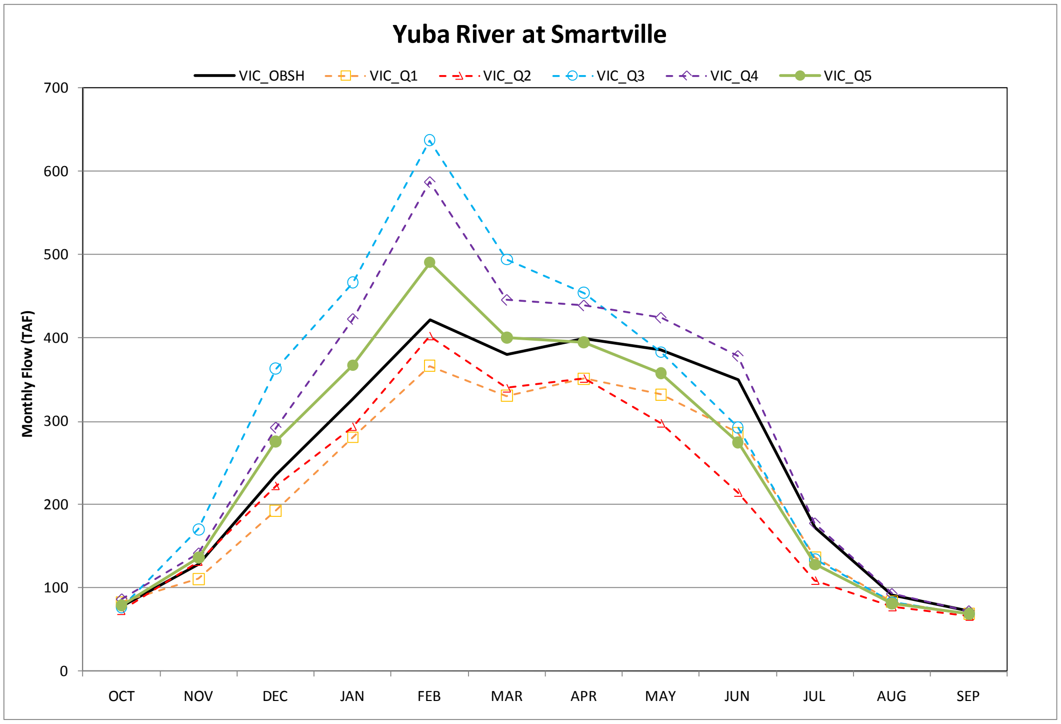


Figure 5A.A.13 Simulated Changes in Monthly Natural Streamflow for Yuba River at Smartville (for the 2025 timeline)

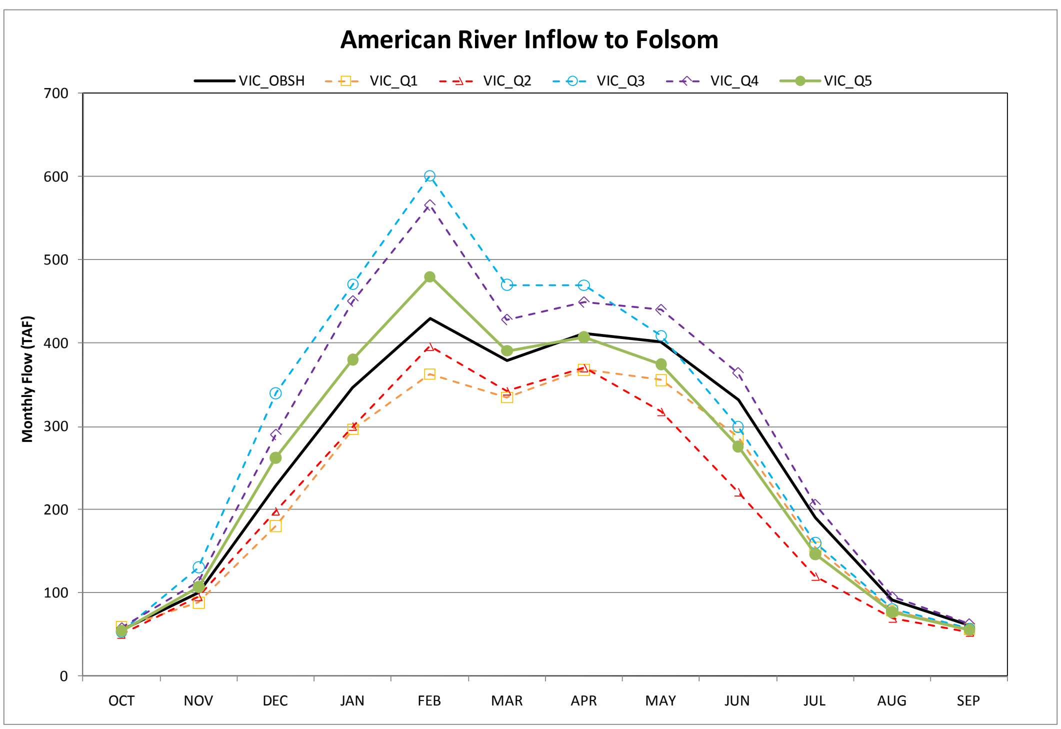


Figure 5A.A.14 Simulated Changes in Monthly Natural Streamflow for American River Inflow to Folsom (for the 2025 timeline)

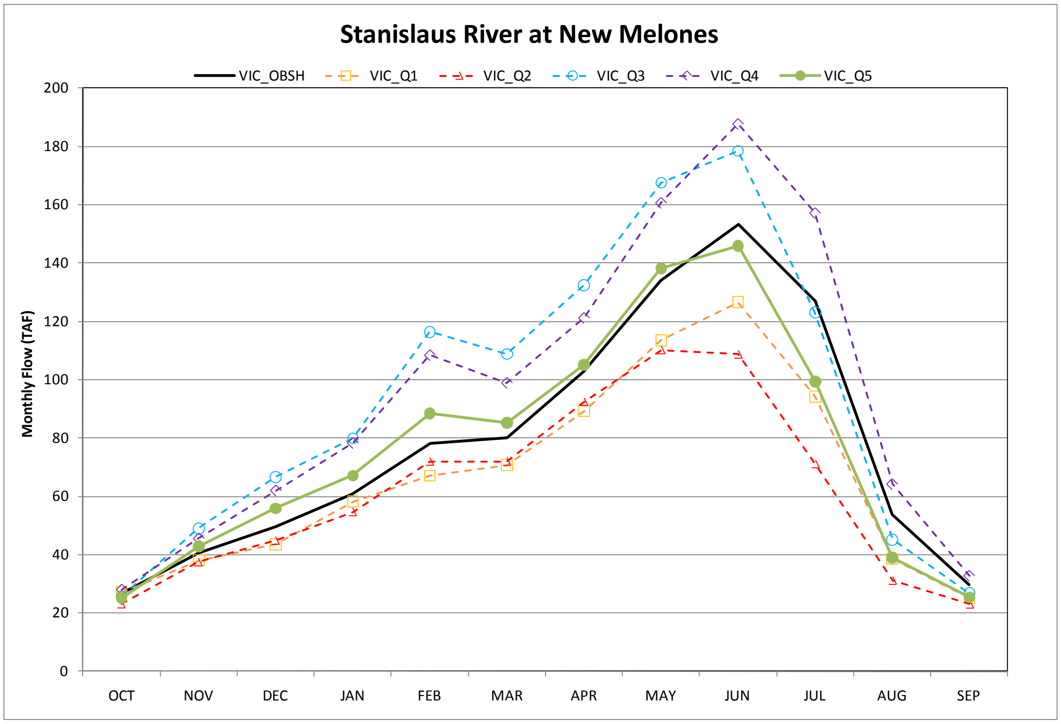


Figure 5A.A.15 Simulated Changes in Monthly Natural Streamflow for Stanislaus River at New Melones (for the 2025 timeline)

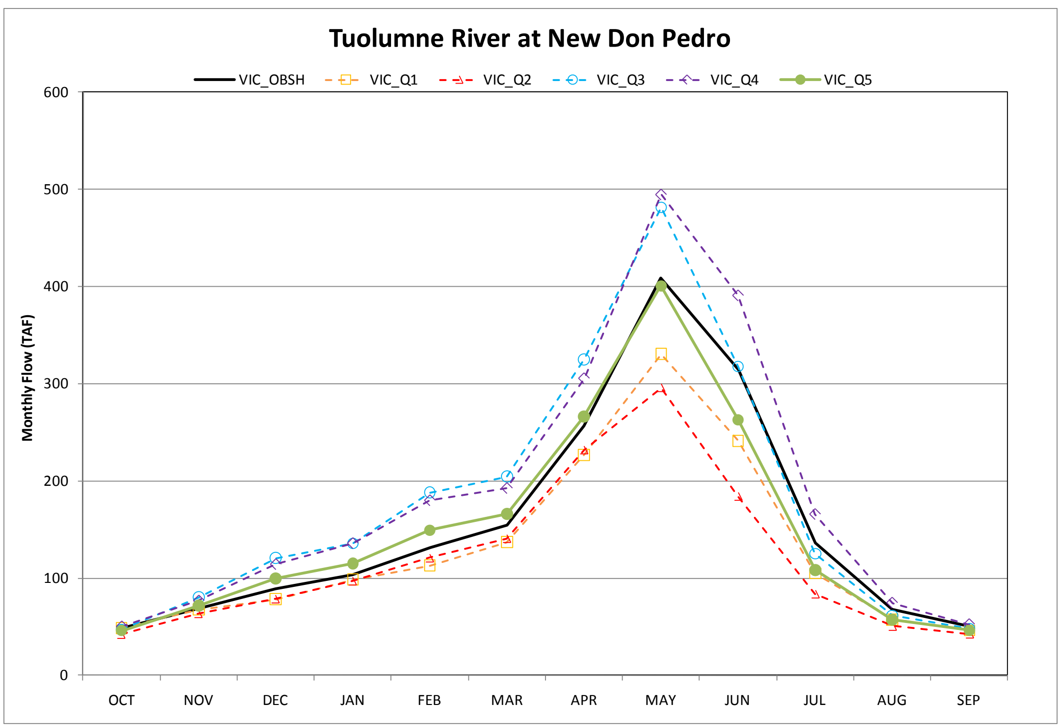


Figure 5A.A.16 Simulated Changes in Monthly Natural Streamflow for Tuolumne River at New Don Pedro (for the 2025 timeline)

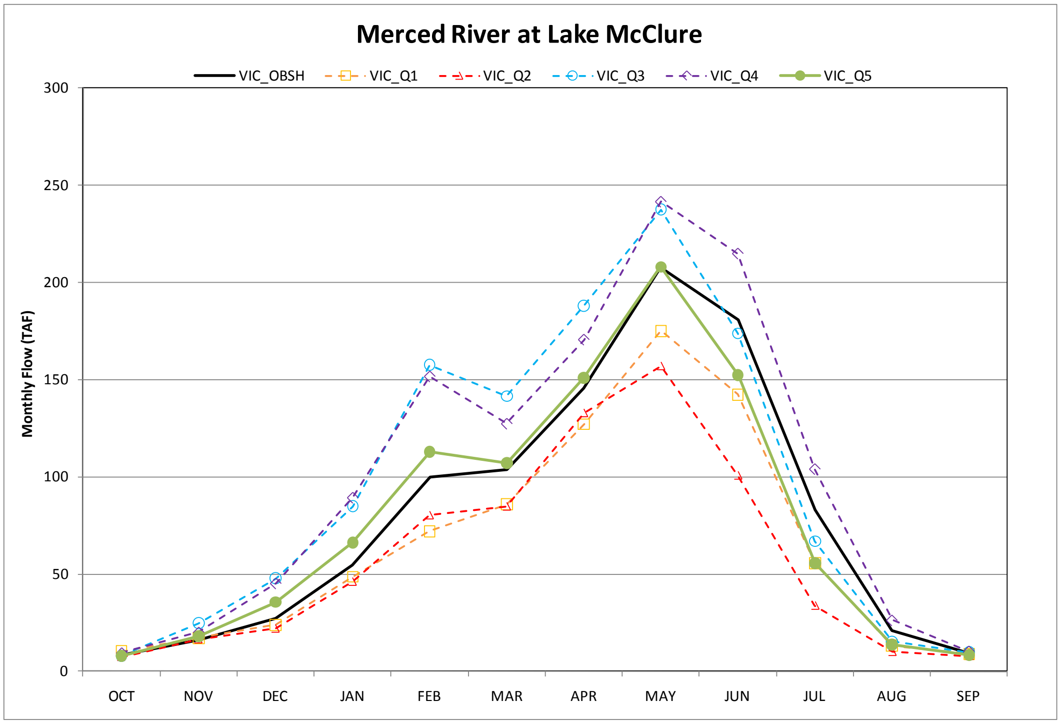


Figure 5A.A.17 Simulated Changes in Monthly Natural Streamflow for Merced River at Lake McClure (for the 2025 timeline)

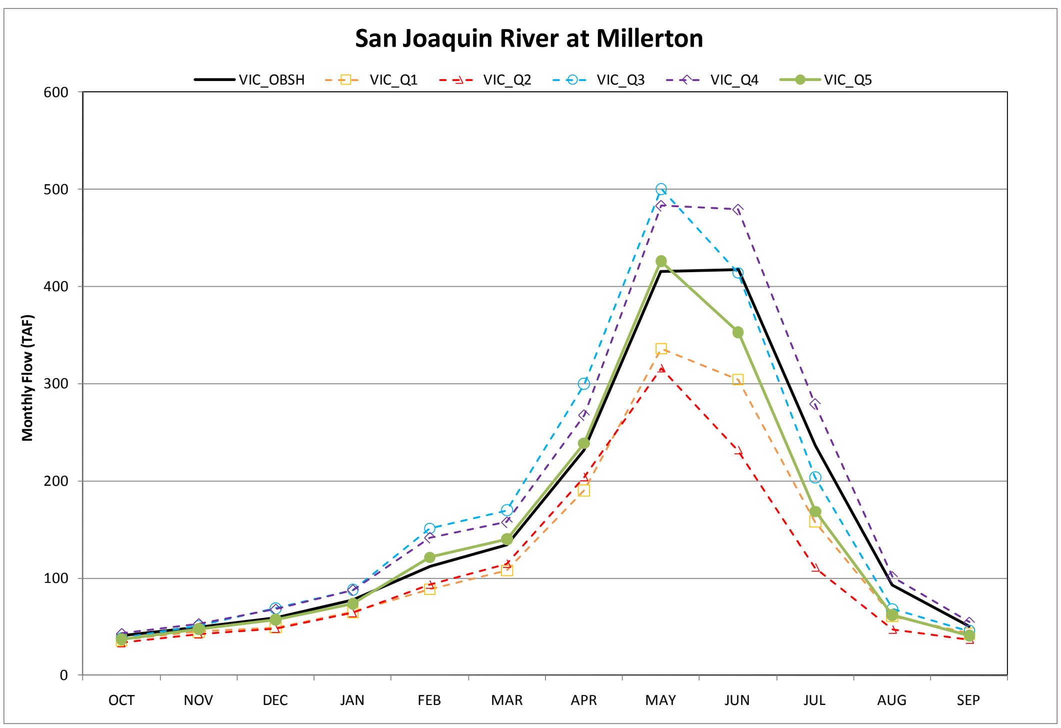


Figure 5A.A.18 Simulated Changes in Monthly Natural Streamflow for San Joaquin River at Millerton (for the 2025 timeline)

5A.A.5.4 Climate Change and Sea-Level Rise Modeling Limitations

GCMs represent different physical processes in the atmosphere, ocean, cryosphere, and land surface. GCMs are the most advanced tools currently available for simulating the response of the global climate system to increasing greenhouse gas concentrations. However, several of the important processes are either missing or inadequately represented in today's state-of-the-art GCMs. GCMs depict the climate using a three dimensional grid over the globe at a coarse horizontal resolution. A downscaling method is generally used to produce finer spatial scale that is more meaningful in the context of local and regional impacts than the coarse-scale GCM simulations.

In this study, downscaled climate projections using the Bias-correction and Spatial Disaggregation (BCSD) method is used (http://gdo-dcp.ucllnl.org/downscaled_cmip_projections/dcpInterface.html#About). The BCSD downscaling method is well tested and widely used, but it has some inherent limitations such as stationary assumptions used in the BCSD downscaling method (Maurer et al. 2007; Reclamation 2013) and also due to the fact that bias correction procedure employed in the BCSD downscaling method can modify climate model simulated precipitation changes (Maurer and Pierce, 2014). The downscaling method also carries some of the limitations applicable to native GCM simulations.

A median climate change scenario that was based on more than a hundred climate change projections was used for characterizing the future climate condition for the purposes of the EIS. Although projected changes in future climate contain significant uncertainty through time, several studies have shown that use of the median climate change condition is acceptable (for example, Pierce et al. 2009). The median climate change is considered appropriate for the EIS because of the comparative nature of the NEPA analysis. Therefore, a sensitivity analysis using the different climate change conditions was not conducted for this study.

Projected change in stream flow is calculated using the VIC macroscale hydrologic model. The use of the VIC model is primarily intended to generate changes in inflow magnitude and timing for use in subsequent CalSim II modeling. While the model contains several sub-grid mechanisms, the coarse grid scale should be noted when considering results and analysis of local-scale phenomena. The VIC model is currently best applied for the regional-scale hydrologic analyses. There are several limitations to long-term gridded meteorology related to spatial-temporal interpolation due to limited availability of meteorological stations that provide data for interpolation. In addition, the inputs to the model do not include any transient trends in the vegetation or water management that may affect stream flows; they should only be analyzed from a "naturalized" flow change standpoint. Finally, the VIC model includes three soil zones to capture the vertical movement of soil moisture, but does not explicitly include groundwater. The exclusion of deeper groundwater is not likely a limiting factor in the upper watersheds of the Sacramento and San Joaquin river watersheds that contribute approximately 80 to 90 percent of the runoff to the Delta. However, in the valley floor, interrelation of groundwater and surface water management is considerable. Water management models such as CalSim II should be used to characterize the heavily "managed" portions of the system.

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Appendix 5A, Section B

CalSim II and DSM2 Modeling Simulations and Assumptions

This section summarizes the modeling simulations and assumptions for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 in this Environmental Impact Statement (EIS). Appendix 5A, Section B, is organized as follows:

- Introduction
- Assumptions for the No Action Alternative and Second Basis of Comparison Model Simulations
  - No Action Alternative
  - Second Basis of Comparison
- Assumptions for Alternatives Model Simulations
  - Alternative 3
  - Alternative 5
  - Summary of Alternatives Assumptions
- Timeframe of Evaluation
- No Action Alternative and Second Basis of Comparison Assumptions Tables
  - CalSim II Assumptions
  - (DSM2 Assumptions
- American River Demands
- Delivery Specifications
- U.S. Fish and Wildlife Service (USFWS) Reasonable and Prudent Alternative (RPA) Implementation
- National Marine Fisheries Service (NMFS) RPA Implementation
- References

5A.B1 Introduction

As described in Appendix 5A, Section A, modeling was prepared for evaluation of the alternatives considered in this EIS. This section describes the assumptions for the CalSim II and DSM2 modeling of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

The following model simulations were prepared as the basis for evaluating the impacts of the other alternatives at 2030 projected conditions:

- No Action Alternative

- Second Basis of Comparison
- Alternative 1 – Same as the Second Basis of Comparison
- Alternative 2 – Only operational components of the No Action Alternative (same modeling assumptions as the No Action Alternative)
- Alternative 3 –Discussed further in this section
- Alternative 4 – Similar to Second Basis of Comparison with actions to improve aquatic resource conditions (same modeling assumptions as the Second Basis of Comparison)
- Alternative 5 – Discussed further in this section

The No Action Alternative and Second Basis of Comparison assumptions were developed by the Bureau of Reclamation (Reclamation). Alternative 2 assumptions were defined in the Notice of Intent. Assumptions for Alternatives 3, 4, and 5 were developed in consideration of comments received during the scoping process.

The No Action Alternative and Second Basis of Comparison models were developed by Reclamation. Other alternatives were simulated using these two CalSim II simulations and implementing changes in assumptions from either the No Action Alternative or the Second Basis of Comparison.

Alternative 1 and Alternative 4 modeling assumptions are the same as the Second Basis of Comparison, and Alternative 2 modeling assumptions are the same as the No Action Alternative; therefore, the assumptions for those alternatives will not be discussed separately in this document.

CalSim II and DSM2 model representation of the RPAs in the 2008 USFWS and 2009 NMFS Biological Opinions (BOs) is consistent with the model representation developed in 2009 through a coordinated process with the Federal and state agencies.

5A.B2 Assumptions for the No Action Alternative and the Second Basis of Comparison Model Simulations

This section presents the assumptions used in developing the CalSim II and DSM2 model simulations of the No Action Alternative and the Second Basis of Comparison for use in the EIS evaluation.

The assumptions were selected to satisfy National Environmental Policy Act requirements. The basis for these assumptions is described in Chapter 3, Description of Alternatives. Assumptions that were applied to the CalSim II and DSM2 modeling are included in the following section.

The No Action Alternative assumptions represent the continuation of existing policy and management direction at Year 2030 and include implementation of water operations components of the RPA actions specified in the 2008 USFWS BO and 2009 NMFS BO.

The Second Basis of Comparison was developed due to the identified need during scoping comments for a basis of comparison that would occur without the RPAs. The Second Basis of Comparison assumptions do not include most of the RPAs. They do, however, include actions that are constructed (e.g., Red Bluff Pumping Plant), implemented (e.g., Suisun Marsh Habitat Management, Preservation, and Restoration Plan), or legislatively mandated (e.g., San Joaquin River Restoration Plan), and those that have undergone a substantial degree of progress (e.g., Yolo Bypass Salmonid Habitat Restoration and Fish Passage).

The detailed assumptions used in developing CalSim II and DSM2 simulations of the No Action Alternative and Second Basis of Comparison are included in Section 5A.B.5. Additional information is provided in the table footnotes of each table. Table entries and footnotes make reference to supporting appendix sections and other documents.

5A.B2.1 No Action Alternative

The No Action Alternative was developed assuming projected Year 2030 conditions. The No Action Alternative assumptions include existing facilities and ongoing programs that existed as of March 28, 2012, publication date of the Notice of Intent. The No Action Alternative assumptions also include facilities and programs that received approvals and permits by March 2012 because those programs were consistent with the existing management direction of the Notice of Intent. The No Action Alternative models do not include any potential future habitat restoration areas due to the uncertainty on system effects depending on potential locations of such areas within the Delta.

The No Action Alternative includes projected climate change and sea-level rise assumptions corresponding to the Year 2030. Climate change results in the changes in the reservoir and tributary inflows included in CalSim II. The sea-level rise changes result in modified flow salinity relationships in the Delta. The climate change and sea-level rise assumptions at Year 2030 are described in detail in Section 5A.B.4. The CalSim II simulation for the No Action Alternative does not consider any adaptation measures that would result in managing the Central Valley Project (CVP) and State Water Project (SWP) system in a different manner than it is managed today to reduce climate impacts. For example, future changes in reservoir flood control reservation to better accommodate a seasonally changing hydrograph may be considered under future programs, but are not considered under the EIS.

5A.B2.1.1 CalSim II Assumptions for the No Action Alternative Hydrology

5A.B2.1.1.1 Inflows/Supplies

The CalSim II model includes the historical hydrology projected to Year 2030 under the climate change and with projected 2020 modifications for operations upstream of the rim reservoirs.

Level of Development

CalSim II uses a hydrology that is the result of an analysis of agricultural and urban land use and population estimates. The assumptions used for Sacramento Valley land use result from aggregation of historical survey and projected data developed for the California Water Plan Update (Bulletin 160-98). Generally, land-use projections are based on Year 2020 estimates (hydrology serial number 2020D09E); however, the San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by Reclamation. Where appropriate, Year 2020 projections of demands associated with water rights and CVP and SWP water service contracts have been included. Specifically, projections of full buildout are used to describe the American River region demands for water rights and CVP contract supplies, and California Aqueduct and the Delta Mendota Canal CVP and SWP contractor demands are set to full contract amounts.

Demands, Water Rights, and CVP and SWP Contracts

CalSim II demand inputs are preprocessed monthly time series for a specified level of development (e.g., 2020) and according to hydrologic conditions. Demands are classified as CVP project, SWP project, local project, or non-project. CVP and SWP demands are separated into different classes based on the contract type. A description of various demands and classifications included in CalSim II is provided in the 2008 Operations Criteria and Plan (OCAP) Biological Assessment (BA) Appendix D (Reclamation 2008a).

Table 5A.B.1 below includes the summary of the CVP and SWP project demands in thousand acre feet (TAF) included under the No Action Alternative. A detailed description of American River demands assumed under the No Action Alternative is provided in Section 5A.B.7. For SWP entitlement contractors, full Table A demands are assumed every year. The demand assumptions are not modified for changes in climate conditions.

The detailed listing of CVP and SWP contract amounts and other water rights assumptions for the No Action Alternative are included in the delivery specification tables in Section 5A.B.9.

Table 5A.B.1 Summary of CVP and SWP Demands (TAF/Year) under No Action Alternative

Project Contractor Type	North-of-the-Delta	South-of-the-Delta
CVP Contractors		
Settlement/Exchange	2,194	840
Water Service Contracts	935	2,101
Agriculture	378	1,937
M&I	557	164
Refuges	189	281
SWP Contractors		

Project Contractor Type	North-of-the-Delta	South-of-the-Delta
Feather River Service Area	983	–
Table A	114	4,055
Agriculture	0	1,017
M&I	114	3,038

Notes:
Urban demands noted above are for full buildout conditions.
M&I = municipal and industrial

5A.B2.1.1.2 Facilities

CalSim II includes representation of all the existing CVP and SWP storage and conveyance facilities. Assumptions regarding selected key facilities are included in the callout tables in Section 5A.B.5.

CalSim II also represents the flood control weirs such as the Fremont Weir located along the Sacramento River at the upstream end of the Yolo Bypass. Rating curves for the existing weir are used to model the spills over the Fremont Weir. In addition, the No Action Alternative CalSim II model assumes an operable weir notch for the Fremont Weir as modeled in Alternative 4 in the Bay Delta Conservation Plan (BDCP) Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (DWR, Reclamation, USFWS, and NMFS 2013).

The No Action Alternative also includes the Freeport Regional Water Project, located along the Sacramento River near Freeport and the City of Stockton Delta Water Supply Project (30 million gallon/day [mgd] capacity).

A brief description of the key export facilities that are located in the Delta and included under the No Action Alternative run is provided below.

The Delta serves as a natural system of channels to transport river flows and reservoir storage to the CVP and SWP facilities in the south Delta, which export water to the projects' contractors through two pumping plants: CVP's C.W. Jones Pumping Plant and SWP's Harvey O. Banks Pumping Plant. The Jones and Banks pumping plants supply water to agricultural and urban users throughout parts of the San Joaquin Valley, South Lahontan, Southern California, Central Coast, and South San Francisco Bay Area regions.

The Contra Costa Canal and the North Bay Aqueduct supply water to users in the northeastern San Francisco Bay and Napa Valley areas.

Fremont Weir

Fremont Weir is a flood control structure located along the Sacramento River at the head of the Yolo Bypass. To enhance the potential benefits of the Yolo Bypass for various fish species, the Fremont Weir is assumed to be notched to provide increased seasonal floodplain inundation in all of the alternatives simulated for the EIS. It is assumed that an opening in the existing weir and operable gates are constructed at elevation 17.5 feet along with a smaller opening and operable gates at elevation 11.5 feet. Derivation of the rating curve for the elevation 17.5-feet opening used in the CalSim II model is described in Section 5A.B.4 of this appendix. The modeling approach used in CalSim II model to estimate the Fremont Weir spills using the daily patterned Sacramento River flow at Verona is provided in Section 5A.3.3.

CVP C.W. Bill Jones Pumping Plant (Tracy Pumping Plant) Capacity

The Jones Pumping Plant consists of six pumps, including one rated at 800 cubic feet/second (cfs), two at 850 cfs, and three at 950 cfs. Maximum pumping capacity is assumed to be 4,600 cfs with the 400 cfs Delta Mendota Canal (DMC)–California Aqueduct Intertie that became operational in July 2012.

SWP Banks Pumping Plant Capacity

SWP Banks pumping plant has an installed capacity of about 10,668 cfs (two units of 375 cfs, five units of 1,130 cfs, and four units of 1,067 cfs). The SWP water rights for diversions specify a maximum of 10,350 cfs, but the U.S. Army Corps of Engineers (USACE) permit for SWP Banks Pumping Plant allows a maximum pumping of 6,680 cfs. With additional diversions depending on Vernalis flows, the total diversion can go up to 8,500 cfs from December 15 to March 15. Additional capacity of 500 cfs (pumping limit up to 7,180 cfs) is allowed to reduce impact of NMFS BO Action 4.2.1 on the SWP.

Contra Costa Water District (CCWD) Intakes

The Contra Costa Canal originates at Rock Slough (about 4 miles southeast of Oakley) and terminates after 47.7 miles, at Martinez Reservoir. Historically, diversions at the unscreened Rock Slough facility (Contra Costa Canal Pumping Plant No. 1) have ranged from about 50 to 250 cfs. The canal and associated facilities are part of the CVP, but are operated and maintained by the Contra Costa Water District (CCWD). CCWD also operates a diversion on Old River and the Alternative Intake Project (AIP), the new drinking water intake at Victoria Canal, about 2.5 miles east of CCWD's intake on the Old River. CCWD can divert water to the Los Vaqueros Reservoir to store good quality water when available and supply to its customers.

5A.B2.1.1.3 Regulatory Standards

The regulatory standards that govern the operations of the CVP and SWP facilities under the No Action Alternative are briefly described below. Specific assumptions related to key regulatory standards are also outlined below.

Decision 1641 (D-1641) Operations

The State Water Resources Control Board (SWRCB) Water Quality Control Plan (WQCP) and other applicable water rights decisions, as well as other agreements, are important factors in determining the operations of both the CVP and SWP.

The December 1994 Accord committed the CVP and SWP to a set of Delta habitat protective objectives that were incorporated into the 1995 WQCP and later were implemented by Decision 1641 (D-1641). Significant elements in D-1641 include X2 standards, export/inflow (E/I) ratios, Delta water quality standards, real-time Delta Cross Channel operation, and San Joaquin flow standards.

Coordinated Operation Agreement (COA)

The CVP and SWP use a common water supply in the Central Valley of California. Reclamation and California Department of Water Resources (DWR) have built water conservation and water delivery facilities in the Central Valley in order to deliver water supplies to project contractors. The water rights of the projects are conditioned by the SWRCB to protect the beneficial uses of water within each respective project and jointly for the protection of beneficial uses in the Sacramento Valley and the Sacramento-San Joaquin Delta Estuary. The agencies coordinate and operate the CVP and SWP to meet the joint water right requirements in the Delta.

The Coordinated Operation Agreement (COA), signed in 1986, defines the project facilities and their water supplies, sets forth procedures for coordination of operations, identifies formulas for sharing joint responsibilities for meeting Delta standards as they existed in SWRCB Decision 1485 (D-1485), identifies how unstored flow will be shared, sets up a framework for exchange of water and services between the Projects, and provides for periodic review of the agreement.

Central Valley Project Improvement Act (CVPIA) (b)(2) Assumptions

The previous 2008 OCAP BA modeling included a dynamic representation of Central Valley Project Improvement Act (CVPIA) 3406(b)(2) water allocation, management, and related actions (B2). The selection of discretionary actions for use of B2 water in each year was based on a May 2003 U.S. Department of the Interior (the Department) policy decision. The use of B2 water is assumed to continue in conjunction with the USFWS and NMFS BO RPA actions. The CalSim II implementation used for modeling for the EIS does not dynamically account for the use of (b)(2) water, but rather assumes predetermined USFWS BO upstream fish objectives for Clear Creek, Sacramento River below Keswick Dam, and American River below Nimbus Dam, and a pulse period exports limit. Other (b)(2) actions are assumed to be accommodated by USFWS and NMFS BO RPA actions for the American River, Stanislaus River, and Delta export restrictions.

Continued CALFED Agreements

The Environmental Water Account (EWA) was established in 2000 by the CALFED Record of Decision (ROD). The EWA was initially identified as a 4-year cooperative effort intended to operate from 2001 through 2004, but was extended through 2007 by agreement between the EWA agencies. It is uncertain, however, whether the EWA will be in place in the future and what actions and assets it may include. Because of this uncertainty, the EWA has not been included in the current CalSim II implementation.

One element of the EWA available assets is the Lower Yuba River Accord (LYRA) Component 1 water. In the absence of the EWA and implementation in CalSim II, the LYRA Component 1 water is assumed to be transferred to south-of-Delta SWP contractors to help mitigate the impact of the NMFS BO on SWP exports during April and May. An additional 500 cfs of capacity is permitted at

Banks Pumping Plant from July through September to export this transferred water.

USFWS BO Actions

The USFWS BO was released on December 15, 2008, in response to Reclamation's request for formal consultation with the USFWS on the coordinated operations of the CVP and SWP in California. To develop CalSim II modeling assumptions for the RPA documented in this BO, DWR led a series of meetings that involved members of fisheries and project agencies. This group has prepared the assumptions and CalSim II implementations to represent the RPA in the No Action Alternative CalSim II simulation. The following actions of the USFWS BO RPA have been included in the No Action Alternative CalSim II simulations:

- Action 1: Adult Delta Smelt migration and entrainment (RPA Component 1, Action 1 – First Flush)
- Action 2: Adult Delta Smelt migration and entrainment (RPA Component 1, Action 2)
- Action 3: Entrainment protection of larval and juvenile Delta Smelt (RPA Component 2)
- Action 4: Estuarine habitat during Fall (RPA Component 3)
- Action 5: Temporary spring Head of Old River barrier (HORB) and the Temporary Barrier Project (RPA Component 2)

A detailed description of the assumptions that have been used to model each action is included in the technical memorandum "Representation of U.S. Fish and Wildlife Service Biological Opinion Reasonable and Prudent Alternative Actions for CalSim II Planning Studies," prepared by an interagency working group under the direction of the lead agencies. Reference information for this technical memorandum is included in Section 5A.B.10.

NMFS BO Salmon Actions

The NMFS Salmon BO on long-term operations of the CVP and SWP was released on June 4, 2009. To develop CalSim II modeling assumptions for the RPAs documented in this BO, DWR led a series of meetings that involved members of fisheries and project agencies. This group has prepared the assumptions and CalSim II implementations to represent the RPA in the No Action Alternative CalSim II simulations for future planning studies. The following NMFS BO RPAs have been included in the No Action Alternative CalSim II simulations:

- Action I.1.1: Clear Creek spring attraction flows
- Action I.4: Wilkins Slough operations
- Action II.1: Lower American River flow management
- Action III.1.4: Stanislaus River flows below Goodwin Dam

- Action IV.1.2: Delta Cross Channel gate operations
- Action IV.2.1: San Joaquin River flow requirements at Vernalis and Delta export restrictions
- Action IV.2.3: Old and Middle River flow management

For Action I.2.1, which calls for a percentage of years that meet certain specified end-of-September and end-of-April storage and temperature criteria resulting from the operation of Lake Shasta, no specific CalSim II modeling code is implemented to simulate the performance measures identified.

A detailed description of the assumptions that have been used to model each action is included in the technical memorandum "Representation of National Marine Fisheries Service Biological Opinion Reasonable and Prudent Alternative Actions for CalSim II Planning Studies," prepared by an interagency working group under the direction of the lead agencies. This technical memorandum is included in the Section 5A.B.9.

Water Transfers

Lower Yuba River Accord (LYRA)

Acquisitions of Component 1 water under the Lower Yuba River Accord, and use of 500 cfs dedicated capacity at Banks Pumping Plant from July to September are assumed to be used to reduce as much of the impact of the April to May Delta export actions on SWP contractors as possible.

Phase 8 transfers

Phase 8 transfers are not included in the No Action Alternative simulation.

Short-term or Temporary Water Transfers

Short-term or temporary transfers such as Sacramento Valley acquisitions conveyed through Banks Pumping Plant are not included in the No Action Alternative simulation.

5A.B2.1.1.4 Specific Regulatory Assumptions

Lower American Flow Management

The American River Flow Management Standard (ARFMS) is included in the No Action Alternative, the Second Basis of Comparison, and all other alternatives in the EIS (Reclamation 2006).

Delta Outflow (Flow and Salinity)

SWRCB D-1641:

All flow-based Delta outflow requirements per SWRCB D-1641 are included in the No Action Alternative simulation. Similarly, for the February through June period, the X2 standard is included in the No Action Alternative simulation.

USFWS BO (December 2008) Action 4:

USFWS BO Action 4 requires additional Delta outflow to manage X2 in the fall months following Wet and Above Normal years to maintain an average X2 for September and October no greater (more eastward) than 74 kilometers following

Wet years and 81 kilometers following Above Normal years. In November, the inflow to CVP and SWP reservoirs in the Sacramento Basin should be added to reservoir releases to provide an added increment of Delta inflow and to augment Delta outflow up to the fall X2 target. This action is included in the No Action Alternative.

Combined Old and Middle River Flows

USFWS BO restricts south Delta pumping to preserve certain Old and Middle River (OMR) flows in three of its Actions: Action 1 to protect pre-spawning adult Delta Smelt from entrainment during the first flush, Action 2 to protect pre-spawning adults from entrainment and from adverse hydrodynamic conditions, and Action 3 to protect larval Delta Smelt from entrainment. CalSim II simulates these actions to a limited extent.

A brief description of USFWS BO Actions 1 through 3 implementations in CalSim II is as follows: Action 1 is onset based on a turbidity trigger that takes place during or after December. This action requires limit on exports so that the average daily OMR flow is no more negative than -2,000 cfs for a total duration of 14 days, with a 5-day running average no more negative than -2,500 cfs (within 25 percent of the monthly criteria). Action 1 ends after 14 days of duration or when Action 3 is triggered based on a temperature criterion. Action 2 starts immediately after Action 1 and requires a range of net daily OMR flows to be no more negative than -1,250 to -5,000 cfs (with a 5-day running average within 25 percent of the monthly criteria). Action 2 continues until Action 3 is triggered. Action 3 also requires net daily OMR flow to be no more negative than -1,250 to -5,000 cfs based on a 14-day running average (with a simultaneous 5-day running average within 25 percent). Although the range is similar to Action 2, the Action implementation is different. Action 3 continues until June 30, or when water temperature reaches a certain threshold. A more detailed description of the implementation of these actions is provided in Section 5A.B.8.

NMFS BO Action 4.2.3 requires OMR flow management to protect emigrating juvenile winter-run, yearling spring-run, and Central Valley Steelhead within the lower Sacramento and San Joaquin rivers from entrainment into south Delta channels and at the export facilities in the south Delta. This action requires reducing exports from January 1 through June 15 to limit negative OMR flows to -2,500 to -5,000 cfs. CalSim II assumes OMR flows required in NMFS BO are covered by OMR flow requirements developed for Actions 1 through 3 of the USFWS BO as described in Section 5A.B.8.

South Delta Export-San Joaquin River Inflow Ratio

NMFS BO Action 4.2.1 requires exports to be capped at a certain fraction of San Joaquin River flow at Vernalis during April and May while maintaining a health and safety pumping of 1,500 cfs.

Exports at the South Delta Intakes

Exports at Jones and Banks Pumping Plant are restricted to their permitted capacities per SWRCB D-1641 requirements. In addition, the south Delta exports are subject to Vernalis flow-based export limits during April and May as required by Action 4.2.1. An additional 500 cfs pumping is allowed to reduce the impact of NMFS BO Action 4.2.1 on SWP during the July through September period.

Under D-1641 the combined export of the CVP Tracy Pumping Plant and SWP Banks Pumping Plant is limited to a percentage of Delta inflow. The percentage ranges from 35 to 45 percent during February (depending on the January eight river index) and 35 percent during the months of March through June. For the rest of the months, 65 percent of the Delta inflow is allowed to be exported.

A minimum health and safety pumping of 1,500 cfs is assumed from January through June.

Delta Water Quality

The No Action Alternative simulation includes SWRCB D-1641 salinity requirements. However, not all salinity requirements are included as CalSim II is not capable of predicting salinities in the Delta. Instead, empirically based equations and models are used to relate interior salinity conditions with the flow conditions. DWR's Artificial Neural Network (ANN) is used to predict and interpret salinity conditions at the Emmaton, Jersey Point, Rock Slough, and Collinsville stations. Emmaton and Jersey Point standards are for protecting water quality conditions for agricultural use in the western Delta, and they are in effect from April 1 to August 15. The electrical conductivity (EC) requirement at Emmaton varies from 0.45 millimhos per centimeter (mmhos/cm) to 2.78 mmhos/cm, depending on the water year type. The EC requirement at Jersey Point varies from 0.45 to 2.20 mmhos/cm, depending on the water year type. The Rock Slough standard is for protecting water quality conditions for municipal and industrial (M&I) use for water exported through the Contra Costa Canal. It is a year-round standard that requires a certain number of days in a year with chloride concentration less than 150 milligrams per liter. The number of days requirement is dependent upon the water year type. The Collinsville standard is applied during October through May months to protect water quality conditions for migrating fish species, and it varies between 12.5 mmhos/cm in May and 19.0 mmhos/cm in October.

The sea-level rise change assumed at the Year 2030 results in a modified flow-salinity relationship in the Delta. An ANN, which is capable of emulating DSM2 results under the 15-cm sea-level rise condition at the Year 2030 is used to simulate the flow-salinity relationship in CalSim II simulation for the No Action Alternative.

San Joaquin River Restoration Program

Friant Dam releases required by the San Joaquin River Restoration Program are included in the No Action Alternative, the Second Basis of Comparison, and all other alternatives. A more detailed description of the San Joaquin River Restoration Program is presented in Appendix 3A, "No Action Alternative: Central Valley Project and State Water Project Operations".

5A.B2.1.1.5 Operations Criteria

Fremont Weir Operations

To provide seasonal floodplain inundation in the Yolo Bypass, the 17.5- and the 11.5-foot elevation gates are opened between December 1 and March 31. This may extend to May 15, depending on hydrologic conditions and measures to minimize land use and ecological conflicts in the bypass. As a simplification for modeling, the gates are assumed opened until April 30 in all years. The gates are operated to limit maximum spill to 6,000 cfs until the Sacramento River stage reaches the existing Fremont Weir crest elevation. When the river stage is at or above the existing Fremont Weir crest elevation, the notch gates are assumed to be closed. While desired inundation period is on the order of 30 to 45 days, gates are not managed to limit to this range; instead, the duration of the event is governed by the Sacramento River flow conditions. To provide greater opportunity for the fish in the bypass to migrate upstream into the Sacramento River, the 11.5-foot elevation gate is assumed to be open for an extended period between September 15 and June 30. As a simplification for modeling, the period of operation for this gate is assumed to be September 1 to June 30. The spills through the 11.5-foot elevation gate are limited to 100 cfs.

Delta Cross Channel Gate Operations

SWRCB D-1641 Delta Cross Channel (DCC) standards provide for closure of the DCC gates for fisheries protection at certain times of the year. From November through January, the DCC may be closed for up to 45 days. From February 1 through May 20, the gates are closed every day. The gates may also be closed for 14 days during the May 21 through June 15 time period. Reclamation determines the timing and duration of the closures after discussion with USFWS, California Department of Fish and Wildlife (DFW), and NMFS.

NMFS BO Action 4.1.2 requires gates to be operated as described in the BO based on the presence of salmonids and water quality from October 1 through December 14; gates should be closed from December 15 to January 31, except short-term operations to maintain water quality. CalSim II includes the NMFS BO DCC gate operations in addition to the D-1641 gate operations. When the daily flows in the Sacramento River at Wilkins Slough exceed 7,500 cfs (flow assumed to flush salmon into the Delta), DCC is closed for a certain number of days in a month as described in Section B-11. From October 1 to December 14, if the flow trigger condition is such that additional days of DCC gates closure is called for, however water quality conditions are a concern and the DCC gates remain open, then Delta exports are limited to 2,000 cfs for each day in question.

Allocation Decisions

CalSim II includes allocation logic for determining deliveries to north-of-Delta and south-of-Delta CVP and SWP contractors. The delivery logic uses runoff forecast information, which incorporates uncertainty in the hydrology and standardized rule curves (i.e. Water Supply Index versus Demand Index Curve). The rule curves relate forecasted water supplies to deliverable “demand,” and then use deliverable “demand” to assign subsequent delivery levels to estimate the water available for delivery and carryover storage. Updates of delivery levels occur monthly from January 1 through May 1 for the SWP and March 1 through May 1 for the CVP as runoff forecasts become more certain. The south-of-Delta SWP delivery is determined based on water supply parameters and operational constraints. The CVP system wide delivery and south-of-Delta delivery are determined similarly upon water supply parameters and operational constraints with specific consideration for export constraints.

San Luis Operations

CalSim II sets targets for San Luis storage each month that are dependent on the current South-of-Delta allocation and upstream reservoir storage. When upstream reservoir storage is high, allocations and San Luis fill targets are increased. During a prolonged drought when upstream storage is low, allocations and fill targets are correspondingly low. For the No Action Alternative simulation, the San Luis rule curve is managed to minimize situations in which shortages may occur due to lack of storage or exports.

New Melones Operations

In addition to flood control, New Melones is operated for four different purposes: fishery flows, water quality, Bay-Delta flow, and water supply.

Fishery

In the No Action Alternative simulation, fishery flows refer to flow requirements of the 2009 NMFS BO Action III.1.3. These flows are patterned to provide fall attraction flows in October and outmigration pulse flows in spring months (April 15 through May 15 in all years), and total up to 98.9 TAF to 589.5 TAF annually depending on the hydrological conditions based on the New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) (Tables 5A.B.2 through 5A.B.4).

Table 5A.B.2 Annual Fishery Flow Allocation in New Melones

New Melones Water Supply Forecast (TAF)	Fishery Flows (TAF)
0 to 1,399.9	185.3
1,400 to 1,999.9	234.1
2,000 to 2,499.9	346.7
2,500 to 2,999.9	483.7
≥ 3,000	589.5

Table 5A.B.3 Monthly "Base" Flows for Fisheries Purposes Based on the Annual Fishery Volume

Annual Fishery Flow Volume (TAF)	Monthly Fishery Base Flows (cfs)											
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. 1-15	May 16–31	June	July	Aug.	Sept.
98.9	110	200	200	125	125	125	250	250	0	0	0	0
185.3	577.4	200	200	212.9	214.3	200	200	150	150	150	150	150
234.1	635.5	200	200	219.4	221.4	200	500	284.4	200	200	200	200
346.7	774.2	200	200	225.8	228.6	200	1,471.4	1,031.3	363.3	250	250	250
483.7	796.8	200	200	232.3	235.7	1,521	1,614.3	1,200	940	300	300	300
589.5	841.9	300	300	358.1	364.3	1,648.4	2,442.9	1,725	1,100	429	400	400

Table 5A.B.4 April 15 through May 15 "Pulse" Flows for Fisheries Purposes Based on the Annual Fishery Volume

Annual Fishery Flow Volume (TAF)	Fishery Pulse Flows (cfs)	Fishery Pulse Flows (cfs)
	April 15-30	May 1-15
185.3	687.5	666.7
234.1	1,000.0	1,000.0
346.7	1,625.0	1,466.7
483.7	1,212.5	1,933.3
589.5	925.0	2,206.7

Water Quality

Water quality releases include releases to meet the SWRCB D-1641 salinity objectives at Vernalis and the Decision 1422 (D-1422) dissolved oxygen objectives at Ripon.

The Vernalis water quality requirement (SWRCB D-1641) is an EC requirement of 700 and 1000 mmhos/cm for the irrigation (April through August) and non-irrigation (September through March) seasons, respectively.

Additional releases are made to the Stanislaus River below Goodwin Dam if necessary, to meet the D-1422 dissolved oxygen content objective. Surrogate flows representing releases for dissolved oxygen requirement in CalSim II are presented in Table 5A.B.5. The surrogate flows are reduced for critical years where New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) is less than 940 TAF. These flows are met through releases from New Melones without any annual volumetric limit.

Table 5A.B.5 Surrogate Flows for D1422 DO Requirement at Vernalis (TAF)

	Non-Critical Years	Critical Years
January	0.0	0.0
February	0.0	0.0
March	0.0	0.0
April	0.0	0.0
May	0.0	0.0
June	15.2	11.9
July	16.3	12.3
August	17.4	12.3
September	14.8	11.9
October	0.0	0.0
November	0.0	0.0
December	0.0	0.0

Bay-Delta Flows

Bay-Delta flow requirements are defined by D-1641 flow requirements at Vernalis (not including pulse flows during the April 15 through May 16 period). These flows are met through releases from New Melones without any annual volumetric limit.

D-1641 requires the flow at Vernalis to be maintained during the February through June period. The flow requirement is based on the required location of X2 and the San Joaquin Valley water year hydrologic classification (60-20-20 Index), as summarized in Table 5A.B.6.

Table 5A.B.6 Bay-Delta Vernalis Flow Objectives (average monthly cfs)

60-20-20 Index	Flow Required if X2 is West of Chipps Island	Flow required if X2 is East of Chipps Island
Wet	3,420	2,130
Above Normal	3,420	2,130
Below Normal	2,280	1,420
Dry	2,280	1,420
Critical	1,140	710

Water Supply

Water supply refers to deliveries from New Melones to water rights holders (Oakdale Irrigation District [ID] and South San Joaquin ID) and CVP eastside contractors (Stockton East Water District [WD] and Central San Joaquin Water Control District [WCD]).

Water is provided to Oakdale ID and South San Joaquin ID in accordance with their 1988 Settlement Agreement with Reclamation (up to 600 TAF based on hydrologic conditions), limited by consumptive use. The conservation account of up to 200 TAF storage capacity defined under this agreement is not modeled in CalSim II.

Water Supply-CVP Eastside Contractors

Annual allocations are determined using New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) for Stockton East WD and Central San Joaquin WCD (Table 5A.B.7) and are distributed throughout 1 year using monthly patterns.

Table 5A.B.7 CVP Contractor Allocations

New Melones Water Supply Forecast (TAF)	CVP Contractor Allocation (TAF)
<1,400	0
1,400 to 1,800	49
>1,800	155

5A.B2.1.2 DSM2 Assumptions for No Action Alternative

5A.B2.1.2.1 River Flows

For the No Action Alternative DSM2 simulation, the river flows at the DSM2 boundaries are based on the monthly flow time series from CalSim II.

5A.B2.1.2.2 Tidal Boundary

For the No Action Alternative, the tidal boundary condition at Martinez is based on an adjusted astronomical tide normalized for sea-level rise (Ateljevich and Yu 2007) and is modified to account for the sea-level rise using the correlations derived based on three-dimensional (UnTRIM) modeling of the Bay-Delta with sea-level rise at Year 2030.

5A.B2.1.2.3 Water Quality

Martinez EC

For the No Action Alternative, the Martinez EC boundary condition in the DSM2 planning simulation is estimated using the G-model based on the net Delta outflow simulated in CalSim II and the pure astronomical tide (Ateljevich 2001), as modified to account for the salinity changes related to the sea-level rise using the correlations derived based on the three-dimensional (UnTRIM) modeling of the Bay-Delta with sea-level rise at Year 2030.

Vernalis EC

For the No Action Alternative DSM2 simulation, the Vernalis EC boundary condition is based on the monthly San Joaquin EC time series estimated in CalSim II.

5A.B2.1.2.4 Morphological Changes

No additional morphological changes were assumed as part of the No Action Alternative simulation. The DSM2 model and grid developed as part of the 2009 recalibration effort (DWR 2009) was used for the No Action Alternative modeling.

5A.B2.1.2.5 Facilities

Delta Cross Channel

DCC gate operations are modeled in DSM2. The number of days in a month the DCC gates are open is based on the monthly time series from CalSim II.

South Delta Temporary Barriers

South Delta Temporary Barriers are included in the No Action Alternative simulation. The three agricultural temporary barriers located on Old River, Middle River, and Grant Line Canal are included in the model. The fish barrier located at the Head of Old River is also included in the model.

Clifton Court Forebay Gates

Clifton Court Forebay gates are operated based on the Priority 3 operation, where the gate operations are synchronized with the incoming tide to minimize the impacts to low water levels in nearby channels. The Priority 3 operation is described in the 2008 OCAP BA Appendix F Section 5.2 (Reclamation 2008b).

5A.B2.1.2.6 Operations Criteria

South Delta Temporary Barriers

South Delta Temporary Barriers are operated based on San Joaquin flow conditions. Head of Old River Barrier is assumed to be only installed from September 16 to November 30 and is not installed in the spring months, based on the USFWS BO Action 5. The agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16, and the one on Grant Line Canal from June 1. All three agricultural barriers are allowed to operate until November 30. The tidal gates on Old and Middle River agricultural barriers are assumed to be tied open from May 16 to May 31.

Montezuma Salinity Control Gate

The radial gates in the Montezuma Slough Salinity Control Gate Structure are assumed to be tidally operating from October through February each year to minimize propagation of high salinity conditions into the interior Delta.

5A.B2.2 Second Basis of Comparison

The Second Basis of Comparison was developed assuming projected Year 2030 conditions. The Second Basis of Comparison assumptions include CVP and SWP operations prior to the RPAs, except for the ones that are constructed (e.g., Red Bluff Pumping Plant), implemented, legislatively mandated (e.g., San Joaquin River Restoration Plan), or that have undergone a substantial degree of progress (e.g., Yolo Bypass Salmonid Habitat and Fish Passage). Similar to the No Action Alternative, the Second Basis of Comparison models do not include any potential future habitat restoration areas due to the uncertainty of system effects depending on potential locations of such areas within the Delta.

The Second Basis of Comparison includes projected climate change and sea-level rise assumptions corresponding to the Year 2030. Change in climate results in the changes in the reservoir and tributary inflows are included in CalSim II. The sea-level rise changes result in modified flow-salinity relationships in the Delta. The climate change and sea-level rise assumptions at Year 2030 are described in detail in Section 5A.B.2. CalSim II simulation of the Second Basis of Comparison does not consider any adaptation measures that would result in managing the CVP and SWP system in a different manner than today to reduce climate impacts. For example, future changes in reservoir flood control reservation to better accommodate a seasonally changing hydrograph may be considered under future programs, but are not considered under the EIS.

5A.B2.2.1 CalSim II Assumptions for Second Basis of Comparison

5A.B2.2.1.1 Hydrology

Inflows/Supplies

Consistent with the No Action Alternative simulation.

Level of Development

Consistent with the No Action Alternative simulation.

Demands, Water Rights, CVP and SWP Contracts

Consistent with the No Action Alternative simulation.

5A.B2.2.1.2 Facilities

Facilities assumptions under the Second Basis of Comparison are consistent with the No Action Alternative simulation.

Fremont Weir

Consistent with the No Action Alternative simulation.

CVP C.W. Bill Jones Pumping Plant (Tracy Pumping Plant) Capacity

Consistent with the No Action Alternative simulation.

SWP Banks Pumping Plant (Banks Pumping Plant) Capacity

Consistent with the No Action Alternative simulation.

CCWD Intakes

Consistent with the No Action Alternative simulation.

5A.B2.2.1.3 Regulatory Standards

The regulatory standards that govern the operations of the CVP and SWP facilities under the Second Basis of Comparison are briefly described below. Specific assumptions related to key regulatory standards are also outlined below.

D-1641 Operations

D-1641 Operations simulated under the Second Basis of Comparison are consistent with the No Action Alternative simulation.

Significant elements of D-1641 include X2 standards, E/I) ratios, Delta water quality standards, real-time Delta Cross Channel operation, and San Joaquin flow standards.

Coordinated Operation Agreement (COA)

Consistent with the No Action Alternative simulation.

CVPIA (b)(2) Assumptions

Consistent with the No Action Alternative simulation.

Continued CALFED Agreements

Consistent with the No Action Alternative simulation.

USFWS BO Actions

The 2008 USFWS BO RPAs are not implemented under the Second Basis of Comparison.

NMFS BO Actions

The 2009 NMFS BO RPAs are not implemented under the Second Basis of Comparison.

Water Transfers

Water transfers assumptions simulated under the Second Basis of Comparison are consistent with the No Action Alternative simulation.

5A.B2.2.1.4 Specific Regulatory Assumptions

Lower American Flow Management

Consistent with the No Action Alternative simulation.

Delta Outflow (Flow and Salinity)

SWRCB D-1641

Consistent with the No Action Alternative simulation.

USFWS BO (December 2008) Action 4

USFWS BO Action 4 is not included under the Second Basis of Comparison.

Combined Old and Middle River Flows

No requirement for minimum combined Old and Middle River flows is included in the Second Basis of Comparison.

South Delta Export-San Joaquin River Inflow Ratio

NMFS BO Action 4.2.1 requires exports to be capped at a certain fraction of San Joaquin River flow at Vernalis during April and May while maintaining a health and safety pumping of 1,500 cfs.

Exports at the South Delta Intakes

The Second Basis of Comparison, similar to the No Action Alternative, includes export restrictions at Jones and Banks Pumping Plant per SWRCB D-1641 requirements.

Under D-1641, the combined export of the CVP Tracy Pumping Plant and SWP Banks Pumping Plant is limited to a percentage of Delta inflow. The percentage ranges from 35 percent to 45 percent during February depending on the January eight river index and is 35 percent during March through June months. For the rest of the months, 65 percent of the Delta inflow is allowed to be exported.

Further limitations on south Delta exports due to NMFS BO Action 4.2.1 are not included under the Second Basis of Comparison.

A minimum health and safety pumping of 1,500 cfs is assumed from January through June.

Delta Water Quality

Consistent with the No Action Alternative simulation.

The sea-level rise change assumed at the Year 2030 results in a modified flow-salinity relationship in the Delta. An ANN, which is capable of emulating the DSM2 model results under the 15-cm sea-level rise condition at the Year 2030, is used to simulate the flow-salinity relationship in CalSim II simulation for the Second Basis of Comparison.

San Joaquin River Restoration Program

Consistent with the No Action Alternative simulation.

5A.B2.2.1.5 Operations Criteria

Fremont Weir Operations

Consistent with the No Action Alternative simulation.

Delta Cross Channel Gate Operations

SWRCB D-1641 DCC standards provide for closure of the DCC gates for fisheries protection at certain times of the year. From November through January, the DCC may be closed for up to 45 days. From February 1 through May 20, the gates are closed. The gates may also be closed for 14 days during the May 21 through June 15 time period. Reclamation determines the timing and duration of the closures after discussion with USFWS, California Department of Fish and Wildlife (DFW), and NMFS.

The NMFS BO Action 4.1.2 that specifies DCC operations is not included in the Second Basis of Comparison.

Allocation Decisions

The rules and assumptions used for allocation decisions under the Second Basis of Comparison are consistent with the No Action Alternative simulation.

San Luis Operations

The rules and assumptions used for San Luis operations under the Second Basis of Comparison are consistent with the No Action Alternative simulation.

New Melones Operations

In addition to flood control, New Melones is operated for four different purposes: fishery flows, water quality, Bay-Delta flow, and water supply.

Fishery

Because the Second Basis of Comparison represents regulatory environment prior to the 2008 USFWS and 2009 NMFS BOs, fishery flows in this simulation refer to flow requirements of the 1997 New Melones Interim Plan of Operations (IPO). These flows include an outmigration pulse flow in April and May. Total annual volume dedicated to fishery flows vary from 0 to 467 TAF depending on the hydrologic conditions defined by the New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) (Tables 5A.B.8 through 5A.B.10).

Table 5A.B.8 Annual Fishery Flow Allocation in New Melones

New Melones Water Supply Forecast (TAF)	Fishery Flows (TAF)
0	0
1,400	98
2,000	125
2,500	345
3,000	467
6,000	467

Table 5A.B.9 Monthly "Base" Flows for Fisheries Purposes Based on the Annual Fishery Volume

Annual Fishery Flow Volume (TAF)	Monthly Fishery Base Flows (cfs)											
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr. 1-15	May 16–31	June	July	Aug.	Sept.
98.4	110	200	200	125	125	125	250	250	0	0	0	0
243.3	200	250	250	250	250	250	300	300	200	200	200	200
253.8	250	275	275	275	275	275	300	300	200	200	200	200
310.3	250	300	300	300	300	300	900	900	250	250	250	250
410.2	350	350	350	350	350	350	1,500	1,500	800	300	300	300
466.8	350	400	400	400	400	400	1,500	1,500	1,500	300	300	300

Table 5A.B.10 April 15 through May 15 "Pulse" Flows for Fisheries Purposes Based on the Annual Fishery Volume

Annual Fishery Flow Volume (TAF)	Fishery Pulse Flows (CFS) April 15 – May 15
0	0
98	500
125	1,500
345	1,500
467	1,500
467	1,500

Water Quality

Consistent with the No Action Alternative simulation.

Bay-Delta Flows

Consistent with the No Action Alternative simulation.

Water Supply

Consistent with the No Action Alternative simulation.

Water Supply-CVP Eastside Contractors

Consistent with the No Action Alternative simulation.

5A.B2.2.2 DSM2 Assumptions for Second Basis of Comparison

5A.B2.2.2.1 River Flows

Consistent with the No Action Alternative simulation.

5A.B2.2.2.2 Tidal Boundary

Consistent with the No Action Alternative simulation.

5A.B2.2.2.3 Water Quality

Martinez EC

Consistent with the No Action Alternative simulation.

Vernalis EC

Consistent with the No Action Alternative simulation.

5A.B2.2.2.4 Morphological Changes

Consistent with the No Action Alternative simulation.

5A.B2.2.2.5 Facilities

Delta Cross Channel

Delta Cross Channel gate operations are modeled in DSM2. The number of days in a month the DCC gates are open is based on the monthly time series from

CalSim II. DCC gate operations in Second Basis of Comparison are different than those in the No Action Alternative simulation as described previously in this section.

South Delta Temporary Barriers

South Delta Temporary Barriers are included similar to the No Action Alternative. However, the operation of the HORB is different in the Second Basis of Comparison as explained in the following section.

Clifton Court Forebay Gates

Consistent with the No Action Alternative simulation.

5A.B2.2.2.6 Operations Criteria

South Delta Temporary Barriers

Similar to the No Action Alternative simulation with the exception that the USFWS BO Action 5 is not included in the Second Basis of Comparison. Therefore, HORB is installed in spring months (April 1 through May 31) in addition to fall months (September 16 through November 30).

Montezuma Salinity Control Gate

Consistent with the No Action Alternative simulation.

5A.B3 Assumptions for Alternatives Model Simulations

This section describes the CalSim II and DSM2 modeling assumptions for the Alternatives 3 and 5. Alternative 3 is generally consistent with the Second Basis of Comparison, and Alternative 5 is generally consistent with the No Action Alternative. Assumptions that are different from the Second Basis of Comparison for Alternative 3 and from the No Action Alternative for Alternative 5 are described in detail below. Other assumptions that are consistent with the respective basis of comparison, are provided in short form for completeness.

CVP and SWP operational assumptions are identical under the No Action Alternative and Alternative 2; and under the Second Basis of Comparison and Alternatives 1 and 4. Therefore, separate discussions related to assumptions for Alternatives 1, 2, and 4 are not included in this appendix.

5A.B3.1 Alternative 3

Alternative 3 model assumptions generally follow the Second Basis of Comparison simulation with the exception of the Old and Middle River Flows requirement, and a different set of assumptions for the New Melones operation that are based on the Oakdale ID’s 2012 proposal [OID et al. 2012]. Alternative 3 includes other assumptions that are not modeled such as predation control, trap and haul fish passage, trap at head of Old River and barge to Chipps Island, and ocean harvest limits for Central Valley Chinook Salmon. Detailed descriptions of

Alternative 3 assumptions are described in the Chapter 3, Description of Alternatives.

Alternative 3 CalSim II and DSM2 assumptions that are different from the Second Basis of comparison are described below.

5A.B3.1.1 CalSim II Assumptions for Alternative 3

5A.B3.1.1.1 Demands, Water Rights, CVP and SWP Contracts

Similar to the Second Basis of Comparison and the No Action Alternative.

5A.B3.1.1.2 Facilities

Fremont Weir

Consistent with the Second Basis of Comparison and the No Action Alternative.

Banks Pumping Plant Capacity

Consistent with the Second Basis of Comparison and the No Action Alternative.

Jones Pumping Plant Capacity

Consistent with the Second Basis of Comparison and the No Action Alternative.

5A.B3.1.1.3 Regulatory Standards

Delta Outflow Index (Flow and Salinity)

SWRCB D-1641

Consistent with the Second Basis of Comparison and the No Action Alternative.

USFWS BO Action 4

Consistent with the Second Basis of Comparison.

Combined Old and Middle River Flows

The combined Old and Middle River (OMR) flow criteria are based on concepts addressed in the 2008 USFWS and 2009 NMFS BOs related to adaptive restrictions for temperature, turbidity, salinity, and presence of Delta Smelt. The OMR flow criteria in the Alternative 3 are similar to those of the No Action Alternative, with the exception of the following changes:

- Action 1 that protects the pre-spawning adult Delta Smelt from entrainment is modified to limit exports such that the average daily OMR flow is no more negative than -3,500 cfs for a total duration of 14 days, with a 5-day running average no more negative than 4,375 cfs (within 25 percent of the monthly criteria).
- Action 2 that protects adult Delta Smelt within the Delta from entrainment is modified to limit exports so that the average daily OMR flow is no more negative than -3,500 or -7,500 cfs depending on the previous month’s ending X2 location (-3,500 cfs if X2 is east of Roe Island, or -7,500 cfs if X2 is west of Roe Island), with a 5-day running average within 25 percent of the monthly criteria (no more negative than -4,375 cfs if X2 is east of Roe Island, or -9,375 cfs if X2 is west of Roe Island).

- Action 3 that protects larval and juvenile Delta Smelt from entrainment is modified to limit exports so that the average daily OMR flow is no more negative than -1,250, 3,500, or 7,500 cfs, depending on the previous month's ending X2 location (-1,250 cfs if X2 is east of Chipps Island, -7,500 cfs if X2 is west of Roe Island, or -3,500 cfs if X2 is between Chipps and Roe Island, inclusively), with a 5-day running average within 25 percent of the monthly criteria (no more negative than -1,562 cfs if X2 is east of Chipps Island, -9,375 cfs if X2 is west of Roe Island, or -4,375 cfs if X2 is between Chipps and Roe Island).
- Temporal off-ramp for Action 3 is assumed to occur no later than June 15 (changed from June 30).
- An off-ramp based on QWest (westerly flow on the San Joaquin River past Jersey Point calculated as a combination of San Joaquin River at Blind Point, Three Mile Slough and Dutch Slough) is assumed. If Qwest is greater than 12,000 cfs, then the Action 3 is discontinued. Because Action 2 is defined to occur between Actions 1 and 3, the Qwest off ramp also results in discontinuation of Action 2 if it happens before Action 3 is triggered. In monthly CalSim II modeling, the previous month's QWest value is used for determining the off-ramp, therefore if the off-ramp occurs within the previous month, RPA Actions in that previous month are assumed to continue until the end of the month.

South Delta Export-San Joaquin River Inflow Ratio

Consistent with the Second Basis of Comparison.

Exports at the South Delta Intakes

The south Delta exports in Alternative 3 are operated per SWRCB D-1641. Similar to the Second Basis of comparison, the combined export of the CVP Tracy Pumping Plant and SWP Banks Pumping Plant is limited to a percentage of the total Delta inflow, based on the export-inflow ratio specified under D-1641.

Delta Water Quality

Alternative 3 includes SWRCB D-1641 salinity requirements consistent with the Second Basis of Comparison and the No Action Alternative.

San Joaquin River Restoration Program

Consistent with the No Action Alternative simulation.

5A.B3.1.1.4 Operations Criteria

Fremont Weir Operations

Consistent with the Second Basis of Comparison and the No Action Alternative.

Delta Cross Channel Gate Operations

Consistent with the Second Basis of Comparison.

Allocation Decisions

The rules and assumptions used for determining the allocations in the Alternative 3 CalSim II simulation are similar to the No Action Alternative simulation.

San Luis Operations

The rules and assumptions used for San Luis operations under the Alternative 3 are consistent with the No Action Alternative and the Second Basis of Comparison simulations.

New Melones Operations

In addition to flood control, New Melones is operated for four different purposes: fishery flows, water quality, Bay-Delta flow, and water supply.

Fishery

In the Alternative 3 simulation, fishery flows are modeled per Oakdale Irrigation District's 2012 proposal (OID et al. 2012). These flows include an outmigration pulse flow from April 1 through May 15. Total annual volume dedicated to fishery flows vary from 174 to 318 TAF depending on the hydrologic conditions defined by the New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) (Tables 5A.B.11 through 5A.B.13).

Table 5A.B.11 Annual Fishery Flow Allocation in New Melones

New Melones Water Supply Forecast (TAF)	Fishery Base Flows (TAF)
0 to 1,800	174
1,801 to 2,500	235
>2,500	318

Table 5A.B.12 Monthly "Base" Flows for Fisheries Purposes Based on the Annual Fishery Volume

Annual Fishery Flow Volume (TAF)	Monthly Fishery Base Flows (cfs)											
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
235	252	300	300	150	173	200	200	200	200	200	200	200
318	300	300	300	300	300	300	1,500	850	200	200	200	200

Table 5A.B.13 April 1 through May 31 "Pulse" Flows for Fisheries Purposes Based on the Annual Fishery Volume

New Melones Water Supply Forecast (TAF)	Fishery Pulse Flows (CFS) April 1–May 31
0 to 1,800	750
1,801 to 2,500	1,500
>2,500	1,500

Water Quality

No D-1641 water quality releases are assumed in Alternative 3.

D-1422 dissolved oxygen compliance point is moved to the Orange Blossom Bridge under the Alternative 3. However, for modeling purposes, surrogate flows in CalSim II are assumed to be the same as those to meet the Ripon compliance point (surrogate flows consistent with the Second Basis of Comparison and the No Action Alternative).

Bay-Delta Flows

No D-1641 Bay-Delta flow requirements are assumed under the Alternative 3.

Water Supply

Water supply refers to deliveries from New Melones to water rights holders (Oakdale ID and South San Joaquin ID) and CVP eastside contractors (Stockton East WD and Central San Joaquin WCD).

Water is provided to Oakdale ID and South San Joaquin ID in accordance with their 1988 Settlement Agreement with Reclamation (up to 600 TAF based on hydrologic conditions), limited by consumptive use. The conservation account of up to 200 TAF storage capacity defined under this agreement is not modeled in CalSim II.

Water Supply-CVP Eastside Contractors

Annual allocations are determined using New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) for Stockton East WD and Central San Joaquin WCD (Table 5A.B.14) and are distributed throughout 1 year using monthly patterns.

Table 5A.B.14 CVP Contractor Allocations

New Melones Water Supply Forecast (TAF)	CVP Contractor Allocation (TAF)
<1,400	10
1,400 to 1,800	59
>1,800	155

5A.B3.1.2 DSM2 Assumptions for Alternative 3

5A.B3.1.2.1 Tidal Boundary

Consistent with the Second Basis of Comparison and the No Action Alternative.

5A.B3.1.2.2 Water Quality

Martinez EC

Consistent with the Second Basis of Comparison and the No Action Alternative.

5A.B3.1.2.3 Morphological Changes

Consistent with the Second Basis of Comparison and the No Action Alternative.

5A.B3.1.2.4 Facilities

South Delta Temporary Barriers

Consistent with the Second Basis of Comparison and the No Action Alternative.

5A.B3.1.2.5 Operations Criteria

South Delta Temporary Barriers

Consistent with the No Action Alternative, South Delta Temporary Barriers are operated based on San Joaquin flow conditions. Head of Old River Barrier is assumed to be only installed from September 16 to November 30 and is not installed in the spring months, based on the USFWS BO Action 5. The agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16, and the one on Grant Line Canal from June 1. All three agricultural barriers are allowed to operate until November 30. The tidal gates on Old and Middle River agricultural barriers are assumed to be tied open from May 16 to May 31.

Montezuma Salinity Control Gate

Consistent with the Second Basis of Comparison and the No Action Alternative.

5A.B3.2 Alternative 5

Alternative 5 model assumptions generally follow the No Action Alternative simulation with the exception of more positive Old and Middle River Flows requirement in April and May, and D 1641 pulse flows at Vernalis. Detailed descriptions of Alternative 5 assumptions are described in Chapter 3, Description of Alternatives.

Alternative 5 CalSim II and DSM2 assumptions that are different from the No Action Alternative are described below.

5A.B3.2.1 CalSim II Assumptions for Alternative 5

5A.B3.2.1.1 Demands, Water Rights, CVP and SWP Contracts

Similar to the Second Basis of Comparison and the No Action Alternative.

5A.B3.2.1.2 Facilities

Fremont Weir

Consistent with the No Action Alternative and the Second Basis of Comparison.

Banks Pumping Plant Capacity

Consistent with the No Action Alternative and the Second Basis of Comparison.

Jones Pumping Plant Capacity

Consistent with the No Action Alternative and the Second Basis of Comparison.

5A.B3.2.1.3 Regulatory Standards

Delta Outflow Index (Flow and Salinity)

SWRCB D-1641

All flow-based Delta outflow requirements included in SWRCB D-1641 are consistent with the No Action Alternative. Similarly, for the February through June period, the X2 standard is included consistent with the No Action Alternative.

USFWS BO Action 4

USFWS BO Action 4 requires additional Delta outflow to manage X2 in the fall months following the Wet and Above Normal years. This action is included in Alternative 5. The assumptions for this action under Alternative 5 are consistent with the No Action Alternative.

Combined Old and Middle River Flows

The Alternative 5 OMR flow requirement is similar to the No Action Alternative with the exception of positive OMR flows in April and May in all years.

South Delta Export-San Joaquin River Inflow Ratio

Consistent with the No Action Alternative.

Exports at the South Delta Intakes

Similar to the No Action Alternative, with the exception that the minimum health and safety pumping of 1,500 cfs is not assumed for the months of April and May under Alternative 5.

Delta Water Quality

Consistent with the No Action Alternative and the Second Basis of Comparison.

San Joaquin River Restoration Program

Consistent with the No Action Alternative simulation.

5A.B3.2.1.4 Operations Criteria

Fremont Weir Operations

Consistent with the No Action Alternative and the Second Basis of Comparison.

Delta Cross Channel Gate Operations

Consistent with the No Action Alternative and the Second Basis of Comparison.

Allocation Decisions

The rules and assumptions used for allocation decisions under Alternative 5 are consistent with the No Action Alternative simulation.

San Luis Operations

The rules and assumptions used for San Luis Operations under Alternative 5 are consistent with the No Action Alternative simulation.

New Melones Operations

New Melones operations assumed in Alternative 5 is similar to the No Action Alternative with the exception of D-1641 Vernalis pulse flows.

Fishery

Similar to the No Action Alternative simulation, fishery flows refer to flow requirements of the 2009 NMFS BO Action III.1.3 under Alternative 5.

Water Quality

Consistent with the No Action Alternative.

Bay-Delta Flows

Bay-Delta flow requirements are defined by D-1641 flow requirements at Vernalis (not including pulse flows during the April 15 through May 16 period). These flows are met through releases from New Melones without any annual volumetric limit.

D-1641 requires flows at Vernalis to be maintained during the February through June period and is based on the required location of X2 and the San Joaquin Valley water year hydrologic classification (60-20-20 Index) as summarized in Table 5A.B.15.

Table 5A.B.15 Bay-Delta Vernalis Flow Objectives (average monthly cfs)

60-20-20 Index	Flow Required if X2 is West of Chipps Island	Flow required if X2 is East of Chipps Island
Wet	3,420	2,130
Above Normal	3,420	2,130
Below Normal	2,280	1,420
Dry	2,280	1,420
Critical	1,140	710

In addition to the D-1641 “base” flows, D-1641 pulse flows for the April 15 through May 15 period are also simulated under Alternative 5 (Table 5A.B.16).

Table 5A.B.16 Bay-Delta Vernalis Flow Objectives (average monthly cfs)

60-20-20 Index	Pulse Flow Required if X2 is West of Chipps Island	Pulse Flow required if X2 is East of Chipps Island
Wet	8,620	7,330
Above Normal	7,020	5,730
Below Normal	5,480	4,620
Dry	4,880	4,020
Critical	3,540	3,110

Water Supply

Water supply refers to deliveries from New Melones to water rights holders (Oakdale ID and South San Joaquin ID) and CVP eastside contractors (Stockton East WD and Central San Joaquin WCD).

Water is provided to Oakdale ID and South San Joaquin ID in accordance with their 1988 Settlement Agreement with Reclamation (up to 600 TAF based on hydrologic conditions), limited by consumptive use. The conservation account of up to 200 TAF storage capacity defined under this agreement is not modeled in CalSim II.

Water Supply-CVP Eastside Contractors

Annual allocations are determined using New Melones water supply forecast (the end-of-February New Melones Storage, plus the March through September forecast of inflow to the reservoir) for Stockton East WD and Central San Joaquin WCD (Table 5A.B.17), and are distributed throughout 1 year using monthly patterns.

Table 5A.B.17 CVP Contractor Allocations

New Melones Water Supply Forecast (TAF)	CVP Contractor Allocation (TAF)
<1,400	0
1,400 to 1,800	49
>1,800	155

5A.B3.2.2 DSM2 Assumptions for Alternative 5

5A.B3.2.2.1 Tidal Boundary

Consistent with the No Action Alternative and the Second Basis of Comparison.

5A.B3.2.2.2 Water Quality

Martinez EC

Consistent with the No Action Alternative and the Second Basis of Comparison.

5A.B3.2.2.3 Morphological Changes

Consistent with the No Action Alternative and the Second Basis of Comparison.

5A.B3.2.2.4 Facilities

South Delta Temporary Barriers

Consistent with the No Action Alternative.

5A.B3.2.2.5 Operations Criteria

South Delta Temporary Barriers

Consistent with the No Action Alternative and the Second Basis of Comparison.

Montezuma Salinity Control Gate

Consistent with the No Action Alternative and the Second Basis of Comparison.

5A.B3.3 Summary of Alternatives Assumptions

A summary table of the EIS alternatives' assumptions is provided below for quick reference (Table 5A.B.18).

1 **Table 5A.B.18 EIS Alternatives CalSim II Model Key Modeling Assumptions Summary**

		No Action Alternative and Alternative 2	Alternatives 1 and 4 and Second Basis of Comparison	Alternative 3	Alternative 5
USFWS BO RPAs	Action 1 – First Flush	Represented	Not Represented	Modified to be operationally less restrictive (-7,500 cfs limit)	Represented
	Action 2 – Adult Protection OMR	Represented	Not Represented	Modified to be operationally less restrictive (-7,500 cfs limit)	Represented
	Action 3 – Juvenile Protection OMR	Represented	Not Represented	Modified to be operationally less restrictive (-7,500 cfs limit)	Modified to be operationally more restrictive
	Action 4 – Fall X2	Represented	Not Represented	Not Represented	Represented
	Action 5 – Spring HORB	Represented	Not Represented	Represented	Represented
NMFS BO RPAs	I.1.1 – Clear Creek Spring Attraction	Represented	Not Represented	Not Represented	Represented
	I.3.1, I.3.2, I.3.3 – Red Bluff Ops	Represented	Represented	Represented	Represented
	I.7 – Yolo Bypass Modification	Represented using BDCP Modeling Logic	Represented using BDCP Modeling Logic	Represented using BDCP Modeling Logic	Represented using BDCP Modeling Logic
	III.1.3 – Goodwin Flow Schedule	Represented per Appendix 2E Table	Fishery Flows from 1997 IPO	Fishery Flows from OID/SSJID Plan (2012)	Represented per Appendix 2E Table

		No Action Alternative and Alternative 2	Alternatives 1 and 4 and Second Basis of Comparison	Alternative 3	Alternative 5
NMFS BO RPAs	IV.1.2 – DCC Ops	Represented per RPA	Represented per D-1641	Represented per D-1641	Represented per RPA
	IV.2.1 – I/E Ratio	Represented	Not Represented	Not Represented	Represented
	IV.2.3 – OMR	See USFWS Actions 1-3	See USFWS Actions 1-3	See USFWS Actions 1-3	See USFWS Actions 1-3
Spring Delta Outflow		D-1641	D-1641	D-1641	Increased from D-1641 due to OMR Action in April and May
Releases from Goodwin	Fishery Flows	NMFS RPA III.1.3 (Appendix 2E)	Fishery Flows from 1997 Interim Plan of Operations	Fishery Flows from OID/SSJID Proposal (2012)	NMFS RPA III.1.3 (Appendix 2E)
	Vernalis Base Flow	D-1641 – no cap	D-1641 – no cap	N/A	D-1641 – no cap
	Vernalis Pulse Flow	N/A	N/A	N/A	D-1641 – no cap
	Vernalis Salinity	D-1641—no cap	D-1641—no cap	N/A	D-1641 – no cap
	Dissolved Oxygen	D-1641 standard at Ripon	D-1641 standard at Ripon	D-1641 standard at Orange Blossom Bridge (no model changes)	D-1641 standard at Ripon
OID/SSJID Deliveries		1988 Agreement limited by consumptive use, no conservation account	1988 Agreement limited by consumptive use, no conservation account	1988 Agreement limited by consumptive use, no conservation account	1988 Agreement limited by consumptive use, no conservation account
CVP Contractor Allocations		Based on New Melones Index: <1,400 = 0 TAF 1,400-1,800 = 49 TAF >1,800 = 155 TAF	Based on New Melones Index: <1,400 = 0 TAF 1,400-1,800 = 49 TAF >1,800 = 155 TAF	Based on New Melones Index: <1,400 = 0 TAF 1,400-1,800 = 59 TAF >1,800 = 155 TAF	Based on New Melones Index: <1,400 = 0 TAF 1,400-1,800 = 49 TAF >1,800 = 155 TAF

5A.B4 Timeframe of Evaluation

The No Action Alternative, the Second Basis of Comparison, and the other alternatives are simulated at Year 2030 conditions. Changes in climate conditions and sea level (15-cm rise) were assumed at Year 2030 and are consistent within all alternatives.

Using this approach, the climate scenario was derived based on sampling of the ensemble of global climate model projections rather than one single realization or a handful of individual realizations. The Q5 scenario that represents the central tendency of the climate projections was selected for the EIS analysis.

Simulation of climate change and sea-level rise effects in CalSim II modeling of the alternatives is accomplished by:

- Incorporating the modified CalSim II inputs reflecting climate change for parameters including, inflows, water year types, runoff forecasts, and Delta water temperature.
- Incorporating modified ANNs to reflect the flow-salinity response under sea level change.

Simulation of the tidal marsh restoration areas and sea-level rise effects in DSM2 modeling of the alternatives is accomplished by:

- Incorporating consistent grid changes identified in corroboration simulation into the DSM2 model for the sea-level rise condition.
- Modifying the downstream stage and EC boundary conditions at Martinez in the DSM2 model using the appropriate regression equation for the 15-cm sea-level rise. The adjusted astronomical tide specified at Martinez in the alternatives is modified using the correlations shown in Table 5A.B.19. The Martinez EC boundary condition resulting from the G-model is modified using the correlations specified in the Table 5A.B.19.

Table 5A.B.19 Correlation to Transform Baseline Martinez Stage and EC for use in Alternatives DSM2 Simulations at Year 2030

Scenario	Martinez Stage (feet NGVD 29)		Martinez EC (µS/cm)	
	Correlation	Lag (min)	Correlation	Lag (min)
Year 2030 (15cm SLR)	Y = 1.0033*X + .47	-1	Y = 0.9954* X + 556.3	0

Notes:

X = Baseline Martinez stage or EC

Y = Alternative Martinez stage or EC

5A.B5 No Action Alternative and Second Basis of Comparison Callout Tables

5A.B5.1 CalSim II Assumptions

This subsection provides a summary of the CalSim II assumptions for the No Action Alternative and the Second Basis of Comparison (Table 5A.B.20).

5A.B5.2 DSM2 Assumptions

This subsection provides a summary of the DSM2 assumptions for the No Action Alternative and the Second Basis of Comparison (Table 5A.B.21).

5A.B6 American River Demands

This section includes the information in the "Bay Delta Conservation Plan EIR/EIS Project—CalSim II Baselines Models—American River Assumptions," dated February 17, 2010.

5A.B6.1 Introduction

The following is a summary of the assumptions that are EIS alternatives. For specific diversion-related assumptions, see the following section.

- American River Flow Management is included, as required by the June 2009 NMFS Biological Opinion Action II.1.
- Water rights and CVP demands are assumed at a full buildout condition with CVP contracts at full contract amounts
- Placer County Water Agency (PCWA) Pump Station is included at full demand
- Freeport Regional Water Project (FRWP) is included at full demand (East Bay Municipal Utility District (EBMUD) CVP contracts and SCWA CVP contract and new appropriative water rights and water acquisitions as modeled in the FRWP EIS/R)
    - Sacramento River Water Reliability Project is not included
    - Sacramento Area Water Forum is not included (dry year "wedge" reductions and mitigation water releases are not included)

5A.B6.2 Summary of Demands

The Table 5A.B.22 below summarizes the water rights, CVP contract amounts, and demand amounts for each diverter in the American River system in the No Action Alternative and the Second Basis of Comparison.

1 **Table 5A.B.20 CalSim II Inputs – Assumptions**

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Planning horizon[a]	Year 2030	Same
Demarcation date[a]	March 2012	Same
Period of simulation	82 years (1922-2003)	Same
HYDROLOGY		
Inflows/Supplies	Historical with modifications for operations upstream of rim reservoirs and with changed climate at Year 2030	Same
Level of development	Projected 2030 level[c]	Same
DEMANDS, WATER RIGHTS, CVP and SWP CONTRACTS		
Sacramento River Region (excluding American River)		
CVP[d]	Land-use based, full buildout of contract amounts	Same
SWP (FRSA)[e]	Land-use based, limited by contract amounts	Same
Non-project	Land-use based, limited by water rights and SWRCB Decisions for Existing Facilities	Same
Antioch Water Works	Pre-1914 water right	Same
Federal refuges[f]	Firm Level 2 water needs	Same
Sacramento River Region—American River[g]		
Water rights	Year 2025, full water rights	Same
CVP	Year 2025, full contracts, including Freeport Regional Water Project	Same
San Joaquin River Region[h]		
Friant Unit	Limited by contract amounts, based on current allocation policy	Same
Lower Basin	Land-use based, based on district level operations and constraints	Same

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Stanislaus River[i]	Land-use based, Revised Operations Plan[t] and NMFS BO (June 2009) Actions III.1.2 and III.1.3[v]	Land-use based, Revised Operations Plan[t]
San Francisco Bay, Central Coast, Tulare Lake and South Coast Regions (CVP and SWP project facilities)		
CVP[d]	Demand based on contract amounts	Same
CCWD[j]	195 TAF/year CVP contract supply and water rights	Same
SWP[e,k]	Demand based on Table A amounts	Same
Article 56	Based on 2001-2008 contractor requests	Same
Article 21	MWD demand up to 200 TAF/month from December to March subject to conveyance capacity, Kern County Water Agency demand up to 180 TAF/month, and other contractor demands up to 34 TAF/month in all months, subject to conveyance capacity	Same
North Bay Aqueduct (NBA)	77 TAF/yr demand under SWP contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville, and Benicia Settlement Agreement	Same
Federal refuges[f]	Firm Level 2 water needs	Same
FACILITIES		
Systemwide	Existing facilities	Same
Sacramento River Region		
Shasta Lake	Existing, 4,552 TAF capacity	Same
Red Bluff Diversion Dam	Diversion dam operated with gates out all year, NMFS BO (June 2009) Action I.3.1[v]; assume permanent facilities in place	Same
Colusa Basin	Existing conveyance and storage facilities	Same
Upper American River[g,l]	PCWA American River Pump Station	Same
Lower Sacramento River	Freeport Regional Water Project[n]	Same
San Joaquin River Region		
Millerton Lake (Friant Dam)	Existing, 520 TAF capacity	Same

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Lower San Joaquin River	City of Stockton Delta Water Supply Project, 30-mgd capacity	Same
Delta Region		
SWP Banks Pumping Plant (South Delta)	Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months up to 8,500 cfs during Dec. 15 through Mar. 15 depending on Vernalis flow conditions[o]; additional capacity of 500 cfs (up to 7,180 cfs) allowed for July through Sept. for reducing impact of NMFS BO (June 2009) Action IV.2.1 Phase II[v] on SWP[w]	Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months up to 8,500 cfs during Dec. 15 through Mar. 15 depending on Vernalis flow conditions[o]; additional capacity of 500 cfs (up to 7,180 cfs) allowed for July through Sept. for reducing impact of B2 Actions.
CVP C.W. Bill Jones Pumping Plant (Tracy Pumping Plant)	Permit capacity is 4,600 cfs in all months (allowed for by the Delta-Mendota Canal-California Aqueduct Intertie)	Same
Upper Delta-Mendota Canal Capacity	Existing plus 400 cfs Delta-Mendota Canal-California Aqueduct Intertie	Same
CCWD Intakes	Los Vaqueros existing storage capacity, 160 TAF, existing pump locations, AIP included[p]	Same
San Francisco Bay Region		
South Bay Aqueduct (SBA)	SBA rehabilitation, 430 cfs capacity from junction with California Aqueduct to Zone 7 Water Agency diversion point	Same
South Coast Region		
California Aqueduct East Branch	Existing capacity	Same
REGULATORY STANDARDS		
North Coast Region		
Trinity River		
Minimum flow below Lewiston Dam	Trinity EIS Preferred Alternative (369-815 TAF/year)	Same

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Trinity Reservoir end-of-September minimum storage	Trinity EIS Preferred Alternative (600 TAF as able)	Same
Sacramento River Region		
Clear Creek		
Minimum flow below Whiskeytown Dam	Downstream water rights, 1963 Reclamation Proposal to USFWS and NPS, predetermined CVPIA 3406(b)(2) flows[q], and NMFS BO (June 2009) Action I.1.1[v]	Downstream water rights, 1963 Reclamation Proposal to USFWS and NPS, predetermined CVPIA 3406(b)(2) flows[q]
Upper Sacramento River		
Shasta Lake end-of-September minimum storage	NMFS 2004 Winter-run Biological Opinion, (1900 TAF in non-critically dry years), and NMFS BO (June 2009) Action I.2.1[v]	NMFS 2004 Winter-run Biological Opinion, (1900 TAF in non-critically dry years)
Minimum flow below Keswick Dam	SWRCB WR 90-5, predetermined CVPIA 3406(b)(2) flows[q], and NMFS BO (June 2009) Action I.2.2[v]	SWRCB WR 90-5, predetermined CVPIA 3406(b)(2) flows[q]
Feather River		
Minimum flow below Thermalito Diversion Dam	2006 Settlement Agreement (700/800 cfs)	Same
Minimum flow below Thermalito Afterbay outlet	1983 DWR, DFW Agreement (750-1,700 cfs)	Same
Yuba River		
Minimum flow below Daguerre Point Dam	D-1644 Operations (Lower Yuba River Accord)[r]	Same
American River		
Minimum flow below Nimbus Dam	American River Flow Management[s] as required by NMFS BO (June 2009) Action II.1[v]	Same
Minimum Flow at H Street Bridge	SWRCB D-893	Same

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Lower Sacramento River		
Minimum flow near Rio Vista	SWRCB D-1641	Same
San Joaquin River Region		
Mokelumne River		
Minimum flow below Camanche Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (100-325 cfs)	Same
Minimum flow below Woodbridge Diversion Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (25-300 cfs)	Same
Stanislaus River		
Minimum flow below Goodwin Dam	1987 Reclamation, DFW agreement, and flows required for NMFS BO (June 2009) Action III.1.2 and III.1.3[v]	1987 Reclamation, DFW agreement
Minimum dissolved oxygen	SWRCB D-1422	Same
Merced River		
Minimum flow below Crocker-Huffman Diversion Dam	Davis-Grunsky (180-220 cfs, Nov.-Mar.), and Cowell Agreement	Same
Minimum flow at Shaffer Bridge	FERC 2179 (25-100 cfs)	Same
Tuolumne River		
Minimum flow at Lagrange Bridge	FERC 2299-024, 1995 (Settlement Agreement) (94-301 TAF/yr)	Same
San Joaquin River		
San Joaquin River below Friant Dam/ Mendota Pool	San Joaquin River Restoration-full flows, not constrained by current canal capacity[u]	Same
Maximum salinity near Vernalis	SWRCB D-1641	Same
Minimum flow near Vernalis	SWRCB D-1641, and NMFS BO (June 2009) Action IV.2.1[v]	SWRCB D-1641

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Sacramento River – San Joaquin Delta Region		
Delta Outflow Index (Flow and Salinity)	SWRCB D-1641 and USFWS BO (Dec. 2008) Action 4	SWRCB D-1641
Delta Cross Channel gate operation	SRWCB D-1641 with additional days closed from Oct. 1 – Jan. 31 based on NMFS BO (June 2009) Action IV.1.2[v] (closed during flushing flows from Oct. 1 – Dec. 14 unless adverse water quality conditions)	SRWCB D-1641
South Delta exports (Jones Pumping Plant and Banks Pumping Plant)	SWRCB D-1641, Vernalis flow-based export limits Apr. 1 – May 31 as required by NMFS BO (June 2009) Action IV.2.1[v] (additional 500 cfs allowed for July – Sept. For reducing impact on SWP)[w]	SWRCB D-1641 (additional 500 cfs allowed for July – Sept. For reducing impact of B2 Actions)
Combined Flow in OMR	USFWS BO (Dec. 2008) Actions 1 through 3 and NMFS BO (June 2009) Action IV.2.3[v]	None
OPERATIONS CRITERIA: RIVER-SPECIFIC		
Sacramento River Region		
Upper Sacramento River		
Flow objective for navigation (Wilkins Slough)	NMFS BO (June 2009) Action I.4[v]; 3,500 – 5,000 cfs based on CVP water supply condition	Same
American River		
Folsom Dam flood control	Variable 400/670 flood control diagram (without outlet modifications)	Same
Feather River		
Flow at Mouth of Feather River (above Verona)	Maintain DFW/DWR flow target of 2,800 cfs for Apr. through Sept. dependent on Oroville inflow and FRSA allocation	Same
San Joaquin River Region		
Stanislaus River		
Flow below Goodwin Dam[i]	Revised Operations Plan[t] and NMFS BO (June 2009) Action III.1.2 and III.1.3[v]	Revised Operations Plan[t]

	No Action Alternative Assumption	**Second Basis of Comparison Assumption**
San Joaquin River		
Salinity at Vernalis	Grasslands Bypass Project (full implementation)	Same
OPERATIONS CRITERIA: SYSTEMWIDE		
CVP water allocation		
Settlement/Exchange	100 percent (75 percent in Shasta critical years)	Same
Refuges	100 percent (75 percent in Shasta critical years)	Same
Agriculture Service	100 percent-0 percent based on supply, South-of-Delta allocations are additionally limited due to D-1641, USFWS BO (Dec. 2008) and NMFS BO (June 2009) export restrictions[v]	100 percent-0 percent based on supply, South-of-Delta allocations are additionally limited due to D-1641
Municipal & Industrial Service	100 percent-50 percent based on supply, South-of-Delta allocations are additionally limited due to D-1641, USFWS BO (Dec. 2008) and NMFS BO (June 2009) export restrictions[v]	100 percent-50 percent based on supply, South-of-Delta allocations are additionally limited due to D-1641
SWP water allocation		
North of Delta (FRSA)	Contract specific	Same
South of Delta (including North Bay Aqueduct)	Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and USFWS BO (Dec. 2008) and NMFS BO (June 2009) export restrictions[v]	Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641
CVP-SWP coordinated operations		
Sharing of responsibility for in-basin-use	1986 Coordinated Operations Agreement (FRWP EBMUD and 2/3 of the North Bay Aqueduct diversions considered as Delta Export; 1/3 of the North Bay Aqueduct diversion as in-basin-use)	Same
Sharing of surplus flows	1986 Coordinated Operations Agreement	Same

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Sharing of total allowable export capacity for project-specific priority pumping	Equal sharing of export capacity under SWRCB D-1641, USFWS BO (Dec. 2008) and NMFS BO (June 2009) export restrictions[v]	Equal sharing of export capacity under SWRCB D-1641
Water transfers	Acquisitions by SWP contractors are wheeled at priority in Banks Pumping Plant over non-SWP users; LYRA included for SWP contractors[w]	Same
Sharing of total allowable export capacity for lesser priority and wheeling-related pumping	Cross Valley Canal wheeling (max of 128 TAF/year), CALFED ROD defined Joint Point of Diversion (JPOD)	Same
San Luis Reservoir	San Luis Reservoir is allowed to operate to a minimum storage of 100 TAF	Same
CVPIA 3406(b)(2)[v,q]		
Policy Decision	Per May 2003 Department Decision:	Same
Allocation	800 TAF, 700 TAF in 40-30-30 dry years, and 600 TAF in 40-30-30 critical years as a function of Ag allocation	Same
Actions	Predetermined upstream fish flow objectives below Whiskeytown and Keswick Dams, non-discretionary NMFS BO (June 2009) actions for the American and Stanislaus Rivers, and NMFS BO (June 2009) and USFWS BO (Dec. 2008) actions leading to export restrictions[v]	Predetermined upstream fish flow objectives below Whiskeytown and Keswick Dams
Accounting	Releases for non-discretionary USFWS BO (Dec. 2008) and NMFS BO (June 2009)[v] actions may or may not always be deemed (b)(2) actions; in general, it is anticipated that, accounting of these actions using (b)(2) metrics, the sum would exceed the (b)(2) allocation in many years; therefore no additional actions are considered and no accounting logic is included in the model[q]	No accounting logic is included in the model

	No Action Alternative Assumption	Second Basis of Comparison Assumption
WATER MANAGEMENT ACTIONS		
Water Transfer Supplies (long-term programs)		
Lower Yuba River Accord[w]	Yuba River acquisitions for reducing impact of NMFS BO export restrictions[v] on SWP	Yuba River acquisitions
Phase 8	None	None
Water Transfers (short-term or temporary programs)		
Sacramento Valley acquisitions conveyed through Banks Pumping Plant[x]	Post-analysis of available capacity	Post-analysis of available capacity

Notes:

a. These assumptions were developed under the direction of the DWR and Reclamation in 2010. Only operational components of 2008 USFWS and 2009 NMFS BOs as of demarcation date of No Action Alternative and the No action Alternative assumptions are included. Restoration of at least 8,000 acres of intertidal and associated subtidal habitat in the Delta and Suisun Marsh required by the 2008 USFWS BO and restoration of at least 17,000 to 20,000 acres of floodplain rearing habitat for juvenile winter-run and spring-run Chinook Salmon and Central Valley Steelhead in the Yolo Bypass and/or suitable areas of the lower Sacramento River required by the NMFS 2009 BO are not included in the No Action Alternative assumptions because environmental documents of projects regarding these actions were not completed as of the publication date of the Notice of Preparation/Notice of Intent (February 13, 2009).

b. The Sacramento Valley hydrology used in the No Action Alternative CalSim II model reflects nominal 2005 land-use assumptions. The nominal 2005 land use was determined by interpolation between the 1995 and projected 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects 2005 land-use assumptions developed by Reclamation. Existing-level projected land-use assumptions are being coordinated with the California Water Plan Update for future models.

c. The Sacramento Valley hydrology used in the No Action Alternative CalSim II model reflects 2020 land-use assumptions associated with Bulletin 160-98. The San Joaquin Valley hydrology reflects draft 2030 land-use assumptions developed by Reclamation. Development of Future-level projected land-use assumptions are being coordinated with the California Water Plan Update for future models.

d. CVP contract amounts have been updated according to existing and amended contracts as appropriate. Assumptions regarding CVP agricultural and M&I service contracts and Settlement Contract amounts are documented in the Delivery Specifications attachments.

e. SWP contract amounts have been updated as appropriate based on recent Table A transfers/agreements. Assumptions regarding SWP agricultural and M&I contract amounts are documented in the Delivery Specifications attachments.

f. Water needs for Federal refuges have been reviewed and updated as appropriate. Assumptions regarding firm Level 2 refuge water needs are documented in the Delivery Specifications attachments. Refuge Level 4 (and incremental Level 4) water is not analyzed.

g. Assumptions regarding American River water rights and CVP contracts are documented in the Delivery Specifications attachments. The Sacramento Area Water Forum agreement, its dry year diversion reductions, Middle Fork Project operations and “mitigation” water is not included.

h. The new CalSim II representation of the San Joaquin River has been included in this model package (CalSim II San Joaquin River Model, Reclamation, 2005). Updates to the San Joaquin River have been included since the preliminary model release in August 2005. The model reflects the difficulties of ongoing groundwater overdraft problems. The 2030 level of development representation of the San Joaquin River Basin does not make any attempt to offer solutions to groundwater overdraft problems. In addition a dynamic groundwater simulation is not yet developed for the San Joaquin River Valley. Groundwater extraction/recharge and stream-groundwater interaction are static assumptions and may not accurately reflect a response to simulated actions. These limitations should be considered in the analysis of results.

i. The CalSim II model representation for the Stanislaus River does not necessarily represent Reclamation’s current or future operational policies. A suitable plan for supporting flows has not been developed for NMFS BO (June 2009) Action 3.1.3.

j. The actual amount diverted is operated in conjunction with supplies from the Los Vaqueros project. The existing Los Vaqueros storage capacity is 160 TAF. Associated water rights for Delta excess flows are included.

k. Under No Action Alternative, it is assumed that SWP Contractors demand for Table A allocations vary from 3.0 to 4.1 million acre-feet (MAF)/year. Under the No Action Alternative, it is assumed that SWP Contractors can take delivery of all Table A allocations and Article 21 supplies. Article 56 provisions are assumed and allow for SWP Contractors to manage storage and delivery conditions such that full Table A allocations can be delivered. Article 21 deliveries are limited in Wet years under the assumption that demand is decreased in these conditions. Article 21 deliveries for the NBA are dependent on excess conditions only, all other Article 21 deliveries also require that San Luis Reservoir be at capacity and that Banks Pumping Plant and the California Aqueduct have available capacity to divert from the Delta for direct delivery.

l. PCWA American River pumping facility upstream of Folsom Lake is included in both the Existing and No Action Alternative No Action Alternative. The diversion is assumed to be 35.5 TAF/Yr.

m. footnote removed

n. footnote removed

o. Current USACE permit for Banks Pumping Plant allows for an average diversion rate of 6,680 cfs in all months. Diversion rate can increase up to 1/3 of the rate of San Joaquin River flow at Vernalis from Dec. 15th to Mar. 15th, up to a maximum diversion of 8,500 cfs, if Vernalis flow exceeds 1,000 cfs.

p. The CCWD AIP is an intake at Victoria Canal that operates as an alternate Delta diversion for Los Vaqueros Reservoir. This assumption is consistent with the future no-project condition defined by the Los Vaqueros Enlargement study team.

q. CVPIA (b)(2) fish actions are not dynamically determined in the CalSim II model, nor is (b)(2) accounting done in the model. Since the USFWS BO and NMFS BO were issued, the Department has exercised its discretion to use (b)(2) in the delta by accounting some or all of the export reductions required under those biological opinions as (b)(2) actions. It is therefore assumed for modeling purposes that (b)(2) availability for other delta actions will be limited to covering the CVP’s VAMP export reductions. Similarly, since the USFWS BO and NMFS BO were issued, the Department has exercised its discretion to use (b)(2) upstream by accounting some or all of the release augmentations (relative to the hypothetical (b)(2) base case) below Whiskeytown, Nimbus, and Goodwin as (b)(2) actions. It is therefore assumed for modeling purposes that (b)(2) availability for other upstream actions will be limited to covering Sacramento releases, in the fall and winter. For modeling purposes, predetermined time series of minimum instream flow requirements are specified. The time series are based on the Aug. 2008 BA Study 7.0 and Study 8.0 simulations which did include dynamically determined (b)(2) actions.

r. D-1644 and the Lower Yuba River Accord is assumed to be implemented for Existing and No Action Alternative No Action Alternative. The Yuba River is not dynamically modeled in CalSim II. Yuba River hydrology and availability of water acquisitions under the Lower Yuba River Accord are based on modeling performed and provided by the Lower Yuba River Accord EIS/EIR study team.

s. Under Existing Conditions, the flow components of the proposed American River Flow Management are as required by the NMFS BO (June 4, 2009).

t. The model operates the Stanislaus River using a 1997 Interim Plan of Operation-like structure, i.e., allocating water for Stockton East Water District and CSJWCD, Vernalis water quality dilution, and Vernalis D-1641 flow requirements based on the New Melones Index. Oakdale Irrigation District and South San Joaquin Irrigation District allocations are based on their 1988 agreement and Ripon DO requirements are represented by a static set of minimum instream flow requirements during June thru Sept. Instream flow requirements for fish below Goodwin are based on NMFS BO Action III.1.2. NMFS BO Action IV.2.1's flow component is not assumed to be in effect.

u. SJR Restoration Water Year 2010 Interim Flows Project are assumed, but are *not input into the models; operation not regularly defined at this time*

v. In cooperation with Reclamation, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife, the Department of Water Resources has developed assumptions for implementation of the USFWS BO (Dec. 15, 2008) and NMFS BO (June 4, 2009) in CalSim II.

w. Acquisitions of Component 1 water under the Lower Yuba River Accord, and use of 500 cfs dedicated capacity at Banks Pumping Plant during July through Sept., are assumed to be used to reduce as much of the impact of the April through May Delta export actions on SWP contractors as possible.

x. Only acquisitions of Lower Yuba River Accord Component 1 water are included.

1 **Table 5A.B.21 DSM2 Assumptions**

	No Action Alternative Assumption	Second Basis of Comparison Assumption
Period of simulation	82 years (1922-2003)[a,b]	Same
REGIONAL SUPPLIES		
Boundary flows	Monthly time series from CalSim II output (alternatives provide different flows and exports)[c]	Same
REGIONAL DEMANDS AND CONTRACTS		
Ag flows (DICU)	2005 Level, DWR Bulletin 160-98[d]	2020 Level, DWR Bulletin 160-98[d]
TIDAL BOUNDARY		
Martinez stage	15-minute adjusted astronomical tide[a]	Same
WATER QUALITY		
Vernalis EC	Monthly time series from CalSim II output[e]	Monthly time series from CalSim II output[e]
Agricultural Return EC	Municipal Water Quality Investigation Program analysis	Same
Martinez EC	Monthly net Delta Outflow from CalSim II output and G-model[f]	Monthly net Delta Outflow from CalSim II output and G-model[f]
MORPHOLOGICAL CHANGES		
Mokelumne River	None	None
San Joaquin River	None	None
Middle River	None	None
Dutch Slough Restoration Project	None	None

	No Action Alternative Assumption	Second Basis of Comparison Assumption
FACILITIES		
Contra Costa Water District Delta Intakes	Rock Slough Pumping Plant, Old River at Highway 4 Intake	Rock Slough Pumping Plant, Old River at Highway 4 Intake and Alternate Improvement Project Intake on Victoria Canal
South Delta barriers	Temporary Barriers Program	Same
Two Gate Program	None	None
Franks Tract Program	None	None
SPECIFIC PROJECTS		
Water Supply Intake Projects		
Freeport Regional Water Project	None	Monthly output from CalSim II
Stockton Delta Water Supply Project	None	Monthly output from CalSim II
Antioch Water Works	Monthly output from CalSim II	Monthly output from CalSim II
Sanitary and Agricultural Discharge Projects		
Veale Tract Drainage Relocation	The Veale Tract Water Quality Improvement Project, funded by CALFED, relocates the agricultural drainage outlet that was relocated from Rock Slough channel to the southern end of Veale Tract, on Indian Slough[k]	Same
OPERATIONS CRITERIA		
Delta Cross Channel	Monthly time series of number of days open from CalSim II output	Monthly time series of number of days open from CalSim II output
Clifton Court Forebay	Priority 3, gate operations synchronized with incoming tide to minimize impacts to low water levels in nearby channels	Same

	No Action Alternative Assumption	Second Basis of Comparison Assumption
South Delta barriers	Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB is assumed only installed[l] Sept. 16 through Nov. 30; agricultural barriers on OMR are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; all three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers[m].	Temporary Barriers Project operated based on San Joaquin River flow time series from CalSim II output; HORB is assumed installed[l] April 1 through May 31 and Sept. 16 through Nov. 30; agricultural barriers on OMR are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; all three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on ORM[m]

Notes:

a. A new adjusted astronomical tide for use in DSM2 planning studies has been developed by DWR's Bay Delta Office Modeling Support Branch Delta Modeling Section in cooperation with the Common Assumptions workgroup. This tide is based on a more extensive observed dataset and covers the entire 82-year period of record.

b. The 16-year period of record is the simulation period for which DSM2 has been commonly used for impacts analysis in many previous projects, and includes varied water year types.

c. Although monthly CalSim II output was used as the DSM2-HYDRO input, the Sacramento and San Joaquin rivers were interpolated to daily values in order to smooth the transition from high to low and low to high flows. DSM2 then uses the daily flow values along with a 15-minute adjusted astronomical tide to simulate effect of the spring and neap tides.

d. The Delta Island Consumptive Use (DICU) model is used to calculate diversions and return flows for all Delta islands based on the level of development assumed. The nominal 2005 Delta region hydrology land use was determined by interpolation between the 1995 and projected 2020 land-use assumptions associated with Bulletin 160-98.

e. CalSim II calculates monthly EC for the San Joaquin River, which was then converted to daily EC using the monthly EC and flow for the San Joaquin River. Fixed concentrations of 150, 175, and 125 µmhos/cm were assumed for the Sacramento River, Yolo Bypass, and eastside streams, respectively.

f. Net Delta outflow based on the CalSim II flows was used with an updated G-model to calculate Martinez EC. Under changed climate conditions, Martinez EC is modified to account for the sea-level rise at early (15 cm) and late (45 cm) long-term phases (Year 2060).

g. footnote removed.

h. footnote removed.

i. footnote removed.

j. footnote removed.

k. Information was obtained based on the information from the draft final “Delta Region Drinking Water Quality Management Plan” dated June 2005 prepared under the CALFED Water Quality Program and a presentation by David Briggs at SWRCB public workshop for periodic review. The presentation “Compliance Location at Contra Costa Canal at Pumping Plant #1 – Addressing Local Degradation” notes that the Veale Tract drainage relocation project will be operational in June 2005. The DICU drainage currently simulated at node 204 is moved to node 202 in DSM2.

l. Based on the USFWS BO Action 5, HORB is assumed to be not installed in April or May; therefore HORB is only installed in the fall, as shown.

m. Based on the USFWS BO Action 5 and the project description provided in the page 119.

Table 5A.B.22 American River Diversions Assumed in the No Action Alternative and Second Basis of Comparison

	Diversion Location	No Action Alternative and Second Basis of Comparison (TAF/yr) CVP M&I[a] Contracts (maximum[a])	No Action Alternative and Second Basis of Comparison (TAF/yr) Water Rights (maximum)	No Action Alternative and Second Basis of Comparison (TAF/yr) Diversion Limit (maximum capacity)
Placer County Water Agency	Auburn Dam Site	–	65.0	65.0
Total		**0**	**65.0**	**65.0**
Sacramento Suburban Water District[b]	Folsom Reservoir	–	0	0
City of Folsom – includes P.L. 101-514		7	27	34
Folsom Prison		–	5	5
San Juan Water District (Placer County)		–	25	25
San Juan Water District (Sac County) – includes P.L. 101-514	Folsom Reservoir	24.2	33	57.2
El Dorado Irrigation District		7.55	17	24.55
City of Roseville		32	30	62.0
Placer County Water Agency		35	–	35
El Dorado County – P.L.101-514		15	–	15
Total		**120.8**	**137.0**	**257.8**

		No Action Alternative and Second Basis of Comparison (TAF/yr)	No Action Alternative and Second Basis of Comparison (TAF/yr)	No Action Alternative and Second Basis of Comparison (TAF/yr)
	Diversion Location	**CVP M&I[a] Contracts (maximum[a])**	**Water Rights (maximum)**	**Diversion Limit (maximum capacity)**
So. Cal WC/Arden Cordova WC	Folsom South Canal	–	5	5
California Parks and Recreation		5	–	5
SMUD		30	15	45
Canal Losses		–	1	1
Total		**35**	**21**	**56**
City of Sacramento[c]	Lower American River	–	225.6	225.6
Carmichael Water District		–	12	12
Total		**0**	**237.6**	**237.6**
Total American River Diversions		**155.8**	**460.6**	**616.4**
Sacramento River Diversions				
City of Sacramento	Lower Sacramento River	–	86.19	86.19
Sacramento County Water Agency		30	–	30
Sacramento County Water Agency—P.L. 101-514		15	–	15
Sacramento County Water Agency—water rights and acquisitions		–	Varies[d], average 32.58	Varies[d], average 32.58

	Diversion Location	No Action Alternative and Second Basis of Comparison (TAF/yr) CVP M&I[a] Contracts (maximum[a])	No Action Alternative and Second Basis of Comparison (TAF/yr) Water Rights (maximum)	No Action Alternative and Second Basis of Comparison (TAF/yr) Diversion Limit (maximum capacity)
East Bay Municipal Utilities District		133	–	Varies[e], average 8.2
Total Sacramento River Diversions		**178**	**118.8**	**172.0**
Total		**333.8**	**579.4**	**788.4**

Notes:

a. When the CVP Contract quantity exceeds the quantity of the Diversion Limit minus the Water Right (if any), the diversion modeled is the quantity allocated to the CVP Contract (based on the CVP contract quantity shown times the CVP M&I allocation percentage) plus the Water Right (if any), but with the sum limited to the quantity of the Diversion Limit

b. Diversion is only allowed if and when Mar-Nov Folsom Unimpaired Inflow (FUI) exceeds 1,600 TAF

c. When the Hodge single dry year criteria is triggered, Mar-Nov FUI falls below 400 TAF, diversion on the American River is limited to 50 TAF/yr; based on monthly Hodge flow limits assumed for the American, diversion on the Sacramento River may be increased to 223 TAF due to reductions of diversions on American River

d. SCWA targets 68 TAF of surface water supplies annually. The portion unmet by CVP contract water is assumed to come from two sources:

(1) Delta "excess" water- averages 16.5 TAF annually, but varies according to availability. SCWA is assumed to divert excess flow when it is available, and when there is available pumping capacity.

(2) "Other" water- derived from transfers and/or other appropriated water, averaging 14.8 TAF annually but varying according remaining unmet demand.

e. EBMUD CVP diversions are governed by the Amendatory Contract, stipulating:

(1) 133 TAF maximum diversion in any given year

(2) 165 TAF maximum diversion amount over any 3 year period

(3) Diversions allowed only when EBMUD total storage drops below 500 TAF

(4) 155 cfs maximum diversion rate

5A.B7 Delivery Specifications

This section lists the CVP and SWP contract amounts and other water rights assumptions used in the EIS No Action Alternative and No Action Alternative CalSim II simulations (Tables 5A.B.23 through 5A.B.27).

5A.B8 USFWS RPA Implementation

The information included in this section is consistent with what was provided to and agreed upon by the lead agencies in the technical memorandum, "Representation of U.S. Fish and Wildlife Service Biological Opinion Reasonable and Prudent Alternative Actions for CalSim II Planning Studies" on February 10, 2010 (updated May 18, 2010).

5A.B8.1 Representation of U.S. Fish and Wildlife Service Biological Opinion Reasonable and Prudent Alternative Actions for CalSim II Planning Studies

The USFWS BO was released on December 15, 2008. To develop CalSim II modeling assumptions for the RPA in the BO, DWR led a series of meetings that involved members of fisheries and project agencies. The purpose for establishing this group was to prepare the assumptions and CalSim II implementations to represent the RPAs in Existing and Future Condition CalSim II simulations for future planning studies.

This memorandum summarizes the approach that resulted from these meetings and the modeling assumptions that were laid out by the group. The scope of this memorandum is limited to the December 15, 2008 BO. Unless otherwise indicated, all descriptive information of the RPAs is taken from Appendix B of the BO.

Table 5A.B.28 lists the participants that contributed to the meetings and information summarized in this document.

The RPAs in the USFWS BO are based on physical and biological phenomena that do not lend themselves to simulations using a monthly time step. Much scientific and modeling judgment has been employed to represent the implementation of the RPAs. The group believes the logic put into CalSim II represents the RPAs as best as possible at this time, given the scientific understanding of environmental factors enumerated in the BO and the limited historical data for some of these factors.

Table 5A.B.23 Delta – Future Conditions

CVP/SWP Contractor	Geographic Location	Water Right (TAF/yr)	SWP Table A Amount (TAF)		SWP Article 21 Demand (TAF/mon)	CVP Water Service Contracts (TAF/yr)	
			Ag	M&I		AG	M&I
North Delta							
City of Vallejo	City of Vallejo	–	–	–	–	–	16.0
CCWD*	Contra Costa County	–	–	–	–	–	195.0
Napa County FC&WCD	North Bay Aqueduct	–	–	29.03	1.0	–	–
Solano County WA	North Bay Aqueduct	–	–	47.51	1.0	–	–
Fairfield, Vacaville, and Benicia Agreement	North Bay Aqueduct	31.60	–	–	–	–	–
City of Antioch	City of Antioch	18.0	–	–	–	–	–
Total North Delta		**49.6**	**0.0**	**76.5**	**2.0**	**0.0**	**211.0**
South Delta							
Delta Water Supply Project	City of Stockton	32.4	–	–	–	–	–
Total South Delta		**32.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total		**82.0**	**0.0**	**76.5**	**2.0**	**0.0**	**211.0**

Table 5A.B.24 CVP North-of-the-Delta – Future Conditions

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)
		AG	M&I			
Anderson Cottonwood ID	Sacramento River Redding Subbasin	–	–	128.0	–	–
Clear Creek C.S.D.		13.8	1.5	–	–	–
Bella Vista WD		22.1	2.4	–	–	–
Shasta C.S.D.		–	1.0	–	–	–
Sac R. Misc. Users		–	–	3.4	–	–
Redding, City of		–	–	21.0	–	–
City of Shasta Lake		2.5	0.3	–	–	–
Mountain Gate C.S.D.			0.4	–	–	–
Shasta County Water Agency		0.5	0.5	–	–	–
Redding, City of/Buckeye		–	6.1	–	–	–
Total		**38.9**	**12.2**	**152.4**		**0.0**
Corning WD	Corning Canal	23.0	–	–	–	–
Proberta WD		3.5	–	–	–	–
Thomes Creek WD		6.4	–	–	–	–
Total		**32.9**	**0.0**	**0.0**	–	**0.0**
Kirkwood WD	Tehama-Colusa Canal	2.1	–	–	–	–
Glide WD		10.5	–	–	–	–
Kanawha WD		45.0	–	–	–	–
Orland-Artois WD		53.0	–	–	–	–

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr) AG	M&I	Settlement/Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)
Colusa, County of		20.0	–	–	–	–
Colusa County WD		62.2	–	–	–	–
Davis WD		4.0	–	–	–	–
Dunnigan WD		19.0	–	–	–	–
La Grande WD		5.0	–	–	–	–
Westside WD		65.0	–	–	–	–
Total		**285.8**	**0.0**	**0.0**	–	**0.0**
Sac. R. Misc. Users	Sacramento River	–	–	1.5	–	–
Glenn Colusa ID	Glenn-Colusa Canal	–	–	441.5	–	–
		–	–	383.5	–	–
Sacramento NWR		–	–	–	–	53.4
Delevan NWR		–	–	–	–	24.0
Colusa NWR		–	–	–	–	28.8
Colusa Drain M.W.C.	Colusa Basin Drain	–	–	7.7	–	–
		–	–	62.3	–	–
Total		**0.0**	**0.0**	**895.0**	–	**106.2**
Princeton-Cordova-Glenn ID	Sacramento River	–	–	67.8	–	–
Provident ID		–	–	54.7	–	–
Maxwell ID		–	–	1.8	–	–
		–	–	16.2	–	–

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr) AG	M&I	Settlement/Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)
Sycamore Family Trust		–	–	31.8	–	–
Roberts Ditch IC		–	–	4.4	–	–
Sac R. Misc. Users[b]		–	–	4.9	–	–
		–	–	9.5	–	–
Total		**0.0**	**0.0**	**191.2**	–	**0.0**
Reclamation District 108	Sacramento River	–	–	12.9	–	–
		–	–	219.1	–	–
River Garden Farms		–	–	29.8	–	–
Meridian Farms WC		–	–	35.0	–	–
Pelger Mutual WC		–	–	8.9	–	–
Reclamation District 1004		–	–	71.4	–	–
Carter MWC		–	–	4.7	–	–
Sutter MWC		–	–	226.0	–	–
Tisdale Irrigation & Drainage Co.		–	–	9.9	–	–
Sac R. Misc. Users		–	–	103.4	–	–
		–	–	0.9	–	–
Feather River WD export		20.0	–	–	–	–
Total		**20.0**	**0.0**	**722.1**	–	**0.0**
Sutter NWR	Sutter bypass water for Sutter NWR	–	–	–	–	25.9
Gray Lodge WMA	Feather River	–	–	–	–	41.4
Butte Sink Duck Clubs		–	–	–	–	15.9
Total		**0.0**	**0.0**	**0.0**		**83.2**

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)
		AG	**M&I**			
Sac. R. Misc. Users	Sacramento River	–	–	56.8	–	–
City of West Sacramento		–	–	23.6	–	–
Davis-Woodland Water Supply Project		DSA 65	–	–	–	–
Total		**0.0**	**0.0**	**80.4**	–	**0.0**
Sac R. Misc. Users	Lower Sacramento River	–	–	4.8	–	–
Natomas Central MWC		–	–	120.2	–	–
Pleasant Grove-Verona MWC		–	–	26.3	–	–
City of Sacramento		–	0.0	–	0.0	–
PCWA (Water Rights)		–	0.0	–	0.0	–
Total		**0.0**	**0.0**	**151.3**	**0.0**	–
Total CVP North-of-Delta		**377.6**	**12.2**	**2,193.8**	**0.0**	**189.4**

Notes:

* Level 4 Refuge water needs are not included.

Table 5A.B.25 CVP South-of-the-Delta – Future Conditions

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)	Losses (TAF/yr)
		AG	M&I				
Byron-Bethany ID	Upper DMC	20.6		–	–	–	–
Tracy, City of		–	10.0	–	–	–	–
		–	5.0	–	–	–	–
		–	5.0	–	–	–	–
Banta Carbona ID		20.0		–	–	–	–
Total		**40.6**	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**
Del Puerto WD	Upper DMC	12.1	–	–	–	–	–
Davis WD		5.4	–	–	–	–	–
Foothill WD		10.8	–	–	–	–	–
Hospital WD		34.1	–	–	–	–	–
Kern Canon WD		7.7	–	–	–	–	–
Mustang WD		14.7	–	–	–	–	–
Orestimba WD		15.9	–	–	–	–	–
Quinto WD		8.6	–	–	–	–	–
Romero WD		5.2	–	–	–	–	–
Salado WD		9.1	–	–	–	–	–
Sunflower WD		16.6	–	–	–	–	–
West Stanislaus WD		50.0	–	–	–	–	–
Patterson WD		16.5	–	–	6.0	–	–
Total		**206.7**	**0.0**	**0.0**	**6.0**	**0.0**	**0.0**

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)	Losses (TAF/yr)
		AG	M&I				
Upper DMC Loss	Upper DMC	–	–	–	–	–	18.5
Panoche WD	Lower DMC Volta	6.6	–	–	–	–	–
San Luis WD		65.0	–	–	–	–	–
Laguna WD		0.8	–	–	–	–	–
Eagle Field WD		4.6	–	–	–	–	–
Mercy Springs WD		2.8	–	–	–	–	–
Oro Loma WD		4.6	–	–	–	–	–
Total		**84.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Central California ID	Lower DMC Volta	–	–	140.0	–	–	–
Grasslands via CCID	Lower DMC Volta	–	–	–	–	81.8	–
Los Banos WMA		–	–	–	–	11.2	–
Kesterson NWR	Lower DMC Volta	–	–	–	–	10.5	–
Freitas – SJBAP		–	–	–	–	6.3	–
Salt Slough – SJBAP		–	–	–	–	8.6	–
China Island – SJBAP		–	–	–	–	7.0	–
Volta WMA		–	–	–	–	13.0	–
Grassland via Volta Wasteway		–	–	–	–	23.2	–
Total		**0.0**	**0.0**	**140.0**	**0.0**	**161.5**	**0.0**

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)	Losses (TAF/yr)
		AG	M&I				
Fresno Slough WD	San Joaquin River at Mendota Pool	4.0	–	–	0.9	–	–
James ID		35.3	–	–	9.7	–	–
Coelho Family Trust		2.1	–	–	1.3	–	–
Tranquillity ID		13.8	–	–	20.2	–	–
Tranquillity PUD		0.1	–	–	0.1	–	–
Reclamation District 1606		0.2	–	–	0.3	–	–
Central California ID		–	–	392.4	–	–	–
Columbia Canal Co.		–	–	59.0	–	–	–
Firebaugh Canal Co.		–	–	85.0	–	–	–
San Luis Canal Co.		–	–	23.6	–	–	–
M.L. Dudley Company		–	–	–	2.3	–	–
Grasslands WD		–	–	–	–	29.0	–
Mendota WMA		–	–	–	–	27.6	–
Losses		–	–	–	–	–	101.5
Total		**55.5**	**0.0**	**560.0**	**34.8**	**56.6**	**101.5**
San Luis Canal Co.	San Joaquin River at Sack Dam	–	–	140.0	–	–	–
Grasslands WD		–	–	–	–	2.3	–
Los Banos WMA		–	–	–	–	12.4	–
San Luis NWR		–	–	–	–	19.5	–
West Bear Creek NWR		–	–	–	–	7.5	–
East Bear Creek NWR		–	–	–	–	8.9	–
Total		**0.0**	**0.0**	**140.0**	**0.0**	**50.6**	**0.0**

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)	Losses (TAF/yr)
		AG	M&I				
San Benito County WD (Ag)	San Felipe	35.6	–	–	–	–	–
Santa Clara Valley WD (Ag)		33.1	–	–	–	–	–
Pajaro Valley WD		6.3	–	–	–	–	–
San Benito County WD (M&I)		–	8.3	–	–	–	–
Santa Clara Valley WD (M&I)		–	119.4	–	–	–	–
Total		**74.9**	**127.7**	**0.0**	**0.0**	**0.0**	**0.0**
San Luis WD	CA reach 3	60.1	–	–	–	–	–
CA, State Parks and Rec		2.3	–	–	–	–	–
Affonso/Los Banos Gravel Co.		0.3	–	–	–	–	–
Total		**62.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Panoche WD	CVP Dos Amigos Pumping Plant/ CA reach 4	87.4	–	–	–	–	–
Pacheco WD		10.1	–	–	–	–	–
Total		**97.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Westlands WD (Centinella)	CA reach 4	2.5	–	–	–	–	–
Westlands WD (Broadview WD)		27.0	–	–	–	–	–
Westlands WD (Mercy Springs WD)		4.2	–	–	–	–	–
Westlands WD (Widern WD)		3.0	–	–	–	–	–
Total		**36.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr)		Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)	Losses (TAF/yr)
		AG	M&I				
Westlands WD: CA Joint Reach 4	CA reach 4	219.0	–	–	–	–	–
Westlands WD: CA Joint Reach 5	CA reach 5	570.0	–	–	–	–	–
Westlands WD: CA Joint Reach 6	CA reach 6	219.0	–	–	–	–	–
Westlands WD: CA Joint Reach 7	CA reach 7	142.0	–	–	–	–	–
Total		**1150.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Avenal, City of	CA reach 7	–	3.5	–	3.5	–	–
Coalinga, City of		–	10.0	–	–	–	–
Huron, City of		–	3.0	–	–	–	–
Total		**0.0**	**16.5**	**0.0**	**3.5**	**0.0**	**0.0**
CA Joint Reach 3 – Loss	CVP Dos Amigos PP/CA reach 3	–	–	–	–	–	2.5
CA Joint Reach 4 – Loss	CA reach 4	–	–	–	–	–	10.1
CA Joint Reach 5 – Loss	CA reach 5	–	–	–	–	–	30.1
CA Joint Reach 6 – Loss	CA reach 6	–	–	–	–	–	12.5
CA Joint Reach 7 – Loss	CA reach 7	–	–	–	–	–	8.5
Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**63.7**
Cross Valley Canal – CVP	CA reach 14	–	–	–	–	–	–
Fresno, County of		3.0	–	–	–	–	–
Hills Valley ID-Amendatory		3.3	–	–	–	–	–
Kern-Tulare WD		40.0	–	–	–	–	–
Lower Tule River ID		31.1	–	–	–	–	–

CVP Contractor	Geographic Location	CVP Water Service Contracts (TAF/yr) AG	CVP Water Service Contracts (TAF/yr) M&I	Settlement/ Exchange Contractor (TAF/yr)	Water Rights/ Non-CVP (TAF/yr)	Level 2 Refuges* (TAF/yr)	Losses (TAF/yr)
Pixley ID		31.1	–	–	–	–	–
Rag Gulch WD		13.3	–	–	–	–	–
Tri-Valley WD		1.1	–	–	–	–	–
Tulare, County of		5.3	–	–	–	–	–
Kern NWR		–	–	–	–	11.0	–
Pixley NWR		–	–	–	–	1.3	–
Total		**128.3**	**0.0**	**0.0**	**0.0**	**12.3**	**0.0**
Total CVP South-of-Delta		**1,937.1**	**164.2**	**840.0**	**44.3**	**281.0**	**183.7**

Notes:
*Level 4 Refuge water supplies are not included.

1 **Table 5A.B.26 SWP North-of-the-Delta – Future Conditions**

SWP CONTRACTOR	Geographic Location	FRSA Amount (TAF)	Water Right (TAF/yr)	Table A Amount (TAF)		Article 21 Demand (TAF/mon)	Other (TAF/yr)
				Ag	M&I		
Feather River							
Palermo	FRSA	–	17.6	–	–	–	–
County of Butte	Feather River	–	–	–	27.5	–	–
Thermalito	FRSA	–	8.0	–	–	–	–
Western Canal	FRSA	150.0	145.0	–	–	–	–
Joint Board	FRSA	550.0	5.0	–	–	–	–
City of Yuba City	Feather River	–	–	–	9.6	–	–
Feather WD	FRSA	17.0	–	–	–	–	–
Garden, Oswald, Joint Board	FRSA	–	–	–	–	–	–
Garden	FRSA	12.9	5.1	–	–	–	–
Oswald	FRSA	2.9	–	–	–	–	–
Joint Board	FRSA	50.0	–	–	–	–	–
Plumas, Tudor	FRSA	–	–	–	–	–	–
Plumas	FRSA	8.0	6.0	–	–	–	–
Tudor	FRSA	5.1	0.2	–	–	–	–
Total Feather River Area		**795.8**	**186.9**	**0.0**	**37.1**	–	–

SWP CONTRACTOR	Geographic Location	FRSA Amount (TAF)	Water Right (TAF/yr)	Table A Amount (TAF)		Article 21 Demand (TAF/mon)	Other (TAF/yr)
				Ag	M&I		
Other							
Yuba County Water Agency	Yuba River	–	–	–	–	–	Variable
		–	–	–	–	–	333.6
Camp Far West ID	Yuba River	–	–	–	–	–	12.6
Bear River Exports	American R/DSA70	–	–	–	–	–	Variable
		–	–	–	–	–	95.2
Feather River Exports to American River (left bank to DSA70)	American R/DSA70	–	11.0	–	–	–	–

Table 5A.B.27 SWP South-of-the-Delta –Future Conditions

SWP Contractor	Geographic Location	Table A Amount (TAF) Ag	Table A Amount (TAF) M&I	Article 21 Demand (TAF/mon)	Losses (TAF/yr)
Alameda Co. FC&WCD, Zone 7	SBA reaches 1-4	–	47.60	1.00	–
	SBA reaches 5-6	–	33.02	None	–
	Total	–	**80.62**	**1.00**	–
Alameda County WD	SBA reaches 7-8	–	42.00	1.00	–
Santa Clara Valley WD	SBA reach 9	–	100.00	4.00	–
Oak Flat WD	CA reach 2A	5.70	–	None	–
County of Kings	CA reach 8C	9.31	–	None	–
Dudley Ridge WD	CA reach 8D	50.34	–	1.00	–
Empire West Side ID	CA reach 8C	2.00	–	1.00	–
Kern County Water Agency	CA reaches 3, 9-13B	608.86	134.60	None	–
	CA reaches 14A-C	99.20	–	180.00	–
	CA reaches 15A-16A	59.40	–	None	–
	CA reach 31A	80.67	–	None	–
	Total	**848.13**	**134.60**	**180.00**	–
Tulare Lake Basin WSD	CA reaches 8C-8D	88.92	–	15.00	–
San Luis Obispo Co. FC&WCD	CA reaches 33A-35	–	25.00	None	–
Santa Barbara Co. FC&WCD	CA reach 35	–	45.49	None	–
Antelope Valley-East Kern WA	CA reaches 19-20B, 22A-B	–	141.40	1.00	–
Castaic Lake WA	CA reach 31A	12.70	–	1.00	–
	CA reach 30	–	82.50	None	–
	Total	**12.70**	**82.50**	**1.00**	–
Coachella Valley WD	CA reach 26A	–	138.35	2.00	–

SWP Contractor	Geographic Location	Table A Amount (TAF)		Article 21 Demand (TAF/mon)	Losses (TAF/yr)
		Ag	M&I		
Crestline-Lake Arrowhead WA	CA reach 24	–	5.80	None	–
Desert WA	CA reach 26A	–	55.75	5.00	–
Littlerock Creek ID	CA reach 21	–	2.30	None	–
Mojave WA	CA reaches 19, 22B-23	–	82.80	None	–
Metropolitan WDSC	CA reach 26A	–	148.67	90.70	–
	CA reach 30	–	756.69	74.80	–
	CA reaches 28G-H	–	102.71	27.60	–
	CA reach 28J	–	903.43	6.90	–
	Total	–	**1911.50**	**200.00**	–
Palmdale WD	CA reaches 20A-B	–	21.30	None	–
San Bernardino Valley MWD	CA reach 26A	–	102.60	None	–
San Gabriel Valley MWD	CA reach 26A	–	28.80	None	–
San Gorgonio Pass WA	CA reach 26A	–	17.30	None	–
Ventura County FCD	CA reach 29H	–	3.15	None	–
	CA reach 30	–	16.85	None	–
	Total	–	**20.00**	–	–

SWP Contractor	Geographic Location	Table A Amount (TAF)		Article 21 Demand (TAF/mon)	Losses (TAF/yr)
		Ag	M&I		
SWP Losses	CA reaches 1-2	–	–	–	7.70
	SBA reaches 1-9	–	–	–	0.60
	CA reach 3	–	–	–	10.80
	CA reach 4	–	–	–	2.60
	CA reach 5	–	–	–	3.90
	CA reach 6	–	–	–	1.20
	CA reach 7	–	–	–	1.60
	CA reaches 8C-13B	–	–	–	11.90
	Wheeler Ridge Pumping Plant and CA reaches 14A-C	–	–	–	3.60
	Chrisman Pumping Plant and CA reaches 15A-18A	–	–	–	1.80
	Pearblossom Pumping Plant and CA reaches 17-21	–	–	–	5.10
	Mojave Pumping Plant and CA reaches 22A-23	–	–	–	4.00
	REC and CA reaches 24-28J	–	–	–	1.40
	CA reaches 29A-29F	–	–	–	1.90
	Castaic PWP and CA reach 29H	–	–	–	3.10
	REC and CA reach 30	–	–	–	2.40
	Total	–	–	–	**63.60**
Total		**1,017.10**	**3,038.11**	**412.00**	**63.60**

Table 5A.B.28 Meeting Participants

Aaron Miller/DWR Steve Ford/DWR Randi Field/Reclamation Gene Lee/Reclamation Lenny Grimaldo/Reclamation	Derek Hilts/USFWS Steve Detwiler/USFWS Matt Nobriga/CDFW Jim White/CDFW Craig Anderson/NMFS
Parviz Nader-Tehrani/DWR Erik Reyes/DWR Sean Sou/DWR	Robert Leaf/CH2M HILL Derya Sumer/CH2M HILL

The simulated OMR flow conditions and CVP and SWP Delta export operations, resulting from these assumptions, are believed to be a reasonable representation of conditions expected to prevail under the RPAs over large spans of years (refer to CalSim II modeling results for more details on simulated operations). Actual OMR flow conditions and Delta export operations will differ from simulated operations for numerous reasons, including having near real-time knowledge and/or estimates of turbidity, temperature, and fish spatial distribution that are unavailable for use in CalSim II over a long period of record. Because these factors and others are believed to be critical for smelt entrainment risk management, the USFWS adopted an adaptive process in defining the RPAs. Given the relatively generalized representation of the RPAs, assumed for CalSim II modeling, much caution is required when interpreting outputs from the model.

5A.B8.1.1 Action 1: Adult Delta Smelt Migration and Entrainment (RPA Component 1, Action 1 – First Flush)

5A.B8.1.1.1 Action 1 Summary:

Objective: A fixed duration action to protect pre-spawning adult Delta Smelt from entrainment during the first flush, and to provide advantageous hydrodynamic conditions early in the migration period.

Action: Limit exports so that the average daily combined OMR flow is no more negative than -2,000 cfs for a total duration of 14 days, with a 5-day running average no more negative than -2,500 cfs (within 25 percent).

Timing:

Part A: December 1 to December 20 – The Smelt Working Group (SWG) may recommend a start date to the USFWS based upon an examination of turbidity data from Prisoner's Point, Holland Cut, Victoria Canal and salvage data from CVP and SWP (see below), and other parameters important to the protection of Delta Smelt including (but not limited to) preceding conditions of X2, the Fall Midwater Trawl Survey (FMWT), and river flows. The USFWS will make the final determination.

Part B: After December 20 – The action will begin if the 3-day average turbidity at Prisoner's Point, Holland Cut, and Victoria Canal exceeds 12 nephelometric turbidity units (NTU). However the SWG can recommend a delayed start or interruption based on other conditions such as Delta inflow that may affect vulnerability to entrainment.

Triggers (Part B):

Turbidity: Three-day average of 12 NTU or greater at all three turbidity stations (Prisoner's Point, Holland Cut, and Victoria Canal)

OR

Salvage: Three days of Delta Smelt salvage after December 20 at either facility or cumulative daily salvage count that is above a risk threshold based upon the daily salvage index approach reflected in a daily salvage index value greater than or equal to 0.5 (daily Delta Smelt salvage greater than one-half of the prior year FMWT index value).

The window for triggering Action 1 concludes when either off-ramp condition described below is met. These off-ramp conditions may occur without Action 1 ever being triggered. If this occurs, then Action 3 is triggered, unless the USFWS concludes on the basis of the totality of available information that Action 2 should be implemented instead.

Off-ramps:

Temperature: Water temperature reaches 12 degrees Celsius (°C) based on a three station daily mean at the temperature stations Mossdale, Antioch, and Rio Vista

OR

Biological: Onset of spawning (presence of spent females in the Spring Kodiak Trawl Survey [SKT] or at Banks or Jones).

5A.B8.1.1.2 Action 1 Assumptions for CalSim II Modeling Purposes:

An approach was selected based on hydrologic and assumed turbidity conditions. Under this general assumption, Part A of the action was never assumed because, on the basis of historical salvage data, it was considered unlikely or rarely to occur. Part B of the action was assumed to occur if triggered by turbidity conditions. This approach was believed to tend to a more conservative interpretation of the frequency, timing, and extent of this action. The assumptions used for modeling are as follows:

Action: Limit exports so that the average daily OMR flow is no more negative than -2,000 cfs for a total duration of 14 days, with a 5-day running average no more negative than 2,500 cfs (within 25 percent of the monthly criteria).

Timing: If turbidity-trigger conditions first occur in December, then the action starts on December 21; if turbidity-trigger conditions first occur in January, then the action starts on January 1; if turbidity-trigger conditions first occur in February, then the action starts on February 1; and if turbidity-trigger conditions first occur in March, then the action starts on March 1. It is assumed that once the action is triggered, it continues for 14 days.

Triggers: Only an assumed turbidity trigger that is based on hydrologic outputs was considered. A surrogate salvage trigger or indicator was not included because there was no way to model it.

Turbidity: If the monthly average unimpaired Sacramento River Index (four-river index: sum of Sacramento, Yuba, Feather, and American Rivers) exceeds 20,000 cfs, then it is assumed that an event, in which the 3-day average turbidity at Hood exceeds 12 NTU, has occurred within the month. It is assumed that an event at Sacramento River is a reasonable indicator of this condition occurring, within the month, at all three turbidity stations: Prisoner's Point, Holland Cut, and Victoria Canal.

A chart showing the relationship between turbidity at Hood (number of days with turbidity is greater than 12 NTU) and Sacramento River Index (sum of monthly flow at four stations on the Sacramento, Feather, Yuba and American Rivers, from 2003 to 2006) is shown on Figure 5A.B.1. For months when average Sacramento River Index is between 20,000 cfs and 25,000 cfs, a transition is observed in number of days with Hood turbidity greater than 12 NTU. For months when average Sacramento River Index is above 25,000 cfs, Hood turbidity was always greater than 12 NTU for as many as 5 days or more within the month in which the flow occurred. For a conservative approach, 20,000 cfs is used as the threshold value.

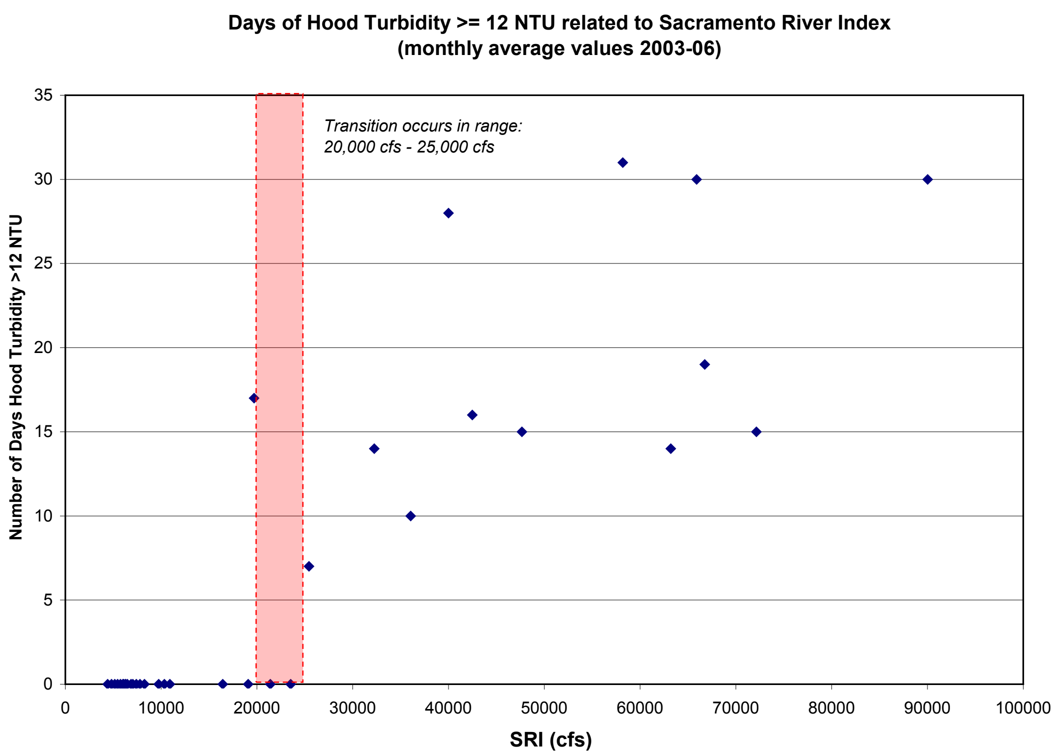

Figure 5A.B.1 Relationship between Turbidity at Hood and Sacramento River Index

Salvage: It is assumed that salvage would occur when first flush occurs.

Off-ramps: Only temperature-based off-ramping is considered. A surrogate biological off-ramp indicator was not included.

Temperature: Because the water temperature data at the three temperature stations (Antioch, Mossdale, and Rio Vista) are only available for years after 1984, another parameter was sought for use as an alternative indicator. It is observed that monthly average air temperature at Sacramento Executive Airport generally trends with the three-station average water temperature (see Figure 5A.B.2). Using this alternative indicator, monthly average air temperature is assumed to occur in the middle of the month, and values are interpolated on a daily basis to obtain daily average water temperature. Using the correlation between air and water temperature, estimated daily water temperatures are estimated from the 82-year monthly average air temperature. Dates when the three-station average temperature reaches 12°C are recorded and used as input in CalSim II. A 1:1 correlation was used for simplicity instead of using the trend line equation illustrated on Figure 5A.B.2.

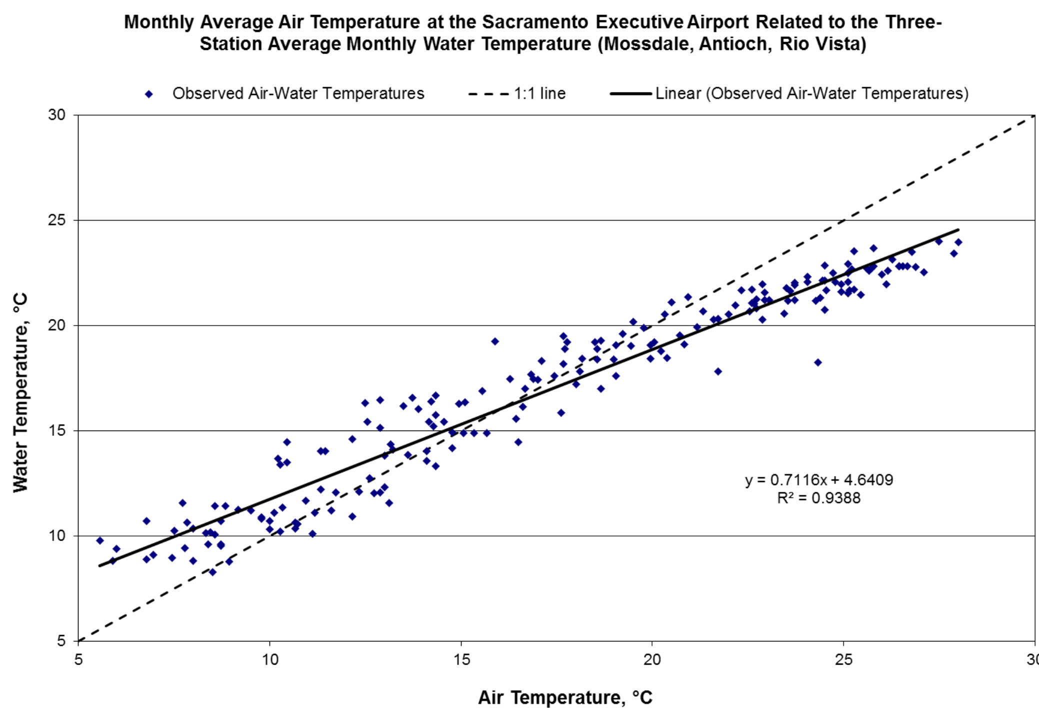

Figure 5A.B.2 Relationship between Monthly Average Air Temperature at the Sacramento Executive Airport and the Three-station Average Monthly Water Temperature

Other Modeling Considerations: For monthly analysis for the month of December (in which Action 1 does not begin until December 21), a background OMR flow must be assumed for the purpose of calculating a day-weighted average for implementing a partial-month action condition. When necessary, the background OMR flow for December was assumed to be -8,000 cfs.

For the additional condition to meet a 5-day running average no more negative than 2,500 cfs (within 25 percent), Paul Hutton's equation is used. Hutton concluded that with stringent OMR standards (1,250 to 2,500 cfs), the 5-day average would control more frequently than the 14-day average, but it is less likely to control at higher flows. Therefore, the CalSim II implementation includes both a 14-day (approximately monthly average) and a 5-day average flow criteria based on Hutton's methodology.

Rationale: The following is an overall summary of the rationale for the preceding interpretation of RPA Action 1.

December 1 to December 20 for initiating Action 1 is not considered because seasonal peaks of Delta Smelt salvage are rare prior to December 20. Adult Delta Smelt spawning migrations often begin following large precipitation events that happen after mid-December.

Salvage of adult Delta Smelt often corresponds with increases in turbidity and exports. On the basis of the above discussion and Figure 5A.B.2, Sacramento River Index greater than 25,000 cfs is assumed to be an indicator of turbidity trigger being reached at all three turbidity stations: Prisoner's Point, Holland Cut, and Victoria Canal. Most sediment enters the Delta from the Sacramento River during flow pulses; therefore, a flow indicator based on only Sacramento River flow is used.

The 12°C threshold for the off-ramp criterion is a conservative estimate of when Delta Smelt larvae begin successfully hatching. Once hatched, the larvae move into the water column where they are potentially vulnerable to entrainment.

Results: Using these assumptions, in a typical CalSim II 82-year simulation (1922 through 2003 hydrologic conditions), Action 1 will occur 29 times in the December 21 to January 3 period, 14 times in the January 1 to January 14 period, 13 times in the February 1 to February 14 period, and 17 times in the March 1 to March 14 period. In three of these 17 occurrences (1934, 1991, and 2001), Action 3 is triggered before Action 1 and therefore Action 1 is bypassed. Action 1 is not triggered in nine of the 82 years (1924, 1929, 1931, 1955, 1964, 1976, 1977, 1985, and 1994), typically critically dry years. Refer to CalSim II modeling results for more details on simulated operations of OMR, Delta exports, and other parameters of interest.

5A.B8.1.2 Action 2: Adult Delta Smelt Migration and Entrainment (RPA Component 1, Action 2)

5A.B8.1.2.1 Action 2 Summary:

Objective: An action implemented using an adaptive process to tailor protection to changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions.

Action: The range of net daily OMR flows will be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions (and the general guidelines below), specific OMR flows within this range are recommended by the SWG from the onset of Action 2 through its termination (see Adaptive Process description in the BO). The SWG would provide weekly recommendations based upon review of the sampling data, from real-time salvage data at the CVP and SWP, and utilizing most up-to-date technological expertise and knowledge relating population status and predicted distribution to monitored physical variables of flow and turbidity. The USFWS will make the final determination.

Timing: Beginning immediately after Action 1. Before this date (in time for operators to implement the flow requirement) the SWG will recommend specific requirement OMR flows based on salvage and on physical and biological data on an ongoing basis. If Action 1 is not implemented, the SWG may recommend a start date for the implementation of Action 2 to protect adult Delta Smelt.

Suspension of Action:

Flow: OMR flow requirements do not apply whenever a 3-day flow average is greater than or equal to 90,000 cfs in Sacramento River at Rio Vista and 10,000 cfs in San Joaquin River at Vernalis. Once such flows have abated, the OMR flow requirements of the Action are again in place.

Off-ramps:

Temperature: Water temperature reaches 12°C based on a three-station daily average at the temperature stations: Rio Vista, Antioch, and Mossdale.

OR

Biological: Onset of spawning (presence of a spent female in SKT or at either facility).

5A.B8.1.2.2 Action 2 Assumptions for CalSim II Modeling Purposes:

An approach was selected based on the occurrence of Action 1 and X2 salinity conditions. This approach selects from between two OMR flow tiers depending on the previous month's X2 position, and is never more constraining than an OMR criterion of -3,500 cfs. The assumptions used for modeling are as follows:

Action: Limit exports so that the average daily OMR flow is no more negative than -3,500 or -5,000 cfs depending on the previous month's ending X2 location (-3,500 cfs if X2 is east of Roe Island, or -5,000 cfs if X2 is west of Roe Island), with a 5-day running average within 25 percent of the monthly criteria (no more negative than -4,375 cfs if X2 is east of Roe Island, or -6,250 cfs if X2 is west of Roe Island).

Timing: Begins immediately after Action 1 and continues until initiation of Action 3.

In a typical CalSim II 82-year simulation, Action 1 was not triggered in nine of the 82 years. In these conditions it is assumed that OMR flow should be maintained no more negative than -5,000 cfs.

Suspension of Action: A flow peaking analysis, developed by Paul Hutton (2009), is used to determine the likelihood of a 3-day flow average greater than or equal to 90,000 cfs in Sacramento River at Rio Vista and a 3-day flow average greater than or equal to 10,000 cfs in San Joaquin River at Vernalis occurring within the month. It is assumed that when the likelihood of these conditions occurring exceeds 50 percent, Action 2 is suspended for the full month, and OMR flow requirements do not apply. The likelihood of these conditions occurring is evaluated each month, and Action 2 is suspended for 1 month at a time whenever both of these conditions occur.

The equations for likelihood (frequency of occurrence) are as follows:

- Frequency of Rio Vista 3-day flow average > 90,000 cfs:
  - 0 percent when Freeport monthly flow < 50,000 cfs, OR
  - (0.00289 × Freeport monthly flow – 146) percent when 50,000 cfs ≤ Freeport plus Yolo Bypass monthly flow ≤ 85,000 cfs, OR
  - 100 percent when Freeport monthly flow >85,000 cfs
- Frequency of Vernalis 3-day flow average > 10,000 cfs:
  - 0 percent when Vernalis monthly flow < 6,000 cfs, OR
  - (0.00901 × Vernalis monthly flow – 49) percent when 6,000 cfs ≤ Vernalis monthly flow ≤ 16,000 cfs, OR
  - 100 percent when Vernalis monthly flow >16,000 cfs

The frequency of the Rio Vista 3-day flow average > 90,000 cfs equals 50 percent when Freeport plus Yolo Bypass monthly flow is 67,820 cfs and the frequency of Vernalis 3-day flow average > 10,000 cfs equals 50 percent Vernalis monthly flow is 10,988 cfs. Therefore these two flow values are used as thresholds in the model.

Off-ramps: Only temperature-based off-ramping is considered. A surrogate biological off-ramp indicator was not included.

<u>Temperature:</u> Because the water temperature data at the three temperature stations (Antioch, Mossdale, and Rio Vista) are only available for years after 1984, another parameter was sought for use as an alternative indicator. It is observed that monthly average air temperature at Sacramento Executive Airport generally trends with the three-station average water temperature (Figure 5A.B.2). Using this alternative indicator, monthly average air temperature is assumed to occur in the middle of the month, and values are interpolated on a daily basis to obtain daily average water temperature. Using the correlation between air and water temperature, daily water temperatures are estimated from the 82-year monthly average air temperature. Dates when the three-station average temperature reaches 12°C are recorded and used as input in CalSim II. A 1:1 correlation was used for simplicity instead of using the trend line equation illustrated on Figure 5A.B.2.

Rationale: The following is an overall summary of the rationale for the preceding interpretation of RPA Action 2.

Action 2 requirements are based on X2 location that is dependent on the Delta outflow. If outflows are very high, fewer Delta Smelt will spawn east of Sherman Lake; therefore, the need for OMR restrictions is lessened.

In the case of Action 1 not being triggered, CDFW suggested OMR > -5,000 cfs, following the actual implementation of the BO in winter 2009 because some adult Delta Smelt might move into the Central Delta without a turbidity event.

Action 2 is suspended when the likelihood of a 3-day flow average greater than or equal to 90,000 cfs in Sacramento River at Rio Vista and a 3-day flow average greater than or equal to 10,000 cfs in San Joaquin River at Vernalis occurring concurrently within the month exceeds 50 percent, because at extreme high flows the majority of adult Delta Smelt will be distributed downstream of the Delta and entrainment concerns will be very low.

The 12°C threshold for the off-ramp criterion is a conservative estimate of when Delta Smelt larvae begin successfully hatching. Once hatched, the larvae move into the water column where they are potentially vulnerable to entrainment.

Results: Using these assumptions, in a typical CalSim II 82-year simulation (1922 through 2003 hydrologic conditions), Action 1, and therefore Action 2, does not occur in 12 of the 82 years (1924, 1929, 1931, 1934, 1955, 1964, 1976, 1977, 1985, 1991, 1994, and 2001), typically critically dry years. The criteria for suspension of OMR minimum flow requirements, described above, results in potential suspension of Action 2 (if Action 2 is active) six times in January, 11 times in February, six times in March (however, Action 2 was not active three of these six times), and two times in April. The result is that Action 2 is in effect 37 times in January (with OMR at -3,500 cfs 29 times, and at -5,000 cfs 8 times), 43 times in February (with OMR at -3,500 cfs 25 times, and at -5,000 cfs 18 times), 31 times in March (with OMR at -3,500 cfs 14 times, and at -5,000 cfs 17 times), and 80 times in April (with OMR at -3,500 cfs 46 times, and at -5,000 cfs 34 times). The frequency each month is a cumulative result of the action being triggered in the current or prior months. Refer to CalSim II modeling results for more details on simulated operations of OMR, Delta exports, and other parameters of interest.

5A.B8.1.3 Action 3: Entrainment Protection of Larval and Juvenile Delta Smelt (RPA Component 2)

5A.B8.1.3.1 Action 3 Summary:

Objective: Minimize the number of larval Delta Smelt entrained at the facilities by managing the hydrodynamics in the Central Delta flow levels pumping rates spanning a time sufficient for protection of larval Delta Smelt, e.g., by using a VAMP-like action. Because protective OMR flow requirements vary over time (especially between years), the action is adaptive and flexible within appropriate constraints.

Action: Net daily OMR flow will be no more negative than -1,250 to -5,000 cfs based on a 14-day running average with a simultaneous 5-day running average within 25 percent of the applicable requirement for OMR. Depending on extant conditions (and the general guidelines below), specific OMR flows within this range are recommended by the SWG from the onset of Action 3 through its termination (see Adaptive Process in Introduction). The SWG would provide these recommendations based upon weekly review of sampling data, from real-time salvage data at the CVP and SWP, and expertise and knowledge relating population status and predicted distribution to monitored physical variables of flow and turbidity. The USFWS will make the final determination.

Timing: Initiate the action after reaching the triggers below, which are indicative of spawning activity and the probable presence of larval Delta Smelt in the South and Central Delta. Based upon daily salvage data, the SWG may recommend an earlier start to Action 3. The USFWS will make the final determination.

Triggers:

Temperature: When temperature reaches 12°C based on a three-station average at the temperature stations: Mossdale, Antioch, and Rio Vista.

OR

Biological: Onset of spawning (presence of spent females in SKT or at either facility).

Off-ramps:

Temporal: June 30;

OR

Temperature: Water temperature reaches a daily average of 25°C for three consecutive days at Clifton Court Forebay.

5A.B8.1.4 Action 3 Assumptions for CalSim II Modeling Purposes:

An approach was selected based on assumed temperature and X2 salinity conditions. This approach selects from among three OMR flow tiers depending on the previous month's X2 position and ranges from an OMR criteria of -1,250 to -5,000 cfs. Because of the potential low export conditions that could occur at an OMR criterion of -1,250 cfs, a criterion for minimum exports for health and safety is also assumed. The assumptions used for modeling are as follows:

Action: Limit exports so that the average daily OMR flow is no more negative than -1,250, -3,500, or -5,000 cfs, depending on the previous month's ending X2 location (-1,250 cfs if X2 is east of Chipps Island, -5,000 cfs if X2 is west of Roe Island, or -3,500 cfs if X2 is between Chipps and Roe Island, inclusively), with a 5-day running average within 25 percent of the monthly criteria (no more negative than -1,562 cfs if X2 is east of Chipps Island, -6,250 cfs if X2 is west of Roe Island, or -4,375 cfs if X2 is between Chipps and Roe Island). The more constraining of this OMR requirement or the VAMP requirement will be selected during the VAMP period (April 15 to May 15). Additionally, in the case of the month of June, the OMR criterion from May is maintained through June (it is assumed that June OMR should not be more constraining than May).

Timing: Begins immediately upon temperature trigger conditions and continues until off-ramp conditions are met.

Triggers: Only temperature trigger conditions are considered. A surrogate biological trigger was included.

Temperature: Because the water temperature data at the three temperature stations (Antioch, Mossdale, and Rio Vista) are only available for years after 1984, another parameter was sought to be used as an alternative indicator. It is observed that monthly average air temperature at Sacramento Executive Airport generally trends with the three-station average water temperature (Figure 5A.B.2). Using this alternative indicator, monthly average air temperature is assumed to occur in the middle of the month, and values are interpolated on a daily basis to obtain daily average water temperature. Using the correlation between air and water temperature, estimated daily water temperatures are estimated from the 82-year monthly average air temperature. Dates when the three-station average temperature reaches 12°C are recorded and used as input in CalSim II. A 1:1 correlation was used for simplicity instead of using the trend line equation illustrated on Figure 5A.B.2.

Biological: Onset of spawning is assumed to occur no later than May 30.

Clarification Note: This text previously read "Onset of spawning is assumed to occur no later than April 30", where the CalSim II lookup table has May 30 as the date. Based on RPA team discussions in August 2009, it was agreed upon that onset of spawning could not be modeled in CalSim II. This trigger was actually coded as a placeholder in case in the future this trigger was to be used; the date was selected purposefully in a way that it wouldn't affect modeling results. Temperature trigger for Action 3 does occur before end of April. Therefore it does not matter whether the document is corrected to read May 30 or the model lookup table is changed to April 30.

Off-ramps:

Temporal: It is assumed that the ending date of the action would be no later than June 30.

OR

Temperature: Only 17 years of data are available for Clifton Court water temperature. A similar approach as used in the temperature trigger was considered. However, because 3 consecutive days of water temperature greater than or equal to 25°C is required, a correlation between air temperature and water temperature did not work well for this off-ramp criterion. Out of the 17 recorded years, in 1 year the criterion was triggered in May (May 31), and in 3 years it was triggered in June (June 3, 21, and 27). In all other years it was observed in July or later. With only four data points before July, it was not possible to generate a rule based on statistics. Therefore, temporal off-ramp criterion (June 30) is used for all years.

Health and Safety: In CalSim II, a minimum monthly Delta export criterion of 300 cfs for SWP and 600 cfs (or 800 cfs depending on Shasta storage) for CVP is assumed. This assumption is suitable for dry-year conditions when allocations are low and storage releases are limited; however, minimum monthly exports need to be made for protection of public health and safety (health and safety deliveries upstream of San Luis Reservoir).

In consideration of the severe export restrictions associated with the OMR criteria established in the RPAs, an additional set of health and safety criterion is assumed. These export restrictions could lead to a situation in which supplies are available and allocated; however, exports are curtailed forcing San Luis to have an accelerated drawdown rate. For dam safety at San Luis Reservoir, 2 feet per day is the maximum acceptable drawdown rate. Drawdown occurs faster in summer months and peaks in June when the agricultural demands increase. To avoid rapid drawdown in San Luis Reservoir, a relaxation of OMR is allowed so that exports can be maintained at 1,500 cfs in all months if needed.

This modeling approach may not fit the real-life circumstances. In summer months, especially in June, the assumed 1,500 cfs for health and safety may not be sufficient to keep San Luis drawdown below a safe 2 feet per day; under such circumstances the projects would be required to increase pumping in order to maintain dam safety.

Rationale: The following is an overall summary of the rationale for the preceding interpretation of RPA Action 3.

The geographic distribution of larval and juvenile Delta Smelt is tightly linked to X2 (or Delta outflow). Therefore, the percentage of the population likely to be found east of Sherman Lake is also influenced by the location of X2. The X2-based OMR criteria were intended to model an expected management response to the general increase in Delta Smelt's risk of entrainment as a function of increasing X2.

The 12°C threshold for the trigger criterion is a conservative estimate of when Delta Smelt larvae begin successfully hatching. Once hatched, the larvae move into the water column where they are potentially vulnerable to entrainment.

The annual salvage season for Delta Smelt typically ends as South Delta water temperatures warm to lethal levels during summer. This usually occurs in late June or early July. The laboratory-derived upper lethal temperature for Delta Smelt is 25.4°C.

Results: Action 3 occurs 30 times in February (with OMR at -1,250 cfs 9 times, at -3,500 cfs 11 times, and at -5,000 cfs 10 times), 76 times in March (with OMR at -1,250 cfs 15 times, at -3,500 cfs 27 times, and at -5,000 cfs 34 times), all times (82) in April (with OMR at -1,250 cfs 17 times, at -3,500 cfs 29 times, and at -5,000 cfs 35 times), all times (82) in May (with OMR at -1,250 cfs 19 times, at -3,500 cfs 37 times, and at -5,000 cfs 26 times), and 70 times in June (with OMR at -1,250 cfs 7 times, at -3,500 cfs 37 times, and at -5,000 cfs 26 times). Refer to CalSim II modeling results for more details on simulated operations of OMR, Delta exports and other parameters of interest. (Note: The above information is based on the August 2009 version of the model and documents the development process; more recent versions of the model may have different results.)

5A.B8.1.5 Action 4: Estuarine Habitat During Fall (RPA Component 3)

5A.B8.1.5.1 Action 4 Summary:

Objective: Improve fall habitat for Delta Smelt by managing of X2 through increasing Delta outflow during fall when the preceding water year was wetter than normal. This will help return ecological conditions of the estuary to that which occurred in the late 1990s when smelt populations were much larger. Flows provided by this action are expected to provide direct and indirect benefits to Delta Smelt. Both the direct and indirect benefits to Delta Smelt are considered equally important to minimize adverse effects.

Action: Subject to adaptive management as described below, provide sufficient Delta outflow to maintain average X2 for September and October no greater (more eastward) than 74 kilometers in the fall following Wet years and 81 kilometers in the fall following Above Normal years. The monthly average X2 position is to be maintained at or seaward of these location for each individual month and not averaged over the 2-month period. In November, the inflow to CVP and SWP reservoirs in the Sacramento Basin will be added to reservoir releases to provide an added increment of Delta inflow and to augment Delta outflow up to the fall X2 target. The action will be evaluated and may be modified or terminated as determined by the USFWS.

Timing: September 1 to November 30.

Triggers: Wet and Above Normal water-year type classification from the 1995 Water Quality Control Plan that is used to implement D-1641.

5A.B8.1.5.2 Action 4 Assumptions for CalSim II Modeling Purposes:

Model is modified to increase Delta outflow to meet monthly average X2 requirements for September and October and subsequent November reservoir release actions in Wet and Above Normal years. No off-ramps are considered for reservoir release capacity constraints. Delta exports may or may not be reduced as part of reservoir operations to meet this action. The action is summarized in Table 5A.B.29.

Table 5A.B.29 Summary of Action 4 implementation in CalSim II

Fall Months following Wet or Above Normal Years	Action Implementation
September	Meet monthly average X2 requirement (74 km in Wet years, 81 km in Above Normal years)
October	Meet monthly average X2 requirement (74 km in Wet years, 81 km in Above Normal years)
November	Add reservoir releases up to natural inflow as needed to continue to meet monthly average X2 requirement (74 km in Wet years, 81 km in Above Normal years)

Rationale: Action 4 requirements are based on determining X2 location. Adjustment and retraining of the ANN was also completed to address numerical sensitivity concerns.

Results: There are 38 September and 37 October months that the action is triggered over the 82-year simulation period.

5A.B8.1.6 Action 5: Temporary Spring Head of Old River Barrier and the Temporary Barrier Project (RPA Component 2)

5A.B8.1.6.1 Action 5 Summary:

Objective: To minimize entrainment of larval and juvenile Delta Smelt at Banks and Jones or from being transported into the South and Central Delta, where they could later become entrained.

Action: Do not install the spring HORB if Delta Smelt entrainment is a concern. If installation of the HORB is not allowed, the agricultural barriers would be installed as described in the project description. If installation of the HORB is allowed, the Temporary Barrier Project (TBP) flap gates would be tied in the open position until May 15.

Timing: The timing of the action would vary depending on the conditions. The normal installation of the spring temporary HORB and the TBP is in April.

Triggers: For Delta Smelt, installation of the HORB will only occur when particle tracking modeling results show that entrainment levels of Delta Smelt will not increase beyond 1 percent at Station 815 as a result of installing the HORB.

Off-ramps: If Action 3 ends or May 15, whichever comes first.

5A.B8.1.6.2 Action 5 Assumptions for CalSim II and DSM2 Modeling Purposes:

The South Delta Improvement Program Stage 1 is not included in the Existing and Future Condition assumptions being used for CalSim II and DSM2 baselines. The TBP is assumed instead. The TBP specifies that HORB be installed and operated during April 1 through May 31 and September 16 through November 30. In response to the USFWS BO, Action 5, the HORB is assumed to not be installed during April 1 through May 31.

5A.B9 NMFS RPA Implementation

The information included in this section is consistent with what was provided to and agreed by the lead agencies in the, “Representation of U.S. Fish and Wildlife Service Biological Opinion Reasonable and Prudent Alternative Actions for CalSim II Planning Studies”, on February 10, 2010 (updated May 18, 2010).

5A.B9.1 Representation of National Marine Fisheries Service Biological Opinion Reasonable and Prudent Alternative Actions for CalSim II Planning Studies

The NMFS BO was released on June 4, 2009. To develop CalSim II modeling assumptions to represent the operations related RPA actions required by this BO, DWR led a series of meetings that involved members of fisheries and project agencies. The purpose for establishing this group was to prepare the assumptions and CalSim II implementations to represent the RPAs in both Existing- and Future-Condition CalSim II simulations for future planning studies.

This memorandum summarizes the approach that resulted from these meetings and the modeling assumptions that were laid out by the group. The scope of this memorandum is limited to the June 4, 2009 BO. All descriptive information of the RPAs is taken from the BO.

Table 5A.B.30 lists the participants that contributed to the meetings and information summarized in this document.

Table 5A.B.30 Meeting Participants

Aaron Miller/DWR Randi Field/Reclamation Lenny Grimaldo/Reclamation Henry Wong/Reclamation	Derek Hilts/USFWS Roger Guinee/ USFWS Matt Nobriga/CDFW Bruce Oppenheim/ NMFS
Parviz Nader-Tehrani/ DWR Erik Reyes/ DWR Sean Sou/ DWR Paul A. Marshall/ DWR Ming-Yen Tu/ DWR Xiaochun Wang/ DWR	Robert Leaf/CH2M HILL Derya Sumer/CH2M HILL

The RPA actions in NMFS's BO are based on physical and biological processes that do not lend themselves to simulations using a monthly time step. Much scientific and modeling judgment has been employed to represent the implementation of the RPAs. The group believes the logic put into CalSim II represents the RPAs as best as possible at this time, given the scientific understanding of environmental factors enumerated in the BO and the limited historical data for some of these factors.

Given the relatively generalized representation of the RPAs assumed for CalSim II modeling, much caution is required when interpreting outputs from the model.

5A.B9.1.1 Action Suite 1.1 Clear Creek

Suite Objective: The RPA actions described below were developed based on a careful review of past flow studies, current operations, and future climate change scenarios. These actions are necessary to address adverse project effects on flow and water temperature that reduce the viability of spring-run and Central Valley Steelhead in Clear Creek.

5A.B9.1.1.1 Action 1.1.1 Spring Attraction Flows

Objective: Encourage spring-run movement to upstream Clear Creek habitat for spawning.

Action: Reclamation shall annually conduct at least two pulse flows in Clear Creek in May and June of at least 600 cfs for at least 3 days for each pulse, to attract adult spring-run holding in the Sacramento River main stem.

Action 1.1.1 Assumptions for CalSim II Modeling Purposes

Action: Model is modified to meet 600 cfs for 3 days twice in May. In the CalSim II analysis, flows sufficient to increase flow up to 600 cfs for a total of 6 days are added to the flows that would have otherwise occurred in Clear Creek.

Rationale: CalSim II is a monthly model. The monthly flow in Clear Creek is an underestimate of the actual flows that would occur subject to daily operational constraints at Whiskeytown Reservoir. The additional flow to meet 600 cfs for a total of 6 days was added to the monthly average flow model.

5A.B9.1.1.2 Action 1.1.5 Thermal Stress Reduction

Objective: To reduce thermal stress to over-summering steelhead and spring-run during holding, spawning, and embryo incubation.

Action: Reclamation shall manage Whiskeytown releases to meet a daily water temperature of: (1) 60°F at the Igo gauge from June 1 through September 15 and (2) 56°F at the Igo gauge from September 15 to October 31.

5A.B9.1.1.3 Action 1.1.5 Assumptions for CalSim II Modeling Purposes

Action: It is assumed that temperature operations can perform reasonably well with flows included in model.

Rationale: A temperature model of Whiskeytown Reservoir has been developed by Reclamation. Further analysis using this or other temperature model is required to verify the statement that temperature operations can perform reasonably well with flows included in model.

5A.B9.1.2 Action Suite 1.2 Shasta Operations

Objectives: To address the avoidable and unavoidable adverse effects of Shasta operations on winter-run and spring-run:

- Ensure a sufficient cold water pool to provide suitable temperatures for winter-run spawning between Balls Ferry and Bend Bridge in most years, without sacrificing the potential for cold water management in a subsequent year. Additional actions to those in the 2004 CVP and SWP operations opinion are needed, due to increased vulnerability of the population to temperature effects attributable to changes in Trinity River ROD operations, projected climate change hydrology, and increased water demands in the Sacramento River system.

- Ensure suitable spring-run temperature regimes, especially in September and October. Suitable spring-run temperatures will also partially minimize temperature effects to naturally spawning, non-listed Sacramento River fall-run, an important prey base for endangered Southern Residents.

- Establish a second population of winter-run in Battle Creek as soon as possible, to partially compensate for unavoidable project-related effects on the one remaining population.
- Restore passage at Shasta Reservoir with experimental reintroductions of winter-run to the upper Sacramento and/or McCloud rivers, to partially compensate for unavoidable project related effects on the remaining population.

5A.B9.1.2.1 Action 1.2.1 Performance Measures

Objective: To establish and operate to a set of performance measures for temperature compliance points and End-of-September (EOS) carryover storage, enabling Reclamation and NMFS to assess the effectiveness of this suite of actions over time. Performance measures will help to ensure that the beneficial variability of the system from changes in hydrology will be measured and maintained.

Action: To ensure a sufficient cold water pool to provide suitable temperatures, long-term performance measures for temperature compliance points and EOS carryover storage at Shasta Reservoir shall be attained. Performance measures for EOS carryover storage at Shasta Reservoir are as follows:

- 87 percent of years: Minimum EOS storage of 2.2 MAF
- 82 percent of years: Minimum EOS storage of 2.2 MAF and end-of-April storage of 3.8 MAF in following year (to maintain potential to meet Balls Ferry compliance point)
- 40 percent of years: Minimum EOS storage 3.2 MAF (to maintain potential to meet Jelly's Ferry compliance point in following year)

Performance measures (measured as a 10-year running average) for temperature compliance points during summer season are:

- Meet Clear Creek Compliance point 95 percent of time
- Meet Balls Ferry Compliance point 85 percent of time
- Meet Jelly's Ferry Compliance point 40 percent of time
- Meet Bend Bridge Compliance point 15 percent of time

5A.B9.1.2.2 Action 1.2.1 Assumptions for CalSim II Modeling Purposes

Action: No specific CalSim II modeling code is implemented to simulate the performance measures identified. System performance will be assessed and evaluated through post-processing of various model results.

Rationale: Given that the performance criteria are based on the CalSim II modeling data used in preparation of the Biological Assessment, the system performance after application of the RPAs should be similar as a percentage of years that the end-of-April storage and temperature compliance requirements are met over the simulation period. Post-processing of modeling results will be compared to various new operating scenarios as needed to evaluate performance criteria and appropriateness of the rules developed.

5A.B9.1.2.3 Action 1.2.2 November through February Keswick Release Schedule (Fall Actions)

Objective: Minimize impacts to listed species and naturally spawning non-listed fall-run from high water temperatures by implementing standard procedures for release of cold water from Shasta Reservoir.

Action: Depending on EOS carryover storage and hydrology, Reclamation shall develop and implement a Keswick release schedule, and reduce deliveries and exports as needed to achieve performance measures.

Action 1.2.2 Assumptions for CalSim II Modeling Purposes

Action: No specific CalSim II modeling code is implemented to simulate the performance measures identified. Keswick flows based on operation of 3406(b)(2) releases in OCAP Study 7.1 (for Existing) and Study 8 (for Future) are used in CalSim II. These flows will be reviewed for appropriateness under this action**.** A post-process based evaluation similar to what has been explained in Action 1.2.1 will be conducted.

Rationale: Performance measures are set as percentage of years that the end-of-September and temperature compliance requirements are met over the simulation period. Post-processing of modeling results will be compared to various new operating scenarios as needed to evaluate performance criteria and appropriateness of the rules developed.

5A.B9.1.2.4 Action 1.2.3 February Forecast; March – May 14 Keswick Release Schedule (Spring Actions)

Objective: To conserve water in Shasta Reservoir in the spring in order to provide sufficient water to reduce adverse effects of high water temperature in the summer months for winter-run, without sacrificing carryover storage in the fall.

Action:

- Reclamation shall make its February forecast of deliverable water based on an estimate of precipitation and runoff within the Sacramento River basin at least as conservative as the 90 percent probability of exceedance. Subsequent updates of water delivery commitments must be based on monthly forecasts at least as conservative as the 90 percent probability of exceedance.
- Reclamation shall make releases to maintain a temperature compliance point not in excess of 56°F between Balls Ferry and Bend Bridge from April 15 through May 15.

Action 1.2.3 Assumptions for CalSim II Modeling Purposes

Action: No specific CalSim II modeling code is implemented to simulate the performance measures identified. It is assumed that temperature operations can perform reasonably well with flows included in model.

Rationale: Temperature models of Shasta Lake and the Sacramento River have been developed by Reclamation. This modeling reflects current facilities for temperature controlled releases. Further analysis using this or another temperature model can further verify that temperature operations can perform reasonably well with flows included in model and temperatures are met reliably at each of the compliance points. In the future, it may be that adjusted flow schedules may need to be developed based on development of temperature model runs in conjunction with CalSim II modeled operations.

5A.B9.1.2.5 Action 1.2.4 May 15 through October Keswick Release Schedule (Summer Action)

Objective: To manage the cold water storage within Shasta Reservoir and make cold water releases from Shasta Reservoir to provide suitable habitat temperatures for winter-run, spring-run, Central Valley Steelhead, and Southern Distinct Population Segment (DPS) of Green Sturgeon in the Sacramento River between Keswick Dam and Bend Bridge, while retaining sufficient carryover storage to manage for next year's cohorts. To the extent feasible, manage for suitable temperatures for naturally spawning fall-run.

Action: Reclamation shall manage operations to achieve daily average water temperatures in the Sacramento River between Keswick Dam and Bend Bridge as follows:

- Not in excess of 56°F at compliance locations between Balls Ferry and Bend Bridge from May 15 through September 30 for protection of winter-run, and not in excess of 56°F at the same compliance locations between Balls Ferry and Bend Bridge from October 1 through October 31 for protection of mainstem spring run, whenever possible.
- Reclamation shall operate to a final Temperature Management Plan starting May 15 and ending October 31.

Action 1.2.4 Assumptions for CalSim II Modeling Purposes

Action: No specific CalSim II modeling code is implemented to simulate the performance measures identified. It is assumed that temperature operations can perform reasonably well with flows included in model. During the detailed effects analysis, temperature modeling and post-processing will be used to verify temperatures are met at the compliance points. In the long-term approach, for a complete interpretation of the action, development of temperature model runs are needed to develop flow schedules if needed for implementation into CalSim II.

Rationale: Temperature models of Shasta Lake and the Sacramento River have been developed by Reclamation. This modeling reflects current facilities for temperature controlled releases. Further analysis using this or another temperature model is required to verify the statement that temperature operations can perform reasonably well with flows included in model and temperatures are met reliably at each of the compliance points. Alternative flow schedules may need to be developed based on development of temperature model runs in conjunction with CalSim II modeled operations.

5A.B9.1.3 Action Suite 1.3 Red Bluff Diversion Dam (RBDD) Operations

Objectives: Reduce mortality and delay of adult and juvenile migration of winter-run, spring-run, Central Valley Steelhead, and Southern DPS of Green Sturgeon caused by the presence of the diversion dam and the configuration of the operable gates. Reduce adverse modification of the passage element of critical habitat for these species. Provide unimpeded upstream and downstream fish passage in the long-term by raising the gates year-round, and minimize adverse effects of continuing dam operations, while pumps are constructed to replace the loss of the diversion structure.

5A.B9.1.3.1 Action 1.3.1 Operations after May 14, 2012: Operate RBDD with Gates Out

Action: No later than May 15, 2012, Reclamation shall operate RBDD with gates out all year to allow unimpeded passage for listed anadromous fish.

Action 1.3.1 Assumptions for CalSim II Modeling Purposes

Action: Adequate permanent facilities for diversion are assumed; therefore, no constraint on diversion schedules is included in the Future condition modeling.

5A.B9.1.3.2 Action 1.3.2 Interim Operations

Action: Until May 14, 2012, Reclamation shall operate RBDD according to the following schedule:

- September 1—June 14: Gates open. No emergency closures of gates are allowed.
- June 15—August 31: Gates may be closed at Reclamation’s discretion, if necessary to deliver water to TCCA.

Action 1.3.2 Assumptions for CalSim II Modeling Purposes

Action: Adequate interim/temporary facilities for diversion are assumed; therefore, no constraint on diversion schedules is included in the No Action Alternative modeling.

5A.B9.1.4 Action 1.4 Wilkins Slough Operations

Objective: Enhance the ability to manage temperatures for anadromous fish below Shasta Dam by operating Wilkins Slough in the manner that best conserves the dam’s cold water pool for summer releases.

Action: The Sacramento River Temperature Task Group (SRTTG) shall make recommendations for Wilkins Slough minimum flows for anadromous fish in critically dry years, in lieu of the current 5,000 cfs navigation criterion to NMFS by December 1, 2009. In critically dry years, the SRTTG will make a recommendation.

5A.B9.1.4.1 Action 1.4 Assumptions for CalSim II Modeling Purposes

Action: Current rules for relaxation of NCP in CalSim II (based on BA models) will be used. In CalSim II, NCP flows are relaxed depending on allocations for agricultural contractors. Table 5A.B.31 is used to determine the relaxation.

Table 5A.B.31 NCP Flow Schedule with Relaxation

CVP AG Allocation (percent)	NCP Flow (cfs)
< 10	3,250
10–25	3,500
25–40	4,000
40–65	4,500
> 65	5,000

Rationale: The allocation-flow criteria have been used in the CalSim II model for many years. The low allocation year relaxations were added to improve operations of Shasta Lake subject to 1.9 MAF carryover target storage. These criteria may be reevaluated subject to the requirements of Action 1.2.1.

5A.B9.1.5 Action 2.1 Lower American River Flow Management

Objective: To provide minimum flows for all steelhead life stages.

Action: Implement the flow schedule specified in the Water Forum's Flow Management Standard (FMS), which is summarized in Appendix 2-D of the NMFS BO.

5A.B9.1.5.1 Action 2.1 Assumptions for CalSim II Modeling Purposes

Action: The AFRMP Minimum Release Requirements (MRR) range from 800 to 2,000 cfs based on a sequence of seasonal indices and adjustments. The minimum Nimbus Dam release requirement is determined by applying the appropriate water availability index (Index Flow). Three water availability indices (i.e., Four Reservoir Index (FRI), Sacramento River Index (SRI), and the Impaired Folsom Inflow Index (IFII)) are applied during different times of the year, which provides adaptive flexibility in response to changing hydrological and operational conditions.

During some months, Prescriptive Adjustments may be applied to the Index Flow, resulting in the MRR. If there is no Prescriptive Adjustment, the MRR is equal to the Index Flow.

Discretionary Adjustments for water conservation or fish protection may be applied during the period extending from June through October. If Discretionary Adjustments are applied, then the resultant flows are referred to as the Adjusted Minimum Release Requirement (Adjusted MRR).

The MRR and Adjusted MRR may be suspended in the event of extremely dry conditions, represented by “conference years” or “off-ramp criteria”. Conference years are defined when the projected March through November unimpaired inflow into Folsom Reservoir is less than 400,000 acre-feet. Off-ramp criteria are triggered if forecasted Folsom Reservoir storage at any time during the next 12 months is less than 200,000 acre-feet.

Rationale: Minimum instream flow schedule specified in the Water Forum’s FMS is implemented in the model.

5A.B9.1.6 Action 2.2 Lower American River Temperature Management

Objective: Maintain suitable temperatures to support over-summer rearing of juvenile steelhead in the lower American River.

Action: Reclamation shall develop a temperature management plan that contains: (1) forecasts of hydrology and storage; (2) a modeling run or runs, using these forecasts, demonstrating that the temperature compliance point can be attained (see Coldwater Management Pool Model approach in Appendix 2-D); (3) a plan of operation based on this modeling run that demonstrates that all other non-discretionary requirements are met; and (4) allocations for discretionary deliveries that conform to the plan of operation.

5A.B9.1.6.1 Action 2.2 Assumptions for CalSim II Modeling Purposes

Action: The flows in the model reflect the FMS implemented under Action 2.1. It is assumed that temperature operations can perform reasonably well with flows included in model.

Rationale: Temperature models of Folsom Lake and the American River were developed in the 1990s. Model development for long-range planning purposes may be required. Further analysis using a verified long-range planning level temperature model is required to verify the statement that temperature operations can perform reasonably well with flows included in the model and when temperatures are met reliably

5A.B9.1.7 Action Suite 3.1 Stanislaus River/Eastside Division Actions

Overall Objectives: (1) Provide sufficient definition of operational criteria for Eastside Division to ensure viability of the steelhead population on the Stanislaus River, including freshwater migration routes to and from the Delta; and (2) halt or reverse adverse modification of steelhead critical habitat.

5A.B9.1.7.1 Action 3.1.2 Provide Cold Water Releases to Maintain Suitable Steelhead Temperatures

Action: Reclamation shall manage the cold water supply within New Melones Reservoir and make cold water releases from New Melones Reservoir to provide suitable temperatures for CV steelhead rearing, spawning, egg incubation smoltification, and adult migration in the Stanislaus River downstream of Goodwin Dam.

Action 3.1.2 Assumptions for CalSim II Modeling Purposes

Action: No specific CalSim II modeling code is implemented to simulate the performance measures identified. It is assumed that temperature operations can perform reasonably well with flow operations resulting from the minimum flow requirements described in Action 3.1.3.

Rationale: Temperature models of New Melones Lake and the Stanislaus River have been developed by Reclamation. Further analysis using this or another temperature model can further verify that temperature operations perform reasonably well with flows included in model and temperatures are met reliably. Development of temperature model runs is needed to refine the flow schedules assumed.

5A.B9.1.7.2 Action 3.1.3 Operate the East Side Division Dams to Meet the Minimum Flows, as Measured at Goodwin Dam

Objective: To maintain minimum base flows to optimize Central Valley Steelhead habitat for all life history stages and to incorporate habitat maintaining geomorphic flows in a flow pattern that will provide migratory cues to smolts and facilitate out-migrant smolt movement on declining limb of pulse.

Action: Reclamation shall operate releases from the East Side Division reservoirs to achieve a minimum flow schedule as prescribed in NMFS BO Appendix 2-E. When operating at higher flows than specified, Reclamation shall implement ramping rates for flow changes that will avoid stranding and other adverse effects on Central Valley Steelhead.

Action 3.1.3 Assumptions for CalSim II Modeling Purposes

Action: Minimum flows based on Appendix 2-E flows (presented in Figure 5A.B.3) are assumed consistent to what was modeled by NMFS (May 14 and 15, 2009 CalSim II models provided by NMFS; relevant logic merged into baselines models).

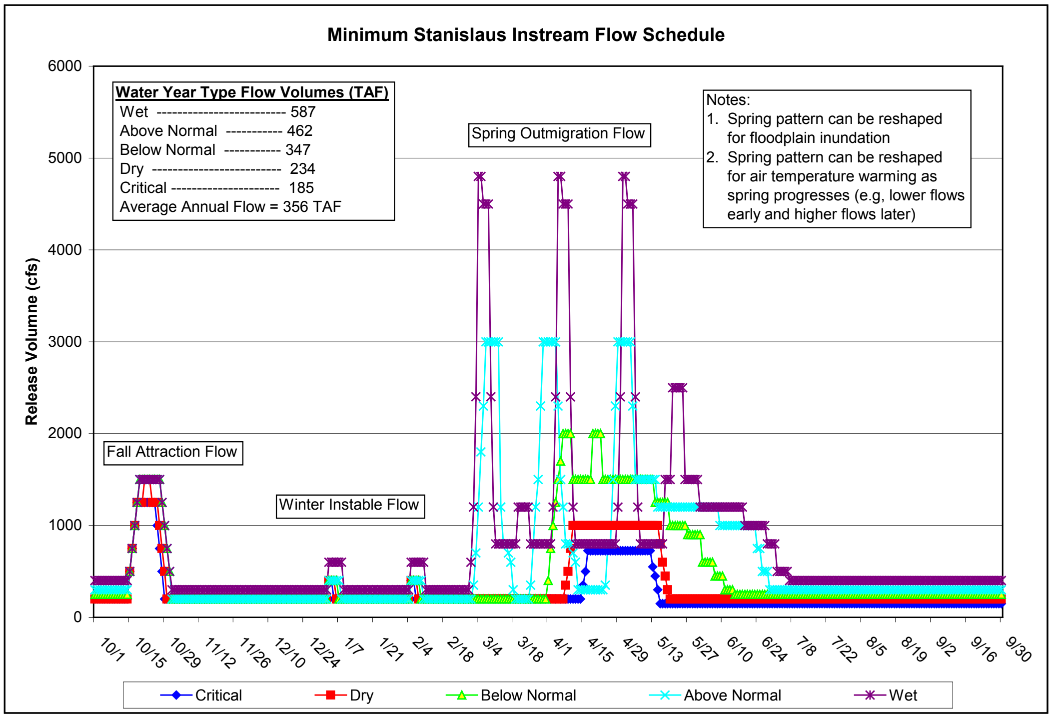

Figure 5A.B.3 Minimum Stanislaus instream flow schedule as prescribed in Appendix 2-E of the NMFS BO (06/04/09)

Annual allocation in New Melones is modeled to ensure availability of required instream flows (Table 5A.B.32) based on a water supply forecast that is comprised of end-of-February New Melones Storage (in TAF) plus forecasted inflow to New Melones from March 1 to September 30 (in TAF). The forecasted inflow is calculated using perfect foresight in the model. An allocated volume of water is released according to water year type following the monthly flow schedule illustrated in Figure 5A.B.3.

Table 5A.B.32 New Melones Allocations to Meet Minimum Instream Flow Requirements

New Melones index (TAF)	Annual Allocation Required for Instream Flows (TAF)
< 1000	0 to 98.9
1,000 to 1,399	98.9
1,400 to 1,724	185.3
1,725 to 2,177	234.1
2,178 to 2,386	346.7
2,387 to 2,761	461.7
2,762 to 6,000	586.9

Rationale: This approach was reviewed by National Oceanic and Atmospheric Administration (NOAA) fisheries and verified that the year typing and New Melones allocation scheme are consistent with the modeling prepared for the BO.

5A.B9.1.8 Action Suite 4.1 Delta Cross Channel Gate Operation, and Engineering Studies of Methods to Reduce Loss of Salmonids in Georgiana Slough and Interior Delta

5A.B9.1.8.1 Action 4.1.2 DCC Gate Operation

Objective: Modify DCC gate operation to reduce direct and indirect mortality of emigrating juvenile salmonids and Green Sturgeon in November, December, and January.

Action: During the period between November 1 and June 15, DCC gate operations will be modified from the proposed action to reduce loss of emigrating salmonids and Green Sturgeon. From December 1 to January 31, the gates will remain closed, except as operations are allowed using the implementation procedures/modified Salmon Decision Tree.

Timing: November 1 through June 15.

Triggers: Action triggers and description of action as defined in NMFS BO are presented in Table 5A.B.33.

Table 5A.B.33 NMFS BO DCC Gate Operation Triggers and Actions

Date	Action Triggers	Action Responses
October 1 – November 30	Water quality criteria per D-1641 are met and either the Knights Landing Catch Index (KLCI) or the Sacramento Catch Index (SCI) are greater than 3 fish per day, but less than or equal to 5 fish per day.	Within 24 hours of trigger, DCC gates are closed. Gates will remain closed for 3 days.
	Water quality criteria per D-1641 are met and either the KLCI or SCI is greater than 5 fish per day.	Within 24 hours, close the DCC gates and keep closed until the catch index is less than 3 fish per day at both the Knights Landing and Sacramento monitoring sites.
	The KLCI or SCI triggers are met, but water quality criteria are not met per D-1641 criteria.	DOSS reviews monitoring data and makes recommendation to NMFS and WOMT per procedures in Action IV.5.

Date	Action Triggers	Action Responses
December 1 – December 14	Water quality criteria are met per D-1641.	DCC gates are closed. If Chinook Salmon migration experiments are conducted during this time period (e.g., Delta Action 8 or similar studies), the DCC gates may be opened according to the experimental design, with NMFS' prior approval of the study.
	Water quality criteria are not met, but both the KLCI and SCI are less than 3 fish per day.	DCC gates may be opened until the water quality criteria are met. Once water quality criteria are met, the DCC gates will be closed within 24 hours of compliance.
	Water quality criteria are not met, but either the KLCI or SCI is greater than 3 fish per day.	DOSS reviews monitoring data and makes recommendation to NMFS and WOMT per procedures in Action IV.5
December 15 – January 31	December 15 – January 31	DCC Gates Closed.
	NMFS-approved experiments are being conducted.	Agency sponsoring the experiment may request gate opening for up to 5 days; NMFS will determine whether opening is consistent with ESA obligations.
	One-time event between December 15 and January 5, when necessary, to maintain Delta water quality in response to the astronomical high tide, coupled with low inflow conditions.	Upon concurrence of NMFS, DCC Gates may be opened 1 hour after sunrise to 1 hour before sunset, for up to 3 days, then return to full closure. Reclamation and DWR will also reduce Delta exports down to a health and safety level during the period of this action.
February 1 – May 15	D-1641 mandatory gate closure.	Gates closed, per WQCP criteria.
May 16 – June 15	D-1641 gate operations criteria	DCC gates may be closed for up to 14 days during this period, per 2006 WQCP, if NMFS determines it is necessary.

Action 4.1.2 Assumptions for CalSim II Modeling Purposes

Action: The DCC gate operations for October 1 through January 31 were layered on top of the D-1641 gate operations already included in the CalSim II model. The general assumptions regarding the NMFS DCC operations are summarized in Table 5A.B.34.

Timing: October 1 through January 31.

Table 5A.B.34 DCC Gate Operation Triggers and Actions as Modeled in CalSim II

Date	Modeled Action Triggers	Modeled Action Responses
October 1 – December 14	Sacramento River daily flow at Wilkins Slough exceeding 7,500 cfs; flow assumed to flush salmon into the Delta	Each month, the DCC gates are closed for the number of days estimated to exceed the threshold value.
	Water quality conditions at Rock Slough subject to D-1641 standards	Each month, the DCC gates are not closed if it results in violation of the D-1641 standard for Rock Slough; if DCC gates are not closed due to water quality conditions, exports during the days in question are restricted to 2,000 cfs.
December 15 – January 31	December 15-January 31	DCC Gates Closed.

Flow Trigger: It is assumed that from October 1 to December 14, the DCC will be closed if Sacramento River daily flow at Wilkins Slough exceeds 7,500 cfs. Using historical data (1945 through 2003, USGS gauge 11390500 "Sacramento River below Wilkins Slough near Grimes, CA"), a linear relationship is obtained between average monthly flow at Wilkins Slough and the number of days in month where the flow exceeds 7,500 cfs. This relation is then used to estimate the number of days of DCC closure for the October 1 to December 14 time period (Figure 5A.B.4).

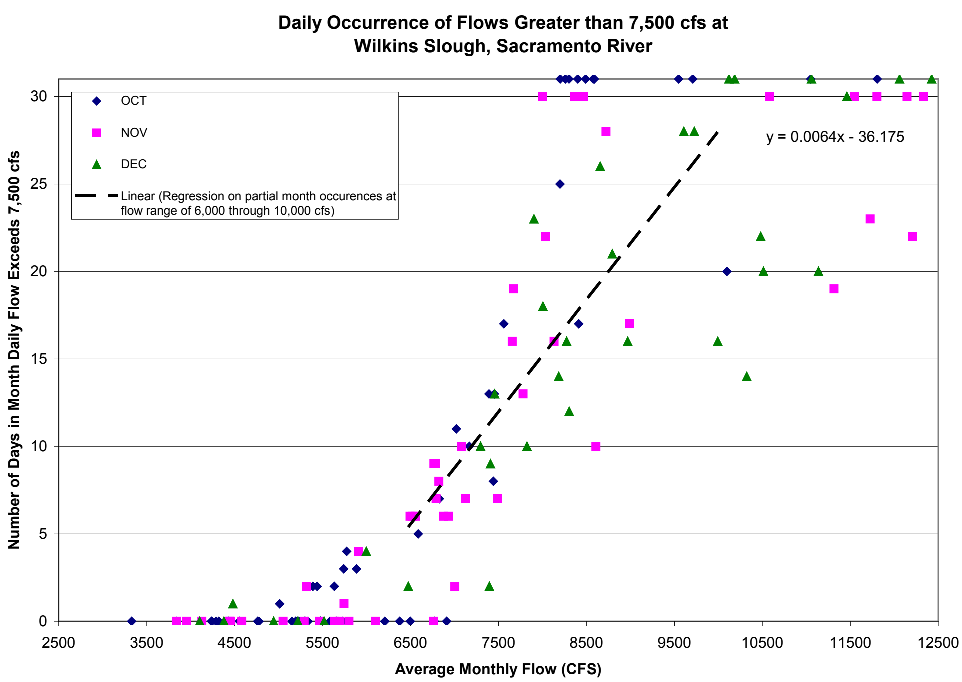

Figure 5A.B.4 Relationship between monthly averages of Sacramento River flows and number of days that daily flow exceeds 7,500 cfs in a month at Wilkins Slough

It is assumed that from December 15 through January 31 that the DCC gates are closed under all flow conditions.

Water Quality: It is assumed that during the October 1 – December 14 time period, the DCC gates may remain open if water quality is a concern. Using the CalSim II-ANN flow-salinity model for Rock Slough, the current month's chloride level at Rock Slough is estimated assuming DCC closure per NMFS BO. The estimated chloride level is compared against the Rock Slough chloride standard (monthly average). If estimated chloride level exceeds the standard, the gate closure is modeled per D-1641 schedule (for the entire month).

It is assumed that during the December 15 through January 31 time period the DCC gates are closed under all water quality conditions.

Export Restriction: During the October 1 to December 14 time period, if the flow trigger condition is such that additional days of DCC gates closed is called for, however water quality conditions are a concern and the DCC gates remain open, then Delta exports are limited to 2,000 cfs for each day in question. A monthly Delta export restriction is calculated based on the trigger and water quality conditions described above.

Rationale: The proposed representation in CalSim II should adequately represent the limited water quality concerns are that Sacramento River flows are low during the extreme high tides of December.

5A.B9.1.9 Action Suite 4.2 Delta Flow Management

5A.B9.1.9.1 Action 4.2.1 San Joaquin River Inflow to Export Ratio

Objectives: To reduce the vulnerability of emigrating Central Valley Steelhead within the lower San Joaquin River to entrainment into the channels of the South Delta and at the pumps due to the diversion of water by the export facilities in the South Delta, by increasing the inflow to export ratio. To enhance the likelihood of salmonids successfully exiting the Delta at Chipps Island by creating more suitable hydraulic conditions in the main stem of the San Joaquin River for emigrating fish, including greater net downstream flows.

Action: For CVP and SWP operations under this action, "The Phase II: Operations beginning is 2012" is assumed. From April 1 through May 31, (1) Reclamation shall continue to implement the Goodwin flow schedule for the Stanislaus River prescribed in Action 3.1.3 and Appendix 2-E of the NMFS BO); and (2) Combined CVP and SWP exports shall be restricted to the ratio depicted in table 5A.B.35 below based on the applicable San Joaquin River Index, but will be no less than 1,500 cfs (consistent with the health and safety provision governing this action.)

Action 4.2.1 Assumptions for CalSim II Modeling Purposes

Action: Flows at Vernalis during April and May will be based on the Stanislaus River flow prescribed in Action 3.1.3 and the flow contributions from the rest of the San Joaquin River basin consistent with the representation of VAMP contained in the BA modeling. In many years this flow may be less than the minimum Vernalis flow identified in the NMFS BO.

Exports are restricted as illustrated in Table 5A.B.35.

Table 5A.B.35 Maximum Combined CVP and SWP Export during April and May

San Joaquin River Index	Combined CVP and SWP Export Ratio
Critically dry	1:1
Dry	2:1
Below normal	3:1
Above normal	4:1
Wet	4:1

Rationale: Although the described model representation does not produce the full Vernalis flow objective outlined in the NMFS BO, it does include the elements that are within the control of the CVP and SWP, and that are reasonably certain to occur for the purpose of the EIS/EIR modeling.

In the long-term, a future SWRCB flow standard at Vernalis may potentially incorporate the full flow objective identified in the BO; and the Merced and Tuolumne flows would be based on the outcome of the current SWRCB and Federal Energy Regulatory Commission (FERC) processes that are underway.

5A.B9.1.10 Action 4.2.3 Old and Middle River Flow Management

Objective: Reduce the vulnerability of emigrating juvenile winter-run, yearling spring-run, and Central Valley Steelhead within the lower Sacramento and San Joaquin rivers to entrainment into the channels of the South Delta and at the pumps due to the diversion of water by the export facilities in the South Delta. Enhance the likelihood of salmonids successfully exiting the Delta at Chipps Island by creating more suitable hydraulic conditions in the mainstem of the San Joaquin River for emigrating fish, including greater net downstream flows.

Action: From January 1 through June 15, reduce exports, as necessary, to limit negative flows to -2,500 to -5,000 cfs in Old and Middle Rivers, depending on the presence of salmonids. The reverse flow will be managed within this range to reduce flows toward the pumps during periods of increased salmonid presence. Refer to NMFS BO document for the negative flow objective decision tree.

5A.B9.1.11 Action 4.2.3 Assumptions for CalSim II Modeling Purposes

Action: Old and Middle River flows required in this BO are assumed to be covered by OMR flow requirements developed for actions 1 through 3 of the USFWS BO Most Likely Scenario.

Rationale: Based on a review of available data, it appears that implementation of actions 1 through 3 of the USFWS RPA, and action 4.2.1 of the NOAA RPA will adequately cover this action within the CalSim II simulation. If necessary, additional post-processing of results could be conducted to verify this assumption.

Although the described model representation does not produce the full Vernalis flow objective outlined in the NMFS BO, it does include the elements that are within the control of the CVP and SWP, and that are reasonably certain to occur for the purpose of the EIS/EIR modeling.

In the long-term, a future SWRCB flow standard at Vernalis may potentially incorporate the full flow objective identified in the BO; and the Merced and Tuolumne flows would be based on the outcome of the current SWRCB and FERC processes that are underway.

5A.B9.1.12 Action 4.2.3 Old and Middle River Flow Management

Objective: Reduce the vulnerability of emigrating juvenile winter-run, yearling spring-run, and Central Valley Steelhead within the lower Sacramento and San Joaquin rivers to entrainment into the channels of the South Delta and at the pumps due to the diversion of water by the export facilities in the South Delta. Enhance the likelihood of salmonids successfully exiting the Delta at Chipps Island by creating more suitable hydraulic conditions in the mainstem of the San Joaquin River for emigrating fish, including greater net downstream flows.

Action: From January 1 through June 15, reduce exports, as necessary, to limit negative flows to -2,500 to -5,000 cfs in Old and Middle Rivers, depending on the presence of salmonids. The reverse flow will be managed within this range to reduce flows toward the pumps during periods of increased salmonid presence. Refer to NMFS BO document for the negative flow objective decision tree.

5A.B9.1.12.1 Action 4.2.3 Assumptions for CalSim II Modeling Purposes

Action: Old and Middle River flows required in this BO are assumed to be covered by OMR flow requirements developed for actions 1 through 3 of the USFWS BO Most Likely Scenario.

Rationale: Based on a review of available data, it appears that implementation of actions 1 through 3 of the USFWS RPA, and action 4.2.1 of the NOAA RPA will adequately cover this action within the CalSim II simulation. If necessary, additional post-processing of results could be conducted to verify this assumption.

5A.B10 References

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Appendix 5A, Section C

CalSim II and DSM2 Modeling Results

5A.1 Introduction

This appendix provides CalSim II and DSM2 model simulation results for alternatives evaluated for the EIS. Figures and tables are provided to illustrate and summarize the results. The different types of presentations are explained below.

Probability of Exceedance Plots. Probability of exceedance plots provide the frequency of occurrence of values of a parameter that exceed a reference value. For this appendix, the calculation of exceedance probability is done by ranking the data. For example, for the Shasta storage end of September exceedance plot, Shasta storage values at the end of September for each simulated year are sorted in ascending order. The smallest value would have a probability of exceedance of 100 percent since all other values would be greater than that value, and the largest value would have a probability of exceedance of 0 percent. All the values are plotted with probability of exceedance on the x-axis and the value of the parameter on the y-axis. Following the same example, if for one scenario, Shasta end of September of 2,000 TAF corresponds to 80 percent probability, it implies that Shasta end-of September storage is higher than 2,000 TAF in 80 percent of the years under the simulated conditions.

Box and Whisker Diagrams. These plots display the distribution of data based on the following statistical summary: minimum, first quartile (25th percentile that corresponds to 75 percent exceedance probability), mean, median (50 percent exceedance probability), third quartile (75th percentile that corresponds to 25 percent exceedance probability), and maximum.

Monthly Pattern Plots. Monthly pattern plots provide average values for a parameter for each month of the year. The averaging may be done on a long-term basis, which means that it is being averaged over the full number of simulated years, or it may be done for a set of simulated years that have a certain year type. In this appendix, year types are determined using the Sacramento Valley 40-30-30 Index developed by the State Water Resources Control Board (SWRCB). In this appendix, for year type based averages, the year type for each simulated year is assumed to be the classification of the year under projected climate at Year 2030 conditions. This type of plot is used to obtain insight to the monthly variation of phenomena throughout the year.

Long-Term Average Summary and Year Type Based Statistics Summary Tables. These tables provide parameter values for each 10 percent increment of exceedance probability (rows) for each month (columns) as well as long-term and year-type averages (using the Sacramento Valley 40-30-30 Index developed by the SWRCB for projected climate at Year 2030) for each month. For a few parameters, such as Delta outflow, annual total or average values are added to the tables (for volume and rates, respectively).

Long-Term Average Summary and Dry and Critical Year Type Based Summary Tables. These tables are primarily used to report average annual Central Valley Project (CVP) and State Water Project (SWP) deliveries for each hydrologic region. Values are averaged either for all the years (long-term) or for dry and critical years (using the Sacramento Valley 40-30-30 Index developed by the SWRCB for projected climate at Year 2030). This table is also provided in a format that summarizes SWP and CVP agricultural and municipal and industrial deliveries to the north and south of Delta.

Long-Term Average Summary for SWP Table A and Article 21 Deliveries. This table provides firm and intermittent SWP deliveries on a long-term average basis.

All plots and tables were prepared to facilitate the following comparisons:

- No Action Alternative (with climate change and sea-level rise at Year 2030) compared to the Second Basis of Comparison (with climate change and sea-level rise at Year 2030)
- Alternatives (with climate change and sea-level rise at Year 2030) compared to the No Action Alternative
- Alternatives (with climate change and sea-level rise at Year 2030) compared to the Second Basis of Comparison

5A.2 Appropriate Use of Model Results

The physical models developed and applied in the Environmental Impact Statement (EIS) analysis are generalized and simplified representations of a complex water resources system. A brief description of appropriate use of the model results to compare two scenarios or to compare against threshold values or standards is presented below.

5A.2.1 Absolute vs. Relative Use of the Model Results

The models are not predictive models (in how they are applied in this project), and therefore the results cannot be considered as absolute with and within a quantifiable confidence interval. The model results are only useful in a comparative analysis and can only serve as an indicator of condition (e.g., compliance with a standard) and of trends (e.g., generalized impacts).

5A.2.2 Appropriate Reporting Time-Step

Due to the assumptions involved in the input data sets and model logic, care must be taken to select the most appropriate time-step for the reporting of model results. Sub-monthly (e.g., weekly or daily) reporting of model results is inappropriate for all models and the results should be presented and interpreted on a monthly basis.

5A.2.3 Statistical Comparisons

Absolute differences computed at a point in time between model results from an alternative and a baseline to evaluate impacts is an inappropriate use of model results (e.g., computing differences between the results from a baseline and an alternative for a particular day or month and year within the period of record of simulation). Likewise computing absolute differences between an alternative (or a baseline) and a specific threshold value or standard is an inappropriate use of model results. Statistics computed based on the absolute differences at a point in time (e.g., average of monthly differences) are an inappropriate use of model results. Computing the absolute differences in this way disregards the changes in antecedent conditions between individual scenarios and distorts the evaluation of impacts of a specific action.

Reporting seasonal patterns from long-term averages and water year type averages is appropriate. Statistics computed based on long-term and water year type averages are an appropriate use of model results. Computing differences between long-term or water year type averages of model results from two scenarios are appropriate. Care should be taken to use the appropriate water year type for presenting water year type average statistics of model results (e.g., D1641 Sacramento River 40-30-30 or San Joaquin River 60-20-20 based on climate modifications). For this study, water year types are based on the projected climate and hydrology at Year 2030.

The most appropriate presentation of monthly and annual model results is in the form of probability distributions and comparisons of probability distributions (e.g., cumulative probabilities). If necessary, comparisons of model results against threshold or standard values should be limited to comparisons based on cumulative probability distributions.

5A.3 CalSim II and DSM2 Model Results

CalSim II and DSM2 model results are presented in the figures at the end of this section as follows:

- C.1. Trinity Storage
- C.2. Shasta Storage
- C.3. Oroville Storage
- C.4. Folsom Storage
- C.5. San Luis Storage
- C.6. New Melones Storage
- C.7. Millerton Storage
- C.8. Trinity Lake Elevation
- C.9. Shasta Lake Elevation

- C.10. Oroville Lake Elevation
- C.11. Folsom Lake Elevation
- C.12. San Luis Lake Elevation
- C.13. New Melones Elevation
- C.14. Millerton Elevation
- C.15. Delta Outflow
- C.16. X2 Position
- C.17. Old and Middle River Flow
- C.18. Exports through Jones and Banks Pumping Plants
- C.19. CVP Deliveries
- C.20. SWP Deliveries
- C.21. Trinity River Flow below Lewiston
- C.22. Clear Creek Flow below Whiskeytown
- C.23. Sacramento River Flow downstream of Keswick Reservoir
- C.24. Sacramento River Flow at Bend Bridge
- C.25. Feather River Flow downstream of Thermalito
- C.26. Fremont Weir Spills
- C.27. American River Flow downstream of Nimbus
- C.28. Sacramento River Flow at Freeport
- C.29. Yolo Bypass Flow
- C.30. Sacramento River Flow a Rio Vista
- C.31. Delta Cross Channel Flow
- C.32. Sutter and Steamboat Slough Flows
- C.33. Qwest Flow
- C.34. San Joaquin River Flow at Vernalis
- C.35. Stanislaus River Flow below Goodwin
- C.36. Stanislaus River Flow at Mouth
- C.37. San Joaquin River Flow downstream of Merced River Confluence
- C.38. San Joaquin River Restoration Flow
- C.39. San Joaquin River Flow at Vernalis minus San Joaquin River Flow downstream of Merced River Confluence

- C.40. Steamboat Slough downstream of Sutter Slough Water Surface Elevation
- C.41. Old River at Tracy Boulevard Water Surface Elevation
- C.42. Mokelumne River at Terminous Water Surface Elevation
- C.43. Sacramento River at Freeport Water Surface Elevation
- C.44. Sacramento River downstream of Delta Cross Channel Water Surface Elevation
- C.45. Sacramento River at Rio Vista Water Surface Elevation

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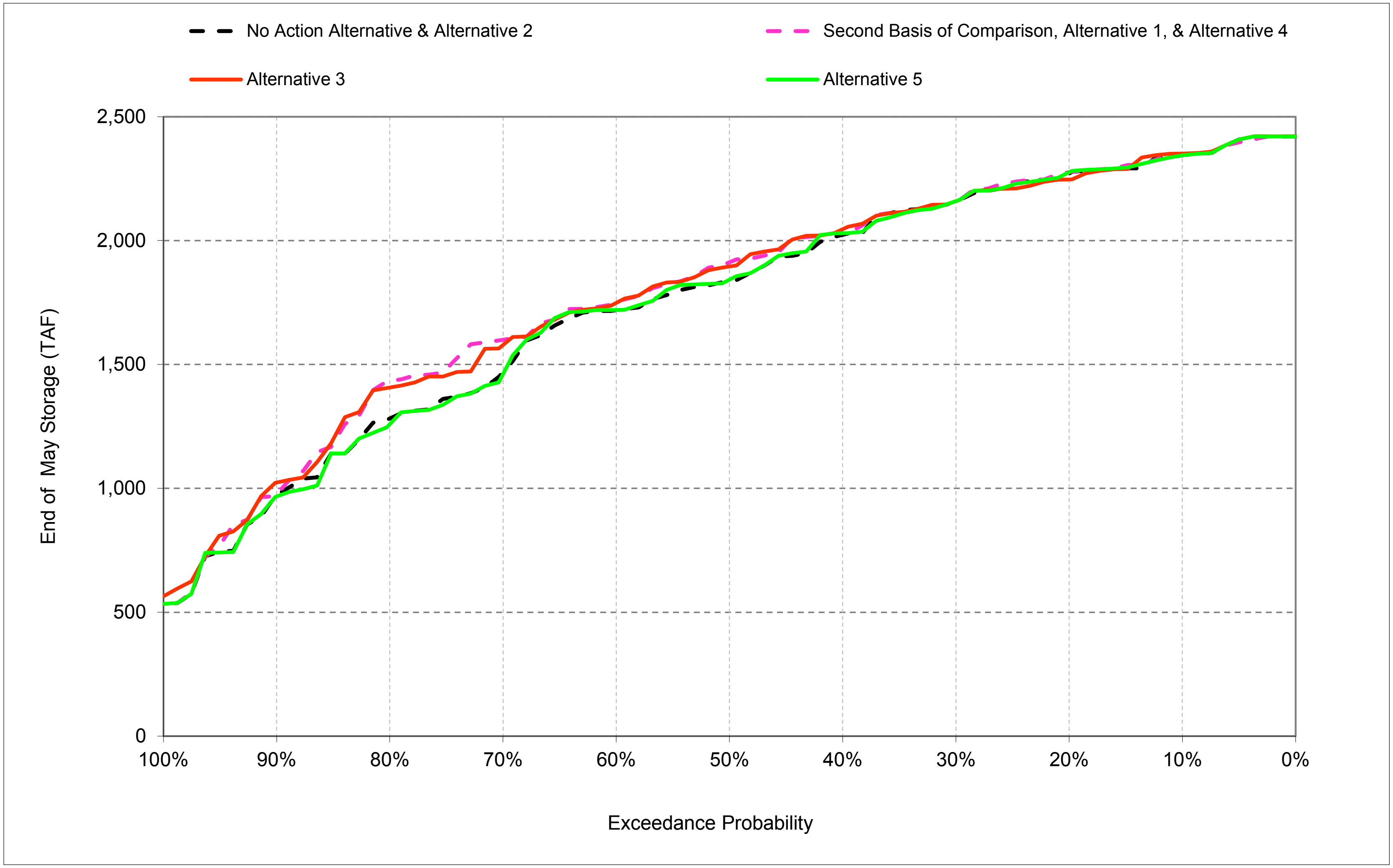
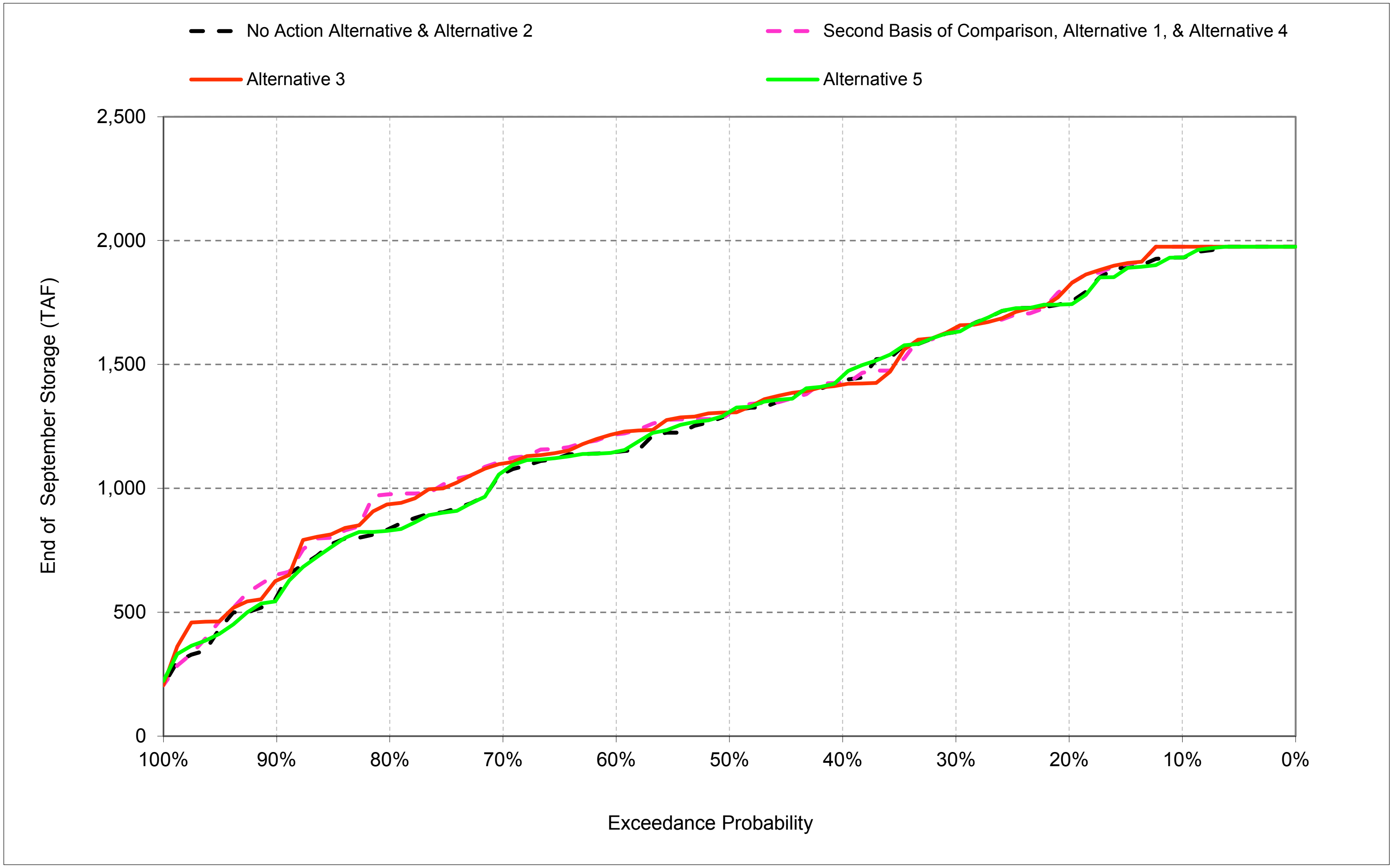
C.1. Trinity Storage

Figure C-1-1. Trinity Lake, End of May Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-1-2. Trinity Lake, End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-1. Trinity Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,850	1,833	1,850	1,900	2,000	2,100	2,284	2,344	2,306	2,261	2,143	1,932
20%	1,764	1,735	1,797	1,889	2,000	2,100	2,251	2,271	2,207	2,064	1,905	1,753
30%	1,542	1,579	1,679	1,774	1,951	2,079	2,218	2,159	2,055	1,913	1,776	1,631
40%	1,383	1,370	1,557	1,673	1,769	1,982	2,115	2,024	1,916	1,774	1,583	1,432
50%	1,217	1,242	1,368	1,500	1,665	1,766	1,908	1,836	1,708	1,563	1,414	1,302
60%	1,119	1,154	1,235	1,277	1,496	1,668	1,793	1,719	1,628	1,423	1,264	1,147
70%	1,033	1,023	1,104	1,154	1,253	1,365	1,486	1,470	1,394	1,283	1,153	1,060
80%	831	855	876	973	1,033	1,139	1,312	1,282	1,222	1,058	924	838
90%	547	592	620	629	734	920	989	973	914	790	599	562
Long Term												
Full Simulation Period[b]	1,233	1,242	1,306	1,385	1,510	1,637	1,779	1,756	1,687	1,549	1,405	1,286
Water Year Types[c]												
Wet (32%)	1,490	1,516	1,630	1,756	1,921	2,053	2,220	2,245	2,190	2,067	1,939	1,784
Above Normal (16%)	1,159	1,178	1,286	1,455	1,658	1,847	2,025	1,999	1,907	1,773	1,619	1,495
Below Normal (13%)	1,393	1,400	1,417	1,488	1,575	1,662	1,817	1,743	1,637	1,470	1,304	1,185
Dry (24%)	1,152	1,148	1,174	1,182	1,274	1,403	1,539	1,490	1,413	1,253	1,104	1,008
Critical (15%)	747	731	746	750	790	872	923	888	862	745	612	536

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,302	2,253	2,143	1,975
20%	1,804	1,840	1,850	1,900	2,000	2,100	2,255	2,276	2,193	2,055	1,920	1,822
30%	1,576	1,594	1,740	1,816	1,981	2,091	2,222	2,159	2,074	1,924	1,793	1,645
40%	1,391	1,446	1,568	1,705	1,855	2,019	2,131	2,030	1,918	1,767	1,582	1,426
50%	1,267	1,266	1,396	1,567	1,685	1,818	2,012	1,912	1,773	1,601	1,416	1,304
60%	1,174	1,201	1,230	1,335	1,535	1,709	1,778	1,749	1,677	1,497	1,330	1,218
70%	1,106	1,099	1,179	1,216	1,362	1,484	1,645	1,599	1,537	1,400	1,225	1,111
80%	948	954	983	1,052	1,132	1,274	1,453	1,434	1,338	1,168	1,055	976
90%	634	645	672	724	810	921	1,051	975	917	802	689	651
Long Term												
Full Simulation Period[b]	1,269	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,434	1,319
Water Year Types[c]												
Wet (32%)	1,501	1,535	1,644	1,767	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,805
Above Normal (16%)	1,208	1,245	1,363	1,524	1,718	1,901	2,079	2,053	1,955	1,815	1,647	1,513
Below Normal (13%)	1,451	1,472	1,492	1,554	1,641	1,729	1,872	1,799	1,696	1,515	1,337	1,204
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,453	1,586	1,536	1,466	1,302	1,152	1,055
Critical (15%)	819	803	813	825	868	949	999	962	929	811	667	598

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	0	17	0	0	0	0	14	1	-4	-8	-1	43
20%	40	105	53	11	0	0	3	5	-14	-9	15	69
30%	34	15	62	42	30	12	5	0	18	12	17	15
40%	8	76	11	32	86	36	17	6	2	-8	-1	-6
50%	50	25	28	67	20	52	104	76	65	38	2	2
60%	55	47	-6	59	39	40	-14	30	49	74	66	71
70%	74	76	75	62	110	119	159	130	143	117	73	51
80%	117	100	107	79	99	136	141	152	117	110	131	139
90%	87	53	52	95	77	1	62	2	3	12	90	89
Long Term												
Full Simulation Period[b]	36	46	45	46	44	42	40	40	40	34	28	33
Water Year Types[c]												
Wet (32%)	11	19	14	11	9	2	4	5	4	0	-1	21
Above Normal (16%)	49	68	77	69	60	54	55	54	49	42	27	18
Below Normal (13%)	59	72	74	66	67	67	54	57	60	44	33	18
Dry (24%)	26	36	36	48	48	49	47	46	53	48	48	48
Critical (15%)	73	72	68	75	78	78	76	74	66	66	56	61

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-2. Trinity Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,850	1,833	1,850	1,900	2,000	2,100	2,284	2,344	2,306	2,261	2,143	1,932
20%	1,764	1,735	1,797	1,889	2,000	2,100	2,251	2,271	2,207	2,064	1,905	1,753
30%	1,542	1,579	1,679	1,774	1,951	2,079	2,218	2,159	2,055	1,913	1,776	1,631
40%	1,383	1,370	1,557	1,673	1,769	1,982	2,115	2,024	1,916	1,774	1,583	1,432
50%	1,217	1,242	1,368	1,500	1,665	1,766	1,908	1,836	1,708	1,563	1,414	1,302
60%	1,119	1,154	1,235	1,277	1,496	1,668	1,793	1,719	1,628	1,423	1,264	1,147
70%	1,033	1,023	1,104	1,154	1,253	1,365	1,486	1,470	1,394	1,283	1,153	1,060
80%	831	855	876	973	1,033	1,139	1,312	1,282	1,222	1,058	924	838
90%	547	592	620	629	734	920	989	973	914	790	599	562
Long Term												
Full Simulation Period[b]	1,233	1,242	1,306	1,385	1,510	1,637	1,779	1,756	1,687	1,549	1,405	1,286
Water Year Types[c]												
Wet (32%)	1,490	1,516	1,630	1,756	1,921	2,053	2,220	2,245	2,190	2,067	1,939	1,784
Above Normal (16%)	1,159	1,178	1,286	1,455	1,658	1,847	2,025	1,999	1,907	1,773	1,619	1,495
Below Normal (13%)	1,393	1,400	1,417	1,488	1,575	1,662	1,817	1,743	1,637	1,470	1,304	1,185
Dry (24%)	1,152	1,148	1,174	1,182	1,274	1,403	1,539	1,490	1,413	1,253	1,104	1,008
Critical (15%)	747	731	746	750	790	872	923	888	862	745	612	536

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,351	2,298	2,211	2,100	1,975
20%	1,815	1,831	1,849	1,900	2,000	2,100	2,259	2,246	2,204	2,064	1,903	1,818
30%	1,583	1,614	1,719	1,803	1,968	2,069	2,222	2,159	2,064	1,925	1,794	1,649
40%	1,365	1,400	1,572	1,671	1,858	1,995	2,104	2,046	1,937	1,759	1,581	1,419
50%	1,257	1,259	1,420	1,588	1,700	1,823	1,990	1,895	1,784	1,599	1,418	1,307
60%	1,169	1,205	1,233	1,318	1,536	1,721	1,787	1,748	1,674	1,495	1,334	1,221
70%	1,100	1,095	1,187	1,200	1,344	1,472	1,629	1,579	1,525	1,385	1,223	1,100
80%	909	956	961	1,041	1,155	1,250	1,429	1,407	1,322	1,160	1,019	937
90%	628	630	623	681	790	921	1,065	1,023	965	843	690	628
Long Term												
Full Simulation Period[b]	1,266	1,283	1,347	1,427	1,550	1,674	1,816	1,793	1,724	1,580	1,432	1,318
Water Year Types[c]												
Wet (32%)	1,502	1,537	1,643	1,766	1,928	2,053	2,224	2,248	2,192	2,067	1,936	1,805
Above Normal (16%)	1,197	1,230	1,349	1,511	1,707	1,891	2,071	2,045	1,949	1,806	1,646	1,513
Below Normal (13%)	1,434	1,457	1,477	1,542	1,629	1,717	1,858	1,786	1,680	1,509	1,334	1,199
Dry (24%)	1,173	1,179	1,206	1,226	1,318	1,450	1,585	1,537	1,468	1,301	1,152	1,056
Critical (15%)	829	803	817	829	871	952	1,003	968	936	813	664	600

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	0	17	0	0	0	0	14	7	-8	-50	-43	43
20%	51	96	52	11	0	0	8	-25	-3	0	-2	65
30%	41	35	41	28	17	-10	4	0	8	12	18	19
40%	-18	30	15	-2	89	13	-11	22	21	-15	-2	-14
50%	39	17	52	88	35	57	82	59	76	36	4	5
60%	49	50	-2	41	39	52	-5	29	46	72	70	74
70%	67	72	83	46	92	108	143	109	130	102	70	41
80%	77	102	85	69	122	111	117	125	100	101	95	99
90%	81	39	3	52	56	2	76	50	52	53	92	66
Long Term												
Full Simulation Period[b]	32	41	40	42	40	38	37	37	37	32	27	32
Water Year Types[c]												
Wet (32%)	11	21	13	10	7	0	3	4	3	0	-3	21
Above Normal (16%)	38	53	63	56	49	45	46	46	42	33	27	18
Below Normal (13%)	41	57	60	54	55	55	40	43	43	38	30	13
Dry (24%)	21	31	32	45	44	47	46	47	55	48	48	48
Critical (15%)	82	73	71	79	81	81	80	80	73	68	53	64

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-3. Trinity Lake, End of Month Storage

No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,833	1,850	1,900	2,000	2,100	2,284	2,344	2,306	2,261	2,143	1,932
20%	1,764	1,735	1,797	1,889	2,000	2,100	2,251	2,271	2,207	2,064	1,905	1,753
30%	1,542	1,579	1,679	1,774	1,951	2,079	2,218	2,159	2,055	1,913	1,776	1,631
40%	1,383	1,370	1,557	1,673	1,769	1,982	2,115	2,024	1,916	1,774	1,583	1,432
50%	1,217	1,242	1,368	1,500	1,665	1,766	1,908	1,836	1,708	1,563	1,414	1,302
60%	1,119	1,154	1,235	1,277	1,496	1,668	1,793	1,719	1,628	1,423	1,264	1,147
70%	1,033	1,023	1,104	1,154	1,253	1,365	1,486	1,470	1,394	1,283	1,153	1,060
80%	831	855	876	973	1,033	1,139	1,312	1,282	1,222	1,058	924	838
90%	547	592	620	629	734	920	989	973	914	790	599	562
Long Term												
Full Simulation Period[b]	1,233	1,242	1,306	1,385	1,510	1,637	1,779	1,756	1,687	1,549	1,405	1,286
Water Year Types[c]												
Wet (32%)	1,490	1,516	1,630	1,756	1,921	2,053	2,220	2,245	2,190	2,067	1,939	1,784
Above Normal (16%)	1,159	1,178	1,286	1,455	1,658	1,847	2,025	1,999	1,907	1,773	1,619	1,495
Below Normal (13%)	1,393	1,400	1,417	1,488	1,575	1,662	1,817	1,743	1,637	1,470	1,304	1,185
Dry (24%)	1,152	1,148	1,174	1,182	1,274	1,403	1,539	1,490	1,413	1,253	1,104	1,008
Critical (15%)	747	731	746	750	790	872	923	888	862	745	612	536

Alternative 5

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,828	1,850	1,900	2,000	2,100	2,283	2,344	2,306	2,262	2,143	1,932
20%	1,764	1,735	1,803	1,889	2,000	2,100	2,250	2,276	2,207	2,064	1,893	1,743
30%	1,542	1,577	1,694	1,779	1,954	2,084	2,220	2,159	2,055	1,913	1,776	1,631
40%	1,427	1,373	1,560	1,683	1,770	1,994	2,131	2,029	1,921	1,779	1,600	1,453
50%	1,231	1,253	1,376	1,518	1,671	1,771	1,895	1,842	1,728	1,563	1,420	1,309
60%	1,127	1,172	1,247	1,279	1,493	1,669	1,798	1,720	1,634	1,479	1,271	1,148
70%	1,051	1,037	1,098	1,146	1,250	1,378	1,484	1,460	1,390	1,268	1,139	1,067
80%	834	850	879	977	1,036	1,141	1,321	1,259	1,209	1,066	941	830
90%	537	589	594	628	733	908	983	967	922	811	607	553
Long Term												
Full Simulation Period[b]	1,235	1,244	1,309	1,387	1,512	1,638	1,779	1,756	1,688	1,553	1,411	1,288
Water Year Types[c]												
Wet (32%)	1,494	1,520	1,635	1,759	1,926	2,056	2,222	2,246	2,191	2,068	1,940	1,781
Above Normal (16%)	1,155	1,180	1,290	1,459	1,662	1,850	2,030	2,004	1,912	1,778	1,627	1,503
Below Normal (13%)	1,398	1,405	1,422	1,493	1,580	1,667	1,813	1,741	1,637	1,474	1,311	1,190
Dry (24%)	1,155	1,150	1,175	1,183	1,275	1,404	1,540	1,492	1,415	1,259	1,110	1,012
Critical (15%)	744	726	741	743	784	866	913	878	856	755	622	539

Alternative 5 minus No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	-5	0	0	0	0	-1	0	0	1	0	0
20%	0	0	7	0	0	0	-1	5	0	0	-12	-10
30%	0	-2	15	5	2	5	3	0	0	0	0	0
40%	45	3	2	9	1	12	16	6	5	5	17	21
50%	14	12	7	18	6	5	-13	6	19	0	6	7
60%	7	17	12	3	-3	1	5	1	5	56	7	1
70%	18	14	-6	-8	-3	14	-2	-9	-5	-15	-14	8
80%	3	-4	3	4	3	3	9	-23	-13	7	17	-8
90%	-10	-3	-26	-1	-1	-12	-7	-6	8	22	8	-10
Long Term												
Full Simulation Period[b]	1	2	3	2	2	1	0	0	1	4	5	2
Water Year Types[c]												
Wet (32%)	4	3	5	4	4	2	2	2	2	0	0	-2
Above Normal (16%)	-4	2	4	4	4	4	6	6	5	5	8	8
Below Normal (13%)	5	5	5	5	5	5	-5	-2	0	4	7	4
Dry (24%)	3	1	1	1	1	1	1	1	2	6	6	4
Critical (15%)	-2	-5	-4	-7	-6	-6	-10	-10	-7	10	11	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-4. Trinity Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,302	2,253	2,143	1,975
20%	1,804	1,840	1,850	1,900	2,000	2,100	2,255	2,276	2,193	2,055	1,920	1,822
30%	1,576	1,594	1,740	1,816	1,981	2,091	2,222	2,159	2,074	1,924	1,793	1,645
40%	1,391	1,446	1,568	1,705	1,855	2,019	2,131	2,030	1,918	1,767	1,582	1,426
50%	1,267	1,266	1,396	1,567	1,685	1,818	2,012	1,912	1,773	1,601	1,416	1,304
60%	1,174	1,201	1,230	1,335	1,535	1,709	1,778	1,749	1,677	1,497	1,330	1,218
70%	1,106	1,099	1,179	1,216	1,362	1,484	1,645	1,599	1,537	1,400	1,225	1,111
80%	948	954	983	1,052	1,132	1,274	1,453	1,434	1,338	1,168	1,055	976
90%	634	645	672	724	810	921	1,051	975	917	802	689	651
Long Term												
Full Simulation Period[b]	1,269	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,434	1,319
Water Year Types[c]												
Wet (32%)	1,501	1,535	1,644	1,767	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,805
Above Normal (16%)	1,208	1,245	1,363	1,524	1,718	1,901	2,079	2,053	1,955	1,815	1,647	1,513
Below Normal (13%)	1,451	1,472	1,492	1,554	1,641	1,729	1,872	1,799	1,696	1,515	1,337	1,204
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,453	1,586	1,536	1,466	1,302	1,152	1,055
Critical (15%)	819	803	813	825	868	949	999	962	929	811	667	598

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,833	1,850	1,900	2,000	2,100	2,284	2,344	2,306	2,261	2,143	1,932
20%	1,764	1,735	1,797	1,889	2,000	2,100	2,251	2,271	2,207	2,064	1,905	1,753
30%	1,542	1,579	1,679	1,774	1,951	2,079	2,218	2,159	2,055	1,913	1,776	1,631
40%	1,383	1,370	1,557	1,673	1,769	1,982	2,115	2,024	1,916	1,774	1,583	1,432
50%	1,217	1,242	1,368	1,500	1,665	1,766	1,908	1,836	1,708	1,563	1,414	1,302
60%	1,119	1,154	1,235	1,277	1,496	1,668	1,793	1,719	1,628	1,423	1,264	1,147
70%	1,033	1,023	1,104	1,154	1,253	1,365	1,486	1,470	1,394	1,283	1,153	1,060
80%	831	855	876	973	1,033	1,139	1,312	1,282	1,222	1,058	924	838
90%	547	592	620	629	734	920	989	973	914	790	599	562
Long Term												
Full Simulation Period[b]	1,233	1,242	1,306	1,385	1,510	1,637	1,779	1,756	1,687	1,549	1,405	1,286
Water Year Types[c]												
Wet (32%)	1,490	1,516	1,630	1,756	1,921	2,053	2,220	2,245	2,190	2,067	1,939	1,784
Above Normal (16%)	1,159	1,178	1,286	1,455	1,658	1,847	2,025	1,999	1,907	1,773	1,619	1,495
Below Normal (13%)	1,393	1,400	1,417	1,488	1,575	1,662	1,817	1,743	1,637	1,470	1,304	1,185
Dry (24%)	1,152	1,148	1,174	1,182	1,274	1,403	1,539	1,490	1,413	1,253	1,104	1,008
Critical (15%)	747	731	746	750	790	872	923	888	862	745	612	536

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	-17	0	0	0	0	-14	-1	4	8	1	-43
20%	-40	-105	-53	-11	0	0	-3	-5	14	9	-15	-69
30%	-34	-15	-62	-42	-30	-12	-5	0	-18	-12	-17	-15
40%	-8	-76	-11	-32	-86	-36	-17	-6	-2	8	1	6
50%	-50	-25	-28	-67	-20	-52	-104	-76	-65	-38	-2	-2
60%	-55	-47	6	-59	-39	-40	14	-30	-49	-74	-66	-71
70%	-74	-76	-75	-62	-110	-119	-159	-130	-143	-117	-73	-51
80%	-117	-100	-107	-79	-99	-136	-141	-152	-117	-110	-131	-139
90%	-87	-53	-52	-95	-77	-1	-62	-2	-3	-12	-90	-89
Long Term												
Full Simulation Period[b]	-36	-46	-45	-46	-44	-42	-40	-40	-40	-34	-28	-33
Water Year Types[c]												
Wet (32%)	-11	-19	-14	-11	-9	-2	-4	-5	-4	0	1	-21
Above Normal (16%)	-49	-68	-77	-69	-60	-54	-55	-54	-49	-42	-27	-18
Below Normal (13%)	-59	-72	-74	-66	-67	-67	-54	-57	-60	-44	-33	-18
Dry (24%)	-26	-36	-36	-48	-48	-49	-47	-46	-53	-48	-48	-48
Critical (15%)	-73	-72	-68	-75	-78	-78	-76	-74	-66	-66	-56	-61

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-5. Trinity Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,302	2,253	2,143	1,975
20%	1,804	1,840	1,850	1,900	2,000	2,100	2,255	2,276	2,193	2,055	1,920	1,822
30%	1,576	1,594	1,740	1,816	1,981	2,091	2,222	2,159	2,074	1,924	1,793	1,645
40%	1,391	1,446	1,568	1,705	1,855	2,019	2,131	2,030	1,918	1,767	1,582	1,426
50%	1,267	1,266	1,396	1,567	1,685	1,818	2,012	1,912	1,773	1,601	1,416	1,304
60%	1,174	1,201	1,230	1,335	1,535	1,709	1,778	1,749	1,677	1,497	1,330	1,218
70%	1,106	1,099	1,179	1,216	1,362	1,484	1,645	1,599	1,537	1,400	1,225	1,111
80%	948	954	983	1,052	1,132	1,274	1,453	1,434	1,338	1,168	1,055	976
90%	634	645	672	724	810	921	1,051	975	917	802	689	651
Long Term												
Full Simulation Period[b]	1,269	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,434	1,319
Water Year Types[c]												
Wet (32%)	1,501	1,535	1,644	1,767	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,805
Above Normal (16%)	1,208	1,245	1,363	1,524	1,718	1,901	2,079	2,053	1,955	1,815	1,647	1,513
Below Normal (13%)	1,451	1,472	1,492	1,554	1,641	1,729	1,872	1,799	1,696	1,515	1,337	1,204
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,453	1,586	1,536	1,466	1,302	1,152	1,055
Critical (15%)	819	803	813	825	868	949	999	962	929	811	667	598

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,351	2,298	2,211	2,100	1,975
20%	1,815	1,831	1,849	1,900	2,000	2,100	2,259	2,246	2,204	2,064	1,903	1,818
30%	1,583	1,614	1,719	1,803	1,968	2,069	2,222	2,159	2,064	1,925	1,794	1,649
40%	1,365	1,400	1,572	1,671	1,858	1,995	2,104	2,046	1,937	1,759	1,581	1,419
50%	1,257	1,259	1,420	1,588	1,700	1,823	1,990	1,895	1,784	1,599	1,418	1,307
60%	1,169	1,205	1,233	1,318	1,536	1,721	1,787	1,748	1,674	1,495	1,334	1,221
70%	1,100	1,095	1,187	1,200	1,344	1,472	1,629	1,579	1,525	1,385	1,223	1,100
80%	909	956	961	1,041	1,155	1,250	1,429	1,407	1,322	1,160	1,019	937
90%	628	630	623	681	790	921	1,065	1,023	965	843	690	628
Long Term												
Full Simulation Period[b]	1,266	1,283	1,347	1,427	1,550	1,674	1,816	1,793	1,724	1,580	1,432	1,318
Water Year Types[c]												
Wet (32%)	1,502	1,537	1,643	1,766	1,928	2,053	2,224	2,248	2,192	2,067	1,936	1,805
Above Normal (16%)	1,197	1,230	1,349	1,511	1,707	1,891	2,071	2,045	1,949	1,806	1,646	1,513
Below Normal (13%)	1,434	1,457	1,477	1,542	1,629	1,717	1,858	1,786	1,680	1,509	1,334	1,199
Dry (24%)	1,173	1,179	1,206	1,226	1,318	1,450	1,585	1,537	1,468	1,301	1,152	1,056
Critical (15%)	829	803	817	829	871	952	1,003	968	936	813	664	600

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	6	-4	-42	-42	0
20%	11	-9	-1	0	0	0	5	-29	11	9	-17	-4
30%	6	21	-21	-13	-13	-22	-1	0	-10	1	1	4
40%	-26	-45	4	-34	2	-23	-27	16	20	-8	0	-8
50%	-11	-7	24	21	16	5	-22	-17	11	-2	2	3
60%	-6	3	3	-18	0	12	9	-1	-3	-2	4	3
70%	-7	-4	8	-16	-18	-12	-16	-21	-13	-15	-2	-11
80%	-39	2	-22	-10	23	-25	-24	-26	-16	-9	-36	-40
90%	-5	-14	-49	-43	-20	0	14	48	49	41	2	-23
Long Term												
Full Simulation Period[b]	-4	-5	-5	-4	-5	-4	-3	-3	-2	-2	-2	0
Water Year Types[c]												
Wet (32%)	0	1	-1	-1	-2	-1	-1	-2	-1	0	-3	0
Above Normal (16%)	-11	-15	-14	-13	-11	-10	-8	-8	-7	-9	0	0
Below Normal (13%)	-17	-15	-15	-12	-12	-12	-14	-13	-16	-6	-3	-5
Dry (24%)	-5	-5	-4	-4	-4	-2	-1	0	2	0	0	1
Critical (15%)	10	1	3	3	3	3	4	6	7	2	-3	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-6. Trinity Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,302	2,253	2,143	1,975
20%	1,804	1,840	1,850	1,900	2,000	2,100	2,255	2,276	2,193	2,055	1,920	1,822
30%	1,576	1,594	1,740	1,816	1,981	2,091	2,222	2,159	2,074	1,924	1,793	1,645
40%	1,391	1,446	1,568	1,705	1,855	2,019	2,131	2,030	1,918	1,767	1,582	1,426
50%	1,267	1,266	1,396	1,567	1,685	1,818	2,012	1,912	1,773	1,601	1,416	1,304
60%	1,174	1,201	1,230	1,335	1,535	1,709	1,778	1,749	1,677	1,497	1,330	1,218
70%	1,106	1,099	1,179	1,216	1,362	1,484	1,645	1,599	1,537	1,400	1,225	1,111
80%	948	954	983	1,052	1,132	1,274	1,453	1,434	1,338	1,168	1,055	976
90%	634	645	672	724	810	921	1,051	975	917	802	689	651
Long Term												
Full Simulation Period[b]	1,269	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,434	1,319
Water Year Types[c]												
Wet (32%)	1,501	1,535	1,644	1,767	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,805
Above Normal (16%)	1,208	1,245	1,363	1,524	1,718	1,901	2,079	2,053	1,955	1,815	1,647	1,513
Below Normal (13%)	1,451	1,472	1,492	1,554	1,641	1,729	1,872	1,799	1,696	1,515	1,337	1,204
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,453	1,586	1,536	1,466	1,302	1,152	1,055
Critical (15%)	819	803	813	825	868	949	999	962	929	811	667	598

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,828	1,850	1,900	2,000	2,100	2,283	2,344	2,306	2,262	2,143	1,932
20%	1,764	1,735	1,803	1,889	2,000	2,100	2,250	2,276	2,207	2,064	1,893	1,743
30%	1,542	1,577	1,694	1,779	1,954	2,084	2,220	2,159	2,055	1,913	1,776	1,631
40%	1,427	1,373	1,560	1,683	1,770	1,994	2,131	2,029	1,921	1,779	1,600	1,453
50%	1,231	1,253	1,376	1,518	1,671	1,771	1,895	1,842	1,728	1,563	1,420	1,309
60%	1,127	1,172	1,247	1,279	1,493	1,669	1,798	1,720	1,634	1,479	1,271	1,148
70%	1,051	1,037	1,098	1,146	1,250	1,378	1,484	1,460	1,390	1,268	1,139	1,067
80%	834	850	879	977	1,036	1,141	1,321	1,259	1,209	1,066	941	830
90%	537	589	594	628	733	908	983	967	922	811	607	553
Long Term												
Full Simulation Period[b]	1,235	1,244	1,309	1,387	1,512	1,638	1,779	1,756	1,688	1,553	1,411	1,288
Water Year Types[c]												
Wet (32%)	1,494	1,520	1,635	1,759	1,926	2,056	2,222	2,246	2,191	2,068	1,940	1,781
Above Normal (16%)	1,155	1,180	1,290	1,459	1,662	1,850	2,030	2,004	1,912	1,778	1,627	1,503
Below Normal (13%)	1,398	1,405	1,422	1,493	1,580	1,667	1,813	1,741	1,637	1,474	1,311	1,190
Dry (24%)	1,155	1,150	1,175	1,183	1,275	1,404	1,540	1,492	1,415	1,259	1,110	1,012
Critical (15%)	744	726	741	743	784	866	913	878	856	755	622	539

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	-22	0	0	0	0	-15	-1	4	10	1	-43
20%	-40	-105	-47	-11	0	0	-4	0	14	9	-27	-79
30%	-34	-17	-47	-36	-28	-6	-2	0	-18	-12	-17	-15
40%	37	-73	-9	-22	-85	-25	-1	-1	4	13	18	27
50%	-36	-13	-21	-49	-14	-47	-117	-70	-46	-38	4	4
60%	-48	-30	17	-56	-43	-40	19	-29	-44	-18	-59	-70
70%	-56	-62	-81	-70	-112	-105	-161	-139	-147	-132	-86	-44
80%	-114	-104	-104	-75	-96	-133	-131	-175	-129	-103	-114	-147
90%	-97	-56	-78	-96	-78	-13	-68	-8	5	10	-82	-99
Long Term												
Full Simulation Period[b]	-34	-44	-43	-45	-43	-40	-40	-40	-39	-30	-23	-30
Water Year Types[c]												
Wet (32%)	-7	-16	-9	-8	-5	1	-2	-3	-3	0	1	-23
Above Normal (16%)	-53	-65	-73	-65	-56	-51	-49	-49	-43	-37	-20	-11
Below Normal (13%)	-54	-67	-69	-61	-62	-62	-59	-58	-60	-40	-26	-14
Dry (24%)	-23	-35	-35	-48	-47	-48	-46	-45	-51	-42	-42	-43
Critical (15%)	-75	-77	-72	-82	-84	-84	-86	-84	-73	-56	-45	-59

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

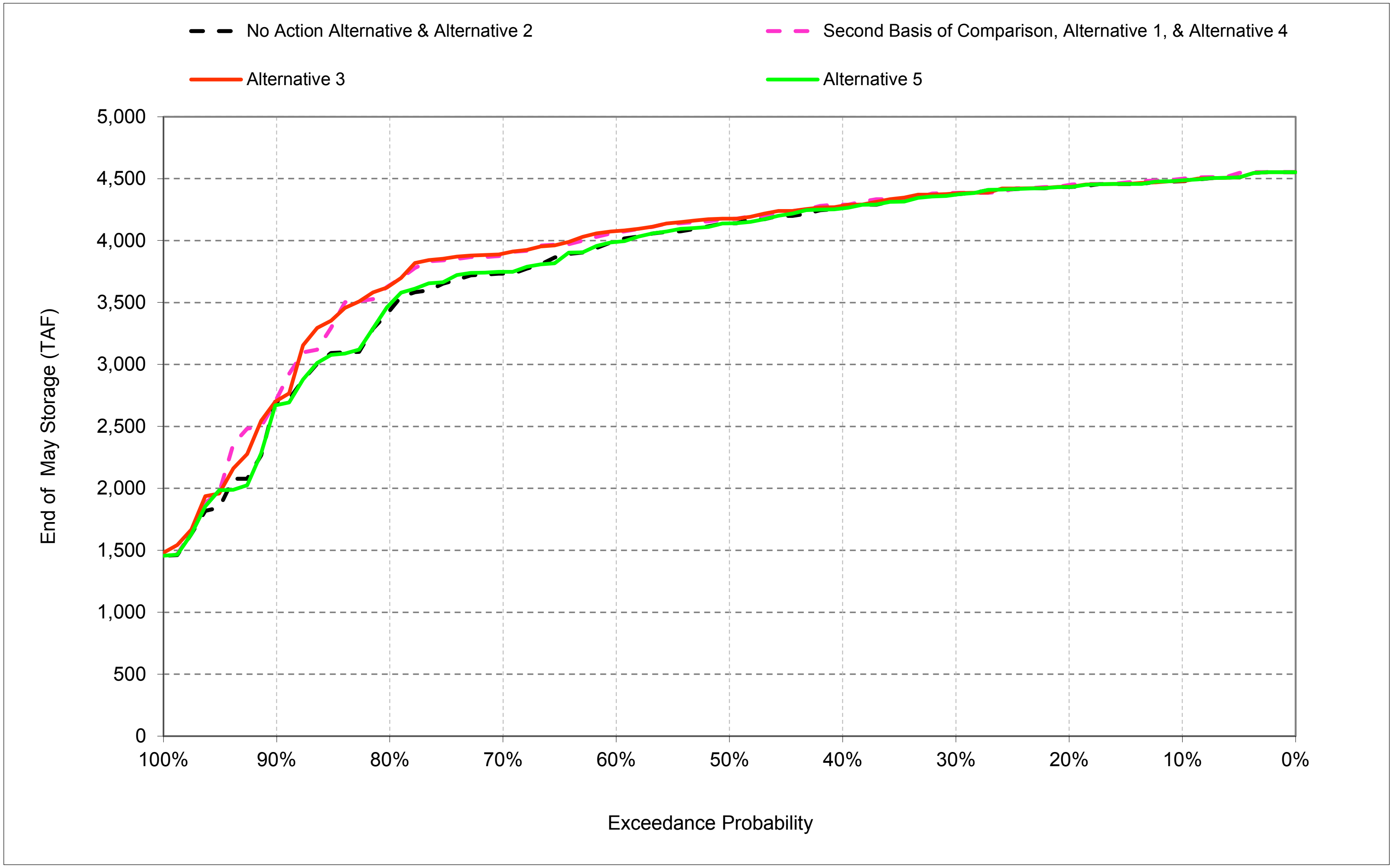
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

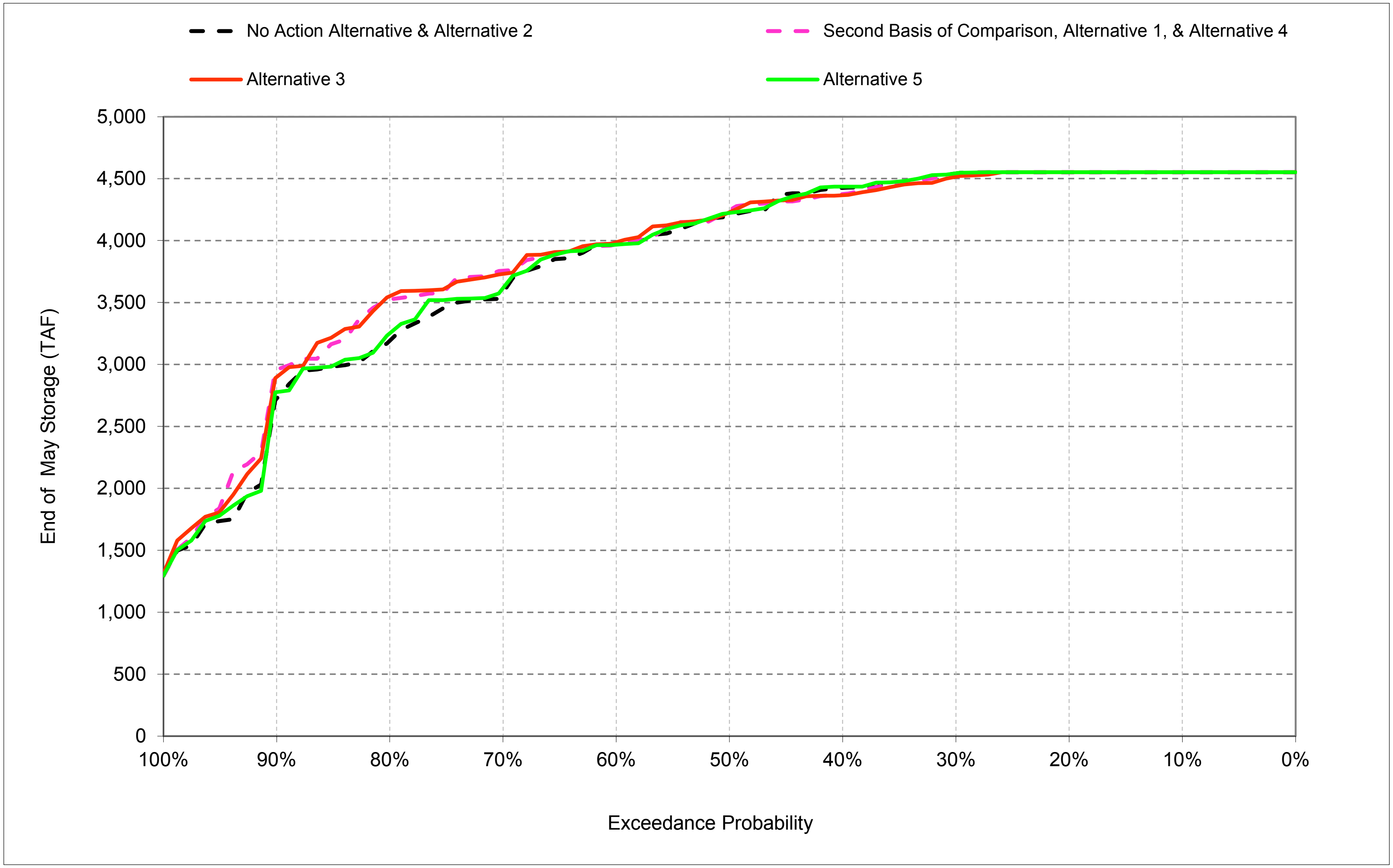
C.2. Shasta Storage

Figure C-2-1. Shasta Lake, End of April Storage



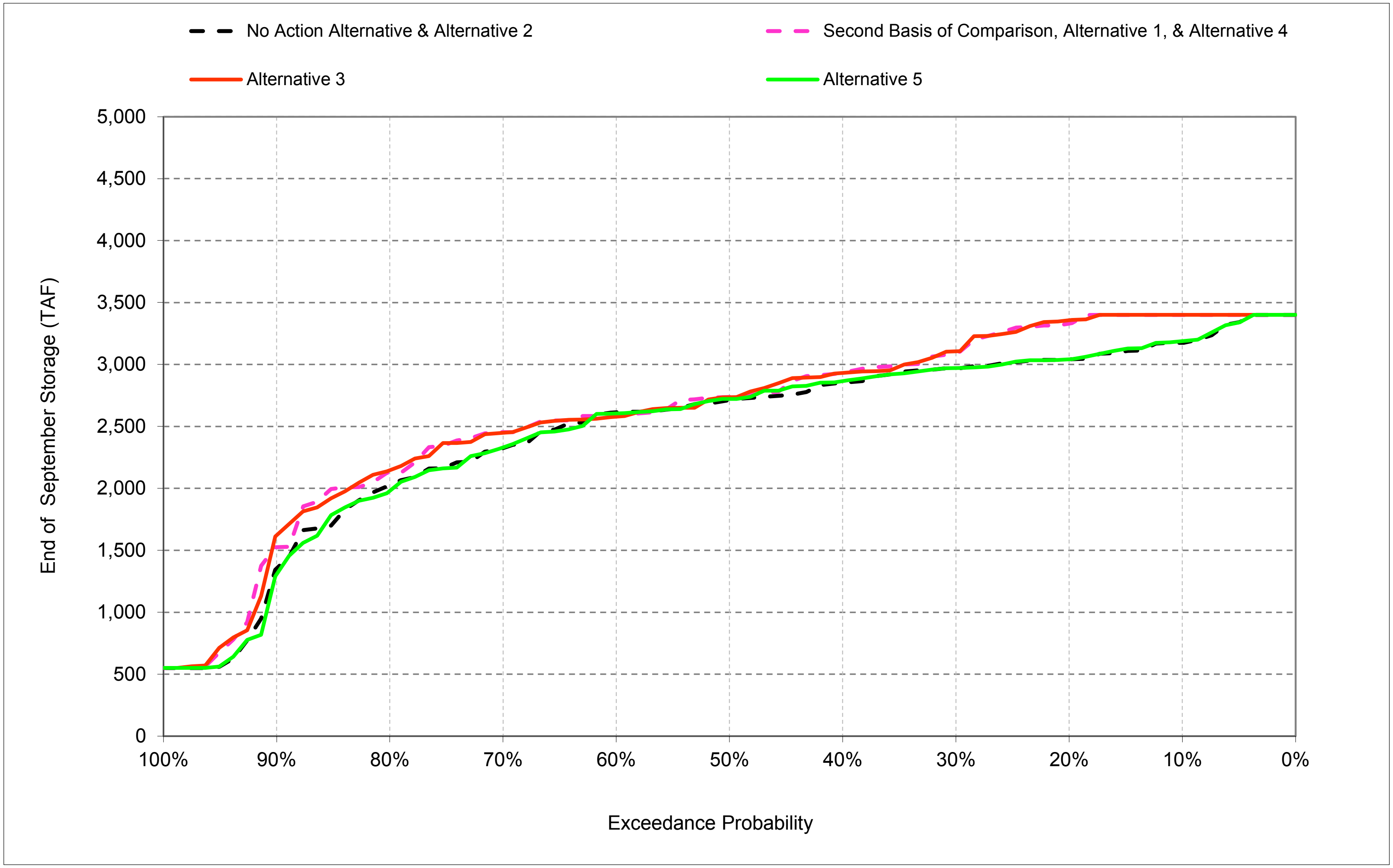
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-2-2. Shasta Lake, End of May Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-2-3. Shasta Lake, End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-1. Shasta Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	3,200	3,209	3,322	3,615	3,812	4,217	4,479	4,552	4,452	3,904	3,575	3,176
20%	2,984	2,938	3,289	3,525	3,700	4,114	4,434	4,552	4,282	3,782	3,479	3,041
30%	2,854	2,759	3,252	3,375	3,616	3,998	4,376	4,542	4,196	3,577	3,227	2,970
40%	2,712	2,674	3,020	3,260	3,489	3,948	4,267	4,425	4,008	3,323	3,024	2,852
50%	2,586	2,531	2,759	3,156	3,388	3,764	4,139	4,202	3,774	3,178	2,841	2,713
60%	2,498	2,449	2,542	2,963	3,284	3,576	3,998	3,977	3,553	2,988	2,712	2,614
70%	2,234	2,251	2,345	2,625	3,145	3,422	3,733	3,580	3,299	2,701	2,491	2,324
80%	1,947	1,951	2,151	2,450	2,777	3,139	3,435	3,191	2,815	2,325	2,098	2,025
90%	1,261	1,240	1,336	1,964	2,191	2,552	2,701	2,725	2,357	1,781	1,402	1,354
Long Term												
Full Simulation Period[b]	2,400	2,378	2,591	2,899	3,185	3,553	3,835	3,847	3,519	2,986	2,676	2,483
Water Year Types[c]												
Wet (32%)	2,700	2,719	3,077	3,384	3,589	3,836	4,298	4,460	4,242	3,735	3,410	2,985
Above Normal (16%)	2,369	2,385	2,600	3,167	3,453	4,021	4,404	4,429	4,039	3,407	3,069	2,834
Below Normal (13%)	2,587	2,548	2,686	3,062	3,442	3,814	4,026	3,957	3,588	3,002	2,643	2,608
Dry (24%)	2,345	2,283	2,428	2,621	3,034	3,505	3,737	3,668	3,284	2,767	2,496	2,462
Critical (15%)	1,702	1,633	1,717	1,871	2,031	2,274	2,202	2,088	1,719	1,253	986	937

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,222	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,767	3,380	3,330
30%	3,127	3,199	3,304	3,513	3,673	4,018	4,384	4,532	4,155	3,546	3,174	3,096
40%	2,924	3,028	3,254	3,382	3,569	3,978	4,290	4,375	3,913	3,291	2,980	2,935
50%	2,689	2,753	3,134	3,314	3,487	3,916	4,175	4,245	3,712	3,139	2,781	2,738
60%	2,520	2,594	2,922	3,170	3,354	3,727	4,064	3,971	3,493	2,942	2,636	2,592
70%	2,345	2,467	2,643	2,891	3,252	3,513	3,886	3,757	3,332	2,790	2,527	2,453
80%	2,099	2,145	2,178	2,609	2,978	3,409	3,640	3,525	2,951	2,410	2,127	2,125
90%	1,414	1,350	1,524	2,050	2,383	2,760	2,722	2,958	2,604	1,986	1,584	1,526
Long Term												
Full Simulation Period[b]	2,530	2,578	2,753	3,020	3,285	3,639	3,913	3,907	3,539	3,007	2,674	2,607
Water Year Types[c]												
Wet (32%)	2,817	2,926	3,154	3,406	3,597	3,841	4,301	4,453	4,228	3,733	3,362	3,252
Above Normal (16%)	2,499	2,578	2,808	3,313	3,515	4,038	4,416	4,417	3,979	3,347	2,975	2,921
Below Normal (13%)	2,826	2,846	2,977	3,299	3,646	3,966	4,164	4,042	3,599	3,010	2,601	2,574
Dry (24%)	2,409	2,431	2,578	2,755	3,168	3,644	3,861	3,774	3,333	2,800	2,539	2,496
Critical (15%)	1,873	1,826	1,911	2,050	2,222	2,460	2,386	2,270	1,861	1,409	1,151	1,086

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	50	43	37	17	99	5	20	0	-18	-1	-12	224
20%	263	314	43	27	71	3	15	0	1	-15	-99	289
30%	273	440	52	138	57	20	9	-11	-42	-31	-53	126
40%	211	355	234	122	80	30	22	-50	-95	-32	-44	83
50%	103	222	375	158	99	151	36	43	-62	-39	-60	25
60%	23	144	380	207	69	150	67	-6	-60	-46	-76	-22
70%	111	217	297	266	107	91	153	177	33	88	37	129
80%	152	193	28	159	201	271	206	335	136	85	29	99
90%	153	110	188	85	193	208	20	234	246	205	182	172
Long Term												
Full Simulation Period[b]	131	201	162	121	100	86	78	60	20	22	-2	124
Water Year Types[c]												
Wet (32%)	117	208	77	22	8	5	3	-7	-14	-2	-49	267
Above Normal (16%)	130	193	208	146	62	17	12	-11	-60	-60	-94	87
Below Normal (13%)	239	298	291	237	204	152	138	86	10	8	-42	-33
Dry (24%)	64	148	150	135	134	139	123	106	48	33	42	35
Critical (15%)	171	193	194	179	190	186	184	183	142	155	165	149

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-2. Shasta Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	3,200	3,209	3,322	3,615	3,812	4,217	4,479	4,552	4,452	3,904	3,575	3,176
20%	2,984	2,938	3,289	3,525	3,700	4,114	4,434	4,552	4,282	3,782	3,479	3,041
30%	2,854	2,759	3,252	3,375	3,616	3,998	4,376	4,542	4,196	3,577	3,227	2,970
40%	2,712	2,674	3,020	3,260	3,489	3,948	4,267	4,425	4,008	3,323	3,024	2,852
50%	2,586	2,531	2,759	3,156	3,388	3,764	4,139	4,202	3,774	3,178	2,841	2,713
60%	2,498	2,449	2,542	2,963	3,284	3,576	3,998	3,977	3,553	2,988	2,712	2,614
70%	2,234	2,251	2,345	2,625	3,145	3,422	3,733	3,580	3,299	2,701	2,491	2,324
80%	1,947	1,951	2,151	2,450	2,777	3,139	3,435	3,191	2,815	2,325	2,098	2,025
90%	1,261	1,240	1,336	1,964	2,191	2,552	2,701	2,725	2,357	1,781	1,402	1,354
Long Term												
Full Simulation Period[b]	2,400	2,378	2,591	2,899	3,185	3,553	3,835	3,847	3,519	2,986	2,676	2,483
Water Year Types[c]												
Wet (32%)	2,700	2,719	3,077	3,384	3,589	3,836	4,298	4,460	4,242	3,735	3,410	2,985
Above Normal (16%)	2,369	2,385	2,600	3,167	3,453	4,021	4,404	4,429	4,039	3,407	3,069	2,834
Below Normal (13%)	2,587	2,548	2,686	3,062	3,442	3,814	4,026	3,957	3,588	3,002	2,643	2,608
Dry (24%)	2,345	2,283	2,428	2,621	3,034	3,505	3,737	3,668	3,284	2,767	2,496	2,462
Critical (15%)	1,702	1,633	1,717	1,871	2,031	2,274	2,202	2,088	1,719	1,253	986	937

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	3,250	3,252	3,349	3,639	3,910	4,225	4,481	4,552	4,434	3,884	3,579	3,400
20%	3,200	3,251	3,321	3,552	3,771	4,127	4,435	4,552	4,276	3,764	3,421	3,358
30%	3,094	3,161	3,292	3,513	3,675	4,020	4,382	4,515	4,155	3,528	3,171	3,106
40%	2,918	3,066	3,257	3,370	3,592	3,975	4,281	4,367	3,917	3,296	2,999	2,933
50%	2,680	2,774	3,085	3,277	3,484	3,866	4,177	4,228	3,736	3,148	2,761	2,735
60%	2,475	2,593	2,921	3,173	3,330	3,751	4,078	3,987	3,504	2,992	2,668	2,579
70%	2,379	2,412	2,634	2,889	3,252	3,513	3,895	3,731	3,375	2,802	2,547	2,448
80%	2,107	2,114	2,239	2,610	2,981	3,387	3,636	3,552	2,996	2,475	2,188	2,146
90%	1,527	1,514	1,581	2,107	2,371	2,814	2,706	2,899	2,628	2,089	1,752	1,621
Long Term												
Full Simulation Period[b]	2,525	2,578	2,750	3,019	3,284	3,636	3,914	3,908	3,543	3,013	2,687	2,605
Water Year Types[c]												
Wet (32%)	2,816	2,932	3,161	3,408	3,597	3,841	4,301	4,453	4,221	3,720	3,370	3,244
Above Normal (16%)	2,475	2,555	2,783	3,303	3,509	4,023	4,403	4,401	3,975	3,350	2,998	2,946
Below Normal (13%)	2,818	2,851	2,983	3,302	3,650	3,971	4,176	4,056	3,631	3,036	2,669	2,562
Dry (24%)	2,431	2,451	2,590	2,770	3,189	3,662	3,885	3,798	3,359	2,826	2,542	2,500
Critical (15%)	1,833	1,793	1,877	2,024	2,184	2,424	2,354	2,237	1,836	1,406	1,129	1,066

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	50	43	27	25	98	8	2	0	-18	-20	4	224
20%	216	313	32	26	71	13	1	0	-7	-17	-58	316
30%	240	402	40	138	59	22	6	-27	-41	-48	-56	136
40%	206	392	237	110	104	27	14	-59	-91	-27	-26	80
50%	94	244	326	122	96	101	39	26	-38	-29	-80	23
60%	-23	143	379	209	46	175	80	11	-49	4	-44	-35
70%	145	162	289	264	107	91	163	151	76	101	56	124
80%	160	163	89	160	204	248	201	361	181	150	90	120
90%	266	274	245	143	180	263	5	174	271	308	351	267
Long Term												
Full Simulation Period[b]	125	200	158	120	99	83	79	60	24	27	11	122
Water Year Types[c]												
Wet (32%)	116	214	84	24	8	5	2	-7	-21	-16	-41	260
Above Normal (16%)	106	170	183	136	56	2	-1	-27	-64	-57	-71	112
Below Normal (13%)	231	302	296	240	208	157	150	99	42	34	26	-46
Dry (24%)	86	168	162	149	155	156	148	130	74	58	45	38
Critical (15%)	131	160	160	153	152	149	152	149	117	153	143	129

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-3. Shasta Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	3,200	3,209	3,322	3,615	3,812	4,217	4,479	4,552	4,452	3,904	3,575	3,176
20%	2,984	2,938	3,289	3,525	3,700	4,114	4,434	4,552	4,282	3,782	3,479	3,041
30%	2,854	2,759	3,252	3,375	3,616	3,998	4,376	4,542	4,196	3,577	3,227	2,970
40%	2,712	2,674	3,020	3,260	3,489	3,948	4,267	4,425	4,008	3,323	3,024	2,852
50%	2,586	2,531	2,759	3,156	3,388	3,764	4,139	4,202	3,774	3,178	2,841	2,713
60%	2,498	2,449	2,542	2,963	3,284	3,576	3,998	3,977	3,553	2,988	2,712	2,614
70%	2,234	2,251	2,345	2,625	3,145	3,422	3,733	3,580	3,299	2,701	2,491	2,324
80%	1,947	1,951	2,151	2,450	2,777	3,139	3,435	3,191	2,815	2,325	2,098	2,025
90%	1,261	1,240	1,336	1,964	2,191	2,552	2,701	2,725	2,357	1,781	1,402	1,354
Long Term												
Full Simulation Period[b]	2,400	2,378	2,591	2,899	3,185	3,553	3,835	3,847	3,519	2,986	2,676	2,483
Water Year Types[c]												
Wet (32%)	2,700	2,719	3,077	3,384	3,589	3,836	4,298	4,460	4,242	3,735	3,410	2,985
Above Normal (16%)	2,369	2,385	2,600	3,167	3,453	4,021	4,404	4,429	4,039	3,407	3,069	2,834
Below Normal (13%)	2,587	2,548	2,686	3,062	3,442	3,814	4,026	3,957	3,588	3,002	2,643	2,608
Dry (24%)	2,345	2,283	2,428	2,621	3,034	3,505	3,737	3,668	3,284	2,767	2,496	2,462
Critical (15%)	1,702	1,633	1,717	1,871	2,031	2,274	2,202	2,088	1,719	1,253	986	937

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	3,200	3,242	3,322	3,615	3,812	4,217	4,486	4,552	4,451	3,905	3,580	3,188
20%	3,018	2,911	3,293	3,525	3,704	4,114	4,434	4,552	4,282	3,762	3,471	3,041
30%	2,878	2,770	3,252	3,370	3,616	3,998	4,371	4,542	4,196	3,578	3,239	2,971
40%	2,735	2,684	3,037	3,270	3,496	3,944	4,260	4,435	3,973	3,313	3,027	2,866
50%	2,615	2,540	2,771	3,188	3,391	3,756	4,139	4,223	3,785	3,196	2,859	2,722
60%	2,495	2,452	2,537	2,971	3,284	3,590	3,989	3,967	3,595	3,020	2,738	2,605
70%	2,246	2,250	2,355	2,639	3,163	3,417	3,748	3,615	3,292	2,728	2,489	2,330
80%	1,912	1,958	2,146	2,447	2,766	3,151	3,485	3,251	2,855	2,356	2,051	1,979
90%	1,216	1,196	1,281	1,929	2,246	2,565	2,672	2,777	2,423	1,794	1,341	1,308
Long Term												
Full Simulation Period[b]	2,399	2,377	2,593	2,900	3,185	3,552	3,838	3,859	3,534	2,991	2,675	2,483
Water Year Types[c]												
Wet (32%)	2,704	2,716	3,078	3,385	3,590	3,836	4,299	4,461	4,243	3,736	3,410	2,989
Above Normal (16%)	2,369	2,388	2,598	3,164	3,454	4,019	4,401	4,430	4,042	3,409	3,071	2,842
Below Normal (13%)	2,603	2,565	2,704	3,077	3,450	3,820	4,039	3,970	3,602	3,012	2,663	2,620
Dry (24%)	2,344	2,287	2,433	2,627	3,039	3,509	3,745	3,699	3,315	2,787	2,497	2,459
Critical (15%)	1,676	1,611	1,700	1,856	2,015	2,258	2,203	2,104	1,749	1,246	958	910

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	0	33	0	0	0	0	7	0	-1	1	5	12
20%	34	-27	3	0	4	0	0	0	0	-20	-9	0
30%	24	11	0	-5	0	0	-5	0	0	1	12	1
40%	22	11	17	10	7	-4	-7	10	-35	-10	3	14
50%	29	9	12	33	2	-8	0	20	11	19	19	9
60%	-2	3	-5	7	0	14	-8	-10	43	32	26	-8
70%	12	-1	10	14	18	-5	15	35	-7	27	-2	6
80%	-35	7	-4	-3	-11	12	50	60	40	30	-47	-46
90%	-45	-44	-55	-35	55	13	-30	53	66	13	-61	-47
Long Term												
Full Simulation Period[b]	-1	0	1	1	0	-1	3	12	15	5	-1	0
Water Year Types[c]												
Wet (32%)	4	-3	1	1	0	0	1	1	1	0	0	4
Above Normal (16%)	0	4	-2	-3	0	-1	-3	2	3	2	2	8
Below Normal (13%)	16	16	18	16	8	6	13	13	14	10	20	12
Dry (24%)	-1	4	5	6	5	4	8	31	31	20	1	-3
Critical (15%)	-25	-22	-17	-15	-16	-16	1	16	31	-7	-28	-26

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-4. Shasta Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,222	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,767	3,380	3,330
30%	3,127	3,199	3,304	3,513	3,673	4,018	4,384	4,532	4,155	3,546	3,174	3,096
40%	2,924	3,028	3,254	3,382	3,569	3,978	4,290	4,375	3,913	3,291	2,980	2,935
50%	2,689	2,753	3,134	3,314	3,487	3,916	4,175	4,245	3,712	3,139	2,781	2,738
60%	2,520	2,594	2,922	3,170	3,354	3,727	4,064	3,971	3,493	2,942	2,636	2,592
70%	2,345	2,467	2,643	2,891	3,252	3,513	3,886	3,757	3,332	2,790	2,527	2,453
80%	2,099	2,145	2,178	2,609	2,978	3,409	3,640	3,525	2,951	2,410	2,127	2,125
90%	1,414	1,350	1,524	2,050	2,383	2,760	2,722	2,958	2,604	1,986	1,584	1,526
Long Term												
Full Simulation Period[b]	2,530	2,578	2,753	3,020	3,285	3,639	3,913	3,907	3,539	3,007	2,674	2,607
Water Year Types[c]												
Wet (32%)	2,817	2,926	3,154	3,406	3,597	3,841	4,301	4,453	4,228	3,733	3,362	3,252
Above Normal (16%)	2,499	2,578	2,808	3,313	3,515	4,038	4,416	4,417	3,979	3,347	2,975	2,921
Below Normal (13%)	2,826	2,846	2,977	3,299	3,646	3,966	4,164	4,042	3,599	3,010	2,601	2,574
Dry (24%)	2,409	2,431	2,578	2,755	3,168	3,644	3,861	3,774	3,333	2,800	2,539	2,496
Critical (15%)	1,873	1,826	1,911	2,050	2,222	2,460	2,386	2,270	1,861	1,409	1,151	1,086

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,200	3,209	3,322	3,615	3,812	4,217	4,479	4,552	4,452	3,904	3,575	3,176
20%	2,984	2,938	3,289	3,525	3,700	4,114	4,434	4,552	4,282	3,782	3,479	3,041
30%	2,854	2,759	3,252	3,375	3,616	3,998	4,376	4,542	4,196	3,577	3,227	2,970
40%	2,712	2,674	3,020	3,260	3,489	3,948	4,267	4,425	4,008	3,323	3,024	2,852
50%	2,586	2,531	2,759	3,156	3,388	3,764	4,139	4,202	3,774	3,178	2,841	2,713
60%	2,498	2,449	2,542	2,963	3,284	3,576	3,998	3,977	3,553	2,988	2,712	2,614
70%	2,234	2,251	2,345	2,625	3,145	3,422	3,733	3,580	3,299	2,701	2,491	2,324
80%	1,947	1,951	2,151	2,450	2,777	3,139	3,435	3,191	2,815	2,325	2,098	2,025
90%	1,261	1,240	1,336	1,964	2,191	2,552	2,701	2,725	2,357	1,781	1,402	1,354
Long Term												
Full Simulation Period[b]	2,400	2,378	2,591	2,899	3,185	3,553	3,835	3,847	3,519	2,986	2,676	2,483
Water Year Types[c]												
Wet (32%)	2,700	2,719	3,077	3,384	3,589	3,836	4,298	4,460	4,242	3,735	3,410	2,985
Above Normal (16%)	2,369	2,385	2,600	3,167	3,453	4,021	4,404	4,429	4,039	3,407	3,069	2,834
Below Normal (13%)	2,587	2,548	2,686	3,062	3,442	3,814	4,026	3,957	3,588	3,002	2,643	2,608
Dry (24%)	2,345	2,283	2,428	2,621	3,034	3,505	3,737	3,668	3,284	2,767	2,496	2,462
Critical (15%)	1,702	1,633	1,717	1,871	2,031	2,274	2,202	2,088	1,719	1,253	986	937

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-50	-43	-37	-17	-99	-5	-20	0	18	1	12	-224
20%	-263	-314	-43	-27	-71	-3	-15	0	-1	15	99	-289
30%	-273	-440	-52	-138	-57	-20	-9	11	42	31	53	-126
40%	-211	-355	-234	-122	-80	-30	-22	50	95	32	44	-83
50%	-103	-222	-375	-158	-99	-151	-36	-43	62	39	60	-25
60%	-23	-144	-380	-207	-69	-150	-67	6	60	46	76	22
70%	-111	-217	-297	-266	-107	-91	-153	-177	-33	-88	-37	-129
80%	-152	-193	-28	-159	-201	-271	-206	-335	-136	-85	-29	-99
90%	-153	-110	-188	-85	-193	-208	-20	-234	-246	-205	-182	-172
Long Term												
Full Simulation Period[b]	-131	-201	-162	-121	-100	-86	-78	-60	-20	-22	2	-124
Water Year Types[c]												
Wet (32%)	-117	-208	-77	-22	-8	-5	-3	7	14	2	49	-267
Above Normal (16%)	-130	-193	-208	-146	-62	-17	-12	11	60	60	94	-87
Below Normal (13%)	-239	-298	-291	-237	-204	-152	-138	-86	-10	-8	42	33
Dry (24%)	-64	-148	-150	-135	-134	-139	-123	-106	-48	-33	-42	-35
Critical (15%)	-171	-193	-194	-179	-190	-186	-184	-183	-142	-155	-165	-149

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-5. Shasta Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,222	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,767	3,380	3,330
30%	3,127	3,199	3,304	3,513	3,673	4,018	4,384	4,532	4,155	3,546	3,174	3,096
40%	2,924	3,028	3,254	3,382	3,569	3,978	4,290	4,375	3,913	3,291	2,980	2,935
50%	2,689	2,753	3,134	3,314	3,487	3,916	4,175	4,245	3,712	3,139	2,781	2,738
60%	2,520	2,594	2,922	3,170	3,354	3,727	4,064	3,971	3,493	2,942	2,636	2,592
70%	2,345	2,467	2,643	2,891	3,252	3,513	3,886	3,757	3,332	2,790	2,527	2,453
80%	2,099	2,145	2,178	2,609	2,978	3,409	3,640	3,525	2,951	2,410	2,127	2,125
90%	1,414	1,350	1,524	2,050	2,383	2,760	2,722	2,958	2,604	1,986	1,584	1,526
Long Term												
Full Simulation Period[b]	2,530	2,578	2,753	3,020	3,285	3,639	3,913	3,907	3,539	3,007	2,674	2,607
Water Year Types[c]												
Wet (32%)	2,817	2,926	3,154	3,406	3,597	3,841	4,301	4,453	4,228	3,733	3,362	3,252
Above Normal (16%)	2,499	2,578	2,808	3,313	3,515	4,038	4,416	4,417	3,979	3,347	2,975	2,921
Below Normal (13%)	2,826	2,846	2,977	3,299	3,646	3,966	4,164	4,042	3,599	3,010	2,601	2,574
Dry (24%)	2,409	2,431	2,578	2,755	3,168	3,644	3,861	3,774	3,333	2,800	2,539	2,496
Critical (15%)	1,873	1,826	1,911	2,050	2,222	2,460	2,386	2,270	1,861	1,409	1,151	1,086

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,349	3,639	3,910	4,225	4,481	4,552	4,434	3,884	3,579	3,400
20%	3,200	3,251	3,321	3,552	3,771	4,127	4,435	4,552	4,276	3,764	3,421	3,358
30%	3,094	3,161	3,292	3,513	3,675	4,020	4,382	4,515	4,155	3,528	3,171	3,106
40%	2,918	3,066	3,257	3,370	3,592	3,975	4,281	4,367	3,917	3,296	2,999	2,933
50%	2,680	2,774	3,085	3,277	3,484	3,866	4,177	4,228	3,736	3,148	2,761	2,735
60%	2,475	2,593	2,921	3,173	3,330	3,751	4,078	3,987	3,504	2,992	2,668	2,579
70%	2,379	2,412	2,634	2,889	3,252	3,513	3,895	3,731	3,375	2,802	2,547	2,448
80%	2,107	2,114	2,239	2,610	2,981	3,387	3,636	3,552	2,996	2,475	2,188	2,146
90%	1,527	1,514	1,581	2,107	2,371	2,814	2,706	2,899	2,628	2,089	1,752	1,621
Long Term												
Full Simulation Period[b]	2,525	2,578	2,750	3,019	3,284	3,636	3,914	3,908	3,543	3,013	2,687	2,605
Water Year Types[c]												
Wet (32%)	2,816	2,932	3,161	3,408	3,597	3,841	4,301	4,453	4,221	3,720	3,370	3,244
Above Normal (16%)	2,475	2,555	2,783	3,303	3,509	4,023	4,403	4,401	3,975	3,350	2,998	2,946
Below Normal (13%)	2,818	2,851	2,983	3,302	3,650	3,971	4,176	4,056	3,631	3,036	2,669	2,562
Dry (24%)	2,431	2,451	2,590	2,770	3,189	3,662	3,885	3,798	3,359	2,826	2,542	2,500
Critical (15%)	1,833	1,793	1,877	2,024	2,184	2,424	2,354	2,237	1,836	1,406	1,129	1,066

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	-10	7	-1	3	-17	0	0	-18	16	0
20%	-48	-1	-11	0	0	9	-14	0	-8	-3	41	27
30%	-34	-38	-11	0	2	2	-3	-16	0	-18	-3	10
40%	-5	37	3	-12	24	-3	-9	-8	4	4	18	-2
50%	-8	22	-49	-36	-3	-50	2	-17	24	9	-20	-2
60%	-46	-1	-1	3	-24	25	13	17	11	50	32	-13
70%	34	-55	-8	-2	0	0	10	-26	43	13	19	-5
80%	8	-31	61	1	3	-23	-5	26	45	65	61	21
90%	113	164	57	57	-13	54	-15	-59	25	103	168	95
Long Term												
Full Simulation Period[b]	-6	-1	-3	-1	-1	-3	1	0	4	6	13	-2
Water Year Types[c]												
Wet (32%)	-1	6	7	2	0	0	0	0	-7	-13	8	-8
Above Normal (16%)	-24	-23	-25	-11	-6	-15	-13	-16	-4	3	23	25
Below Normal (13%)	-9	5	5	3	4	5	12	13	32	26	68	-13
Dry (24%)	22	21	12	15	22	17	24	24	26	25	3	4
Critical (15%)	-40	-33	-34	-26	-38	-36	-32	-33	-25	-2	-22	-20

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-6. Shasta Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,222	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,767	3,380	3,330
30%	3,127	3,199	3,304	3,513	3,673	4,018	4,384	4,532	4,155	3,546	3,174	3,096
40%	2,924	3,028	3,254	3,382	3,569	3,978	4,290	4,375	3,913	3,291	2,980	2,935
50%	2,689	2,753	3,134	3,314	3,487	3,916	4,175	4,245	3,712	3,139	2,781	2,738
60%	2,520	2,594	2,922	3,170	3,354	3,727	4,064	3,971	3,493	2,942	2,636	2,592
70%	2,345	2,467	2,643	2,891	3,252	3,513	3,886	3,757	3,332	2,790	2,527	2,453
80%	2,099	2,145	2,178	2,609	2,978	3,409	3,640	3,525	2,951	2,410	2,127	2,125
90%	1,414	1,350	1,524	2,050	2,383	2,760	2,722	2,958	2,604	1,986	1,584	1,526
Long Term												
Full Simulation Period[b]	2,530	2,578	2,753	3,020	3,285	3,639	3,913	3,907	3,539	3,007	2,674	2,607
Water Year Types[c]												
Wet (32%)	2,817	2,926	3,154	3,406	3,597	3,841	4,301	4,453	4,228	3,733	3,362	3,252
Above Normal (16%)	2,499	2,578	2,808	3,313	3,515	4,038	4,416	4,417	3,979	3,347	2,975	2,921
Below Normal (13%)	2,826	2,846	2,977	3,299	3,646	3,966	4,164	4,042	3,599	3,010	2,601	2,574
Dry (24%)	2,409	2,431	2,578	2,755	3,168	3,644	3,861	3,774	3,333	2,800	2,539	2,496
Critical (15%)	1,873	1,826	1,911	2,050	2,222	2,460	2,386	2,270	1,861	1,409	1,151	1,086

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,200	3,242	3,322	3,615	3,812	4,217	4,486	4,552	4,451	3,905	3,580	3,188
20%	3,018	2,911	3,293	3,525	3,704	4,114	4,434	4,552	4,282	3,762	3,471	3,041
30%	2,878	2,770	3,252	3,370	3,616	3,998	4,371	4,542	4,196	3,578	3,239	2,971
40%	2,735	2,684	3,037	3,270	3,496	3,944	4,260	4,435	3,973	3,313	3,027	2,866
50%	2,615	2,540	2,771	3,188	3,391	3,756	4,139	4,223	3,785	3,196	2,859	2,722
60%	2,495	2,452	2,537	2,971	3,284	3,590	3,989	3,967	3,595	3,020	2,738	2,605
70%	2,246	2,250	2,355	2,639	3,163	3,417	3,748	3,615	3,292	2,728	2,489	2,330
80%	1,912	1,958	2,146	2,447	2,766	3,151	3,485	3,251	2,855	2,356	2,051	1,979
90%	1,216	1,196	1,281	1,929	2,246	2,565	2,672	2,777	2,423	1,794	1,341	1,308
Long Term												
Full Simulation Period[b]	2,399	2,377	2,593	2,900	3,185	3,552	3,838	3,859	3,534	2,991	2,675	2,483
Water Year Types[c]												
Wet (32%)	2,704	2,716	3,078	3,385	3,590	3,836	4,299	4,461	4,243	3,736	3,410	2,989
Above Normal (16%)	2,369	2,388	2,598	3,164	3,454	4,019	4,401	4,430	4,042	3,409	3,071	2,842
Below Normal (13%)	2,603	2,565	2,704	3,077	3,450	3,820	4,039	3,970	3,602	3,012	2,663	2,620
Dry (24%)	2,344	2,287	2,433	2,627	3,039	3,509	3,745	3,699	3,315	2,787	2,497	2,459
Critical (15%)	1,676	1,611	1,700	1,856	2,015	2,258	2,203	2,104	1,749	1,246	958	910

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-50	-10	-37	-17	-99	-5	-12	0	17	3	17	-212
20%	-229	-341	-40	-27	-66	-3	-15	0	-1	-5	91	-289
30%	-250	-429	-52	-143	-57	-20	-14	11	42	32	66	-124
40%	-189	-344	-217	-112	-73	-34	-30	60	60	21	47	-69
50%	-73	-213	-363	-125	-96	-160	-36	-22	73	58	78	-15
60%	-25	-141	-385	-199	-69	-137	-75	-3	102	78	102	13
70%	-99	-218	-287	-252	-89	-96	-138	-142	-40	-61	-39	-124
80%	-187	-187	-32	-162	-212	-259	-156	-274	-96	-54	-76	-145
90%	-198	-154	-244	-121	-138	-195	-50	-181	-180	-192	-243	-218
Long Term												
Full Simulation Period[b]	-131	-201	-160	-120	-100	-87	-75	-48	-5	-16	1	-125
Water Year Types[c]												
Wet (32%)	-114	-211	-76	-21	-8	-5	-2	7	15	3	48	-263
Above Normal (16%)	-130	-190	-210	-149	-62	-19	-15	13	63	62	97	-79
Below Normal (13%)	-224	-281	-273	-221	-196	-146	-125	-72	3	1	62	45
Dry (24%)	-64	-144	-145	-129	-129	-135	-116	-75	-18	-13	-41	-38
Critical (15%)	-197	-215	-211	-194	-207	-202	-183	-166	-111	-163	-193	-176

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

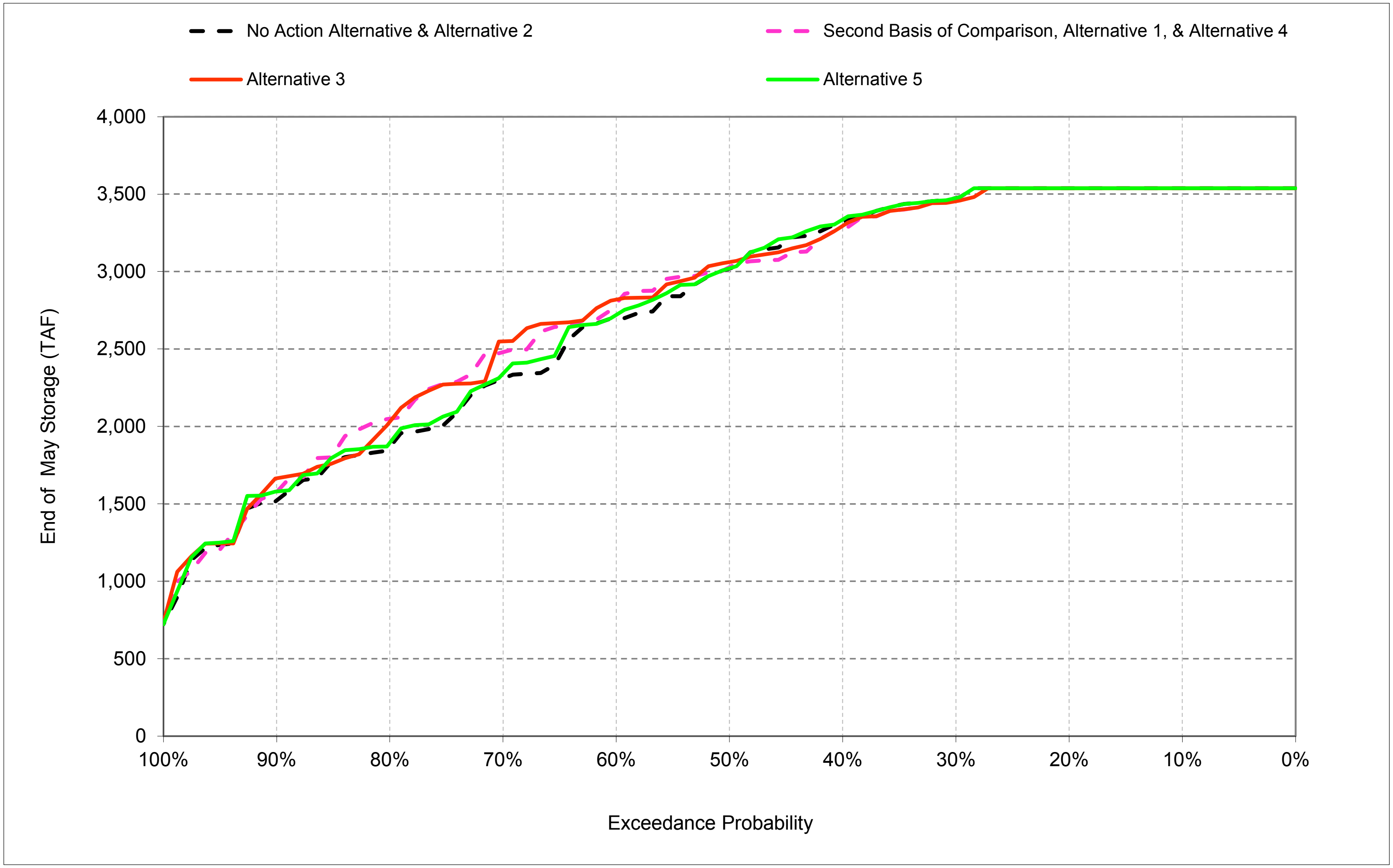
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

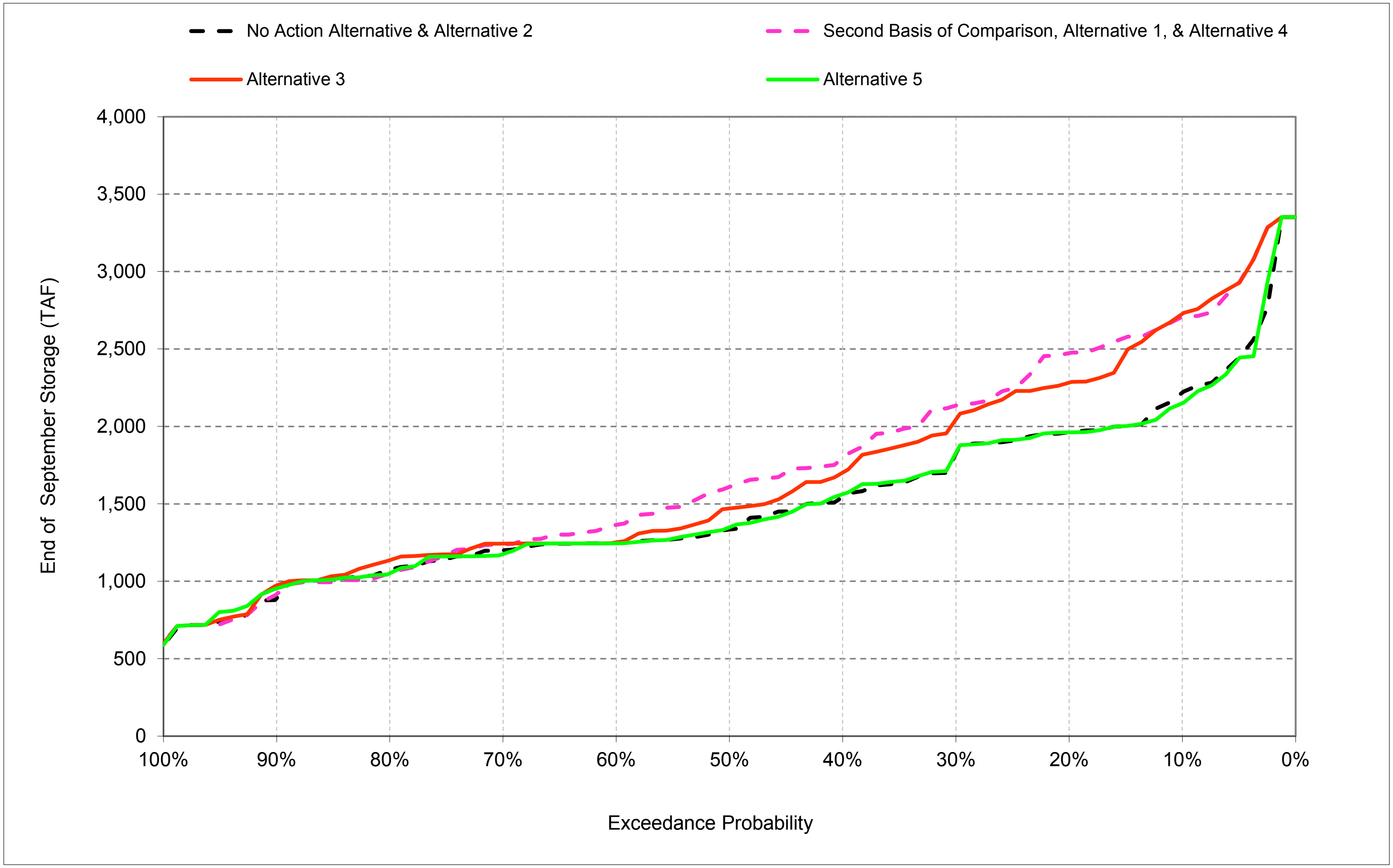
C.3. Oroville Storage

Figure C-3-1. Lake Oroville, End of May Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-3-2. Lake Oroville, End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-1. Lake Oroville, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	2,052	2,115	2,719	2,788	2,918	3,035	3,352	3,538	3,538	3,037	2,759	2,218
20%	1,775	1,798	2,033	2,616	2,788	2,964	3,298	3,538	3,538	2,952	2,501	1,962
30%	1,617	1,660	1,802	2,290	2,788	2,898	3,268	3,475	3,361	2,747	2,311	1,824
40%	1,404	1,407	1,593	1,932	2,557	2,788	3,208	3,320	3,112	2,476	1,962	1,544
50%	1,248	1,246	1,394	1,693	2,170	2,639	2,925	3,019	2,833	2,203	1,729	1,334
60%	1,160	1,121	1,252	1,598	1,901	2,265	2,599	2,698	2,459	1,827	1,507	1,248
70%	1,094	1,014	1,097	1,305	1,673	2,034	2,219	2,310	2,002	1,460	1,257	1,201
80%	1,012	955	992	1,145	1,424	1,692	1,906	1,866	1,685	1,241	1,130	1,075
90%	910	894	898	1,007	1,241	1,491	1,668	1,522	1,259	1,102	986	890
Long Term												
Full Simulation Period[b]	1,400	1,393	1,568	1,832	2,147	2,388	2,654	2,751	2,602	2,120	1,819	1,513
Water Year Types[c]												
Wet (32%)	1,691	1,732	2,189	2,554	2,832	2,942	3,300	3,488	3,445	2,964	2,626	2,109
Above Normal (16%)	1,279	1,322	1,485	1,959	2,519	2,892	3,247	3,393	3,232	2,600	2,117	1,659
Below Normal (13%)	1,542	1,497	1,507	1,719	2,122	2,397	2,653	2,714	2,530	1,923	1,513	1,307
Dry (24%)	1,206	1,158	1,177	1,305	1,582	1,938	2,178	2,210	1,951	1,478	1,287	1,144
Critical (15%)	1,092	1,029	1,019	1,108	1,223	1,381	1,408	1,392	1,243	1,018	917	865

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	2,616	2,550	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,854	2,707
20%	2,272	2,304	2,464	2,788	2,838	2,990	3,298	3,538	3,531	2,965	2,590	2,473
30%	1,937	2,035	2,166	2,556	2,788	2,937	3,268	3,474	3,285	2,772	2,415	2,135
40%	1,699	1,784	2,024	2,366	2,788	2,841	3,209	3,278	2,983	2,367	2,000	1,795
50%	1,429	1,445	1,715	2,187	2,579	2,788	3,067	3,028	2,658	2,145	1,795	1,609
60%	1,145	1,101	1,402	1,723	2,140	2,641	2,888	2,792	2,438	1,915	1,601	1,365
70%	1,037	1,001	1,079	1,306	1,871	2,230	2,527	2,480	2,064	1,754	1,422	1,239
80%	998	974	999	1,109	1,544	1,806	1,996	2,050	1,769	1,436	1,232	1,052
90%	913	877	889	1,003	1,200	1,472	1,563	1,575	1,325	1,133	995	917
Long Term												
Full Simulation Period[b]	1,588	1,585	1,742	1,978	2,258	2,474	2,735	2,796	2,571	2,160	1,897	1,725
Water Year Types[c]												
Wet (32%)	1,936	1,984	2,354	2,636	2,871	2,942	3,300	3,477	3,402	2,976	2,728	2,569
Above Normal (16%)	1,465	1,523	1,702	2,173	2,648	2,937	3,271	3,357	3,081	2,493	2,087	1,827
Below Normal (13%)	1,823	1,783	1,831	2,037	2,361	2,627	2,875	2,836	2,461	1,930	1,637	1,424
Dry (24%)	1,371	1,324	1,344	1,473	1,764	2,120	2,363	2,357	2,031	1,688	1,427	1,261
Critical (15%)	1,117	1,044	1,041	1,125	1,235	1,406	1,423	1,407	1,219	1,027	911	839

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	564	435	69	19	30	17	0	0	0	0	96	489
20%	496	506	432	172	50	26	0	0	-6	13	88	511
30%	320	375	365	266	0	38	0	-1	-76	25	104	311
40%	295	377	430	434	231	53	1	-42	-129	-108	38	251
50%	180	200	321	494	408	149	142	9	-175	-58	66	275
60%	-15	-20	149	126	239	377	289	94	-21	87	94	116
70%	-58	-12	-18	1	198	196	308	170	62	294	165	39
80%	-14	19	7	-36	121	114	90	185	83	195	102	-23
90%	3	-18	-9	-4	-41	-19	-105	53	66	31	9	27
Long Term												
Full Simulation Period[b]	189	193	174	146	111	86	81	45	-31	40	78	213
Water Year Types[c]												
Wet (32%)	245	252	165	82	39	0	0	-10	-43	12	102	459
Above Normal (16%)	187	201	217	214	129	44	24	-37	-150	-107	-29	167
Below Normal (13%)	281	285	324	318	239	230	222	122	-69	7	125	117
Dry (24%)	165	165	167	168	182	182	185	147	80	210	140	117
Critical (15%)	25	15	22	17	12	25	16	15	-25	8	-6	-26

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-2. Lake Oroville, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	2,052	2,115	2,719	2,788	2,918	3,035	3,352	3,538	3,538	3,037	2,759	2,218
20%	1,775	1,798	2,033	2,616	2,788	2,964	3,298	3,538	3,538	2,952	2,501	1,962
30%	1,617	1,660	1,802	2,290	2,788	2,898	3,268	3,475	3,361	2,747	2,311	1,824
40%	1,404	1,407	1,593	1,932	2,557	2,788	3,208	3,320	3,112	2,476	1,962	1,544
50%	1,248	1,246	1,394	1,693	2,170	2,639	2,925	3,019	2,833	2,203	1,729	1,334
60%	1,160	1,121	1,252	1,598	1,901	2,265	2,599	2,698	2,459	1,827	1,507	1,248
70%	1,094	1,014	1,097	1,305	1,673	2,034	2,219	2,310	2,002	1,460	1,257	1,201
80%	1,012	955	992	1,145	1,424	1,692	1,906	1,866	1,685	1,241	1,130	1,075
90%	910	894	898	1,007	1,241	1,491	1,668	1,522	1,259	1,102	986	890
Long Term												
Full Simulation Period[b]	1,400	1,393	1,568	1,832	2,147	2,388	2,654	2,751	2,602	2,120	1,819	1,513
Water Year Types[c]												
Wet (32%)	1,691	1,732	2,189	2,554	2,832	2,942	3,300	3,488	3,445	2,964	2,626	2,109
Above Normal (16%)	1,279	1,322	1,485	1,959	2,519	2,892	3,247	3,393	3,232	2,600	2,117	1,659
Below Normal (13%)	1,542	1,497	1,507	1,719	2,122	2,397	2,653	2,714	2,530	1,923	1,513	1,307
Dry (24%)	1,206	1,158	1,177	1,305	1,582	1,938	2,178	2,210	1,951	1,478	1,287	1,144
Critical (15%)	1,092	1,029	1,019	1,108	1,223	1,381	1,408	1,392	1,243	1,018	917	865

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	2,639	2,548	2,788	2,807	2,943	3,052	3,352	3,538	3,538	3,046	2,791	2,727
20%	2,094	2,155	2,500	2,788	2,802	2,983	3,298	3,538	3,522	2,898	2,518	2,283
30%	1,905	1,889	2,078	2,450	2,788	2,938	3,268	3,454	3,177	2,562	2,273	2,045
40%	1,641	1,686	1,860	2,278	2,724	2,839	3,208	3,295	2,954	2,317	1,982	1,701
50%	1,264	1,293	1,647	2,109	2,565	2,788	3,081	3,061	2,744	2,106	1,708	1,470
60%	1,195	1,126	1,375	1,678	2,130	2,642	2,884	2,819	2,450	1,867	1,429	1,251
70%	1,103	1,056	1,110	1,356	1,827	2,179	2,527	2,549	2,185	1,605	1,309	1,244
80%	1,023	964	999	1,157	1,459	1,739	2,034	2,029	1,743	1,344	1,242	1,136
90%	918	905	907	1,016	1,239	1,461	1,663	1,666	1,294	1,167	1,050	974
Long Term												
Full Simulation Period[b]	1,560	1,554	1,717	1,961	2,248	2,472	2,733	2,798	2,580	2,108	1,823	1,674
Water Year Types[c]												
Wet (32%)	1,893	1,931	2,315	2,608	2,854	2,942	3,300	3,473	3,375	2,902	2,630	2,499
Above Normal (16%)	1,405	1,448	1,623	2,109	2,623	2,945	3,280	3,371	3,129	2,494	2,039	1,778
Below Normal (13%)	1,839	1,801	1,846	2,054	2,370	2,636	2,879	2,883	2,610	1,971	1,520	1,354
Dry (24%)	1,332	1,288	1,322	1,454	1,733	2,088	2,329	2,319	1,980	1,548	1,343	1,198
Critical (15%)	1,129	1,067	1,067	1,156	1,275	1,429	1,449	1,437	1,236	1,029	918	862

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	587	433	69	19	24	17	0	0	0	9	32	508
20%	319	357	468	172	14	19	0	0	-15	-54	16	321
30%	289	228	277	160	0	39	0	-21	-184	-185	-38	221
40%	237	279	267	346	167	51	0	-25	-158	-158	20	157
50%	15	47	253	416	395	149	155	42	-89	-98	-21	136
60%	34	5	123	80	228	377	285	121	-8	40	-78	3
70%	8	42	12	51	154	145	308	239	183	145	51	43
80%	11	10	6	13	35	47	127	164	58	103	112	61
90%	8	11	10	9	-2	-30	-5	144	34	65	64	83
Long Term												
Full Simulation Period[b]	160	161	150	129	102	84	78	48	-22	-11	3	162
Water Year Types[c]												
Wet (32%)	201	199	126	54	23	0	0	-15	-70	-62	4	390
Above Normal (16%)	126	127	138	151	105	53	33	-22	-102	-106	-78	118
Below Normal (13%)	297	303	339	335	248	240	225	169	80	48	8	47
Dry (24%)	127	130	145	149	151	150	151	109	29	70	55	55
Critical (15%)	37	38	48	48	52	48	41	45	-8	10	1	-3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-3. Lake Oroville, End of Month Storage

No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,052	2,115	2,719	2,788	2,918	3,035	3,352	3,538	3,538	3,037	2,759	2,218
20%	1,775	1,798	2,033	2,616	2,788	2,964	3,298	3,538	3,538	2,952	2,501	1,962
30%	1,617	1,660	1,802	2,290	2,788	2,898	3,268	3,475	3,361	2,747	2,311	1,824
40%	1,404	1,407	1,593	1,932	2,557	2,788	3,208	3,320	3,112	2,476	1,962	1,544
50%	1,248	1,246	1,394	1,693	2,170	2,639	2,925	3,019	2,833	2,203	1,729	1,334
60%	1,160	1,121	1,252	1,598	1,901	2,265	2,599	2,698	2,459	1,827	1,507	1,248
70%	1,094	1,014	1,097	1,305	1,673	2,034	2,219	2,310	2,002	1,460	1,257	1,201
80%	1,012	955	992	1,145	1,424	1,692	1,906	1,866	1,685	1,241	1,130	1,075
90%	910	894	898	1,007	1,241	1,491	1,668	1,522	1,259	1,102	986	890
Long Term												
Full Simulation Period[b]	1,400	1,393	1,568	1,832	2,147	2,388	2,654	2,751	2,602	2,120	1,819	1,513
Water Year Types[c]												
Wet (32%)	1,691	1,732	2,189	2,554	2,832	2,942	3,300	3,488	3,445	2,964	2,626	2,109
Above Normal (16%)	1,279	1,322	1,485	1,959	2,519	2,892	3,247	3,393	3,232	2,600	2,117	1,659
Below Normal (13%)	1,542	1,497	1,507	1,719	2,122	2,397	2,653	2,714	2,530	1,923	1,513	1,307
Dry (24%)	1,206	1,158	1,177	1,305	1,582	1,938	2,178	2,210	1,951	1,478	1,287	1,144
Critical (15%)	1,092	1,029	1,019	1,108	1,223	1,381	1,408	1,392	1,243	1,018	917	865

Alternative 5

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,047	2,116	2,763	2,788	2,921	3,035	3,352	3,538	3,538	3,017	2,704	2,150
20%	1,778	1,801	2,036	2,655	2,788	2,964	3,298	3,538	3,538	2,951	2,508	1,961
30%	1,614	1,653	1,810	2,267	2,788	2,898	3,268	3,475	3,367	2,759	2,317	1,829
40%	1,402	1,371	1,559	1,931	2,557	2,788	3,208	3,336	3,132	2,493	2,005	1,562
50%	1,248	1,251	1,433	1,709	2,177	2,642	2,928	3,020	2,849	2,218	1,753	1,349
60%	1,170	1,145	1,252	1,595	1,940	2,279	2,607	2,720	2,516	1,870	1,438	1,245
70%	1,101	1,050	1,095	1,309	1,693	2,044	2,225	2,340	2,049	1,478	1,243	1,176
80%	1,011	974	1,004	1,166	1,440	1,710	1,910	1,894	1,717	1,241	1,135	1,051
90%	894	895	903	1,030	1,250	1,489	1,661	1,579	1,306	1,167	1,050	954
Long Term												
Full Simulation Period[b]	1,403	1,394	1,568	1,836	2,151	2,393	2,660	2,770	2,622	2,134	1,821	1,514
Water Year Types[c]												
Wet (32%)	1,681	1,723	2,179	2,556	2,833	2,942	3,300	3,488	3,447	2,961	2,613	2,103
Above Normal (16%)	1,275	1,310	1,471	1,948	2,512	2,892	3,247	3,401	3,241	2,608	2,125	1,668
Below Normal (13%)	1,552	1,507	1,517	1,728	2,132	2,406	2,663	2,746	2,569	1,959	1,521	1,305
Dry (24%)	1,223	1,173	1,190	1,319	1,595	1,952	2,193	2,255	1,992	1,502	1,295	1,150
Critical (15%)	1,102	1,037	1,025	1,114	1,229	1,383	1,415	1,411	1,266	1,045	929	873

Alternative 5 minus No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5	1	44	0	3	0	0	0	0	-20	-54	-68
20%	2	3	3	39	0	0	0	0	0	-1	6	-1
30%	-3	-8	8	-23	0	0	0	0	6	12	6	5
40%	-2	-36	-35	0	0	0	0	16	20	18	43	18
50%	0	5	39	16	7	3	2	1	16	15	24	14
60%	10	24	0	-2	39	15	7	22	58	42	-70	-4
70%	7	37	-3	4	21	10	6	30	47	18	-14	-24
80%	0	20	12	21	17	18	4	29	32	0	5	-24
90%	-16	0	5	23	9	-2	-7	57	47	64	64	64
Long Term												
Full Simulation Period[b]	3	1	0	4	5	5	6	19	21	15	2	2
Water Year Types[c]												
Wet (32%)	-10	-9	-10	1	1	0	0	0	2	-3	-13	-7
Above Normal (16%)	-3	-12	-14	-11	-7	0	0	8	9	8	8	9
Below Normal (13%)	10	10	10	9	10	10	10	32	39	36	8	-1
Dry (24%)	17	15	13	13	13	13	15	45	41	23	8	6
Critical (15%)	10	9	6	6	6	3	7	19	22	27	12	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-4. Lake Oroville, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,616	2,550	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,854	2,707
20%	2,272	2,304	2,464	2,788	2,838	2,990	3,298	3,538	3,531	2,965	2,590	2,473
30%	1,937	2,035	2,166	2,556	2,788	2,937	3,268	3,474	3,285	2,772	2,415	2,135
40%	1,699	1,784	2,024	2,366	2,788	2,841	3,209	3,278	2,983	2,367	2,000	1,795
50%	1,429	1,445	1,715	2,187	2,579	2,788	3,067	3,028	2,658	2,145	1,795	1,609
60%	1,145	1,101	1,402	1,723	2,140	2,641	2,888	2,792	2,438	1,915	1,601	1,365
70%	1,037	1,001	1,079	1,306	1,871	2,230	2,527	2,480	2,064	1,754	1,422	1,239
80%	998	974	999	1,109	1,544	1,806	1,996	2,050	1,769	1,436	1,232	1,052
90%	913	877	889	1,003	1,200	1,472	1,563	1,575	1,325	1,133	995	917
Long Term												
Full Simulation Period[b]	1,588	1,585	1,742	1,978	2,258	2,474	2,735	2,796	2,571	2,160	1,897	1,725
Water Year Types[c]												
Wet (32%)	1,936	1,984	2,354	2,636	2,871	2,942	3,300	3,477	3,402	2,976	2,728	2,569
Above Normal (16%)	1,465	1,523	1,702	2,173	2,648	2,937	3,271	3,357	3,081	2,493	2,087	1,827
Below Normal (13%)	1,823	1,783	1,831	2,037	2,361	2,627	2,875	2,836	2,461	1,930	1,637	1,424
Dry (24%)	1,371	1,324	1,344	1,473	1,764	2,120	2,363	2,357	2,031	1,688	1,427	1,261
Critical (15%)	1,117	1,044	1,041	1,125	1,235	1,406	1,423	1,407	1,219	1,027	911	839

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,052	2,115	2,719	2,788	2,918	3,035	3,352	3,538	3,538	3,037	2,759	2,218
20%	1,775	1,798	2,033	2,616	2,788	2,964	3,298	3,538	3,538	2,952	2,501	1,962
30%	1,617	1,660	1,802	2,290	2,788	2,898	3,268	3,475	3,361	2,747	2,311	1,824
40%	1,404	1,407	1,593	1,932	2,557	2,788	3,208	3,320	3,112	2,476	1,962	1,544
50%	1,248	1,246	1,394	1,693	2,170	2,639	2,925	3,019	2,833	2,203	1,729	1,334
60%	1,160	1,121	1,252	1,598	1,901	2,265	2,599	2,698	2,459	1,827	1,507	1,248
70%	1,094	1,014	1,097	1,305	1,673	2,034	2,219	2,310	2,002	1,460	1,257	1,201
80%	1,012	955	992	1,145	1,424	1,692	1,906	1,866	1,685	1,241	1,130	1,075
90%	910	894	898	1,007	1,241	1,491	1,668	1,522	1,259	1,102	986	890
Long Term												
Full Simulation Period[b]	1,400	1,393	1,568	1,832	2,147	2,388	2,654	2,751	2,602	2,120	1,819	1,513
Water Year Types[c]												
Wet (32%)	1,691	1,732	2,189	2,554	2,832	2,942	3,300	3,488	3,445	2,964	2,626	2,109
Above Normal (16%)	1,279	1,322	1,485	1,959	2,519	2,892	3,247	3,393	3,232	2,600	2,117	1,659
Below Normal (13%)	1,542	1,497	1,507	1,719	2,122	2,397	2,653	2,714	2,530	1,923	1,513	1,307
Dry (24%)	1,206	1,158	1,177	1,305	1,582	1,938	2,178	2,210	1,951	1,478	1,287	1,144
Critical (15%)	1,092	1,029	1,019	1,108	1,223	1,381	1,408	1,392	1,243	1,018	917	865

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-564	-435	-69	-19	-30	-17	0	0	0	0	-96	-489
20%	-496	-506	-432	-172	-50	-26	0	0	6	-13	-88	-511
30%	-320	-375	-365	-266	0	-38	0	1	76	-25	-104	-311
40%	-295	-377	-430	-434	-231	-53	-1	42	129	108	-38	-251
50%	-180	-200	-321	-494	-408	-149	-142	-9	175	58	-66	-275
60%	15	20	-149	-126	-239	-377	-289	-94	21	-87	-94	-116
70%	58	12	18	-1	-198	-196	-308	-170	-62	-294	-165	-39
80%	14	-19	-7	36	-121	-114	-90	-185	-83	-195	-102	23
90%	-3	18	9	4	41	19	105	-53	-66	-31	-9	-27
Long Term												
Full Simulation Period[b]	-189	-193	-174	-146	-111	-86	-81	-45	31	-40	-78	-213
Water Year Types[c]												
Wet (32%)	-245	-252	-165	-82	-39	0	0	10	43	-12	-102	-459
Above Normal (16%)	-187	-201	-217	-214	-129	-44	-24	37	150	107	29	-167
Below Normal (13%)	-281	-285	-324	-318	-239	-230	-222	-122	69	-7	-125	-117
Dry (24%)	-165	-165	-167	-168	-182	-182	-185	-147	-80	-210	-140	-117
Critical (15%)	-25	-15	-22	-17	-12	-25	-16	-15	25	-8	6	26

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-5. Lake Oroville, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,616	2,550	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,854	2,707
20%	2,272	2,304	2,464	2,788	2,838	2,990	3,298	3,538	3,531	2,965	2,590	2,473
30%	1,937	2,035	2,166	2,556	2,788	2,937	3,268	3,474	3,285	2,772	2,415	2,135
40%	1,699	1,784	2,024	2,366	2,788	2,841	3,209	3,278	2,983	2,367	2,000	1,795
50%	1,429	1,445	1,715	2,187	2,579	2,788	3,067	3,028	2,658	2,145	1,795	1,609
60%	1,145	1,101	1,402	1,723	2,140	2,641	2,888	2,792	2,438	1,915	1,601	1,365
70%	1,037	1,001	1,079	1,306	1,871	2,230	2,527	2,480	2,064	1,754	1,422	1,239
80%	998	974	999	1,109	1,544	1,806	1,996	2,050	1,769	1,436	1,232	1,052
90%	913	877	889	1,003	1,200	1,472	1,563	1,575	1,325	1,133	995	917
Long Term												
Full Simulation Period[b]	1,588	1,585	1,742	1,978	2,258	2,474	2,735	2,796	2,571	2,160	1,897	1,725
Water Year Types[c]												
Wet (32%)	1,936	1,984	2,354	2,636	2,871	2,942	3,300	3,477	3,402	2,976	2,728	2,569
Above Normal (16%)	1,465	1,523	1,702	2,173	2,648	2,937	3,271	3,357	3,081	2,493	2,087	1,827
Below Normal (13%)	1,823	1,783	1,831	2,037	2,361	2,627	2,875	2,836	2,461	1,930	1,637	1,424
Dry (24%)	1,371	1,324	1,344	1,473	1,764	2,120	2,363	2,357	2,031	1,688	1,427	1,261
Critical (15%)	1,117	1,044	1,041	1,125	1,235	1,406	1,423	1,407	1,219	1,027	911	839

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,639	2,548	2,788	2,807	2,943	3,052	3,352	3,538	3,538	3,046	2,791	2,727
20%	2,094	2,155	2,500	2,788	2,802	2,983	3,298	3,538	3,522	2,898	2,518	2,283
30%	1,905	1,889	2,078	2,450	2,788	2,938	3,268	3,454	3,177	2,562	2,273	2,045
40%	1,641	1,686	1,860	2,278	2,724	2,839	3,208	3,295	2,954	2,317	1,982	1,701
50%	1,264	1,293	1,647	2,109	2,565	2,788	3,081	3,061	2,744	2,106	1,708	1,470
60%	1,195	1,126	1,375	1,678	2,130	2,642	2,884	2,819	2,450	1,867	1,429	1,251
70%	1,103	1,056	1,110	1,356	1,827	2,179	2,527	2,549	2,185	1,605	1,309	1,244
80%	1,023	964	999	1,157	1,459	1,739	2,034	2,029	1,743	1,344	1,242	1,136
90%	918	905	907	1,016	1,239	1,461	1,663	1,666	1,294	1,167	1,050	974
Long Term												
Full Simulation Period[b]	1,560	1,554	1,717	1,961	2,248	2,472	2,733	2,798	2,580	2,108	1,823	1,674
Water Year Types[c]												
Wet (32%)	1,893	1,931	2,315	2,608	2,854	2,942	3,300	3,473	3,375	2,902	2,630	2,499
Above Normal (16%)	1,405	1,448	1,623	2,109	2,623	2,945	3,280	3,371	3,129	2,494	2,039	1,778
Below Normal (13%)	1,839	1,801	1,846	2,054	2,370	2,636	2,879	2,883	2,610	1,971	1,520	1,354
Dry (24%)	1,332	1,288	1,322	1,454	1,733	2,088	2,329	2,319	1,980	1,548	1,343	1,198
Critical (15%)	1,129	1,067	1,067	1,156	1,275	1,429	1,449	1,437	1,236	1,029	918	862

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	23	-2	0	0	-6	0	0	0	0	9	-64	20
20%	-178	-149	36	0	-35	-6	0	0	-9	-66	-72	-190
30%	-31	-147	-88	-107	0	1	0	-19	-108	-210	-142	-90
40%	-58	-98	-164	-88	-64	-3	-1	17	-29	-50	-19	-94
50%	-165	-152	-68	-78	-13	0	13	32	86	-39	-87	-139
60%	49	25	-27	-46	-10	0	-4	27	13	-47	-172	-113
70%	66	54	31	50	-44	-51	0	69	121	-149	-114	5
80%	25	-10	0	48	-86	-68	38	-21	-25	-92	10	84
90%	5	29	18	14	39	-11	100	91	-32	34	55	57
Long Term												
Full Simulation Period[b]	-29	-31	-25	-17	-10	-2	-3	2	9	-52	-74	-51
Water Year Types[c]												
Wet (32%)	-43	-53	-39	-28	-17	0	0	-5	-27	-73	-98	-70
Above Normal (16%)	-61	-75	-78	-64	-24	8	8	14	48	1	-49	-49
Below Normal (13%)	16	18	15	17	9	9	3	47	150	41	-117	-70
Dry (24%)	-38	-35	-22	-19	-31	-32	-34	-38	-51	-140	-84	-62
Critical (15%)	12	23	25	31	39	23	25	30	17	2	7	23

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-6. Lake Oroville, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,616	2,550	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,854	2,707
20%	2,272	2,304	2,464	2,788	2,838	2,990	3,298	3,538	3,531	2,965	2,590	2,473
30%	1,937	2,035	2,166	2,556	2,788	2,937	3,268	3,474	3,285	2,772	2,415	2,135
40%	1,699	1,784	2,024	2,366	2,788	2,841	3,209	3,278	2,983	2,367	2,000	1,795
50%	1,429	1,445	1,715	2,187	2,579	2,788	3,067	3,028	2,658	2,145	1,795	1,609
60%	1,145	1,101	1,402	1,723	2,140	2,641	2,888	2,792	2,438	1,915	1,601	1,365
70%	1,037	1,001	1,079	1,306	1,871	2,230	2,527	2,480	2,064	1,754	1,422	1,239
80%	998	974	999	1,109	1,544	1,806	1,996	2,050	1,769	1,436	1,232	1,052
90%	913	877	889	1,003	1,200	1,472	1,563	1,575	1,325	1,133	995	917
Long Term												
Full Simulation Period[b]	1,588	1,585	1,742	1,978	2,258	2,474	2,735	2,796	2,571	2,160	1,897	1,725
Water Year Types[c]												
Wet (32%)	1,936	1,984	2,354	2,636	2,871	2,942	3,300	3,477	3,402	2,976	2,728	2,569
Above Normal (16%)	1,465	1,523	1,702	2,173	2,648	2,937	3,271	3,357	3,081	2,493	2,087	1,827
Below Normal (13%)	1,823	1,783	1,831	2,037	2,361	2,627	2,875	2,836	2,461	1,930	1,637	1,424
Dry (24%)	1,371	1,324	1,344	1,473	1,764	2,120	2,363	2,357	2,031	1,688	1,427	1,261
Critical (15%)	1,117	1,044	1,041	1,125	1,235	1,406	1,423	1,407	1,219	1,027	911	839

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,047	2,116	2,763	2,788	2,921	3,035	3,352	3,538	3,538	3,017	2,704	2,150
20%	1,778	1,801	2,036	2,655	2,788	2,964	3,298	3,538	3,538	2,951	2,508	1,961
30%	1,614	1,653	1,810	2,267	2,788	2,898	3,268	3,475	3,367	2,759	2,317	1,829
40%	1,402	1,371	1,559	1,931	2,557	2,788	3,208	3,336	3,132	2,493	2,005	1,562
50%	1,248	1,251	1,433	1,709	2,177	2,642	2,928	3,020	2,849	2,218	1,753	1,349
60%	1,170	1,145	1,252	1,595	1,940	2,279	2,607	2,720	2,516	1,870	1,438	1,245
70%	1,101	1,050	1,095	1,309	1,693	2,044	2,225	2,340	2,049	1,478	1,243	1,176
80%	1,011	974	1,004	1,166	1,440	1,710	1,910	1,894	1,717	1,241	1,135	1,051
90%	894	895	903	1,030	1,250	1,489	1,661	1,579	1,306	1,167	1,050	954
Long Term												
Full Simulation Period[b]	1,403	1,394	1,568	1,836	2,151	2,393	2,660	2,770	2,622	2,134	1,821	1,514
Water Year Types[c]												
Wet (32%)	1,681	1,723	2,179	2,556	2,833	2,942	3,300	3,488	3,447	2,961	2,613	2,103
Above Normal (16%)	1,275	1,310	1,471	1,948	2,512	2,892	3,247	3,401	3,241	2,608	2,125	1,668
Below Normal (13%)	1,552	1,507	1,517	1,728	2,132	2,406	2,663	2,746	2,569	1,959	1,521	1,305
Dry (24%)	1,223	1,173	1,190	1,319	1,595	1,952	2,193	2,255	1,992	1,502	1,295	1,150
Critical (15%)	1,102	1,037	1,025	1,114	1,229	1,383	1,415	1,411	1,266	1,045	929	873

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-569	-434	-25	-19	-27	-17	0	0	0	-20	-150	-557
20%	-494	-503	-428	-133	-50	-26	0	0	6	-14	-82	-512
30%	-323	-383	-357	-289	0	-38	0	1	82	-14	-97	-306
40%	-297	-414	-465	-434	-230	-53	-1	58	149	126	5	-233
50%	-181	-194	-282	-478	-402	-146	-140	-8	191	73	-42	-261
60%	25	44	-149	-128	-200	-362	-281	-72	79	-45	-163	-120
70%	65	49	16	3	-177	-186	-303	-140	-15	-276	-180	-63
80%	14	0	5	57	-104	-97	-86	-156	-52	-195	-96	-2
90%	-19	18	14	27	50	17	98	4	-19	33	55	38
Long Term												
Full Simulation Period[b]	-186	-191	-174	-142	-106	-81	-75	-26	51	-25	-76	-211
Water Year Types[c]												
Wet (32%)	-255	-261	-175	-81	-38	0	0	10	45	-15	-115	-466
Above Normal (16%)	-190	-213	-231	-225	-136	-44	-24	44	159	115	37	-159
Below Normal (13%)	-271	-275	-314	-309	-228	-220	-212	-90	109	28	-116	-118
Dry (24%)	-148	-151	-153	-155	-169	-168	-170	-102	-39	-186	-132	-111
Critical (15%)	-15	-7	-17	-11	-7	-23	-8	4	47	19	18	34

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

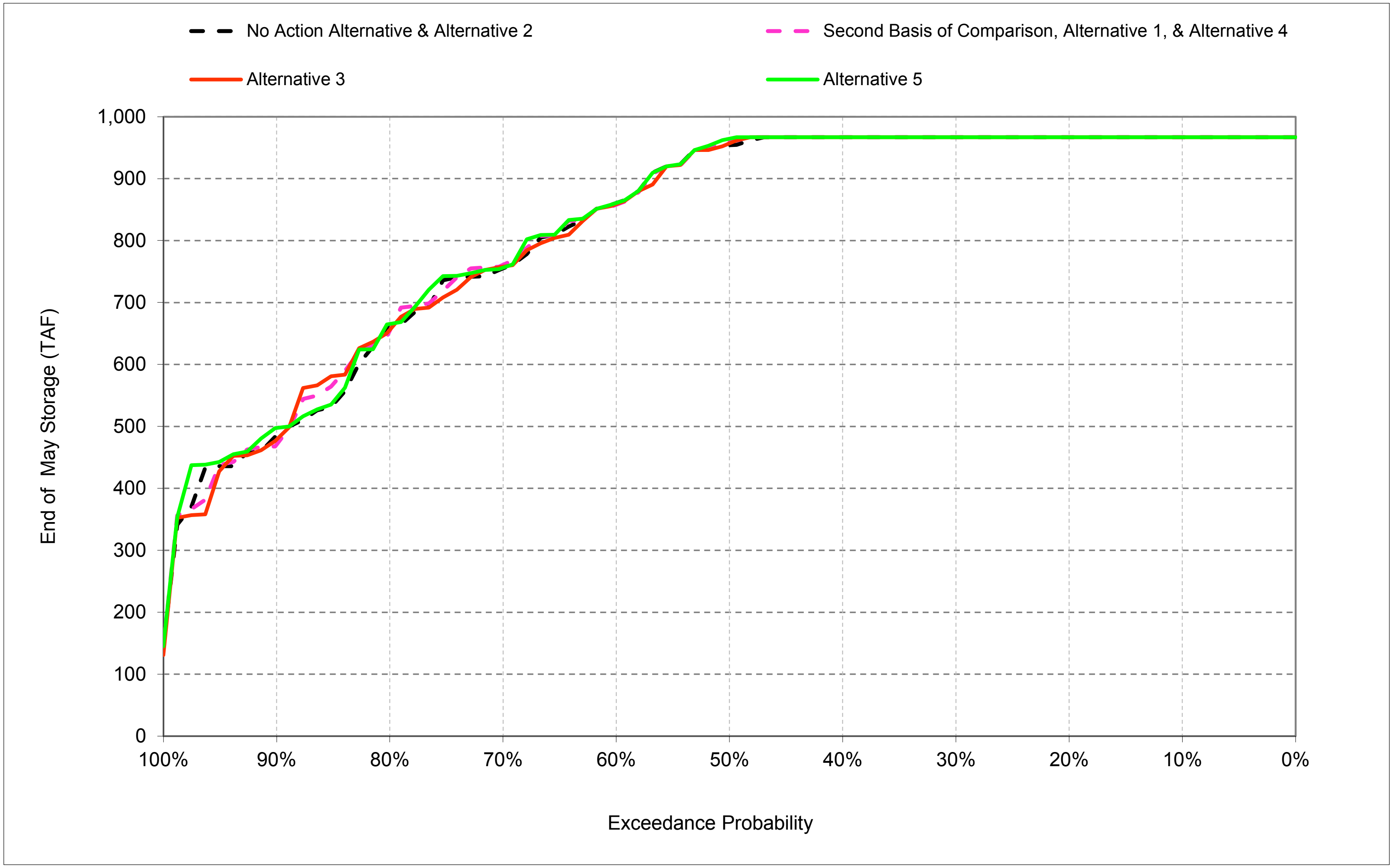
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

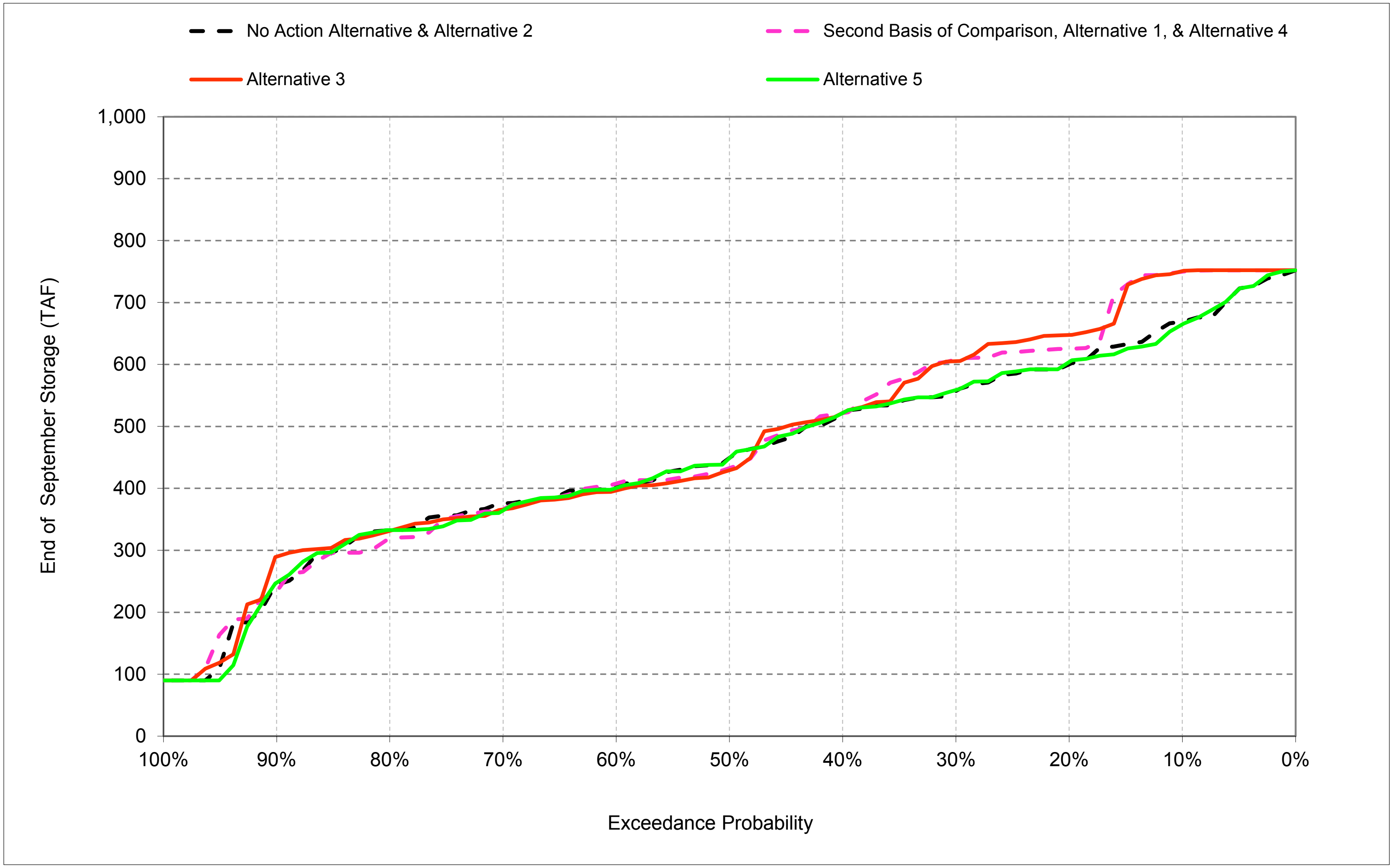
C.4. Folsom Storage

Figure C-4-1. Folsom Lake, End of May Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-4-2. Folsom Lake, End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-1. Folsom Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	592	531	567	567	567	661	792	967	967	910	792	669
20%	538	493	567	565	566	656	792	967	967	828	732	600
30%	497	461	539	557	558	652	792	967	967	738	682	557
40%	451	426	498	540	553	646	792	967	933	664	607	521
50%	412	407	444	475	530	633	792	954	874	592	514	449
60%	354	392	416	444	496	621	790	861	761	521	455	402
70%	330	354	390	424	457	593	735	755	677	427	381	376
80%	296	307	349	365	415	542	630	661	549	380	357	332
90%	225	248	240	298	384	429	480	485	432	328	282	244
Long Term												
Full Simulation Period[b]	407	394	439	461	490	589	713	821	765	591	524	455
Water Year Types[c]												
Wet (32%)	454	435	514	518	515	632	785	951	941	800	712	576
Above Normal (16%)	377	380	429	513	531	640	787	946	887	621	552	477
Below Normal (13%)	446	431	467	484	533	619	757	843	780	527	472	453
Dry (24%)	394	383	408	423	479	579	691	760	658	495	443	419
Critical (15%)	324	305	315	320	366	432	475	486	415	327	267	231

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	689	567	567	567	567	661	792	967	967	906	792	750
20%	582	561	567	567	567	657	792	967	967	817	684	625
30%	552	528	566	563	559	653	792	967	965	728	638	608
40%	469	499	525	556	555	646	792	967	908	641	569	522
50%	400	430	500	523	537	633	792	959	807	546	468	433
60%	351	391	456	470	498	621	790	858	745	504	442	408
70%	336	356	405	430	457	601	733	761	630	433	387	366
80%	291	333	352	388	437	563	634	654	544	371	325	318
90%	253	259	266	311	392	455	489	471	426	309	244	233
Long Term												
Full Simulation Period[b]	431	424	457	475	494	592	715	823	757	579	503	471
Water Year Types[c]												
Wet (32%)	483	470	522	524	515	632	785	951	937	793	688	646
Above Normal (16%)	390	412	467	537	538	640	787	946	857	591	522	485
Below Normal (13%)	506	489	502	514	541	626	761	847	739	475	408	387
Dry (24%)	405	399	423	437	486	585	698	769	664	486	432	408
Critical (15%)	339	317	323	325	369	436	469	482	430	352	288	258

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	97	36	0	0	0	0	0	0	0	-4	0	81
20%	45	68	0	2	1	1	0	0	0	-11	-48	25
30%	55	67	27	6	1	2	0	0	-2	-10	-44	51
40%	18	73	26	15	2	0	0	0	-25	-23	-37	1
50%	-12	23	56	48	7	0	0	5	-67	-45	-46	-17
60%	-2	-1	40	26	2	0	0	-3	-16	-17	-13	6
70%	6	1	14	6	0	8	-2	6	-47	7	6	-9
80%	-4	27	3	22	22	21	4	-7	-5	-9	-32	-15
90%	27	11	26	13	8	26	10	-14	-6	-19	-39	-11
Long Term												
Full Simulation Period[b]	24	29	18	14	4	3	1	2	-8	-13	-21	16
Water Year Types[c]												
Wet (32%)	29	35	8	6	0	0	0	0	-4	-7	-25	70
Above Normal (16%)	13	33	38	24	7	0	0	-1	-30	-31	-30	8
Below Normal (13%)	59	58	35	30	8	7	4	4	-41	-52	-64	-66
Dry (24%)	12	16	15	14	7	6	7	9	5	-9	-11	-11
Critical (15%)	14	11	9	5	3	3	-6	-4	16	25	21	28

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-2. Folsom Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	592	531	567	567	567	661	792	967	967	910	792	669
20%	538	493	567	565	566	656	792	967	967	828	732	600
30%	497	461	539	557	558	652	792	967	967	738	682	557
40%	451	426	498	540	553	646	792	967	933	664	607	521
50%	412	407	444	475	530	633	792	954	874	592	514	449
60%	354	392	416	444	496	621	790	861	761	521	455	402
70%	330	354	390	424	457	593	735	755	677	427	381	376
80%	296	307	349	365	415	542	630	661	549	380	357	332
90%	225	248	240	298	384	429	480	485	432	328	282	244
Long Term												
Full Simulation Period[b]	407	394	439	461	490	589	713	821	765	591	524	455
Water Year Types[c]												
Wet (32%)	454	435	514	518	515	632	785	951	941	800	712	576
Above Normal (16%)	377	380	429	513	531	640	787	946	887	621	552	477
Below Normal (13%)	446	431	467	484	533	619	757	843	780	527	472	453
Dry (24%)	394	383	408	423	479	579	691	760	658	495	443	419
Critical (15%)	324	305	315	320	366	432	475	486	415	327	267	231

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	688	567	567	567	567	661	792	967	967	921	792	751
20%	592	563	567	567	567	656	792	967	967	814	709	648
30%	548	537	564	564	560	652	792	967	958	726	647	605
40%	483	495	523	556	556	646	792	967	899	636	567	522
50%	396	432	502	520	545	633	792	957	793	546	465	429
60%	348	387	450	469	499	621	790	859	749	485	434	397
70%	329	358	405	431	457	603	734	758	655	431	381	366
80%	304	329	342	389	438	563	649	656	547	392	346	331
90%	259	260	251	297	384	446	484	479	428	312	285	290
Long Term												
Full Simulation Period[b]	432	424	456	474	493	591	714	822	755	580	508	473
Water Year Types[c]												
Wet (32%)	486	473	525	524	515	632	785	951	929	790	690	645
Above Normal (16%)	388	404	454	537	539	640	787	946	851	580	516	479
Below Normal (13%)	513	496	505	514	542	627	764	844	766	506	436	407
Dry (24%)	405	398	420	434	482	580	692	761	654	491	436	411
Critical (15%)	331	314	322	325	370	436	474	485	431	343	291	257

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	96	36	0	0	0	0	0	0	0	12	0	82
20%	54	70	0	2	1	0	0	0	0	-14	-23	48
30%	51	75	25	7	2	0	0	0	-9	-12	-35	48
40%	32	69	25	16	3	0	0	0	-34	-28	-40	1
50%	-16	25	58	45	16	0	0	3	-81	-45	-49	-20
60%	-6	-5	35	25	3	0	0	-2	-12	-36	-22	-6
70%	-1	4	14	7	0	9	-1	3	-22	5	1	-10
80%	8	22	-8	24	23	21	19	-5	-2	12	-10	-1
90%	33	12	11	-1	0	17	5	-6	-4	-15	2	45
Long Term												
Full Simulation Period[b]	25	29	17	13	4	2	1	0	-10	-11	-16	18
Water Year Types[c]												
Wet (32%)	33	38	11	6	0	0	0	0	-12	-10	-22	69
Above Normal (16%)	11	24	25	25	8	0	0	0	-36	-41	-36	2
Below Normal (13%)	67	64	38	30	9	8	6	1	-14	-21	-36	-45
Dry (24%)	11	15	12	11	3	1	1	1	-4	-4	-7	-8
Critical (15%)	7	8	8	5	3	3	-1	-1	16	16	25	27

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-3. Folsom Lake, End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	592	531	567	567	567	661	792	967	967	910	792	669
20%	538	493	567	565	566	656	792	967	967	828	732	600
30%	497	461	539	557	558	652	792	967	967	738	682	557
40%	451	426	498	540	553	646	792	967	933	664	607	521
50%	412	407	444	475	530	633	792	954	874	592	514	449
60%	354	392	416	444	496	621	790	861	761	521	455	402
70%	330	354	390	424	457	593	735	755	677	427	381	376
80%	296	307	349	365	415	542	630	661	549	380	357	332
90%	225	248	240	298	384	429	480	485	432	328	282	244
Long Term												
Full Simulation Period[b]	407	394	439	461	490	589	713	821	765	591	524	455
Water Year Types[c]												
Wet (32%)	454	435	514	518	515	632	785	951	941	800	712	576
Above Normal (16%)	377	380	429	513	531	640	787	946	887	621	552	477
Below Normal (13%)	446	431	467	484	533	619	757	843	780	527	472	453
Dry (24%)	394	383	408	423	479	579	691	760	658	495	443	419
Critical (15%)	324	305	315	320	366	432	475	486	415	327	267	231

Alternative 5

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	592	533	567	567	567	661	792	967	967	869	792	665
20%	538	489	567	565	566	656	792	967	967	818	733	604
30%	503	463	537	557	558	652	792	967	967	738	664	559
40%	455	429	503	541	553	646	792	967	933	665	608	521
50%	412	409	444	479	530	633	792	965	874	595	514	449
60%	353	392	417	448	496	621	790	861	773	524	460	401
70%	329	353	400	422	450	593	736	756	682	432	386	364
80%	294	314	350	370	412	542	626	665	552	383	349	333
90%	227	249	239	299	381	432	484	498	430	331	285	248
Long Term												
Full Simulation Period[b]	407	394	439	461	490	590	715	825	766	587	520	453
Water Year Types[c]												
Wet (32%)	454	435	515	518	515	632	785	952	941	794	710	577
Above Normal (16%)	375	379	428	513	532	640	787	946	888	622	554	478
Below Normal (13%)	440	425	461	483	534	620	758	845	783	523	469	450
Dry (24%)	397	386	411	426	479	579	691	766	664	489	435	410
Critical (15%)	325	304	314	320	367	433	483	499	411	324	257	231

Alternative 5 minus No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	3	0	0	0	0	0	0	0	-40	0	-5
20%	0	-4	0	0	0	0	0	0	0	-10	2	4
30%	6	2	-2	0	0	0	0	0	0	0	-17	2
40%	4	3	4	0	0	0	0	0	0	1	1	1
50%	0	2	0	4	0	0	0	11	0	4	0	0
60%	0	0	1	5	0	0	0	0	12	3	5	-2
70%	-1	-2	10	-3	-8	0	1	1	5	6	5	-11
80%	-1	7	0	4	-3	0	-4	4	3	2	-8	0
90%	2	0	-1	0	-3	3	5	13	-1	3	3	3
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	1	4	1	-4	-4	-2
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	1	0	-6	-2	1
Above Normal (16%)	-2	-1	-1	1	1	0	0	0	1	1	2	1
Below Normal (13%)	-6	-7	-6	-2	0	0	0	2	3	-4	-3	-3
Dry (24%)	3	3	3	2	0	0	0	6	6	-5	-8	-9
Critical (15%)	1	-1	0	0	0	0	8	13	-4	-3	-10	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-4. Folsom Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	689	567	567	567	567	661	792	967	967	906	792	750
20%	582	561	567	567	567	657	792	967	967	817	684	625
30%	552	528	566	563	559	653	792	967	965	728	638	608
40%	469	499	525	556	555	646	792	967	908	641	569	522
50%	400	430	500	523	537	633	792	959	807	546	468	433
60%	351	391	456	470	498	621	790	858	745	504	442	408
70%	336	356	405	430	457	601	733	761	630	433	387	366
80%	291	333	352	388	437	563	634	654	544	371	325	318
90%	253	259	266	311	392	455	489	471	426	309	244	233
Long Term												
Full Simulation Period[b]	431	424	457	475	494	592	715	823	757	579	503	471
Water Year Types[c]												
Wet (32%)	483	470	522	524	515	632	785	951	937	793	688	646
Above Normal (16%)	390	412	467	537	538	640	787	946	857	591	522	485
Below Normal (13%)	506	489	502	514	541	626	761	847	739	475	408	387
Dry (24%)	405	399	423	437	486	585	698	769	664	486	432	408
Critical (15%)	339	317	323	325	369	436	469	482	430	352	288	258

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	592	531	567	567	567	661	792	967	967	910	792	669
20%	538	493	567	565	566	656	792	967	967	828	732	600
30%	497	461	539	557	558	652	792	967	967	738	682	557
40%	451	426	498	540	553	646	792	967	933	664	607	521
50%	412	407	444	475	530	633	792	954	874	592	514	449
60%	354	392	416	444	496	621	790	861	761	521	455	402
70%	330	354	390	424	457	593	735	755	677	427	381	376
80%	296	307	349	365	415	542	630	661	549	380	357	332
90%	225	248	240	298	384	429	480	485	432	328	282	244
Long Term												
Full Simulation Period[b]	407	394	439	461	490	589	713	821	765	591	524	455
Water Year Types[c]												
Wet (32%)	454	435	514	518	515	632	785	951	941	800	712	576
Above Normal (16%)	377	380	429	513	531	640	787	946	887	621	552	477
Below Normal (13%)	446	431	467	484	533	619	757	843	780	527	472	453
Dry (24%)	394	383	408	423	479	579	691	760	658	495	443	419
Critical (15%)	324	305	315	320	366	432	475	486	415	327	267	231

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-97	-36	0	0	0	0	0	0	0	4	0	-81
20%	-45	-68	0	-2	-1	-1	0	0	0	11	48	-25
30%	-55	-67	-27	-6	-1	-2	0	0	2	10	44	-51
40%	-18	-73	-26	-15	-2	0	0	0	25	23	37	-1
50%	12	-23	-56	-48	-7	0	0	-5	67	45	46	17
60%	2	1	-40	-26	-2	0	0	3	16	17	13	-6
70%	-6	-1	-14	-6	0	-8	2	-6	47	-7	-6	9
80%	4	-27	-3	-22	-22	-21	-4	7	5	9	32	15
90%	-27	-11	-26	-13	-8	-26	-10	14	6	19	39	11
Long Term												
Full Simulation Period[b]	-24	-29	-18	-14	-4	-3	-1	-2	8	13	21	-16
Water Year Types[c]												
Wet (32%)	-29	-35	-8	-6	0	0	0	0	4	7	25	-70
Above Normal (16%)	-13	-33	-38	-24	-7	0	0	1	30	31	30	-8
Below Normal (13%)	-59	-58	-35	-30	-8	-7	-4	-4	41	52	64	66
Dry (24%)	-12	-16	-15	-14	-7	-6	-7	-9	-5	9	11	11
Critical (15%)	-14	-11	-9	-5	-3	-3	6	4	-16	-25	-21	-28

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-5. Folsom Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	689	567	567	567	567	661	792	967	967	906	792	750
20%	582	561	567	567	567	657	792	967	967	817	684	625
30%	552	528	566	563	559	653	792	967	965	728	638	608
40%	469	499	525	556	555	646	792	967	908	641	569	522
50%	400	430	500	523	537	633	792	959	807	546	468	433
60%	351	391	456	470	498	621	790	858	745	504	442	408
70%	336	356	405	430	457	601	733	761	630	433	387	366
80%	291	333	352	388	437	563	634	654	544	371	325	318
90%	253	259	266	311	392	455	489	471	426	309	244	233
Long Term												
Full Simulation Period[b]	431	424	457	475	494	592	715	823	757	579	503	471
Water Year Types[c]												
Wet (32%)	483	470	522	524	515	632	785	951	937	793	688	646
Above Normal (16%)	390	412	467	537	538	640	787	946	857	591	522	485
Below Normal (13%)	506	489	502	514	541	626	761	847	739	475	408	387
Dry (24%)	405	399	423	437	486	585	698	769	664	486	432	408
Critical (15%)	339	317	323	325	369	436	469	482	430	352	288	258

Alternative 3

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	688	567	567	567	567	661	792	967	967	921	792	751
20%	592	563	567	567	567	656	792	967	967	814	709	648
30%	548	537	564	564	560	652	792	967	958	726	647	605
40%	483	495	523	556	556	646	792	967	899	636	567	522
50%	396	432	502	520	545	633	792	957	793	546	465	429
60%	348	387	450	469	499	621	790	859	749	485	434	397
70%	329	358	405	431	457	603	734	758	655	431	381	366
80%	304	329	342	389	438	563	649	656	547	392	346	331
90%	259	260	251	297	384	446	484	479	428	312	285	290
Long Term												
Full Simulation Period[b]	432	424	456	474	493	591	714	822	755	580	508	473
Water Year Types[c]												
Wet (32%)	486	473	525	524	515	632	785	951	929	790	690	645
Above Normal (16%)	388	404	454	537	539	640	787	946	851	580	516	479
Below Normal (13%)	513	496	505	514	542	627	764	844	766	506	436	407
Dry (24%)	405	398	420	434	482	580	692	761	654	491	436	411
Critical (15%)	331	314	322	325	370	436	474	485	431	343	291	257

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1	0	0	0	0	0	0	0	0	15	0	1
20%	10	3	0	0	0	-1	0	0	0	-3	24	23
30%	-4	9	-2	1	1	-1	0	0	-7	-2	9	-3
40%	13	-4	-1	1	1	0	0	0	-10	-5	-3	0
50%	-3	3	2	-3	9	0	0	-2	-14	0	-3	-3
60%	-4	-4	-5	-1	1	0	0	1	4	-19	-9	-11
70%	-7	2	0	1	0	1	0	-3	25	-2	-6	0
80%	13	-4	-10	1	1	0	15	2	3	21	22	14
90%	6	1	-15	-14	-8	-9	-5	8	2	4	41	56
Long Term												
Full Simulation Period[b]	0	0	-2	-1	-1	-1	0	-2	-2	2	5	2
Water Year Types[c]												
Wet (32%)	3	4	3	0	0	0	0	0	-8	-3	2	-1
Above Normal (16%)	-3	-9	-13	1	1	0	0	0	-6	-10	-7	-6
Below Normal (13%)	8	6	3	0	1	1	3	-3	27	31	28	21
Dry (24%)	-1	-1	-3	-3	-4	-4	-6	-7	-9	5	4	3
Critical (15%)	-7	-3	-1	0	1	0	5	3	1	-9	4	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-6. Folsom Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	689	567	567	567	567	661	792	967	967	906	792	750
20%	582	561	567	567	567	657	792	967	967	817	684	625
30%	552	528	566	563	559	653	792	967	965	728	638	608
40%	469	499	525	556	555	646	792	967	908	641	569	522
50%	400	430	500	523	537	633	792	959	807	546	468	433
60%	351	391	456	470	498	621	790	858	745	504	442	408
70%	336	356	405	430	457	601	733	761	630	433	387	366
80%	291	333	352	388	437	563	634	654	544	371	325	318
90%	253	259	266	311	392	455	489	471	426	309	244	233
Long Term												
Full Simulation Period[b]	431	424	457	475	494	592	715	823	757	579	503	471
Water Year Types[c]												
Wet (32%)	483	470	522	524	515	632	785	951	937	793	688	646
Above Normal (16%)	390	412	467	537	538	640	787	946	857	591	522	485
Below Normal (13%)	506	489	502	514	541	626	761	847	739	475	408	387
Dry (24%)	405	399	423	437	486	585	698	769	664	486	432	408
Critical (15%)	339	317	323	325	369	436	469	482	430	352	288	258

Alternative 5

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	592	533	567	567	567	661	792	967	967	869	792	665
20%	538	489	567	565	566	656	792	967	967	818	733	604
30%	503	463	537	557	558	652	792	967	967	738	664	559
40%	455	429	503	541	553	646	792	967	933	665	608	521
50%	412	409	444	479	530	633	792	965	874	595	514	449
60%	353	392	417	448	496	621	790	861	773	524	460	401
70%	329	353	400	422	450	593	736	756	682	432	386	364
80%	294	314	350	370	412	542	626	665	552	383	349	333
90%	227	249	239	299	381	432	484	498	430	331	285	248
Long Term												
Full Simulation Period[b]	407	394	439	461	490	590	715	825	766	587	520	453
Water Year Types[c]												
Wet (32%)	454	435	515	518	515	632	785	952	941	794	710	577
Above Normal (16%)	375	379	428	513	532	640	787	946	888	622	554	478
Below Normal (13%)	440	425	461	483	534	620	758	845	783	523	469	450
Dry (24%)	397	386	411	426	479	579	691	766	664	489	435	410
Critical (15%)	325	304	314	320	367	433	483	499	411	324	257	231

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-97	-34	0	0	0	0	0	0	0	-37	0	-85
20%	-44	-72	0	-2	-1	-1	0	0	0	1	49	-21
30%	-49	-65	-29	-6	-1	-2	0	0	2	10	26	-49
40%	-15	-70	-22	-15	-2	0	0	0	25	24	38	0
50%	13	-21	-56	-44	-7	0	0	5	67	49	46	16
60%	2	1	-39	-21	-2	0	0	3	27	20	18	-7
70%	-7	-3	-4	-8	-8	-8	3	-5	52	-1	-1	-2
80%	3	-19	-3	-18	-25	-21	-8	11	8	11	24	15
90%	-26	-10	-27	-13	-12	-23	-5	27	4	22	41	14
Long Term												
Full Simulation Period[b]	-25	-30	-18	-13	-4	-3	0	2	9	9	16	-18
Water Year Types[c]												
Wet (32%)	-29	-35	-8	-6	0	0	0	0	4	1	23	-69
Above Normal (16%)	-16	-34	-39	-24	-6	0	0	1	30	32	32	-7
Below Normal (13%)	-66	-65	-41	-31	-7	-7	-3	-2	44	49	60	63
Dry (24%)	-9	-13	-12	-12	-7	-5	-7	-3	0	4	3	2
Critical (15%)	-14	-12	-9	-5	-2	-3	14	17	-19	-28	-31	-27

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

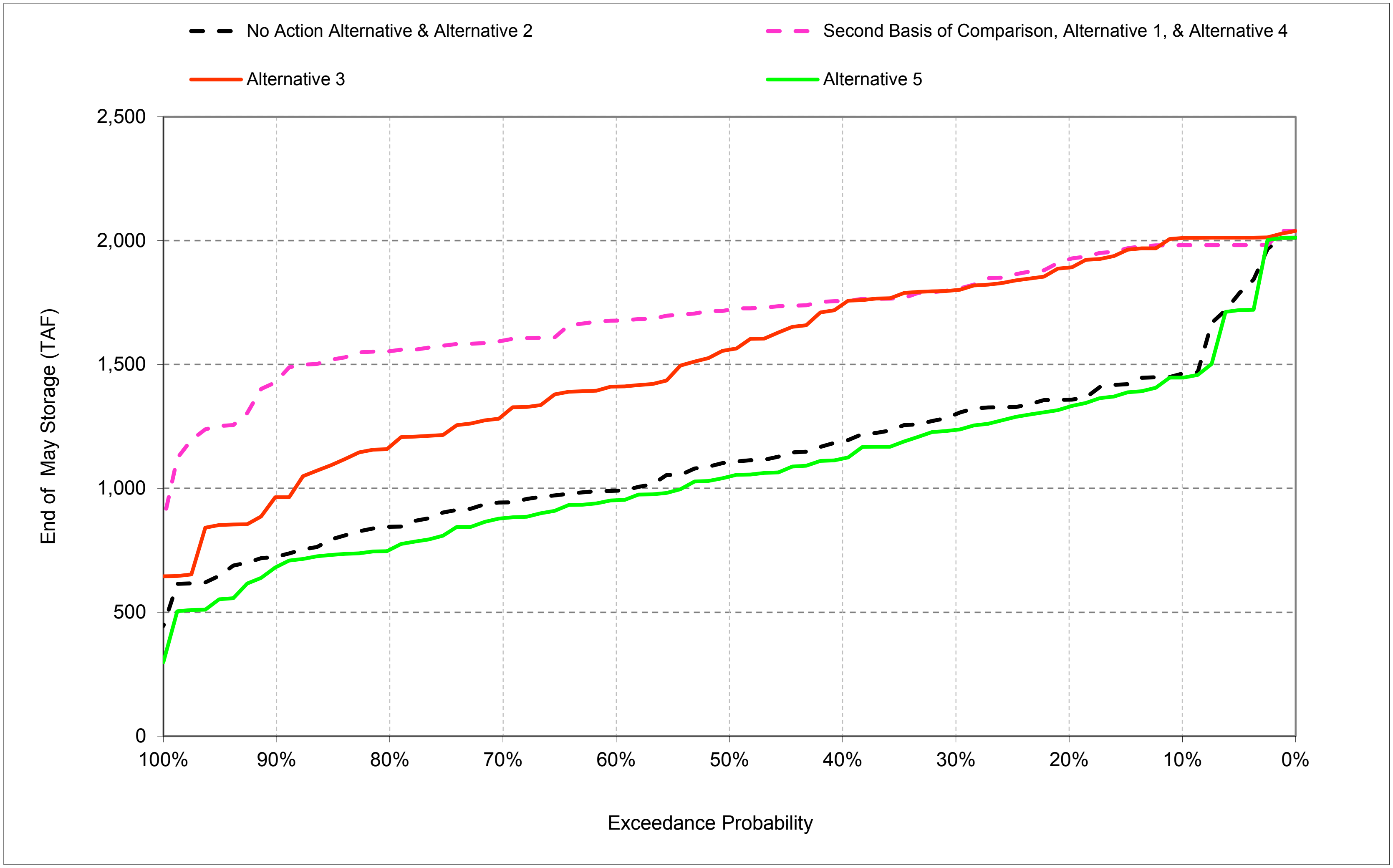
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

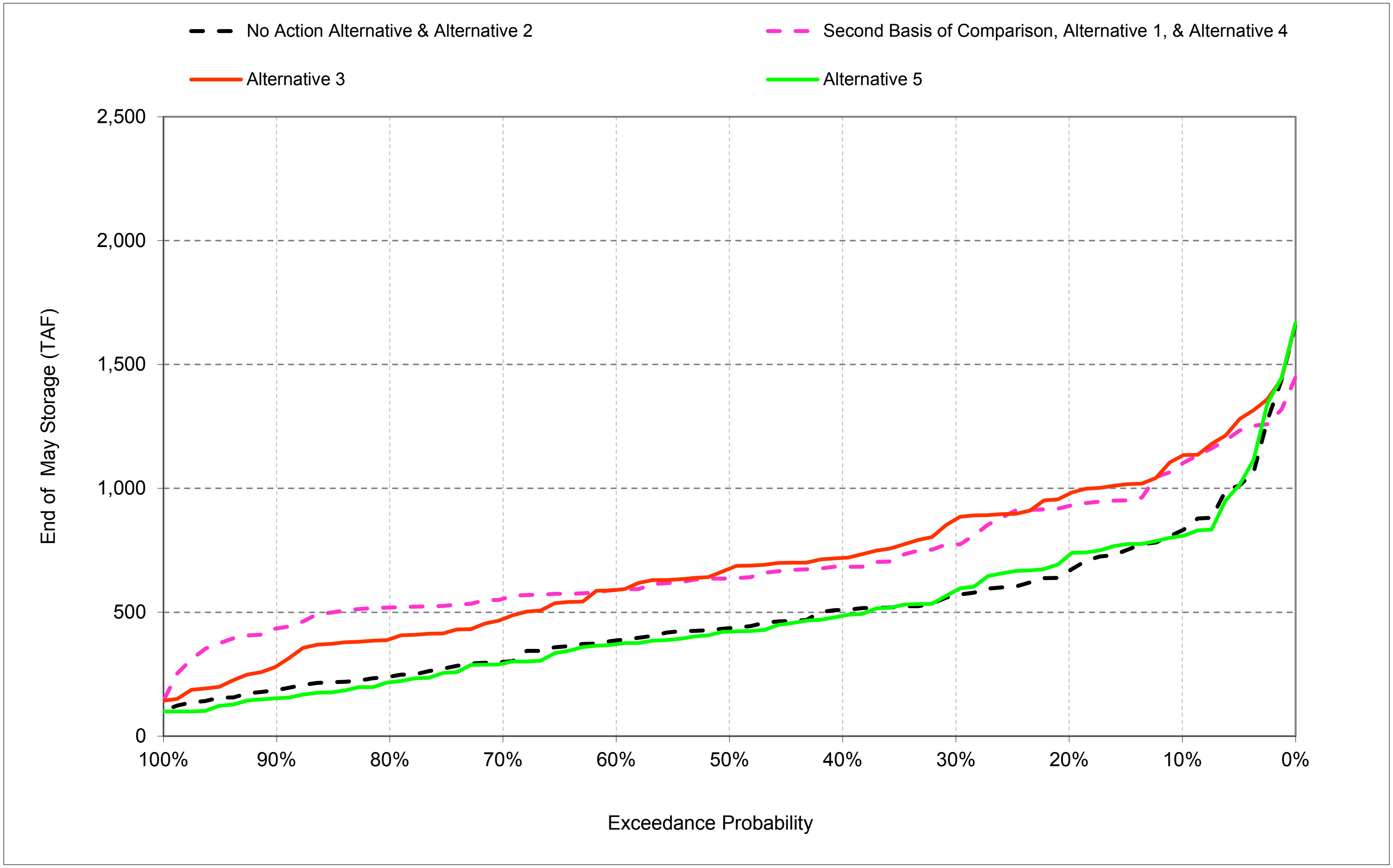
C.5. San Luis Storage

Figure C-5-1-1. San Luis Reservoir (SWP and CVP), End of May Storage



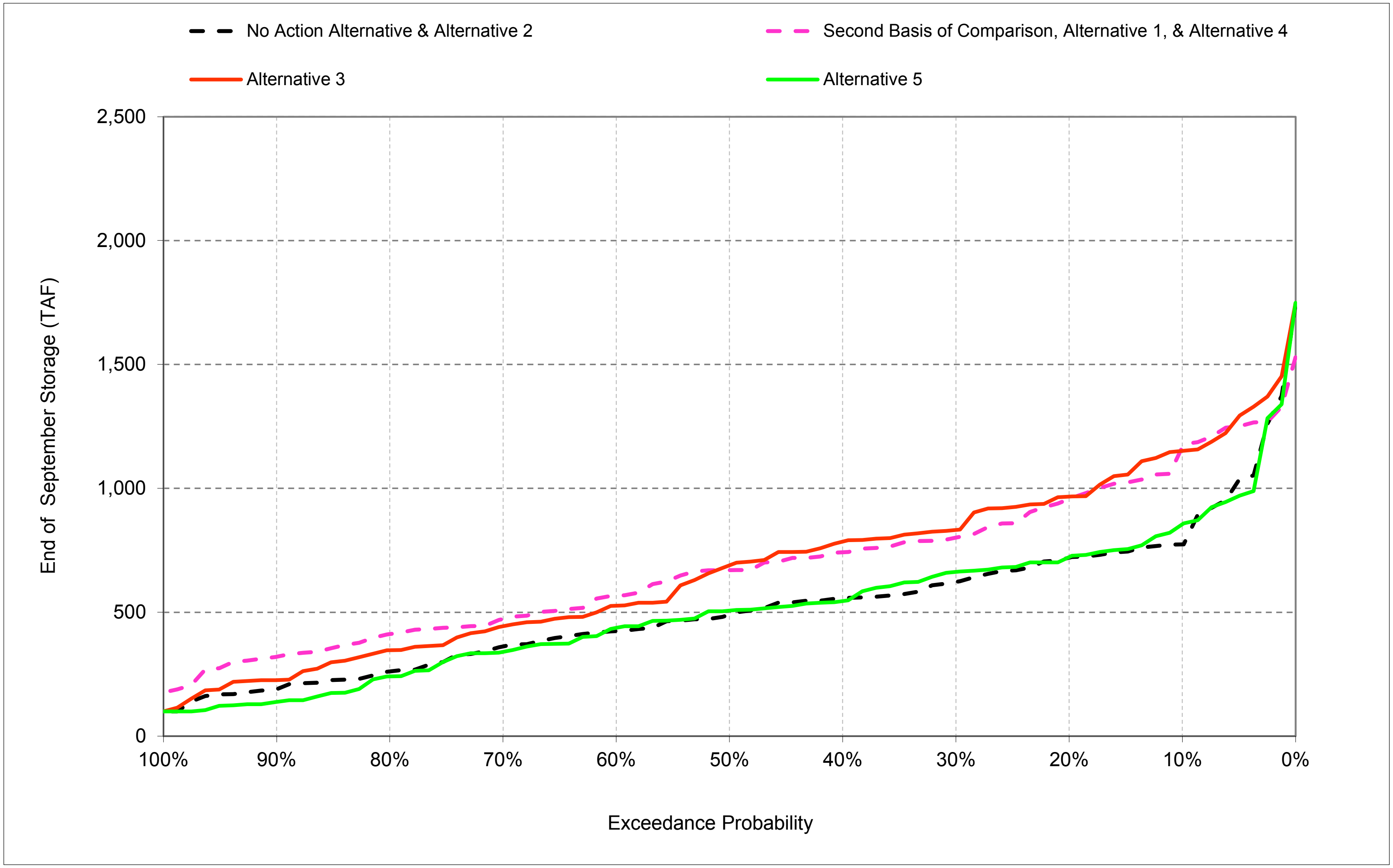
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-1-2. San Luis Reservoir (SWP and CVP), End of August Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-1-3. San Luis Reservoir (SWP and CVP), End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-1-1. San Luis Reservoir (SWP and CVP), End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	868	1,032	1,320	1,726	2,029	2,039	1,835	1,463	1,167	970	831	774
20%	728	849	1,157	1,388	1,643	1,898	1,742	1,358	1,024	868	667	720
30%	563	739	1,076	1,328	1,582	1,801	1,620	1,300	915	780	568	623
40%	503	663	979	1,269	1,504	1,716	1,542	1,190	804	670	509	557
50%	471	580	817	1,140	1,410	1,622	1,457	1,106	714	561	436	491
60%	418	484	742	1,016	1,267	1,507	1,358	991	665	489	386	424
70%	334	422	698	969	1,154	1,314	1,218	943	606	435	299	362
80%	276	356	603	808	1,046	1,267	1,119	845	498	354	240	261
90%	206	298	463	751	941	1,087	1,021	724	378	303	186	190
Long Term												
Full Simulation Period[b]	510	628	890	1,171	1,391	1,575	1,431	1,128	793	642	491	521
Water Year Types[c]												
Wet (32%)	555	681	931	1,236	1,526	1,788	1,598	1,251	946	741	628	679
Above Normal (16%)	490	649	957	1,223	1,441	1,661	1,444	1,048	666	466	433	513
Below Normal (13%)	525	624	907	1,141	1,314	1,473	1,312	967	555	500	426	467
Dry (24%)	476	590	867	1,150	1,339	1,494	1,413	1,167	840	763	476	469
Critical (15%)	478	556	752	1,040	1,204	1,252	1,192	1,028	739	544	343	323

Alternative 1

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,176	1,436	1,728	2,026	2,039	2,039	2,039	1,981	1,738	1,367	1,100	1,166
20%	994	1,178	1,546	1,886	2,039	2,039	2,039	1,924	1,557	1,212	929	957
30%	864	1,071	1,412	1,838	2,036	2,039	2,039	1,804	1,476	1,128	774	801
40%	811	1,013	1,271	1,685	1,993	2,039	2,039	1,756	1,352	1,025	684	742
50%	715	889	1,152	1,616	1,938	2,039	2,023	1,721	1,302	942	637	670
60%	588	750	1,063	1,519	1,877	2,039	1,951	1,677	1,249	901	590	567
70%	461	659	971	1,467	1,805	1,972	1,880	1,596	1,209	852	554	473
80%	356	556	861	1,310	1,671	1,867	1,828	1,553	1,164	815	519	412
90%	268	363	660	1,175	1,508	1,718	1,741	1,433	1,066	751	435	321
Long Term												
Full Simulation Period[b]	711	895	1,180	1,585	1,831	1,941	1,910	1,697	1,338	1,000	705	687
Water Year Types[c]												
Wet (32%)	790	1,017	1,365	1,748	1,965	2,033	2,031	1,852	1,487	1,167	889	925
Above Normal (16%)	658	883	1,213	1,671	1,913	2,001	1,995	1,717	1,263	861	612	631
Below Normal (13%)	854	1,064	1,334	1,742	1,908	1,980	1,908	1,628	1,251	964	635	591
Dry (24%)	617	764	998	1,427	1,728	1,925	1,870	1,665	1,341	1,007	660	596
Critical (15%)	622	709	910	1,257	1,556	1,664	1,623	1,451	1,168	808	545	472

Alternative 1 minus No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	308	404	408	300	10	0	204	519	571	397	269	392
20%	265	329	389	498	396	141	297	567	533	345	262	237
30%	301	332	335	510	454	238	419	505	561	348	206	178
40%	308	350	292	416	489	323	497	565	548	355	175	186
50%	244	310	334	476	528	417	566	616	589	382	201	179
60%	170	266	321	503	610	532	593	686	584	413	204	143
70%	127	237	273	497	651	658	663	653	603	418	255	111
80%	80	200	257	502	625	600	709	709	666	461	279	151
90%	62	65	196	424	567	632	720	709	688	449	249	131
Long Term												
Full Simulation Period[b]	200	267	290	414	440	365	479	569	545	358	214	166
Water Year Types[c]												
Wet (32%)	234	336	433	513	439	245	433	601	541	426	261	245
Above Normal (16%)	168	234	257	448	471	341	551	669	598	395	179	117
Below Normal (13%)	329	439	427	601	594	507	596	660	696	465	209	124
Dry (24%)	141	174	130	277	390	431	457	498	501	244	185	127
Critical (15%)	144	153	158	217	352	412	431	423	429	263	202	149

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-1-2. San Luis Reservoir (SWP and CVP), End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	868	1,032	1,320	1,726	2,029	2,039	1,835	1,463	1,167	970	831	774
20%	728	849	1,157	1,388	1,643	1,898	1,742	1,358	1,024	868	667	720
30%	563	739	1,076	1,328	1,582	1,801	1,620	1,300	915	780	568	623
40%	503	663	979	1,269	1,504	1,716	1,542	1,190	804	670	509	557
50%	471	580	817	1,140	1,410	1,622	1,457	1,106	714	561	436	491
60%	418	484	742	1,016	1,267	1,507	1,358	991	665	489	386	424
70%	334	422	698	969	1,154	1,314	1,218	943	606	435	299	362
80%	276	356	603	808	1,046	1,267	1,119	845	498	354	240	261
90%	206	298	463	751	941	1,087	1,021	724	378	303	186	190
Long Term												
Full Simulation Period[b]	510	628	890	1,171	1,391	1,575	1,431	1,128	793	642	491	521
Water Year Types[c]												
Wet (32%)	555	681	931	1,236	1,526	1,788	1,598	1,251	946	741	628	679
Above Normal (16%)	490	649	957	1,223	1,441	1,661	1,444	1,048	666	466	433	513
Below Normal (13%)	525	624	907	1,141	1,314	1,473	1,312	967	555	500	426	467
Dry (24%)	476	590	867	1,150	1,339	1,494	1,413	1,167	840	763	476	469
Critical (15%)	478	556	752	1,040	1,204	1,252	1,192	1,028	739	544	343	323

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,237	1,441	1,675	1,889	2,039	2,039	2,039	2,011	1,684	1,427	1,132	1,151
20%	985	1,234	1,446	1,710	1,955	2,039	2,036	1,891	1,541	1,256	978	967
30%	901	1,067	1,324	1,581	1,824	2,033	2,004	1,800	1,402	1,133	875	832
40%	801	981	1,253	1,488	1,697	1,903	1,961	1,742	1,331	986	720	785
50%	722	869	1,124	1,383	1,609	1,815	1,770	1,560	1,165	920	676	689
60%	537	765	1,025	1,313	1,501	1,702	1,670	1,411	1,040	806	590	527
70%	377	666	925	1,209	1,436	1,599	1,545	1,295	959	706	473	444
80%	317	491	775	1,066	1,277	1,409	1,397	1,168	837	591	391	347
90%	232	359	605	872	1,003	1,167	1,194	964	614	465	283	227
Long Term												
Full Simulation Period[b]	702	890	1,130	1,381	1,573	1,708	1,695	1,517	1,190	929	690	679
Water Year Types[c]												
Wet (32%)	810	1,033	1,276	1,555	1,810	1,957	1,975	1,851	1,540	1,228	961	980
Above Normal (16%)	619	844	1,109	1,342	1,571	1,756	1,763	1,575	1,155	830	674	703
Below Normal (13%)	834	1,043	1,305	1,489	1,623	1,736	1,651	1,338	899	737	585	561
Dry (24%)	634	804	1,052	1,302	1,455	1,608	1,593	1,413	1,128	926	590	535
Critical (15%)	548	632	804	1,076	1,216	1,256	1,227	1,069	838	572	380	351

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	369	409	355	163	10	0	204	548	517	457	301	377
20%	257	384	289	323	312	141	294	534	518	388	311	246
30%	338	328	248	253	243	233	383	500	487	353	307	209
40%	297	318	274	219	193	187	419	552	527	316	210	229
50%	251	289	307	243	200	193	313	454	452	360	240	198
60%	119	281	284	297	234	195	312	420	375	317	204	102
70%	43	244	227	240	282	286	328	352	354	271	173	81
80%	41	135	172	258	231	142	278	323	339	237	151	86
90%	26	61	142	121	63	80	172	239	236	162	97	37
Long Term												
Full Simulation Period[b]	192	262	240	210	182	133	265	389	397	288	199	158
Water Year Types[c]												
Wet (32%)	255	351	345	320	284	170	377	599	593	487	334	300
Above Normal (16%)	130	194	153	119	129	95	319	526	489	363	241	190
Below Normal (13%)	309	419	399	348	309	263	339	371	344	237	160	94
Dry (24%)	158	214	185	152	117	114	180	246	288	163	114	66
Critical (15%)	70	76	53	37	12	4	35	40	99	28	38	28

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-1-3. San Luis Reservoir (SWP and CVP), End of Month Storage

No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	868	1,032	1,320	1,726	2,029	2,039	1,835	1,463	1,167	970	831	774
20%	728	849	1,157	1,388	1,643	1,898	1,742	1,358	1,024	868	667	720
30%	563	739	1,076	1,328	1,582	1,801	1,620	1,300	915	780	568	623
40%	503	663	979	1,269	1,504	1,716	1,542	1,190	804	670	509	557
50%	471	580	817	1,140	1,410	1,622	1,457	1,106	714	561	436	491
60%	418	484	742	1,016	1,267	1,507	1,358	991	665	489	386	424
70%	334	422	698	969	1,154	1,314	1,218	943	606	435	299	362
80%	276	356	603	808	1,046	1,267	1,119	845	498	354	240	261
90%	206	298	463	751	941	1,087	1,021	724	378	303	186	190
Long Term												
Full Simulation Period[b]	510	628	890	1,171	1,391	1,575	1,431	1,128	793	642	491	521
Water Year Types[c]												
Wet (32%)	555	681	931	1,236	1,526	1,788	1,598	1,251	946	741	628	679
Above Normal (16%)	490	649	957	1,223	1,441	1,661	1,444	1,048	666	466	433	513
Below Normal (13%)	525	624	907	1,141	1,314	1,473	1,312	967	555	500	426	467
Dry (24%)	476	590	867	1,150	1,339	1,494	1,413	1,167	840	763	476	469
Critical (15%)	478	556	752	1,040	1,204	1,252	1,192	1,028	739	544	343	323

Alternative 5

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	835	982	1,306	1,593	2,000	2,039	1,821	1,448	1,216	972	808	855
20%	709	874	1,139	1,403	1,658	1,921	1,727	1,329	1,009	879	731	723
30%	610	740	1,046	1,334	1,596	1,824	1,609	1,236	875	755	588	663
40%	540	656	993	1,238	1,494	1,723	1,509	1,120	718	613	485	545
50%	487	589	880	1,137	1,399	1,614	1,416	1,048	689	544	422	507
60%	417	510	743	1,044	1,285	1,490	1,300	953	622	454	371	437
70%	314	423	705	975	1,175	1,382	1,203	880	523	400	293	341
80%	266	348	592	833	1,062	1,275	1,114	753	445	311	217	241
90%	192	260	455	759	932	1,045	926	684	356	269	153	138
Long Term												
Full Simulation Period[b]	508	620	886	1,167	1,390	1,575	1,404	1,069	745	611	483	516
Water Year Types[c]												
Wet (32%)	576	706	958	1,251	1,539	1,804	1,624	1,279	984	787	680	726
Above Normal (16%)	488	622	932	1,213	1,440	1,660	1,447	1,046	672	477	442	520
Below Normal (13%)	541	628	923	1,157	1,335	1,496	1,305	928	524	476	414	463
Dry (24%)	464	572	856	1,139	1,327	1,481	1,324	1,002	691	655	412	418
Critical (15%)	429	505	698	994	1,166	1,216	1,103	875	600	428	284	270

Alternative 5 minus No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-33	-50	-14	-133	-28	0	-14	-15	49	2	-23	80
20%	-19	25	-18	15	15	23	-15	-28	-15	11	64	3
30%	47	1	-30	6	14	24	-11	-64	-39	-25	20	40
40%	37	-6	13	-31	-10	7	-33	-70	-86	-57	-24	-11
50%	16	9	63	-2	-10	-8	-41	-58	-25	-17	-14	16
60%	-1	26	1	28	18	-16	-58	-38	-43	-35	-15	13
70%	-20	1	6	6	21	69	-15	-63	-83	-35	-6	-22
80%	-10	-8	-12	25	16	8	-5	-92	-53	-43	-23	-20
90%	-15	-38	-8	8	-9	-42	-95	-40	-22	-34	-33	-51
Long Term												
Full Simulation Period[b]	-2	-8	-4	-4	-2	0	-27	-59	-48	-30	-8	-5
Water Year Types[c]												
Wet (32%)	20	25	27	15	13	16	26	28	38	46	52	47
Above Normal (16%)	-2	-27	-24	-10	-2	-1	3	-2	6	10	8	7
Below Normal (13%)	16	4	16	17	21	23	-7	-39	-31	-24	-12	-4
Dry (24%)	-12	-18	-11	-11	-12	-13	-89	-165	-149	-107	-64	-51
Critical (15%)	-50	-51	-53	-46	-38	-36	-89	-154	-140	-116	-59	-53

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-1-4. San Luis Reservoir (SWP and CVP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,176	1,436	1,728	2,026	2,039	2,039	2,039	1,981	1,738	1,367	1,100	1,166
20%	994	1,178	1,546	1,886	2,039	2,039	2,039	1,924	1,557	1,212	929	957
30%	864	1,071	1,412	1,838	2,036	2,039	2,039	1,804	1,476	1,128	774	801
40%	811	1,013	1,271	1,685	1,993	2,039	2,039	1,756	1,352	1,025	684	742
50%	715	889	1,152	1,616	1,938	2,039	2,023	1,721	1,302	942	637	670
60%	588	750	1,063	1,519	1,877	2,039	1,951	1,677	1,249	901	590	567
70%	461	659	971	1,467	1,805	1,972	1,880	1,596	1,209	852	554	473
80%	356	556	861	1,310	1,671	1,867	1,828	1,553	1,164	815	519	412
90%	268	363	660	1,175	1,508	1,718	1,741	1,433	1,066	751	435	321
Long Term												
Full Simulation Period[b]	711	895	1,180	1,585	1,831	1,941	1,910	1,697	1,338	1,000	705	687
Water Year Types[c]												
Wet (32%)	790	1,017	1,365	1,748	1,965	2,033	2,031	1,852	1,487	1,167	889	925
Above Normal (16%)	658	883	1,213	1,671	1,913	2,001	1,995	1,717	1,263	861	612	631
Below Normal (13%)	854	1,064	1,334	1,742	1,908	1,980	1,908	1,628	1,251	964	635	591
Dry (24%)	617	764	998	1,427	1,728	1,925	1,870	1,665	1,341	1,007	660	596
Critical (15%)	622	709	910	1,257	1,556	1,664	1,623	1,451	1,168	808	545	472

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	868	1,032	1,320	1,726	2,029	2,039	1,835	1,463	1,167	970	831	774
20%	728	849	1,157	1,388	1,643	1,898	1,742	1,358	1,024	868	667	720
30%	563	739	1,076	1,328	1,582	1,801	1,620	1,300	915	780	568	623
40%	503	663	979	1,269	1,504	1,716	1,542	1,190	804	670	509	557
50%	471	580	817	1,140	1,410	1,622	1,457	1,106	714	561	436	491
60%	418	484	742	1,016	1,267	1,507	1,358	991	665	489	386	424
70%	334	422	698	969	1,154	1,314	1,218	943	606	435	299	362
80%	276	356	603	808	1,046	1,267	1,119	845	498	354	240	261
90%	206	298	463	751	941	1,087	1,021	724	378	303	186	190
Long Term												
Full Simulation Period[b]	510	628	890	1,171	1,391	1,575	1,431	1,128	793	642	491	521
Water Year Types[c]												
Wet (32%)	555	681	931	1,236	1,526	1,788	1,598	1,251	946	741	628	679
Above Normal (16%)	490	649	957	1,223	1,441	1,661	1,444	1,048	666	466	433	513
Below Normal (13%)	525	624	907	1,141	1,314	1,473	1,312	967	555	500	426	467
Dry (24%)	476	590	867	1,150	1,339	1,494	1,413	1,167	840	763	476	469
Critical (15%)	478	556	752	1,040	1,204	1,252	1,192	1,028	739	544	343	323

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-308	-404	-408	-300	-10	0	-204	-519	-571	-397	-269	-392
20%	-265	-329	-389	-498	-396	-141	-297	-567	-533	-345	-262	-237
30%	-301	-332	-335	-510	-454	-238	-419	-505	-561	-348	-206	-178
40%	-308	-350	-292	-416	-489	-323	-497	-565	-548	-355	-175	-186
50%	-244	-310	-334	-476	-528	-417	-566	-616	-589	-382	-201	-179
60%	-170	-266	-321	-503	-610	-532	-593	-686	-584	-413	-204	-143
70%	-127	-237	-273	-497	-651	-658	-663	-653	-603	-418	-255	-111
80%	-80	-200	-257	-502	-625	-600	-709	-709	-666	-461	-279	-151
90%	-62	-65	-196	-424	-567	-632	-720	-709	-688	-449	-249	-131
Long Term												
Full Simulation Period[b]	-200	-267	-290	-414	-440	-365	-479	-569	-545	-358	-214	-166
Water Year Types[c]												
Wet (32%)	-234	-336	-433	-513	-439	-245	-433	-601	-541	-426	-261	-245
Above Normal (16%)	-168	-234	-257	-448	-471	-341	-551	-669	-598	-395	-179	-117
Below Normal (13%)	-329	-439	-427	-601	-594	-507	-596	-660	-696	-465	-209	-124
Dry (24%)	-141	-174	-130	-277	-390	-431	-457	-498	-501	-244	-185	-127
Critical (15%)	-144	-153	-158	-217	-352	-412	-431	-423	-429	-263	-202	-149

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-1-5. San Luis Reservoir (SWP and CVP), End of Month Storage

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,176	1,436	1,728	2,026	2,039	2,039	2,039	1,981	1,738	1,367	1,100	1,166
20%	994	1,178	1,546	1,886	2,039	2,039	2,039	1,924	1,557	1,212	929	957
30%	864	1,071	1,412	1,838	2,036	2,039	2,039	1,804	1,476	1,128	774	801
40%	811	1,013	1,271	1,685	1,993	2,039	2,039	1,756	1,352	1,025	684	742
50%	715	889	1,152	1,616	1,938	2,039	2,023	1,721	1,302	942	637	670
60%	588	750	1,063	1,519	1,877	2,039	1,951	1,677	1,249	901	590	567
70%	461	659	971	1,467	1,805	1,972	1,880	1,596	1,209	852	554	473
80%	356	556	861	1,310	1,671	1,867	1,828	1,553	1,164	815	519	412
90%	268	363	660	1,175	1,508	1,718	1,741	1,433	1,066	751	435	321
Long Term												
Full Simulation Period[b]	711	895	1,180	1,585	1,831	1,941	1,910	1,697	1,338	1,000	705	687
Water Year Types[c]												
Wet (32%)	790	1,017	1,365	1,748	1,965	2,033	2,031	1,852	1,487	1,167	889	925
Above Normal (16%)	658	883	1,213	1,671	1,913	2,001	1,995	1,717	1,263	861	612	631
Below Normal (13%)	854	1,064	1,334	1,742	1,908	1,980	1,908	1,628	1,251	964	635	591
Dry (24%)	617	764	998	1,427	1,728	1,925	1,870	1,665	1,341	1,007	660	596
Critical (15%)	622	709	910	1,257	1,556	1,664	1,623	1,451	1,168	808	545	472

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,237	1,441	1,675	1,889	2,039	2,039	2,039	2,011	1,684	1,427	1,132	1,151
20%	985	1,234	1,446	1,710	1,955	2,039	2,036	1,891	1,541	1,256	978	967
30%	901	1,067	1,324	1,581	1,824	2,033	2,004	1,800	1,402	1,133	875	832
40%	801	981	1,253	1,488	1,697	1,903	1,961	1,742	1,331	986	720	785
50%	722	869	1,124	1,383	1,609	1,815	1,770	1,560	1,165	920	676	689
60%	537	765	1,025	1,313	1,501	1,702	1,670	1,411	1,040	806	590	527
70%	377	666	925	1,209	1,436	1,599	1,545	1,295	959	706	473	444
80%	317	491	775	1,066	1,277	1,409	1,397	1,168	837	591	391	347
90%	232	359	605	872	1,003	1,167	1,194	964	614	465	283	227
Long Term												
Full Simulation Period[b]	702	890	1,130	1,381	1,573	1,708	1,695	1,517	1,190	929	690	679
Water Year Types[c]												
Wet (32%)	810	1,033	1,276	1,555	1,810	1,957	1,975	1,851	1,540	1,228	961	980
Above Normal (16%)	619	844	1,109	1,342	1,571	1,756	1,763	1,575	1,155	830	674	703
Below Normal (13%)	834	1,043	1,305	1,489	1,623	1,736	1,651	1,338	899	737	585	561
Dry (24%)	634	804	1,052	1,302	1,455	1,608	1,593	1,413	1,128	926	590	535
Critical (15%)	548	632	804	1,076	1,216	1,256	1,227	1,069	838	572	380	351

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	61	5	-53	-137	0	0	0	29	-54	60	32	-15
20%	-9	56	-100	-176	-84	0	-3	-33	-15	43	48	9
30%	37	-4	-88	-257	-212	-6	-35	-4	-74	5	102	31
40%	-11	-32	-18	-197	-296	-136	-78	-14	-21	-39	36	43
50%	7	-20	-27	-232	-329	-224	-253	-162	-137	-22	39	19
60%	-50	16	-38	-206	-376	-337	-281	-266	-209	-95	0	-40
70%	-84	7	-46	-257	-369	-373	-335	-301	-250	-146	-82	-30
80%	-39	-65	-85	-245	-394	-459	-431	-385	-327	-225	-128	-65
90%	-36	-5	-55	-302	-504	-552	-548	-469	-452	-286	-152	-94
Long Term												
Full Simulation Period[b]	-9	-6	-50	-204	-258	-233	-215	-180	-148	-70	-15	-8
Water Year Types[c]												
Wet (32%)	21	16	-88	-193	-155	-76	-56	-2	53	61	72	55
Above Normal (16%)	-38	-40	-104	-329	-342	-245	-233	-143	-108	-32	63	73
Below Normal (13%)	-20	-20	-29	-253	-285	-244	-257	-290	-352	-227	-50	-30
Dry (24%)	17	40	55	-125	-273	-317	-277	-252	-214	-81	-70	-61
Critical (15%)	-74	-77	-106	-180	-340	-408	-396	-383	-330	-235	-164	-121

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-1-6. San Luis Reservoir (SWP and CVP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,176	1,436	1,728	2,026	2,039	2,039	2,039	1,981	1,738	1,367	1,100	1,166
20%	994	1,178	1,546	1,886	2,039	2,039	2,039	1,924	1,557	1,212	929	957
30%	864	1,071	1,412	1,838	2,036	2,039	2,039	1,804	1,476	1,128	774	801
40%	811	1,013	1,271	1,685	1,993	2,039	2,039	1,756	1,352	1,025	684	742
50%	715	889	1,152	1,616	1,938	2,039	2,023	1,721	1,302	942	637	670
60%	588	750	1,063	1,519	1,877	2,039	1,951	1,677	1,249	901	590	567
70%	461	659	971	1,467	1,805	1,972	1,880	1,596	1,209	852	554	473
80%	356	556	861	1,310	1,671	1,867	1,828	1,553	1,164	815	519	412
90%	268	363	660	1,175	1,508	1,718	1,741	1,433	1,066	751	435	321
Long Term												
Full Simulation Period[b]	711	895	1,180	1,585	1,831	1,941	1,910	1,697	1,338	1,000	705	687
Water Year Types[c]												
Wet (32%)	790	1,017	1,365	1,748	1,965	2,033	2,031	1,852	1,487	1,167	889	925
Above Normal (16%)	658	883	1,213	1,671	1,913	2,001	1,995	1,717	1,263	861	612	631
Below Normal (13%)	854	1,064	1,334	1,742	1,908	1,980	1,908	1,628	1,251	964	635	591
Dry (24%)	617	764	998	1,427	1,728	1,925	1,870	1,665	1,341	1,007	660	596
Critical (15%)	622	709	910	1,257	1,556	1,664	1,623	1,451	1,168	808	545	472

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	835	982	1,306	1,593	2,000	2,039	1,821	1,448	1,216	972	808	855
20%	709	874	1,139	1,403	1,658	1,921	1,727	1,329	1,009	879	731	723
30%	610	740	1,046	1,334	1,596	1,824	1,609	1,236	875	755	588	663
40%	540	656	993	1,238	1,494	1,723	1,509	1,120	718	613	485	545
50%	487	589	880	1,137	1,399	1,614	1,416	1,048	689	544	422	507
60%	417	510	743	1,044	1,285	1,490	1,300	953	622	454	371	437
70%	314	423	705	975	1,175	1,382	1,203	880	523	400	293	341
80%	266	348	592	833	1,062	1,275	1,114	753	445	311	217	241
90%	192	260	455	759	932	1,045	926	684	356	269	153	138
Long Term												
Full Simulation Period[b]	508	620	886	1,167	1,390	1,575	1,404	1,069	745	611	483	516
Water Year Types[c]												
Wet (32%)	576	706	958	1,251	1,539	1,804	1,624	1,279	984	787	680	726
Above Normal (16%)	488	622	932	1,213	1,440	1,660	1,447	1,046	672	477	442	520
Below Normal (13%)	541	628	923	1,157	1,335	1,496	1,305	928	524	476	414	463
Dry (24%)	464	572	856	1,139	1,327	1,481	1,324	1,002	691	655	412	418
Critical (15%)	429	505	698	994	1,166	1,216	1,103	875	600	428	284	270

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-341	-454	-423	-434	-39	0	-218	-534	-522	-395	-292	-312
20%	-285	-304	-407	-483	-381	-118	-312	-595	-548	-334	-199	-235
30%	-254	-331	-366	-503	-440	-215	-430	-568	-601	-372	-186	-138
40%	-271	-356	-278	-447	-499	-316	-530	-636	-634	-412	-199	-197
50%	-229	-300	-272	-478	-539	-425	-607	-674	-613	-398	-214	-163
60%	-170	-240	-320	-475	-592	-549	-651	-724	-627	-448	-219	-130
70%	-147	-236	-266	-491	-631	-589	-677	-716	-686	-452	-261	-133
80%	-90	-208	-269	-478	-609	-593	-714	-801	-719	-504	-302	-171
90%	-76	-104	-204	-416	-576	-674	-815	-749	-710	-483	-282	-183
Long Term												
Full Simulation Period[b]	-202	-275	-294	-418	-442	-366	-506	-628	-592	-388	-222	-171
Water Year Types[c]												
Wet (32%)	-214	-311	-407	-498	-426	-229	-408	-573	-503	-380	-210	-199
Above Normal (16%)	-170	-261	-281	-458	-473	-342	-548	-671	-591	-385	-170	-111
Below Normal (13%)	-313	-435	-411	-584	-572	-483	-603	-699	-727	-489	-221	-128
Dry (24%)	-153	-192	-141	-289	-402	-444	-546	-663	-650	-352	-249	-178
Critical (15%)	-193	-204	-212	-263	-390	-448	-520	-577	-569	-379	-261	-202

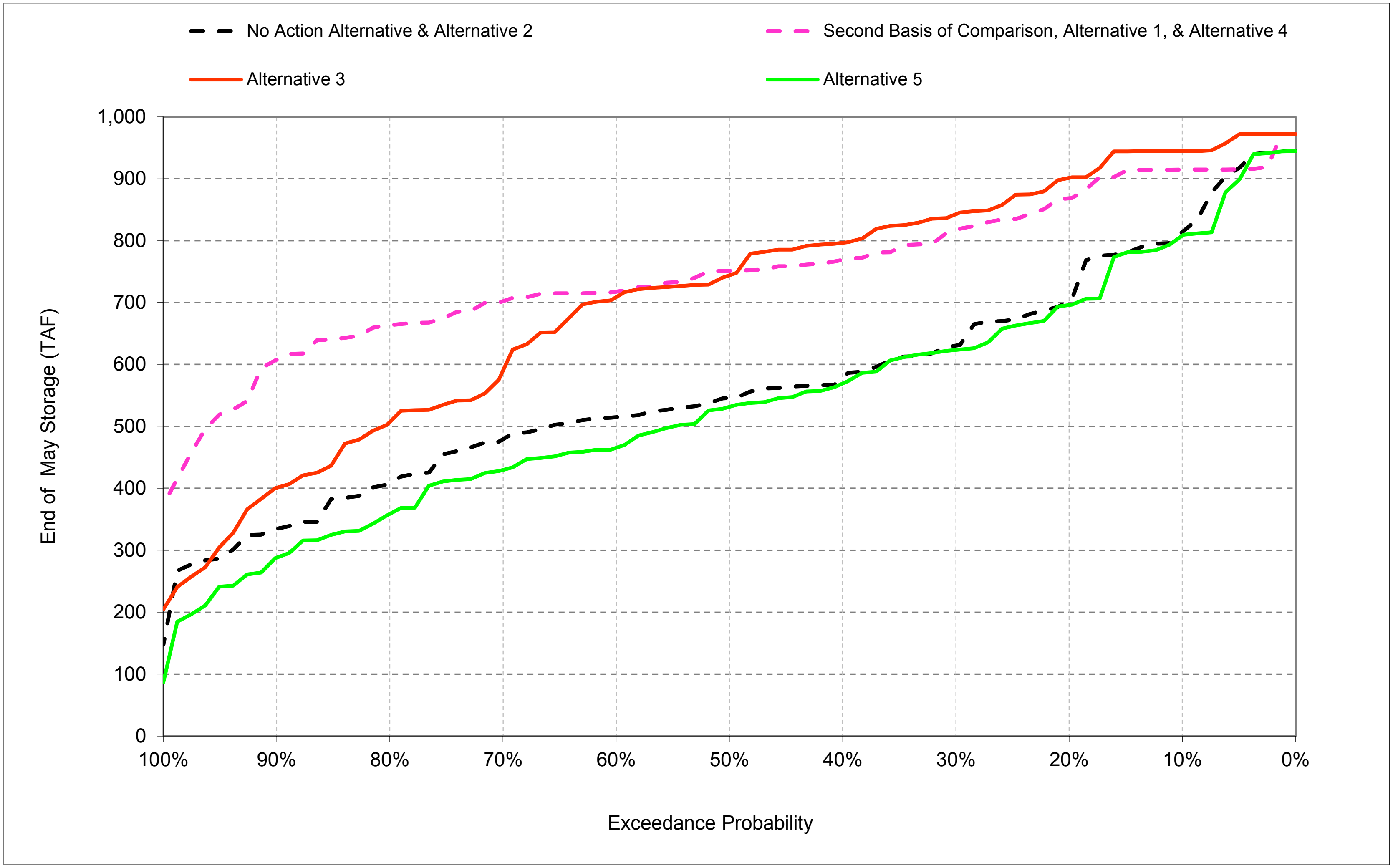
a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

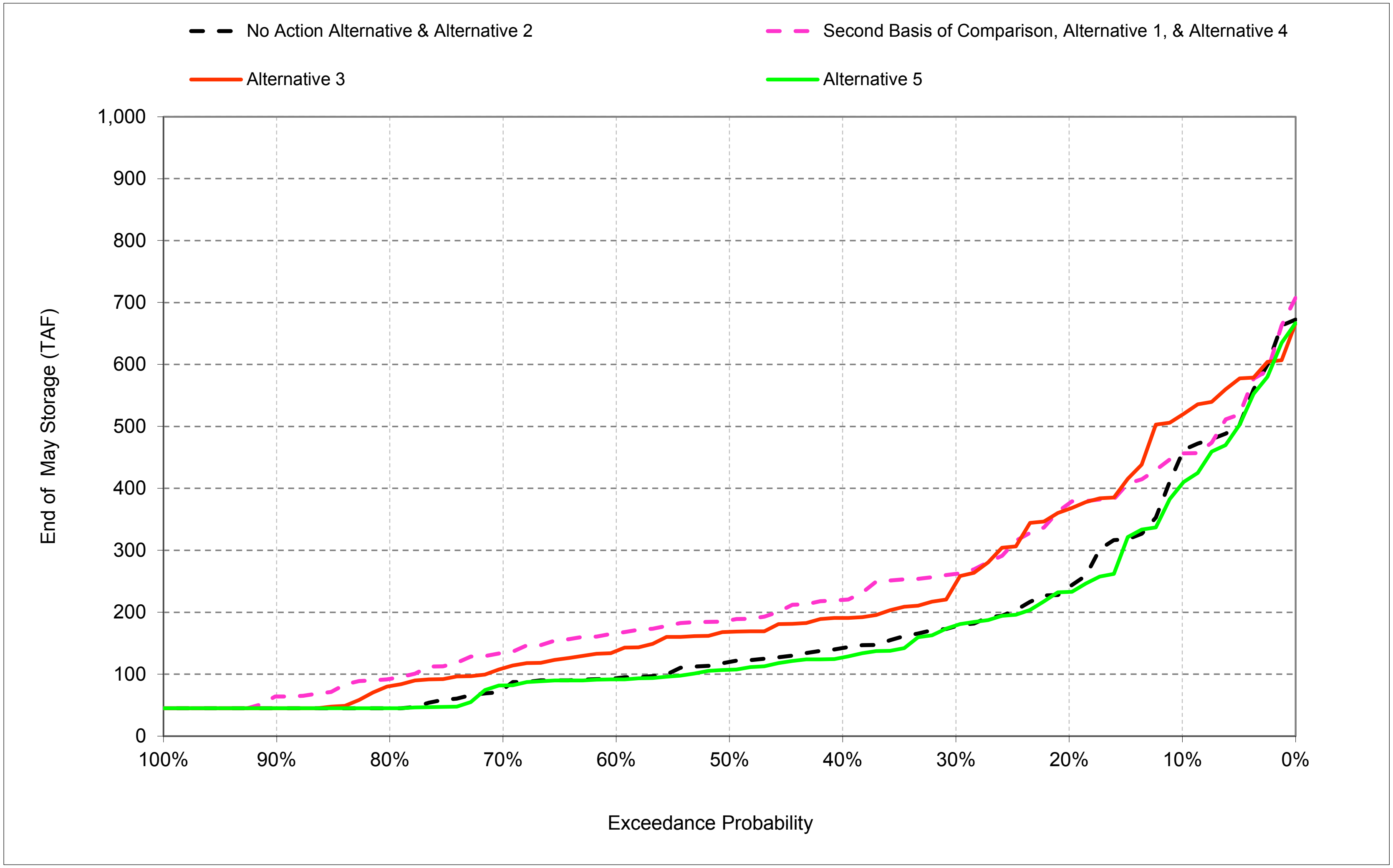
Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-2-1. San Luis Reservoir (CVP), End of May Storage



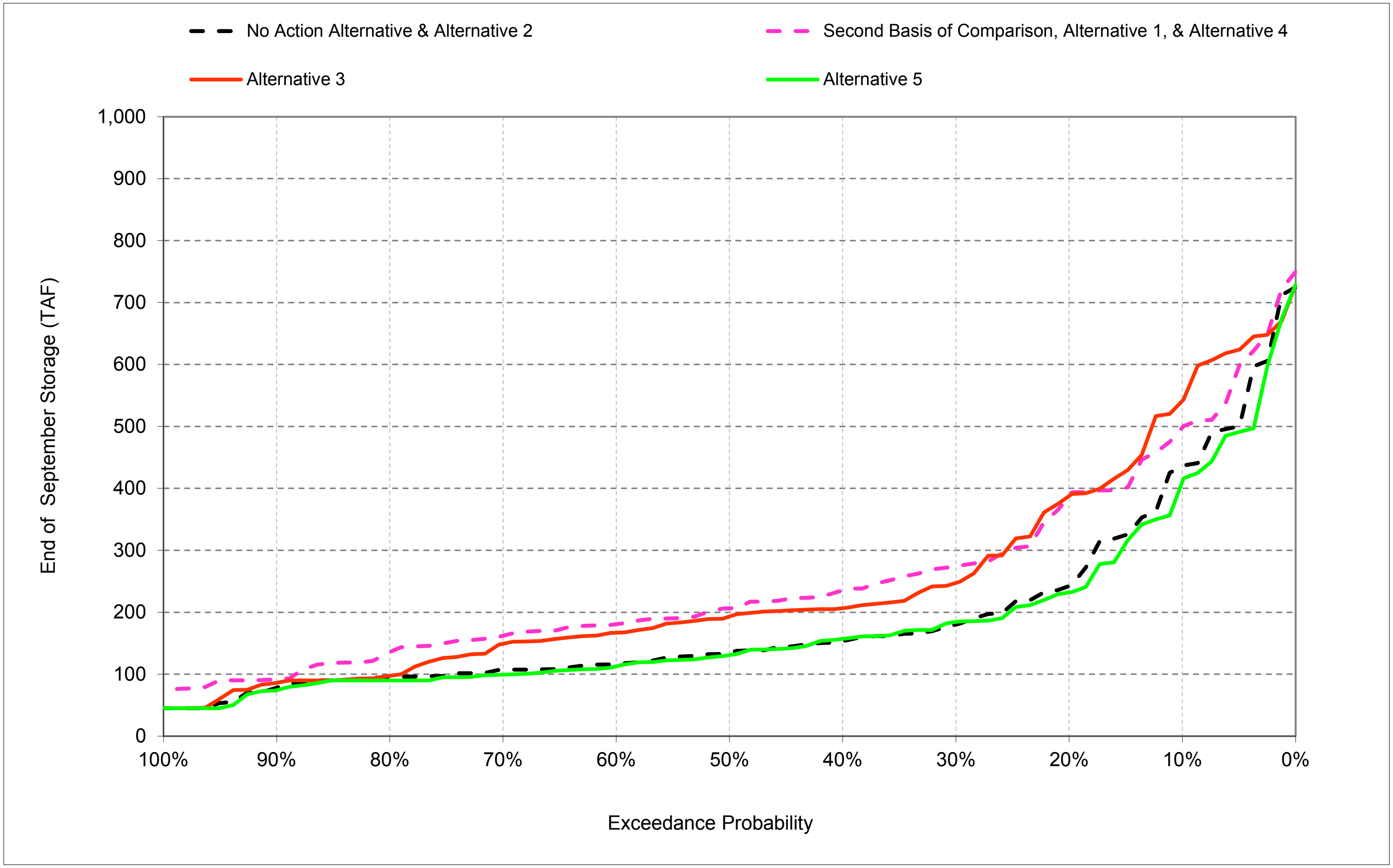
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-2-2. San Luis Reservoir (CVP), End of August Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-2-3. San Luis Reservoir (CVP), End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2-1. San Luis Reservoir (CVP), End of Month Storage

No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	408	488	706	888	972	972	921	814	690	505	457	436
20%	278	373	573	741	904	972	870	703	603	403	241	242
30%	233	367	553	684	798	930	830	630	464	303	178	180
40%	201	367	544	660	762	861	768	579	387	283	142	154
50%	183	350	512	622	728	808	707	546	365	231	120	135
60%	175	324	493	599	666	758	681	515	337	170	93	116
70%	160	283	454	575	610	704	626	479	286	135	76	107
80%	136	244	386	526	561	615	552	408	229	99	45	96
90%	109	172	300	428	515	545	487	335	161	45	45	78
Long Term												
Full Simulation Period[b]	232	347	510	631	717	783	710	566	396	258	173	191
Water Year Types[c]												
Wet (32%)	232	354	522	652	777	886	812	662	516	311	196	209
Above Normal (16%)	218	365	535	646	739	828	728	547	366	165	111	127
Below Normal (13%)	234	350	526	634	694	745	658	492	296	216	163	203
Dry (24%)	226	329	495	623	688	734	675	545	358	282	173	193
Critical (15%)	258	339	465	583	633	627	577	481	325	239	197	209

Alternative 1

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	519	632	834	972	972	972	972	915	727	577	456	498
20%	394	529	719	958	972	972	972	868	681	507	376	388
30%	326	473	657	847	972	972	972	817	599	428	262	274
40%	292	426	607	800	964	972	972	769	542	381	220	236
50%	247	402	567	758	926	972	972	751	520	321	187	206
60%	213	355	534	715	875	972	922	717	486	256	166	181
70%	188	330	518	684	825	935	883	702	449	222	134	162
80%	168	294	474	646	777	870	841	663	420	198	93	136
90%	119	247	374	547	637	775	751	608	352	158	64	92
Long Term												
Full Simulation Period[b]	288	420	591	760	865	916	896	748	533	343	230	254
Water Year Types[c]												
Wet (32%)	273	422	609	788	916	967	966	823	589	358	228	260
Above Normal (16%)	280	421	595	773	903	953	953	760	510	227	117	166
Below Normal (13%)	296	448	628	801	876	920	885	708	467	294	210	232
Dry (24%)	293	412	568	736	827	896	857	715	521	401	256	268
Critical (15%)	316	406	552	688	770	792	760	664	517	385	332	335

Alternative 1 minus No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	112	144	128	84	0	0	51	101	38	72	-2	62
20%	116	155	147	217	68	0	102	165	78	104	135	146
30%	93	106	104	163	174	42	142	186	135	125	84	94
40%	91	59	63	140	202	111	204	190	156	98	78	82
50%	63	52	55	136	198	164	265	205	156	91	67	71
60%	38	31	41	117	209	214	241	202	149	87	73	64
70%	27	47	64	109	215	232	257	223	162	88	58	55
80%	32	50	88	120	216	254	288	255	191	99	48	40
90%	10	75	74	119	122	230	264	273	192	113	19	13
Long Term												
Full Simulation Period[b]	56	73	82	129	148	133	186	182	137	85	58	63
Water Year Types[c]												
Wet (32%)	41	68	87	136	138	81	154	160	73	47	32	50
Above Normal (16%)	62	56	60	127	164	125	225	213	144	62	6	39
Below Normal (13%)	62	97	103	167	182	175	227	216	171	78	47	29
Dry (24%)	67	83	73	113	139	162	182	170	163	119	83	75
Critical (15%)	58	67	87	105	137	165	183	183	192	146	135	126

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2-2. San Luis Reservoir (CVP), End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	408	488	706	888	972	972	921	814	690	505	457	436
20%	278	373	573	741	904	972	870	703	603	403	241	242
30%	233	367	553	684	798	930	830	630	464	303	178	180
40%	201	367	544	660	762	861	768	579	387	283	142	154
50%	183	350	512	622	728	808	707	546	365	231	120	135
60%	175	324	493	599	666	758	681	515	337	170	93	116
70%	160	283	454	575	610	704	626	479	286	135	76	107
80%	136	244	386	526	561	615	552	408	229	99	45	96
90%	109	172	300	428	515	545	487	335	161	45	45	78
Long Term												
Full Simulation Period[b]	232	347	510	631	717	783	710	566	396	258	173	191
Water Year Types[c]												
Wet (32%)	232	354	522	652	777	886	812	662	516	311	196	209
Above Normal (16%)	218	365	535	646	739	828	728	547	366	165	111	127
Below Normal (13%)	234	350	526	634	694	745	658	492	296	216	163	203
Dry (24%)	226	329	495	623	688	734	675	545	358	282	173	193
Critical (15%)	258	339	465	583	633	627	577	481	325	239	197	209

Alternative 3

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	601	699	886	972	972	972	972	945	842	611	519	541
20%	439	593	771	870	972	972	972	901	715	543	367	388
30%	298	447	652	784	913	972	954	842	661	412	247	247
40%	276	424	589	733	849	960	935	796	601	358	191	207
50%	252	377	552	680	805	903	881	744	529	320	169	193
60%	220	343	519	631	719	841	821	709	490	254	138	167
70%	180	306	502	608	661	766	748	590	401	206	110	149
80%	147	290	446	569	620	676	632	507	304	144	81	97
90%	97	193	341	452	545	543	489	401	237	89	45	86
Long Term												
Full Simulation Period[b]	292	422	583	691	768	823	806	704	525	332	219	245
Water Year Types[c]												
Wet (32%)	308	454	627	747	871	944	943	861	695	434	277	305
Above Normal (16%)	264	399	553	639	724	831	825	717	521	247	148	182
Below Normal (13%)	330	477	653	752	799	837	790	648	429	257	165	218
Dry (24%)	286	407	565	679	728	772	748	640	461	352	231	246
Critical (15%)	265	353	487	594	634	626	596	505	356	237	198	204

Alternative 3 minus No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	193	210	180	84	0	0	51	131	152	106	62	105
20%	161	220	199	129	68	0	102	198	112	141	126	145
30%	66	80	100	101	115	42	124	212	197	109	70	67
40%	74	58	45	74	86	99	166	217	214	76	49	53
50%	69	27	39	59	77	94	174	198	164	89	49	58
60%	45	19	26	32	53	84	140	194	153	84	44	50
70%	20	23	48	33	52	63	122	111	115	71	34	42
80%	11	46	60	44	59	61	80	99	75	45	36	2
90%	-12	22	42	24	31	-2	2	66	76	44	0	8
Long Term												
Full Simulation Period[b]	60	75	74	60	51	40	95	138	129	74	46	53
Water Year Types[c]												
Wet (32%)	76	101	106	95	94	57	132	199	179	123	81	96
Above Normal (16%)	46	34	18	-7	-15	3	97	170	155	82	37	55
Below Normal (13%)	96	126	127	118	106	91	132	156	133	41	3	15
Dry (24%)	60	78	71	56	40	38	73	95	102	70	58	53
Critical (15%)	7	14	22	12	1	-1	19	24	31	-3	1	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2-3. San Luis Reservoir (CVP), End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	408	488	706	888	972	972	921	814	690	505	457	436
20%	278	373	573	741	904	972	870	703	603	403	241	242
30%	233	367	553	684	798	930	830	630	464	303	178	180
40%	201	367	544	660	762	861	768	579	387	283	142	154
50%	183	350	512	622	728	808	707	546	365	231	120	135
60%	175	324	493	599	666	758	681	515	337	170	93	116
70%	160	283	454	575	610	704	626	479	286	135	76	107
80%	136	244	386	526	561	615	552	408	229	99	45	96
90%	109	172	300	428	515	545	487	335	161	45	45	78
Long Term												
Full Simulation Period[b]	232	347	510	631	717	783	710	566	396	258	173	191
Water Year Types[c]												
Wet (32%)	232	354	522	652	777	886	812	662	516	311	196	209
Above Normal (16%)	218	365	535	646	739	828	728	547	366	165	111	127
Below Normal (13%)	234	350	526	634	694	745	658	492	296	216	163	203
Dry (24%)	226	329	495	623	688	734	675	545	358	282	173	193
Critical (15%)	258	339	465	583	633	627	577	481	325	239	197	209

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	367	491	703	875	972	972	921	808	686	505	408	410
20%	271	367	570	721	859	972	861	696	552	398	233	232
30%	218	367	550	689	794	925	827	624	449	287	179	184
40%	191	359	539	644	764	851	751	569	383	245	127	157
50%	183	344	512	621	715	809	712	532	351	199	107	131
60%	170	307	489	592	664	758	651	466	286	154	92	113
70%	157	275	423	550	603	701	628	430	243	122	82	99
80%	135	224	375	474	553	617	526	359	171	79	45	90
90%	107	165	293	422	503	526	449	288	83	45	45	74
Long Term												
Full Simulation Period[b]	223	337	500	624	712	778	694	535	371	241	165	183
Water Year Types[c]												
Wet (32%)	228	356	525	657	781	891	819	670	525	321	205	213
Above Normal (16%)	213	346	517	634	728	818	720	541	366	168	112	126
Below Normal (13%)	226	342	516	625	695	747	655	478	289	217	159	203
Dry (24%)	215	314	481	609	675	721	634	470	293	235	150	176
Critical (15%)	236	318	442	566	620	613	531	398	250	179	164	175

Alternative 5 minus No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-41	3	-3	-13	0	0	0	-6	-3	0	-49	-25
20%	-7	-7	-2	-20	-45	0	-9	-8	-51	-4	-8	-10
30%	-15	0	-3	5	-5	-4	-3	-7	-15	-16	1	4
40%	-10	-8	-4	-15	1	-10	-17	-10	-4	-38	-15	4
50%	0	-5	0	-1	-13	1	4	-14	-14	-31	-13	-4
60%	-5	-17	-4	-7	-2	1	-30	-49	-51	-16	-2	-4
70%	-3	-9	-30	-25	-6	-3	3	-49	-43	-13	6	-8
80%	-1	-20	-11	-51	-8	1	-26	-50	-58	-20	0	-6
90%	-2	-6	-6	-6	-12	-19	-38	-46	-77	0	0	-4
Long Term												
Full Simulation Period[b]	-9	-10	-10	-7	-6	-5	-16	-31	-25	-17	-8	-8
Water Year Types[c]												
Wet (32%)	-4	2	3	5	4	5	7	8	9	10	9	4
Above Normal (16%)	-5	-19	-19	-12	-11	-10	-8	-6	0	3	1	-1
Below Normal (13%)	-8	-8	-10	-9	1	2	-3	-14	-7	1	-4	-1
Dry (24%)	-11	-15	-13	-14	-13	-13	-41	-75	-65	-46	-23	-17
Critical (15%)	-22	-21	-24	-17	-13	-14	-46	-82	-75	-61	-33	-34

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2-4. San Luis Reservoir (CVP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	519	632	834	972	972	972	972	915	727	577	456	498
20%	394	529	719	958	972	972	972	868	681	507	376	388
30%	326	473	657	847	972	972	972	817	599	428	262	274
40%	292	426	607	800	964	972	972	769	542	381	220	236
50%	247	402	567	758	926	972	972	751	520	321	187	206
60%	213	355	534	715	875	972	922	717	486	256	166	181
70%	188	330	518	684	825	935	883	702	449	222	134	162
80%	168	294	474	646	777	870	841	663	420	198	93	136
90%	119	247	374	547	637	775	751	608	352	158	64	92
Long Term												
Full Simulation Period[b]	288	420	591	760	865	916	896	748	533	343	230	254
Water Year Types[c]												
Wet (32%)	273	422	609	788	916	967	966	823	589	358	228	260
Above Normal (16%)	280	421	595	773	903	953	953	760	510	227	117	166
Below Normal (13%)	296	448	628	801	876	920	885	708	467	294	210	232
Dry (24%)	293	412	568	736	827	896	857	715	521	401	256	268
Critical (15%)	316	406	552	688	770	792	760	664	517	385	332	335

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	408	488	706	888	972	972	921	814	690	505	457	436
20%	278	373	573	741	904	972	870	703	603	403	241	242
30%	233	367	553	684	798	930	830	630	464	303	178	180
40%	201	367	544	660	762	861	768	579	387	283	142	154
50%	183	350	512	622	728	808	707	546	365	231	120	135
60%	175	324	493	599	666	758	681	515	337	170	93	116
70%	160	283	454	575	610	704	626	479	286	135	76	107
80%	136	244	386	526	561	615	552	408	229	99	45	96
90%	109	172	300	428	515	545	487	335	161	45	45	78
Long Term												
Full Simulation Period[b]	232	347	510	631	717	783	710	566	396	258	173	191
Water Year Types[c]												
Wet (32%)	232	354	522	652	777	886	812	662	516	311	196	209
Above Normal (16%)	218	365	535	646	739	828	728	547	366	165	111	127
Below Normal (13%)	234	350	526	634	694	745	658	492	296	216	163	203
Dry (24%)	226	329	495	623	688	734	675	545	358	282	173	193
Critical (15%)	258	339	465	583	633	627	577	481	325	239	197	209

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-112	-144	-128	-84	0	0	-51	-101	-38	-72	2	-62
20%	-116	-155	-147	-217	-68	0	-102	-165	-78	-104	-135	-146
30%	-93	-106	-104	-163	-174	-42	-142	-186	-135	-125	-84	-94
40%	-91	-59	-63	-140	-202	-111	-204	-190	-156	-98	-78	-82
50%	-63	-52	-55	-136	-198	-164	-265	-205	-156	-91	-67	-71
60%	-38	-31	-41	-117	-209	-214	-241	-202	-149	-87	-73	-64
70%	-27	-47	-64	-109	-215	-232	-257	-223	-162	-88	-58	-55
80%	-32	-50	-88	-120	-216	-254	-288	-255	-191	-99	-48	-40
90%	-10	-75	-74	-119	-122	-230	-264	-273	-192	-113	-19	-13
Long Term												
Full Simulation Period[b]	-56	-73	-82	-129	-148	-133	-186	-182	-137	-85	-58	-63
Water Year Types[c]												
Wet (32%)	-41	-68	-87	-136	-138	-81	-154	-160	-73	-47	-32	-50
Above Normal (16%)	-62	-56	-60	-127	-164	-125	-225	-213	-144	-62	-6	-39
Below Normal (13%)	-62	-97	-103	-167	-182	-175	-227	-216	-171	-78	-47	-29
Dry (24%)	-67	-83	-73	-113	-139	-162	-182	-170	-163	-119	-83	-75
Critical (15%)	-58	-67	-87	-105	-137	-165	-183	-183	-192	-146	-135	-126

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2-5. San Luis Reservoir (CVP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	519	632	834	972	972	972	972	915	727	577	456	498
20%	394	529	719	958	972	972	972	868	681	507	376	388
30%	326	473	657	847	972	972	972	817	599	428	262	274
40%	292	426	607	800	964	972	972	769	542	381	220	236
50%	247	402	567	758	926	972	972	751	520	321	187	206
60%	213	355	534	715	875	972	922	717	486	256	166	181
70%	188	330	518	684	825	935	883	702	449	222	134	162
80%	168	294	474	646	777	870	841	663	420	198	93	136
90%	119	247	374	547	637	775	751	608	352	158	64	92
Long Term												
Full Simulation Period[b]	288	420	591	760	865	916	896	748	533	343	230	254
Water Year Types[c]												
Wet (32%)	273	422	609	788	916	967	966	823	589	358	228	260
Above Normal (16%)	280	421	595	773	903	953	953	760	510	227	117	166
Below Normal (13%)	296	448	628	801	876	920	885	708	467	294	210	232
Dry (24%)	293	412	568	736	827	896	857	715	521	401	256	268
Critical (15%)	316	406	552	688	770	792	760	664	517	385	332	335

Alternative 3

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	601	699	886	972	972	972	972	945	842	611	519	541
20%	439	593	771	870	972	972	972	901	715	543	367	388
30%	298	447	652	784	913	972	954	842	661	412	247	247
40%	276	424	589	733	849	960	935	796	601	358	191	207
50%	252	377	552	680	805	903	881	744	529	320	169	193
60%	220	343	519	631	719	841	821	709	490	254	138	167
70%	180	306	502	608	661	766	748	590	401	206	110	149
80%	147	290	446	569	620	676	632	507	304	144	81	97
90%	97	193	341	452	545	543	489	401	237	89	45	86
Long Term												
Full Simulation Period[b]	292	422	583	691	768	823	806	704	525	332	219	245
Water Year Types[c]												
Wet (32%)	308	454	627	747	871	944	943	861	695	434	277	305
Above Normal (16%)	264	399	553	639	724	831	825	717	521	247	148	182
Below Normal (13%)	330	477	653	752	799	837	790	648	429	257	165	218
Dry (24%)	286	407	565	679	728	772	748	640	461	352	231	246
Critical (15%)	265	353	487	594	634	626	596	505	356	237	198	204

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	81	67	52	0	0	0	0	30	114	34	63	43
20%	45	65	52	-88	0	0	0	33	34	36	-9	0
30%	-28	-26	-5	-63	-59	0	-18	26	62	-16	-15	-27
40%	-16	-1	-18	-66	-115	-12	-37	27	58	-23	-29	-29
50%	5	-24	-15	-78	-121	-69	-91	-7	9	-1	-19	-13
60%	8	-13	-15	-84	-156	-131	-101	-9	4	-3	-29	-14
70%	-7	-24	-16	-76	-163	-169	-135	-112	-48	-17	-25	-13
80%	-21	-4	-28	-77	-157	-193	-208	-156	-116	-54	-12	-38
90%	-22	-53	-32	-95	-92	-231	-262	-207	-116	-70	-19	-6
Long Term												
Full Simulation Period[b]	4	2	-8	-69	-97	-93	-91	-44	-8	-11	-11	-9
Water Year Types[c]												
Wet (32%)	35	33	18	-42	-45	-24	-22	39	106	76	48	46
Above Normal (16%)	-16	-22	-42	-134	-179	-122	-128	-43	11	21	31	16
Below Normal (13%)	33	29	25	-49	-77	-83	-95	-60	-38	-37	-44	-14
Dry (24%)	-7	-5	-2	-57	-99	-124	-109	-74	-61	-49	-25	-22
Critical (15%)	-52	-53	-65	-94	-135	-166	-164	-159	-161	-148	-134	-131

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2-6. San Luis Reservoir (CVP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	519	632	834	972	972	972	972	915	727	577	456	498
20%	394	529	719	958	972	972	972	868	681	507	376	388
30%	326	473	657	847	972	972	972	817	599	428	262	274
40%	292	426	607	800	964	972	972	769	542	381	220	236
50%	247	402	567	758	926	972	972	751	520	321	187	206
60%	213	355	534	715	875	972	922	717	486	256	166	181
70%	188	330	518	684	825	935	883	702	449	222	134	162
80%	168	294	474	646	777	870	841	663	420	198	93	136
90%	119	247	374	547	637	775	751	608	352	158	64	92
Long Term												
Full Simulation Period[b]	288	420	591	760	865	916	896	748	533	343	230	254
Water Year Types[c]												
Wet (32%)	273	422	609	788	916	967	966	823	589	358	228	260
Above Normal (16%)	280	421	595	773	903	953	953	760	510	227	117	166
Below Normal (13%)	296	448	628	801	876	920	885	708	467	294	210	232
Dry (24%)	293	412	568	736	827	896	857	715	521	401	256	268
Critical (15%)	316	406	552	688	770	792	760	664	517	385	332	335

Alternative 5

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	367	491	703	875	972	972	921	808	686	505	408	410
20%	271	367	570	721	859	972	861	696	552	398	233	232
30%	218	367	550	689	794	925	827	624	449	287	179	184
40%	191	359	539	644	764	851	751	569	383	245	127	157
50%	183	344	512	621	715	809	712	532	351	199	107	131
60%	170	307	489	592	664	758	651	466	286	154	92	113
70%	157	275	423	550	603	701	628	430	243	122	82	99
80%	135	224	375	474	553	617	526	359	171	79	45	90
90%	107	165	293	422	503	526	449	288	83	45	45	74
Long Term												
Full Simulation Period[b]	223	337	500	624	712	778	694	535	371	241	165	183
Water Year Types[c]												
Wet (32%)	228	356	525	657	781	891	819	670	525	321	205	213
Above Normal (16%)	213	346	517	634	728	818	720	541	366	168	112	126
Below Normal (13%)	226	342	516	625	695	747	655	478	289	217	159	203
Dry (24%)	215	314	481	609	675	721	634	470	293	235	150	176
Critical (15%)	236	318	442	566	620	613	531	398	250	179	164	175

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-153	-141	-131	-97	0	0	-51	-107	-41	-71	-48	-88
20%	-122	-162	-149	-237	-113	0	-111	-173	-129	-109	-143	-156
30%	-108	-106	-107	-158	-178	-47	-145	-193	-150	-141	-83	-90
40%	-101	-67	-68	-155	-200	-121	-221	-200	-160	-136	-93	-79
50%	-63	-57	-55	-137	-211	-163	-260	-219	-169	-122	-80	-75
60%	-42	-48	-45	-123	-212	-214	-271	-252	-200	-103	-75	-68
70%	-30	-56	-95	-134	-222	-234	-254	-272	-205	-100	-53	-63
80%	-33	-70	-99	-171	-224	-253	-314	-305	-249	-119	-48	-46
90%	-12	-81	-80	-125	-134	-249	-302	-319	-269	-113	-19	-17
Long Term												
Full Simulation Period[b]	-65	-83	-91	-136	-154	-138	-202	-212	-162	-102	-66	-71
Water Year Types[c]												
Wet (32%)	-44	-66	-84	-132	-134	-76	-147	-152	-64	-38	-24	-47
Above Normal (16%)	-67	-74	-79	-139	-175	-135	-233	-219	-144	-59	-5	-40
Below Normal (13%)	-70	-105	-112	-176	-181	-173	-230	-230	-178	-77	-51	-29
Dry (24%)	-79	-98	-86	-127	-152	-175	-223	-244	-228	-165	-106	-92
Critical (15%)	-80	-88	-110	-122	-150	-179	-229	-265	-267	-206	-168	-160

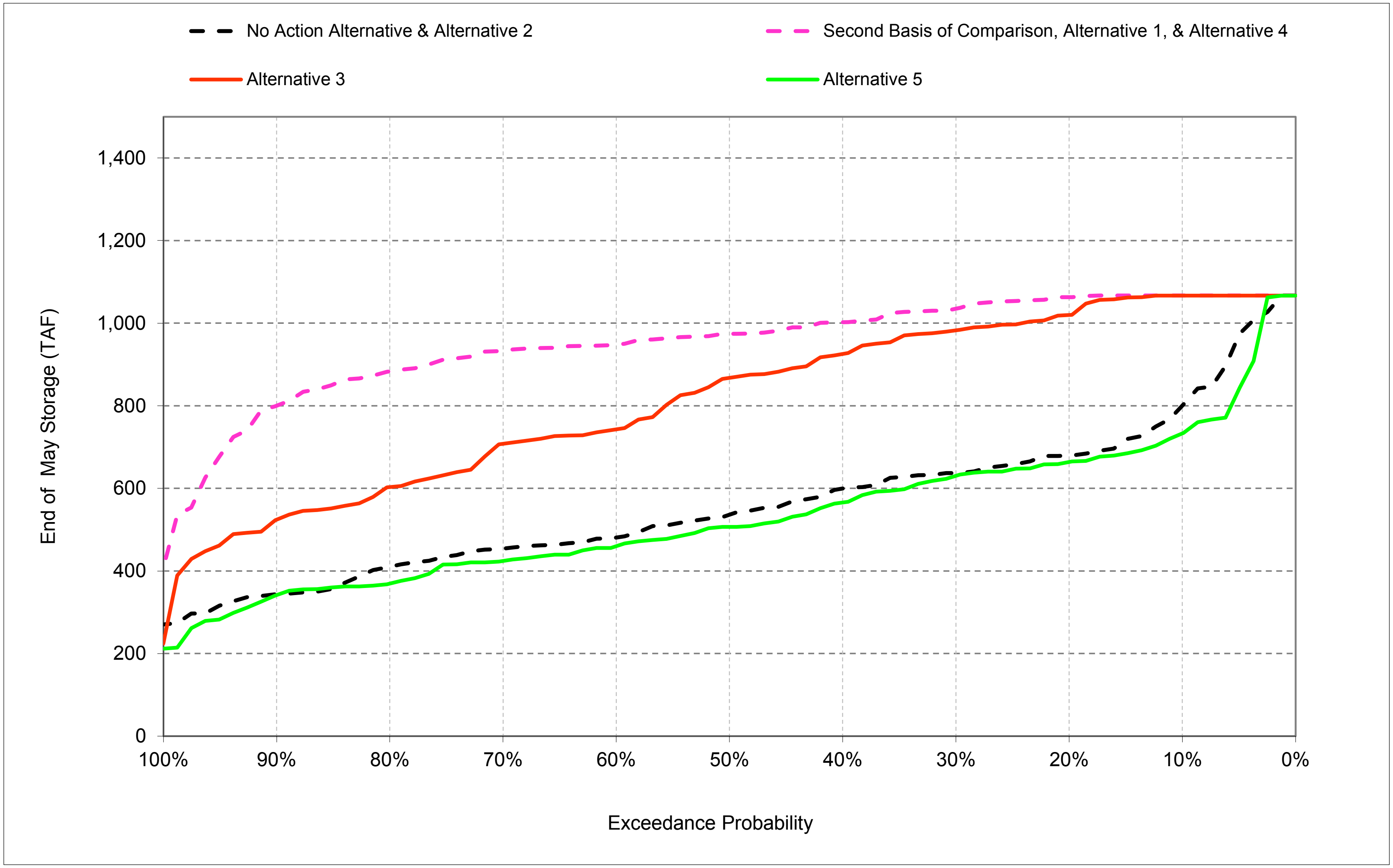
a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

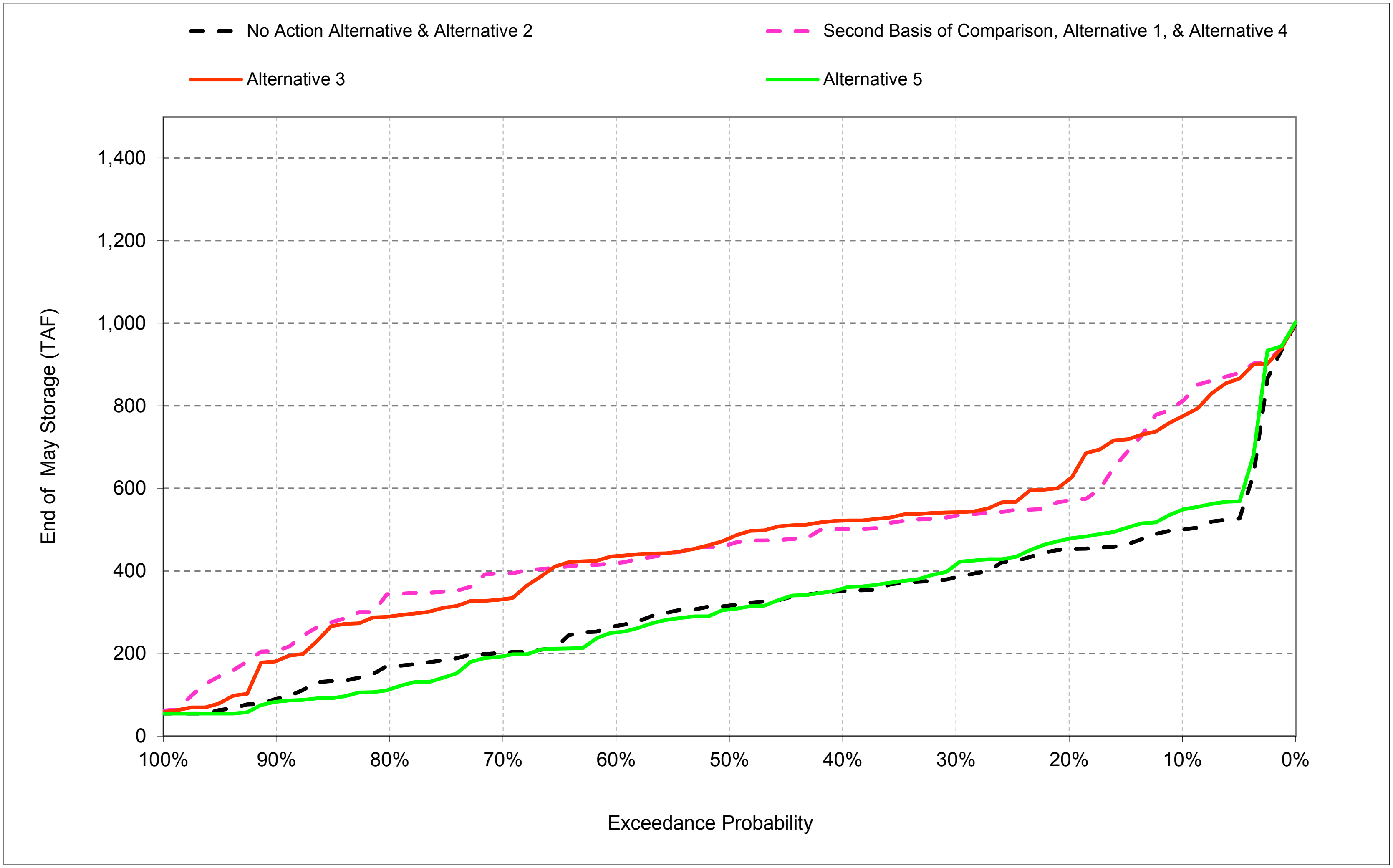
Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-3-1. San Luis Reservoir (SWP), End of May Storage



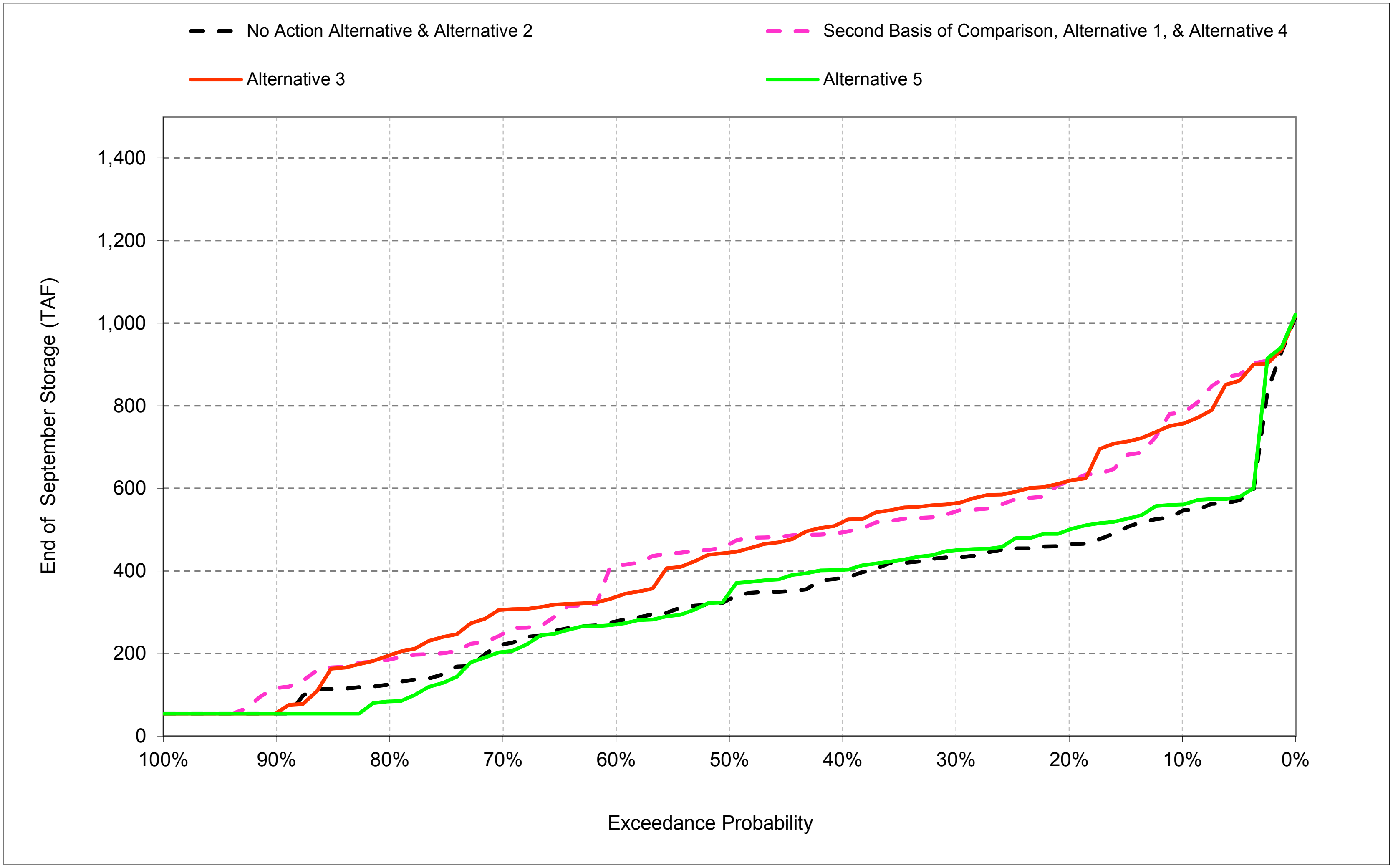
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-3-2. San Luis Reservoir (SWP), End of August Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-5-3-3. San Luis Reservoir (SWP), End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3-1. San Luis Reservoir (SWP), End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	532	574	700	925	1,067	1,067	964	800	613	595	501	545
20%	414	443	605	795	878	1,025	916	679	528	495	453	464
30%	339	357	524	656	801	942	821	637	455	450	385	433
40%	304	327	449	581	719	894	777	600	405	402	351	383
50%	254	242	362	495	657	804	749	536	361	351	316	332
60%	205	164	243	431	609	755	667	481	321	317	266	278
70%	166	88	200	369	511	664	590	454	283	298	202	222
80%	75	55	153	303	435	556	530	410	250	229	170	126
90%	55	55	59	243	380	502	458	344	212	173	91	55
Long Term												
Full Simulation Period[b]	278	281	381	540	674	792	721	562	397	384	318	330
Water Year Types[c]												
Wet (32%)	323	327	410	584	749	901	787	589	430	430	432	470
Above Normal (16%)	272	284	421	577	702	832	716	501	300	301	322	387
Below Normal (13%)	291	274	381	507	620	728	653	475	259	284	263	264
Dry (24%)	250	261	373	527	650	760	738	623	482	481	303	277
Critical (15%)	220	218	286	457	571	625	615	548	415	305	145	114

Alternative 1

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	847	998	1,067	1,067	1,067	1,067	1,067	1,001	925	811	783
20%	623	695	894	1,067	1,067	1,067	1,067	1,063	911	769	571	617
30%	552	660	803	1,067	1,067	1,067	1,067	1,035	886	713	534	544
40%	482	579	680	977	1,067	1,067	1,067	1,002	849	681	501	494
50%	452	474	622	882	1,067	1,067	1,067	974	826	651	464	465
60%	352	406	487	800	1,066	1,067	1,067	948	779	628	419	414
70%	212	268	439	664	953	1,067	1,027	934	739	604	394	248
80%	133	166	287	585	850	1,029	994	883	702	539	344	186
90%	55	77	130	486	740	941	921	800	643	474	207	117
Long Term												
Full Simulation Period[b]	422	475	589	825	966	1,025	1,014	949	805	657	475	433
Water Year Types[c]												
Wet (32%)	517	595	756	960	1,049	1,066	1,066	1,030	898	809	661	665
Above Normal (16%)	377	462	618	898	1,010	1,049	1,043	957	753	635	495	465
Below Normal (13%)	558	616	705	941	1,032	1,060	1,023	920	784	671	426	359
Dry (24%)	324	352	430	692	901	1,029	1,012	951	820	606	404	329
Critical (15%)	306	304	358	569	786	872	863	787	651	422	213	137

Alternative 1 minus No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	305	273	297	142	0	0	103	267	387	330	310	238
20%	209	251	289	272	189	42	151	384	382	274	118	153
30%	213	303	279	411	266	125	246	398	431	263	149	111
40%	178	252	231	395	348	173	290	402	444	279	150	110
50%	199	232	260	388	410	263	318	438	466	300	148	133
60%	147	242	245	369	457	312	400	467	458	310	153	136
70%	46	180	239	295	442	403	437	479	456	306	192	26
80%	58	111	134	283	415	474	464	473	452	310	174	60
90%	0	22	71	243	360	439	464	457	431	301	117	62
Long Term												
Full Simulation Period[b]	144	194	209	285	292	233	293	387	408	273	156	103
Water Year Types[c]												
Wet (32%)	194	268	346	376	300	164	279	441	468	379	229	195
Above Normal (16%)	106	178	196	321	308	216	327	456	454	334	173	78
Below Normal (13%)	267	342	325	434	412	332	369	444	525	387	162	95
Dry (24%)	74	91	57	164	250	269	274	328	338	125	101	52
Critical (15%)	85	86	71	112	216	247	248	240	237	118	67	23

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3-2. San Luis Reservoir (SWP), End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	532	574	700	925	1,067	1,067	964	800	613	595	501	545
20%	414	443	605	795	878	1,025	916	679	528	495	453	464
30%	339	357	524	656	801	942	821	637	455	450	385	433
40%	304	327	449	581	719	894	777	600	405	402	351	383
50%	254	242	362	495	657	804	749	536	361	351	316	332
60%	205	164	243	431	609	755	667	481	321	317	266	278
70%	166	88	200	369	511	664	590	454	283	298	202	222
80%	75	55	153	303	435	556	530	410	250	229	170	126
90%	55	55	59	243	380	502	458	344	212	173	91	55
Long Term												
Full Simulation Period[b]	278	281	381	540	674	792	721	562	397	384	318	330
Water Year Types[c]												
Wet (32%)	323	327	410	584	749	901	787	589	430	430	432	470
Above Normal (16%)	272	284	421	577	702	832	716	501	300	301	322	387
Below Normal (13%)	291	274	381	507	620	728	653	475	259	284	263	264
Dry (24%)	250	261	373	527	650	760	738	623	482	481	303	277
Critical (15%)	220	218	286	457	571	625	615	548	415	305	145	114

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	791	864	912	1,049	1,067	1,067	1,067	1,067	951	856	774	756
20%	663	730	806	968	1,067	1,067	1,067	1,020	838	752	622	618
30%	552	618	701	854	1,002	1,067	1,067	983	783	706	542	564
40%	457	512	628	801	922	1,055	1,032	925	712	642	522	519
50%	375	451	582	720	835	937	973	867	659	604	479	445
60%	302	411	477	619	774	899	876	743	594	549	436	337
70%	226	286	399	540	671	820	802	708	545	489	331	306
80%	119	181	239	408	598	695	726	603	481	427	290	196
90%	55	57	143	341	415	534	570	524	406	320	182	57
Long Term												
Full Simulation Period[b]	410	467	547	689	805	885	890	813	664	598	471	434
Water Year Types[c]												
Wet (32%)	502	578	649	809	939	1,014	1,032	989	844	794	684	674
Above Normal (16%)	355	444	556	703	847	925	938	857	633	582	526	521
Below Normal (13%)	504	566	652	737	823	899	860	690	470	480	420	343
Dry (24%)	348	396	487	624	727	836	845	773	667	574	359	289
Critical (15%)	283	279	317	482	581	630	631	563	482	336	182	147

Alternative 3 minus No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	259	290	212	124	0	0	103	267	338	262	274	211
20%	248	287	201	174	189	42	151	341	310	258	169	154
30%	213	261	177	198	202	125	246	345	328	255	157	131
40%	153	186	178	220	203	161	255	325	307	240	171	135
50%	121	209	220	226	177	133	224	331	299	253	163	113
60%	97	247	235	188	165	144	208	262	273	231	169	60
70%	59	197	199	171	160	156	212	254	262	191	129	84
80%	44	126	85	106	164	139	196	193	231	198	120	70
90%	0	2	84	98	35	31	113	181	194	147	92	2
Long Term												
Full Simulation Period[b]	132	186	166	149	131	93	169	251	268	213	153	105
Water Year Types[c]												
Wet (32%)	179	251	239	225	190	112	245	400	414	364	253	204
Above Normal (16%)	84	160	135	126	145	93	222	356	334	281	204	135
Below Normal (13%)	213	293	271	230	203	171	207	214	211	196	157	79
Dry (24%)	98	136	114	96	77	76	107	151	185	93	56	12
Critical (15%)	63	62	31	25	11	5	15	16	67	31	36	33

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3-3. San Luis Reservoir (SWP), End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	532	574	700	925	1,067	1,067	964	800	613	595	501	545
20%	414	443	605	795	878	1,025	916	679	528	495	453	464
30%	339	357	524	656	801	942	821	637	455	450	385	433
40%	304	327	449	581	719	894	777	600	405	402	351	383
50%	254	242	362	495	657	804	749	536	361	351	316	332
60%	205	164	243	431	609	755	667	481	321	317	266	278
70%	166	88	200	369	511	664	590	454	283	298	202	222
80%	75	55	153	303	435	556	530	410	250	229	170	126
90%	55	55	59	243	380	502	458	344	212	173	91	55
Long Term												
Full Simulation Period[b]	278	281	381	540	674	792	721	562	397	384	318	330
Water Year Types[c]												
Wet (32%)	323	327	410	584	749	901	787	589	430	430	432	470
Above Normal (16%)	272	284	421	577	702	832	716	501	300	301	322	387
Below Normal (13%)	291	274	381	507	620	728	653	475	259	284	263	264
Dry (24%)	250	261	373	527	650	760	738	623	482	481	303	277
Critical (15%)	220	218	286	457	571	625	615	548	415	305	145	114

Alternative 5

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	512	520	706	913	1,065	1,067	935	733	620	580	548	561
20%	431	476	577	750	867	1,013	899	664	489	492	478	500
30%	373	369	500	647	806	943	827	630	422	448	415	450
40%	334	318	463	573	724	874	764	566	381	379	358	403
50%	290	235	363	496	666	803	734	507	332	325	307	347
60%	201	194	285	432	618	750	639	460	289	296	251	271
70%	144	116	234	385	525	672	583	424	273	270	194	204
80%	66	66	176	344	446	583	552	369	233	217	113	84
90%	55	55	74	249	378	477	442	342	178	181	84	55
Long Term												
Full Simulation Period[b]	285	283	387	543	678	797	710	533	374	370	318	333
Water Year Types[c]												
Wet (32%)	347	350	433	594	758	912	805	609	459	466	475	513
Above Normal (16%)	275	276	416	579	712	842	727	505	306	309	329	394
Below Normal (13%)	315	286	407	533	641	749	649	451	235	258	255	260
Dry (24%)	249	258	375	530	652	760	690	532	398	420	262	243
Critical (15%)	193	187	256	428	546	603	572	476	350	249	120	95

Alternative 5 minus No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-21	-54	5	-12	-2	0	-29	-68	6	-15	48	15
20%	17	32	-28	-45	-11	-12	-16	-15	-39	-3	25	36
30%	34	12	-24	-9	6	1	6	-7	-33	-2	30	17
40%	30	-9	14	-9	5	-20	-12	-34	-24	-23	7	19
50%	36	-7	2	2	8	-2	-15	-29	-29	-26	-9	16
60%	-4	30	43	1	9	-5	-29	-21	-32	-21	-15	-7
70%	-23	27	34	16	14	8	-7	-30	-10	-27	-8	-18
80%	-9	10	23	42	11	27	21	-41	-18	-12	-57	-42
90%	0	0	15	6	-1	-26	-15	-2	-34	8	-7	0
Long Term												
Full Simulation Period[b]	7	2	6	3	4	5	-11	-29	-23	-14	0	3
Water Year Types[c]												
Wet (32%)	24	23	24	10	9	11	18	20	29	36	43	43
Above Normal (16%)	3	-9	-6	2	10	9	12	4	7	7	7	8
Below Normal (13%)	24	12	26	26	20	21	-4	-24	-24	-25	-8	-3
Dry (24%)	-1	-3	2	2	1	0	-48	-91	-83	-61	-41	-34
Critical (15%)	-28	-30	-30	-29	-24	-22	-44	-71	-65	-55	-26	-19

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3-4. San Luis Reservoir (SWP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	847	998	1,067	1,067	1,067	1,067	1,067	1,001	925	811	783
20%	623	695	894	1,067	1,067	1,067	1,067	1,063	911	769	571	617
30%	552	660	803	1,067	1,067	1,067	1,067	1,035	886	713	534	544
40%	482	579	680	977	1,067	1,067	1,067	1,002	849	681	501	494
50%	452	474	622	882	1,067	1,067	1,067	974	826	651	464	465
60%	352	406	487	800	1,066	1,067	1,067	948	779	628	419	414
70%	212	268	439	664	953	1,067	1,027	934	739	604	394	248
80%	133	166	287	585	850	1,029	994	883	702	539	344	186
90%	55	77	130	486	740	941	921	800	643	474	207	117
Long Term												
Full Simulation Period[b]	422	475	589	825	966	1,025	1,014	949	805	657	475	433
Water Year Types[c]												
Wet (32%)	517	595	756	960	1,049	1,066	1,066	1,030	898	809	661	665
Above Normal (16%)	377	462	618	898	1,010	1,049	1,043	957	753	635	495	465
Below Normal (13%)	558	616	705	941	1,032	1,060	1,023	920	784	671	426	359
Dry (24%)	324	352	430	692	901	1,029	1,012	951	820	606	404	329
Critical (15%)	306	304	358	569	786	872	863	787	651	422	213	137

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	532	574	700	925	1,067	1,067	964	800	613	595	501	545
20%	414	443	605	795	878	1,025	916	679	528	495	453	464
30%	339	357	524	656	801	942	821	637	455	450	385	433
40%	304	327	449	581	719	894	777	600	405	402	351	383
50%	254	242	362	495	657	804	749	536	361	351	316	332
60%	205	164	243	431	609	755	667	481	321	317	266	278
70%	166	88	200	369	511	664	590	454	283	298	202	222
80%	75	55	153	303	435	556	530	410	250	229	170	126
90%	55	55	59	243	380	502	458	344	212	173	91	55
Long Term												
Full Simulation Period[b]	278	281	381	540	674	792	721	562	397	384	318	330
Water Year Types[c]												
Wet (32%)	323	327	410	584	749	901	787	589	430	430	432	470
Above Normal (16%)	272	284	421	577	702	832	716	501	300	301	322	387
Below Normal (13%)	291	274	381	507	620	728	653	475	259	284	263	264
Dry (24%)	250	261	373	527	650	760	738	623	482	481	303	277
Critical (15%)	220	218	286	457	571	625	615	548	415	305	145	114

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-305	-273	-297	-142	0	0	-103	-267	-387	-330	-310	-238
20%	-209	-251	-289	-272	-189	-42	-151	-384	-382	-274	-118	-153
30%	-213	-303	-279	-411	-266	-125	-246	-398	-431	-263	-149	-111
40%	-178	-252	-231	-395	-348	-173	-290	-402	-444	-279	-150	-110
50%	-199	-232	-260	-388	-410	-263	-318	-438	-466	-300	-148	-133
60%	-147	-242	-245	-369	-457	-312	-400	-467	-458	-310	-153	-136
70%	-46	-180	-239	-295	-442	-403	-437	-479	-456	-306	-192	-26
80%	-58	-111	-134	-283	-415	-474	-464	-473	-452	-310	-174	-60
90%	0	-22	-71	-243	-360	-439	-464	-457	-431	-301	-117	-62
Long Term												
Full Simulation Period[b]	-144	-194	-209	-285	-292	-233	-293	-387	-408	-273	-156	-103
Water Year Types[c]												
Wet (32%)	-194	-268	-346	-376	-300	-164	-279	-441	-468	-379	-229	-195
Above Normal (16%)	-106	-178	-196	-321	-308	-216	-327	-456	-454	-334	-173	-78
Below Normal (13%)	-267	-342	-325	-434	-412	-332	-369	-444	-525	-387	-162	-95
Dry (24%)	-74	-91	-57	-164	-250	-269	-274	-328	-338	-125	-101	-52
Critical (15%)	-85	-86	-71	-112	-216	-247	-248	-240	-237	-118	-67	-23

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3-5. San Luis Reservoir (SWP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	847	998	1,067	1,067	1,067	1,067	1,067	1,001	925	811	783
20%	623	695	894	1,067	1,067	1,067	1,067	1,063	911	769	571	617
30%	552	660	803	1,067	1,067	1,067	1,067	1,035	886	713	534	544
40%	482	579	680	977	1,067	1,067	1,067	1,002	849	681	501	494
50%	452	474	622	882	1,067	1,067	1,067	974	826	651	464	465
60%	352	406	487	800	1,066	1,067	1,067	948	779	628	419	414
70%	212	268	439	664	953	1,067	1,027	934	739	604	394	248
80%	133	166	287	585	850	1,029	994	883	702	539	344	186
90%	55	77	130	486	740	941	921	800	643	474	207	117
Long Term												
Full Simulation Period[b]	422	475	589	825	966	1,025	1,014	949	805	657	475	433
Water Year Types[c]												
Wet (32%)	517	595	756	960	1,049	1,066	1,066	1,030	898	809	661	665
Above Normal (16%)	377	462	618	898	1,010	1,049	1,043	957	753	635	495	465
Below Normal (13%)	558	616	705	941	1,032	1,060	1,023	920	784	671	426	359
Dry (24%)	324	352	430	692	901	1,029	1,012	951	820	606	404	329
Critical (15%)	306	304	358	569	786	872	863	787	651	422	213	137

Alternative 3

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	791	864	912	1,049	1,067	1,067	1,067	1,067	951	856	774	756
20%	663	730	806	968	1,067	1,067	1,067	1,020	838	752	622	618
30%	552	618	701	854	1,002	1,067	1,067	983	783	706	542	564
40%	457	512	628	801	922	1,055	1,032	925	712	642	522	519
50%	375	451	582	720	835	937	973	867	659	604	479	445
60%	302	411	477	619	774	899	876	743	594	549	436	337
70%	226	286	399	540	671	820	802	708	545	489	331	306
80%	119	181	239	408	598	695	726	603	481	427	290	196
90%	55	57	143	341	415	534	570	524	406	320	182	57
Long Term												
Full Simulation Period[b]	410	467	547	689	805	885	890	813	664	598	471	434
Water Year Types[c]												
Wet (32%)	502	578	649	809	939	1,014	1,032	989	844	794	684	674
Above Normal (16%)	355	444	556	703	847	925	938	857	633	582	526	521
Below Normal (13%)	504	566	652	737	823	899	860	690	470	480	420	343
Dry (24%)	348	396	487	624	727	836	845	773	667	574	359	289
Critical (15%)	283	279	317	482	581	630	631	563	482	336	182	147

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-46	17	-86	-18	0	0	0	0	-49	-68	-37	-27
20%	40	36	-88	-99	0	0	0	-43	-72	-16	51	1
30%	0	-42	-101	-213	-65	0	0	-53	-103	-8	8	20
40%	-25	-67	-53	-175	-145	-12	-35	-77	-138	-39	20	25
50%	-78	-23	-40	-162	-232	-130	-94	-107	-167	-47	15	-20
60%	-50	5	-10	-181	-292	-168	-191	-205	-185	-79	17	-76
70%	13	17	-41	-124	-282	-247	-224	-226	-193	-115	-63	58
80%	-14	15	-49	-177	-252	-335	-268	-280	-221	-112	-54	11
90%	0	-19	13	-145	-325	-408	-351	-276	-237	-154	-25	-60
Long Term												
Full Simulation Period[b]	-13	-8	-43	-135	-161	-140	-124	-136	-140	-59	-4	2
Water Year Types[c]												
Wet (32%)	-15	-17	-107	-151	-110	-52	-34	-41	-54	-15	24	9
Above Normal (16%)	-22	-18	-62	-195	-163	-124	-105	-100	-120	-52	31	56
Below Normal (13%)	-54	-49	-53	-204	-209	-160	-162	-230	-314	-191	-5	-16
Dry (24%)	24	45	57	-68	-173	-193	-167	-178	-153	-32	-45	-40
Critical (15%)	-22	-24	-41	-87	-205	-242	-233	-224	-169	-87	-31	10

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3-6. San Luis Reservoir (SWP), End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	847	998	1,067	1,067	1,067	1,067	1,067	1,001	925	811	783
20%	623	695	894	1,067	1,067	1,067	1,067	1,063	911	769	571	617
30%	552	660	803	1,067	1,067	1,067	1,067	1,035	886	713	534	544
40%	482	579	680	977	1,067	1,067	1,067	1,002	849	681	501	494
50%	452	474	622	882	1,067	1,067	1,067	974	826	651	464	465
60%	352	406	487	800	1,066	1,067	1,067	948	779	628	419	414
70%	212	268	439	664	953	1,067	1,027	934	739	604	394	248
80%	133	166	287	585	850	1,029	994	883	702	539	344	186
90%	55	77	130	486	740	941	921	800	643	474	207	117
Long Term												
Full Simulation Period[b]	422	475	589	825	966	1,025	1,014	949	805	657	475	433
Water Year Types[c]												
Wet (32%)	517	595	756	960	1,049	1,066	1,066	1,030	898	809	661	665
Above Normal (16%)	377	462	618	898	1,010	1,049	1,043	957	753	635	495	465
Below Normal (13%)	558	616	705	941	1,032	1,060	1,023	920	784	671	426	359
Dry (24%)	324	352	430	692	901	1,029	1,012	951	820	606	404	329
Critical (15%)	306	304	358	569	786	872	863	787	651	422	213	137

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	512	520	706	913	1,065	1,067	935	733	620	580	548	561
20%	431	476	577	750	867	1,013	899	664	489	492	478	500
30%	373	369	500	647	806	943	827	630	422	448	415	450
40%	334	318	463	573	724	874	764	566	381	379	358	403
50%	290	235	363	496	666	803	734	507	332	325	307	347
60%	201	194	285	432	618	750	639	460	289	296	251	271
70%	144	116	234	385	525	672	583	424	273	270	194	204
80%	66	66	176	344	446	583	552	369	233	217	113	84
90%	55	55	74	249	378	477	442	342	178	181	84	55
Long Term												
Full Simulation Period[b]	285	283	387	543	678	797	710	533	374	370	318	333
Water Year Types[c]												
Wet (32%)	347	350	433	594	758	912	805	609	459	466	475	513
Above Normal (16%)	275	276	416	579	712	842	727	505	306	309	329	394
Below Normal (13%)	315	286	407	533	641	749	649	451	235	258	255	260
Dry (24%)	249	258	375	530	652	760	690	532	398	420	262	243
Critical (15%)	193	187	256	428	546	603	572	476	350	249	120	95

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-325	-327	-292	-154	-2	0	-132	-334	-381	-345	-263	-223
20%	-192	-219	-317	-317	-200	-54	-168	-399	-421	-277	-93	-117
30%	-179	-291	-302	-420	-261	-124	-240	-405	-464	-265	-118	-94
40%	-148	-261	-217	-404	-343	-193	-303	-436	-468	-302	-144	-91
50%	-163	-239	-259	-386	-401	-264	-333	-467	-495	-326	-157	-117
60%	-151	-212	-202	-368	-448	-317	-428	-488	-490	-332	-168	-143
70%	-68	-152	-205	-279	-428	-395	-444	-509	-466	-333	-200	-44
80%	-67	-100	-111	-241	-404	-447	-442	-514	-469	-323	-231	-101
90%	0	-22	-56	-237	-361	-465	-479	-458	-465	-294	-124	-62
Long Term												
Full Simulation Period[b]	-137	-192	-203	-281	-288	-228	-304	-416	-431	-286	-156	-100
Water Year Types[c]												
Wet (32%)	-170	-245	-322	-366	-292	-153	-261	-421	-439	-342	-186	-152
Above Normal (16%)	-102	-187	-202	-319	-298	-207	-315	-452	-447	-326	-165	-71
Below Normal (13%)	-242	-330	-299	-408	-391	-310	-373	-469	-549	-412	-170	-98
Dry (24%)	-75	-94	-55	-162	-249	-269	-323	-419	-422	-186	-142	-86
Critical (15%)	-113	-116	-101	-141	-240	-269	-292	-311	-302	-173	-93	-42

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

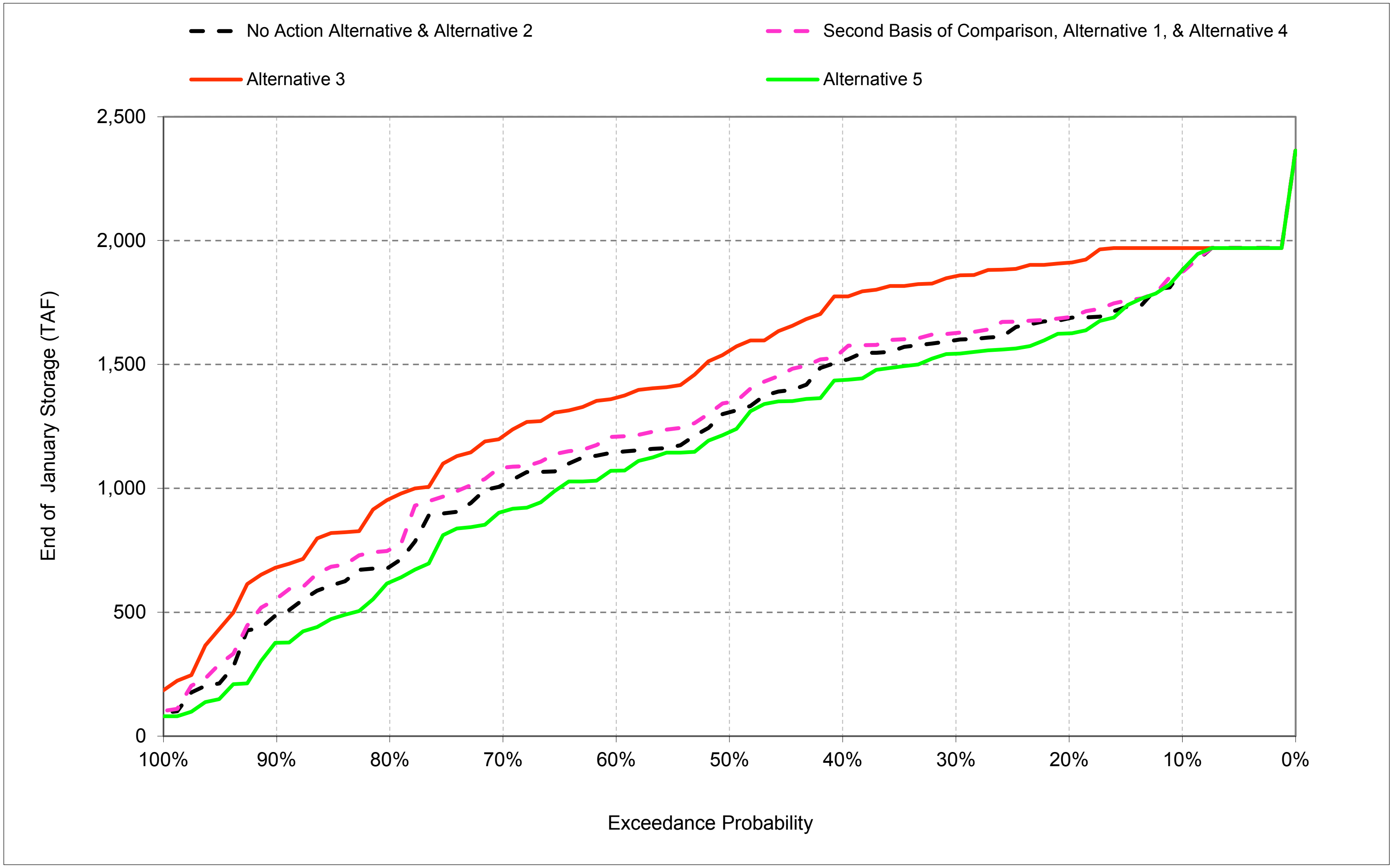
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

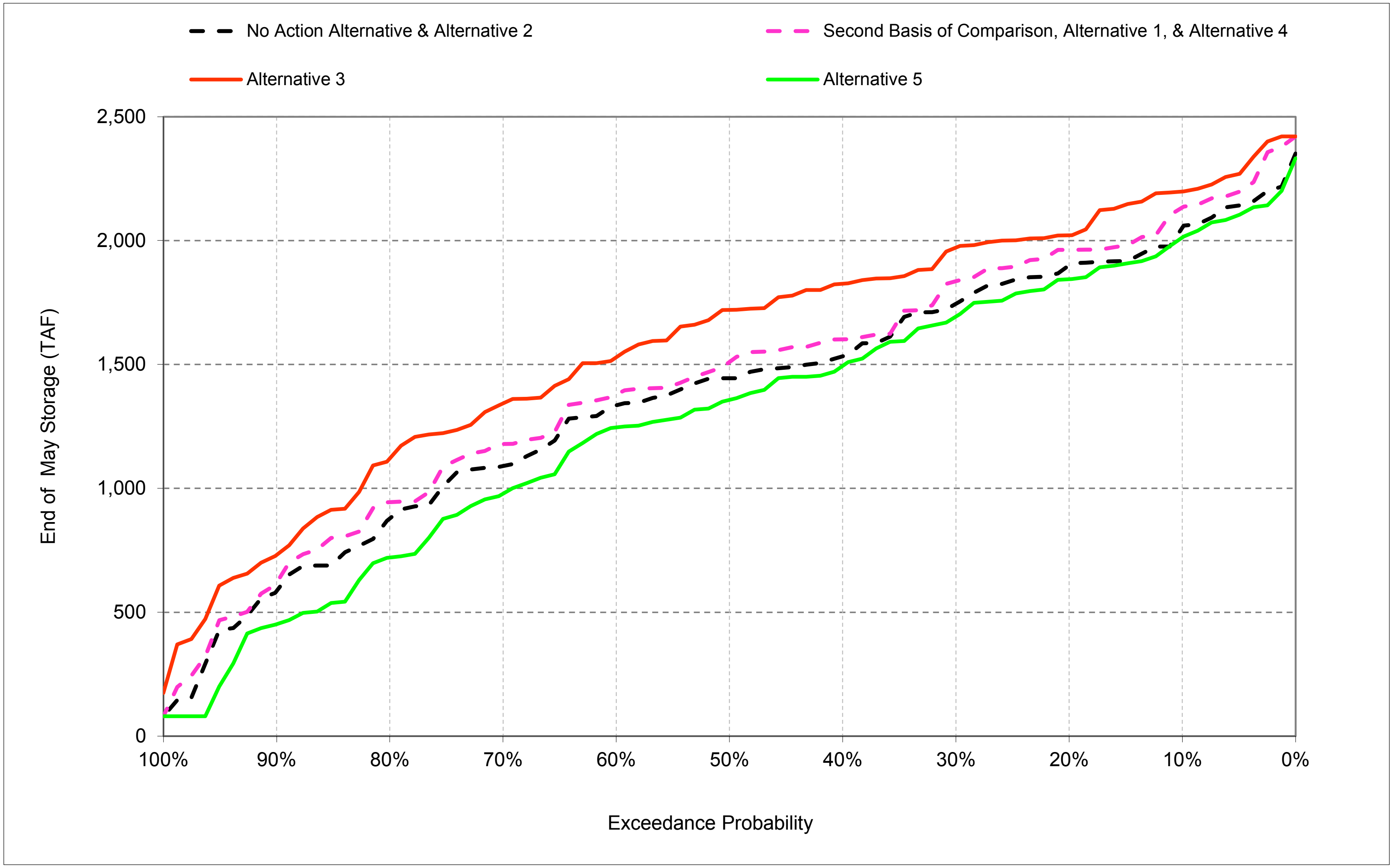
C.6. New Melones Storage

Figure C-6-1. New Melones Reservoir, End of January Storage



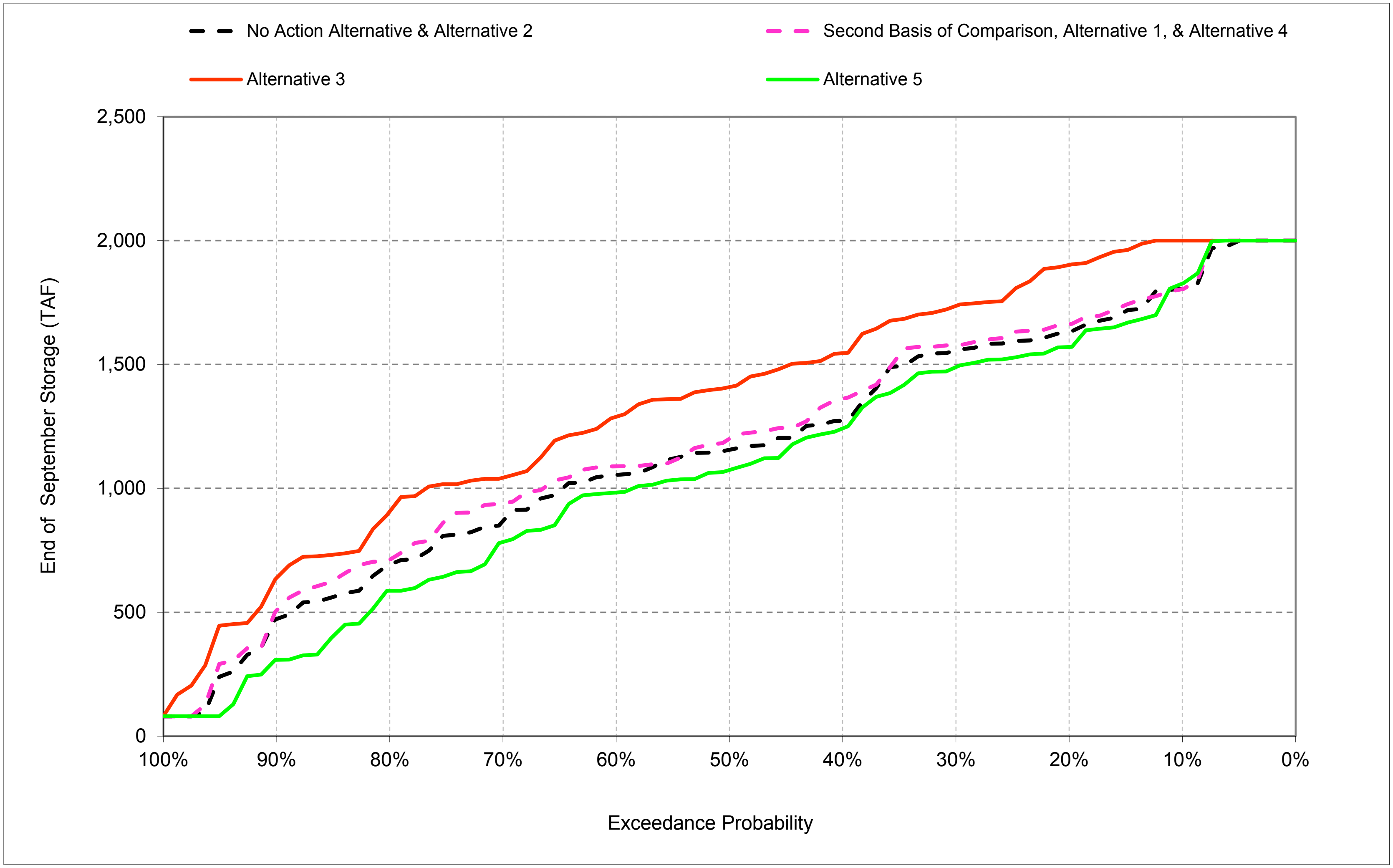
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-6-2. New Melones Reservoir, End of May Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-6-3. New Melones Reservoir, End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-1. New Melones Reservoir, End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (32%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (16%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (13%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (24%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (15%)	624	623	638	645	661	656	602	554	526	476	431	408

Alternative 1

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Alternative 1 minus No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	35	22	4	-5	21	50	71	81	-4	-2	0	-1
20%	45	24	19	4	79	129	50	62	7	33	28	30
30%	42	48	59	29	11	15	65	92	51	36	31	21
40%	94	98	40	42	27	58	56	68	80	77	82	89
50%	79	84	95	40	36	7	23	66	75	74	68	45
60%	64	51	44	63	60	68	95	44	41	25	32	35
70%	75	77	54	69	61	42	66	89	59	69	72	71
80%	66	54	46	69	91	124	79	66	31	28	25	19
90%	77	82	76	67	126	94	34	33	67	53	40	35
Long Term												
Full Simulation Period[b]	59	53	46	42	40	48	64	60	38	37	36	35
Water Year Types[c]												
Wet (32%)	64	56	49	44	43	70	75	84	25	27	30	28
Above Normal (16%)	62	56	50	46	43	48	68	59	49	46	44	42
Below Normal (13%)	69	61	52	46	40	41	71	63	55	54	52	51
Dry (24%)	55	49	43	40	35	33	56	45	44	43	42	42
Critical (15%)	44	40	37	36	35	34	45	31	31	23	18	18

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-2. New Melones Reservoir, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (32%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (16%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (13%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (24%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (15%)	624	623	638	645	661	656	602	554	526	476	431	408

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,967	1,954	1,970	1,970	1,970	2,030	2,062	2,198	2,284	2,209	2,103	2,000
20%	1,901	1,905	1,913	1,911	1,970	2,026	1,988	2,021	2,154	2,055	1,955	1,902
30%	1,729	1,727	1,790	1,857	1,925	1,975	1,910	1,972	1,983	1,877	1,785	1,736
40%	1,582	1,596	1,668	1,775	1,851	1,884	1,838	1,826	1,796	1,697	1,601	1,546
50%	1,427	1,416	1,439	1,556	1,660	1,719	1,674	1,721	1,675	1,561	1,460	1,409
60%	1,308	1,316	1,318	1,366	1,426	1,494	1,488	1,529	1,525	1,432	1,335	1,289
70%	1,049	1,073	1,187	1,210	1,289	1,269	1,265	1,343	1,276	1,180	1,092	1,043
80%	875	862	919	957	1,020	1,099	1,056	1,121	1,071	1,001	938	907
90%	635	646	646	681	779	803	734	731	835	756	682	639
Long Term												
Full Simulation Period[b]	1,347	1,351	1,382	1,436	1,491	1,541	1,534	1,580	1,595	1,506	1,408	1,353
Water Year Types[c]												
Wet (32%)	1,562	1,567	1,618	1,720	1,792	1,871	1,906	2,049	2,146	2,057	1,934	1,855
Above Normal (16%)	1,269	1,295	1,356	1,442	1,530	1,620	1,634	1,713	1,720	1,627	1,529	1,481
Below Normal (13%)	1,530	1,536	1,550	1,570	1,620	1,650	1,614	1,617	1,599	1,501	1,403	1,357
Dry (24%)	1,327	1,320	1,326	1,342	1,378	1,409	1,380	1,360	1,319	1,224	1,137	1,091
Critical (15%)	828	824	836	846	866	860	803	751	719	653	593	563

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	202	194	147	90	39	50	117	146	209	231	233	195
20%	289	275	266	224	202	227	155	121	277	257	264	269
30%	196	192	234	259	238	246	224	227	197	170	180	180
40%	311	322	236	260	257	266	245	293	256	264	268	273
50%	306	288	286	248	224	185	213	276	283	279	271	253
60%	284	274	238	220	228	221	210	194	249	234	233	235
70%	167	162	201	195	251	213	185	252	188	186	182	175
80%	230	204	235	273	285	290	221	243	198	193	205	214
90%	205	212	206	193	239	234	159	145	206	190	175	167
Long Term												
Full Simulation Period[b]	214	209	202	199	186	193	197	206	213	206	200	194
Water Year Types[c]												
Wet (32%)	183	177	165	158	126	147	149	172	178	168	161	152
Above Normal (16%)	239	235	231	228	213	213	220	229	253	255	252	250
Below Normal (13%)	236	231	224	219	207	212	224	234	239	233	228	224
Dry (24%)	232	226	220	220	222	221	226	228	232	228	223	221
Critical (15%)	205	201	198	201	204	204	202	197	193	177	162	154

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-3. New Melones Reservoir, End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (32%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (16%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (13%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (24%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (15%)	624	623	638	645	661	656	602	554	526	476	431	408

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,831	1,881	1,949	1,969	1,908	2,012	2,117	2,013	1,900	1,826
20%	1,588	1,587	1,601	1,626	1,782	1,794	1,752	1,844	1,816	1,740	1,631	1,571
30%	1,468	1,459	1,490	1,544	1,630	1,672	1,679	1,693	1,721	1,633	1,531	1,489
40%	1,249	1,252	1,347	1,437	1,522	1,573	1,512	1,494	1,505	1,405	1,297	1,242
50%	1,040	1,058	1,142	1,227	1,437	1,455	1,393	1,357	1,289	1,190	1,100	1,074
60%	976	997	1,023	1,072	1,134	1,161	1,159	1,246	1,218	1,130	1,032	983
70%	766	802	855	907	938	973	1,006	978	991	900	821	783
80%	554	553	620	621	623	697	651	721	761	686	617	587
90%	285	298	299	377	429	449	386	452	492	423	349	308
Long Term												
Full Simulation Period[b]	1,063	1,073	1,112	1,169	1,239	1,284	1,265	1,287	1,299	1,221	1,134	1,086
Water Year Types[c]												
Wet (32%)	1,309	1,321	1,388	1,496	1,602	1,668	1,704	1,812	1,906	1,833	1,722	1,653
Above Normal (16%)	983	1,014	1,079	1,168	1,271	1,361	1,363	1,413	1,396	1,302	1,207	1,162
Below Normal (13%)	1,210	1,220	1,242	1,267	1,329	1,354	1,298	1,276	1,254	1,163	1,071	1,028
Dry (24%)	1,018	1,018	1,030	1,045	1,081	1,114	1,066	1,031	990	903	823	781
Critical (15%)	558	559	570	578	597	591	506	449	433	391	355	336

Alternative 5 minus No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1	0	8	1	18	-11	-37	-40	42	35	31	21
20%	-24	-44	-46	-61	13	-5	-82	-56	-60	-58	-60	-62
30%	-65	-75	-65	-54	-56	-57	-7	-52	-64	-73	-74	-67
40%	-22	-22	-85	-77	-72	-45	-81	-39	-34	-28	-36	-31
50%	-81	-69	-11	-80	1	-80	-68	-87	-104	-93	-89	-82
60%	-48	-46	-57	-74	-65	-112	-119	-89	-59	-69	-70	-71
70%	-116	-109	-131	-108	-100	-84	-74	-112	-96	-94	-90	-85
80%	-92	-105	-64	-63	-112	-112	-184	-157	-111	-122	-116	-106
90%	-145	-137	-141	-111	-112	-120	-188	-134	-138	-144	-158	-164
Long Term												
Full Simulation Period[b]	-69	-69	-68	-68	-67	-64	-73	-86	-82	-79	-75	-73
Water Year Types[c]												
Wet (32%)	-70	-69	-65	-66	-64	-56	-54	-65	-62	-57	-51	-49
Above Normal (16%)	-46	-46	-46	-46	-46	-46	-51	-71	-71	-70	-70	-70
Below Normal (13%)	-84	-84	-84	-84	-84	-84	-93	-107	-106	-105	-105	-104
Dry (24%)	-77	-76	-76	-76	-75	-74	-88	-100	-97	-94	-91	-89
Critical (15%)	-66	-64	-68	-66	-64	-65	-95	-105	-93	-84	-76	-73

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-4. New Melones Reservoir, End of Month Storage

Second Basis of Comparison

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

No Action Alternative

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (32%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (16%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (13%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (24%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (15%)	624	623	638	645	661	656	602	554	526	476	431	408

No Action Alternative minus Second Basis of Comparison

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-35	-22	-4	5	-21	-50	-71	-81	4	2	0	1
20%	-45	-24	-19	-4	-79	-129	-50	-62	-7	-33	-28	-30
30%	-42	-48	-59	-29	-11	-15	-65	-92	-51	-36	-31	-21
40%	-94	-98	-40	-42	-27	-58	-56	-68	-80	-77	-82	-89
50%	-79	-84	-95	-40	-36	-7	-23	-66	-75	-74	-68	-45
60%	-64	-51	-44	-63	-60	-68	-95	-44	-41	-25	-32	-35
70%	-75	-77	-54	-69	-61	-42	-66	-89	-59	-69	-72	-71
80%	-66	-54	-46	-69	-91	-124	-79	-66	-31	-28	-25	-19
90%	-77	-82	-76	-67	-126	-94	-34	-33	-67	-53	-40	-35
Long Term												
Full Simulation Period[b]	-59	-53	-46	-42	-40	-48	-64	-60	-38	-37	-36	-35
Water Year Types[c]												
Wet (32%)	-64	-56	-49	-44	-43	-70	-75	-84	-25	-27	-30	-28
Above Normal (16%)	-62	-56	-50	-46	-43	-48	-68	-59	-49	-46	-44	-42
Below Normal (13%)	-69	-61	-52	-46	-40	-41	-71	-63	-55	-54	-52	-51
Dry (24%)	-55	-49	-43	-40	-35	-33	-56	-45	-44	-43	-42	-42
Critical (15%)	-44	-40	-37	-36	-35	-34	-45	-31	-31	-23	-18	-18

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-5. New Melones Reservoir, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	1,954	1,970	1,970	1,970	2,030	2,062	2,198	2,284	2,209	2,103	2,000
20%	1,901	1,905	1,913	1,911	1,970	2,026	1,988	2,021	2,154	2,055	1,955	1,902
30%	1,729	1,727	1,790	1,857	1,925	1,975	1,910	1,972	1,983	1,877	1,785	1,736
40%	1,582	1,596	1,668	1,775	1,851	1,884	1,838	1,826	1,796	1,697	1,601	1,546
50%	1,427	1,416	1,439	1,556	1,660	1,719	1,674	1,721	1,675	1,561	1,460	1,409
60%	1,308	1,316	1,318	1,366	1,426	1,494	1,488	1,529	1,525	1,432	1,335	1,289
70%	1,049	1,073	1,187	1,210	1,289	1,269	1,265	1,343	1,276	1,180	1,092	1,043
80%	875	862	919	957	1,020	1,099	1,056	1,121	1,071	1,001	938	907
90%	635	646	646	681	779	803	734	731	835	756	682	639
Long Term												
Full Simulation Period[b]	1,347	1,351	1,382	1,436	1,491	1,541	1,534	1,580	1,595	1,506	1,408	1,353
Water Year Types[c]												
Wet (32%)	1,562	1,567	1,618	1,720	1,792	1,871	1,906	2,049	2,146	2,057	1,934	1,855
Above Normal (16%)	1,269	1,295	1,356	1,442	1,530	1,620	1,634	1,713	1,720	1,627	1,529	1,481
Below Normal (13%)	1,530	1,536	1,550	1,570	1,620	1,650	1,614	1,617	1,599	1,501	1,403	1,357
Dry (24%)	1,327	1,320	1,326	1,342	1,378	1,409	1,380	1,360	1,319	1,224	1,137	1,091
Critical (15%)	828	824	836	846	866	860	803	751	719	653	593	563

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	167	172	143	95	18	0	45	65	213	233	234	195
20%	244	251	247	220	123	98	105	59	270	224	236	239
30%	154	144	175	229	228	232	159	135	147	134	149	159
40%	217	224	196	219	230	209	189	225	176	187	186	184
50%	227	205	191	208	188	178	190	210	208	205	202	209
60%	220	223	194	157	168	153	115	150	208	209	201	200
70%	92	85	147	126	190	170	119	164	129	116	110	104
80%	164	150	190	205	194	167	142	176	168	165	180	195
90%	127	130	131	126	113	139	126	112	138	137	134	132
Long Term												
Full Simulation Period[b]	155	156	155	156	146	144	132	146	175	169	163	159
Water Year Types[c]												
Wet (32%)	119	121	116	114	83	77	73	88	153	141	131	124
Above Normal (16%)	177	179	181	181	170	165	153	170	204	208	207	208
Below Normal (13%)	167	170	172	173	167	170	153	170	184	179	175	174
Dry (24%)	177	177	177	181	187	188	170	183	188	185	181	179
Critical (15%)	161	161	162	165	170	170	157	166	162	155	144	137

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-6. New Melones Reservoir, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Alternative 5

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,831	1,881	1,949	1,969	1,908	2,012	2,117	2,013	1,900	1,826
20%	1,588	1,587	1,601	1,626	1,782	1,794	1,752	1,844	1,816	1,740	1,631	1,571
30%	1,468	1,459	1,490	1,544	1,630	1,672	1,679	1,693	1,721	1,633	1,531	1,489
40%	1,249	1,252	1,347	1,437	1,522	1,573	1,512	1,494	1,505	1,405	1,297	1,242
50%	1,040	1,058	1,142	1,227	1,437	1,455	1,393	1,357	1,289	1,190	1,100	1,074
60%	976	997	1,023	1,072	1,134	1,161	1,159	1,246	1,218	1,130	1,032	983
70%	766	802	855	907	938	973	1,006	978	991	900	821	783
80%	554	553	620	621	623	697	651	721	761	686	617	587
90%	285	298	299	377	429	449	386	452	492	423	349	308
Long Term												
Full Simulation Period[b]	1,063	1,073	1,112	1,169	1,239	1,284	1,265	1,287	1,299	1,221	1,134	1,086
Water Year Types[c]												
Wet (32%)	1,309	1,321	1,388	1,496	1,602	1,668	1,704	1,812	1,906	1,833	1,722	1,653
Above Normal (16%)	983	1,014	1,079	1,168	1,271	1,361	1,363	1,413	1,396	1,302	1,207	1,162
Below Normal (13%)	1,210	1,220	1,242	1,267	1,329	1,354	1,298	1,276	1,254	1,163	1,071	1,028
Dry (24%)	1,018	1,018	1,030	1,045	1,081	1,114	1,066	1,031	990	903	823	781
Critical (15%)	558	559	570	578	597	591	506	449	433	391	355	336

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-36	-22	4	6	-3	-61	-108	-122	46	37	31	21
20%	-69	-67	-65	-65	-66	-134	-132	-118	-68	-90	-88	-92
30%	-107	-123	-124	-83	-67	-72	-71	-143	-115	-109	-104	-88
40%	-116	-120	-126	-119	-99	-103	-137	-108	-114	-105	-118	-120
50%	-161	-153	-106	-121	-35	-86	-90	-154	-178	-167	-158	-127
60%	-112	-97	-102	-137	-125	-180	-214	-133	-100	-94	-102	-106
70%	-190	-187	-185	-177	-161	-126	-140	-201	-156	-163	-162	-156
80%	-157	-159	-109	-132	-203	-235	-263	-224	-142	-150	-141	-125
90%	-222	-219	-216	-178	-238	-215	-221	-167	-206	-196	-198	-199
Long Term												
Full Simulation Period[b]	-128	-121	-114	-110	-106	-112	-137	-146	-121	-115	-111	-108
Water Year Types[c]												
Wet (32%)	-134	-125	-114	-110	-108	-126	-129	-149	-88	-84	-81	-77
Above Normal (16%)	-108	-102	-96	-92	-89	-94	-118	-130	-120	-117	-114	-112
Below Normal (13%)	-154	-145	-137	-130	-124	-125	-164	-170	-161	-159	-157	-155
Dry (24%)	-132	-125	-119	-116	-110	-107	-144	-145	-141	-136	-133	-131
Critical (15%)	-109	-104	-104	-102	-99	-99	-140	-136	-123	-107	-95	-90

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

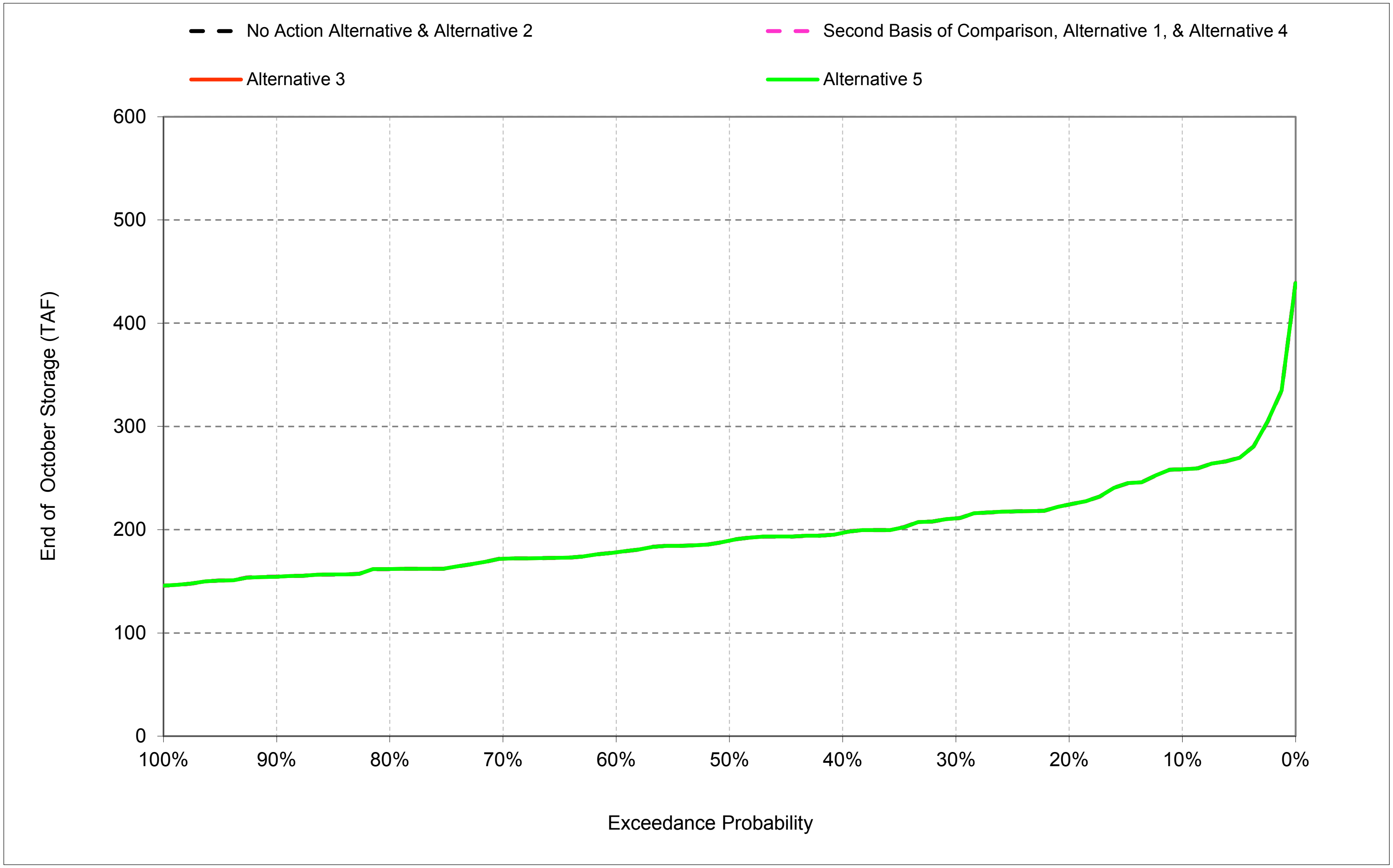
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

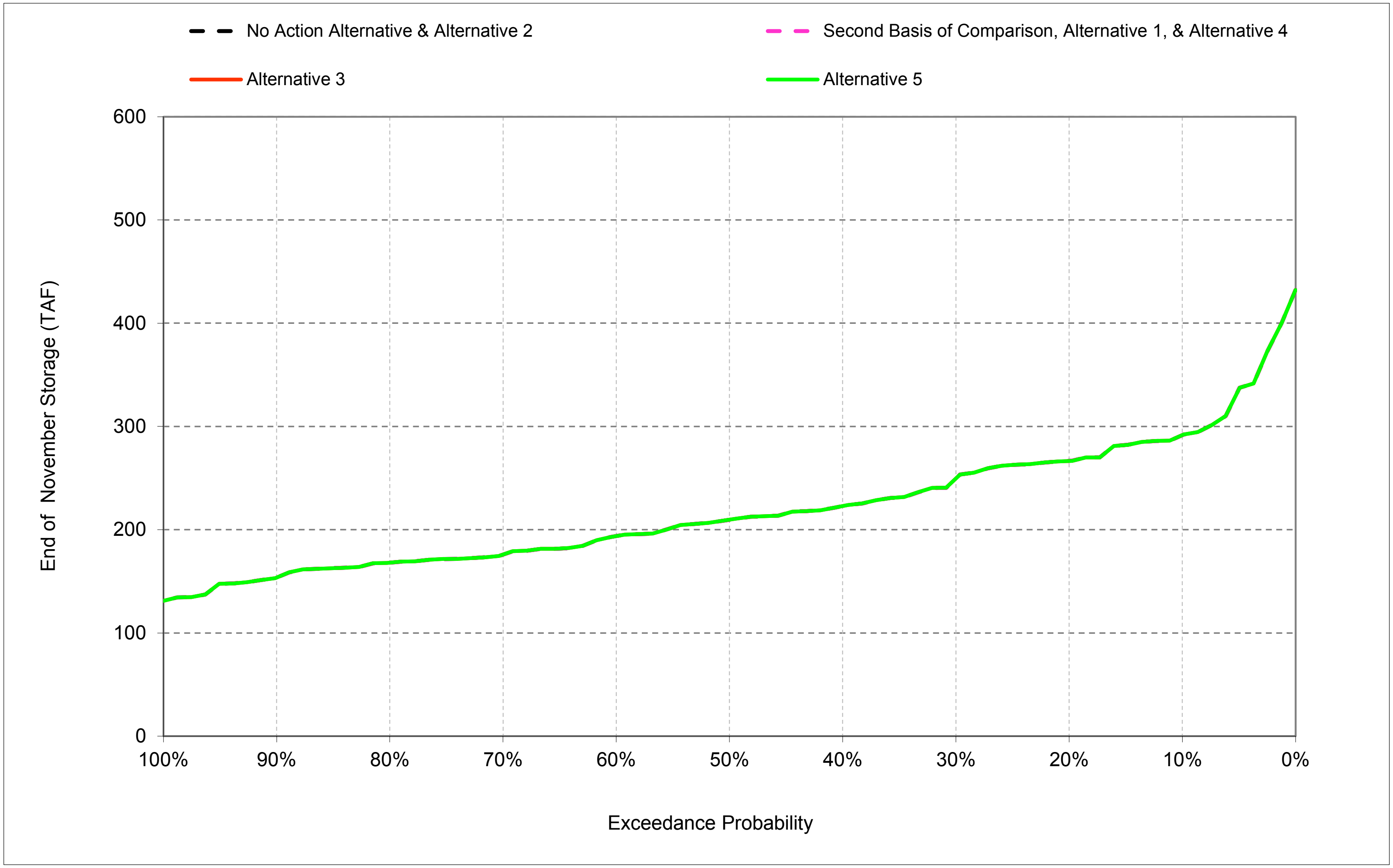
C.7. Millerton Storage

Figure C-7-1. Millerton Lake, End of October Storage



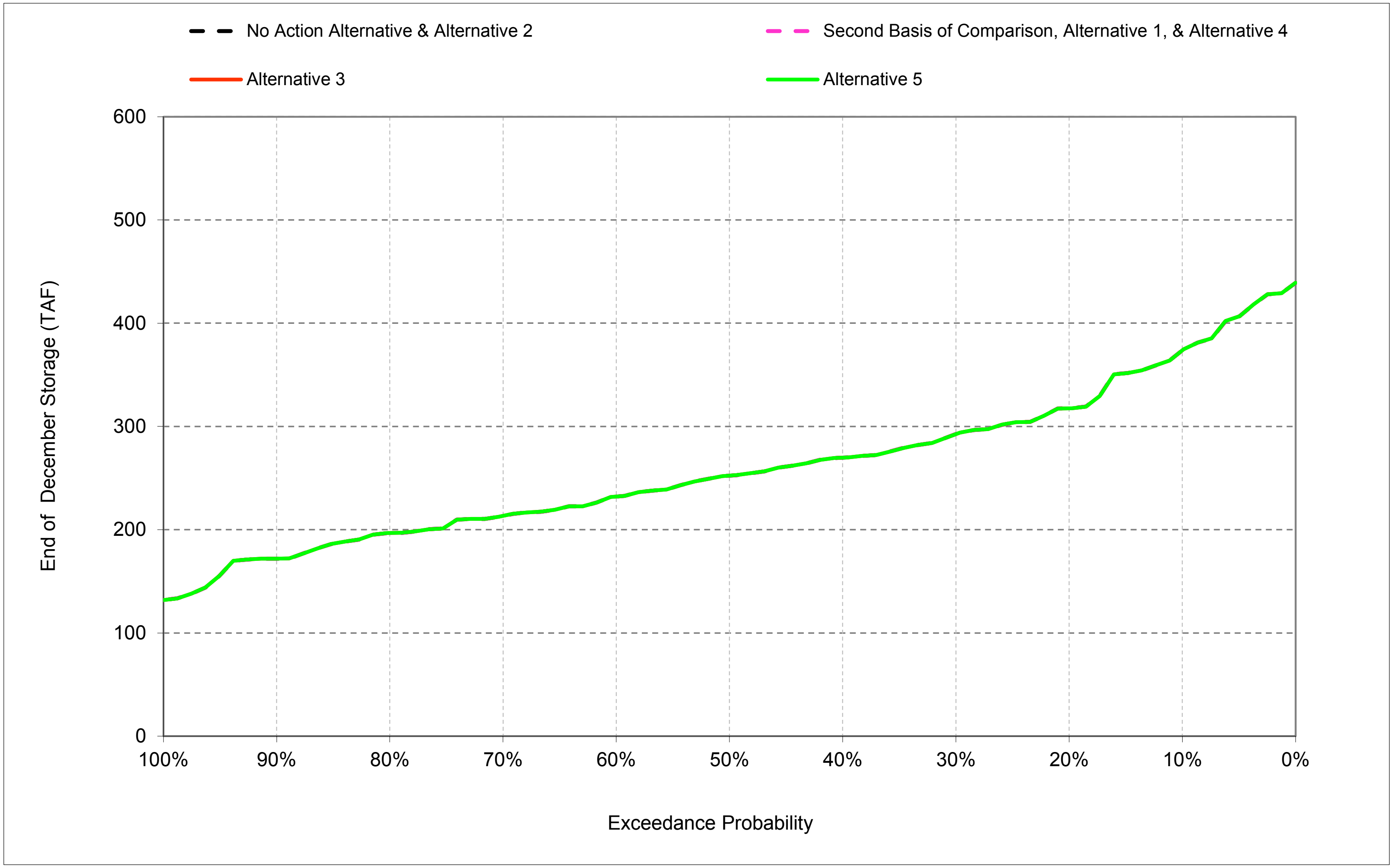
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-2. Millerton Lake, End of November Storage



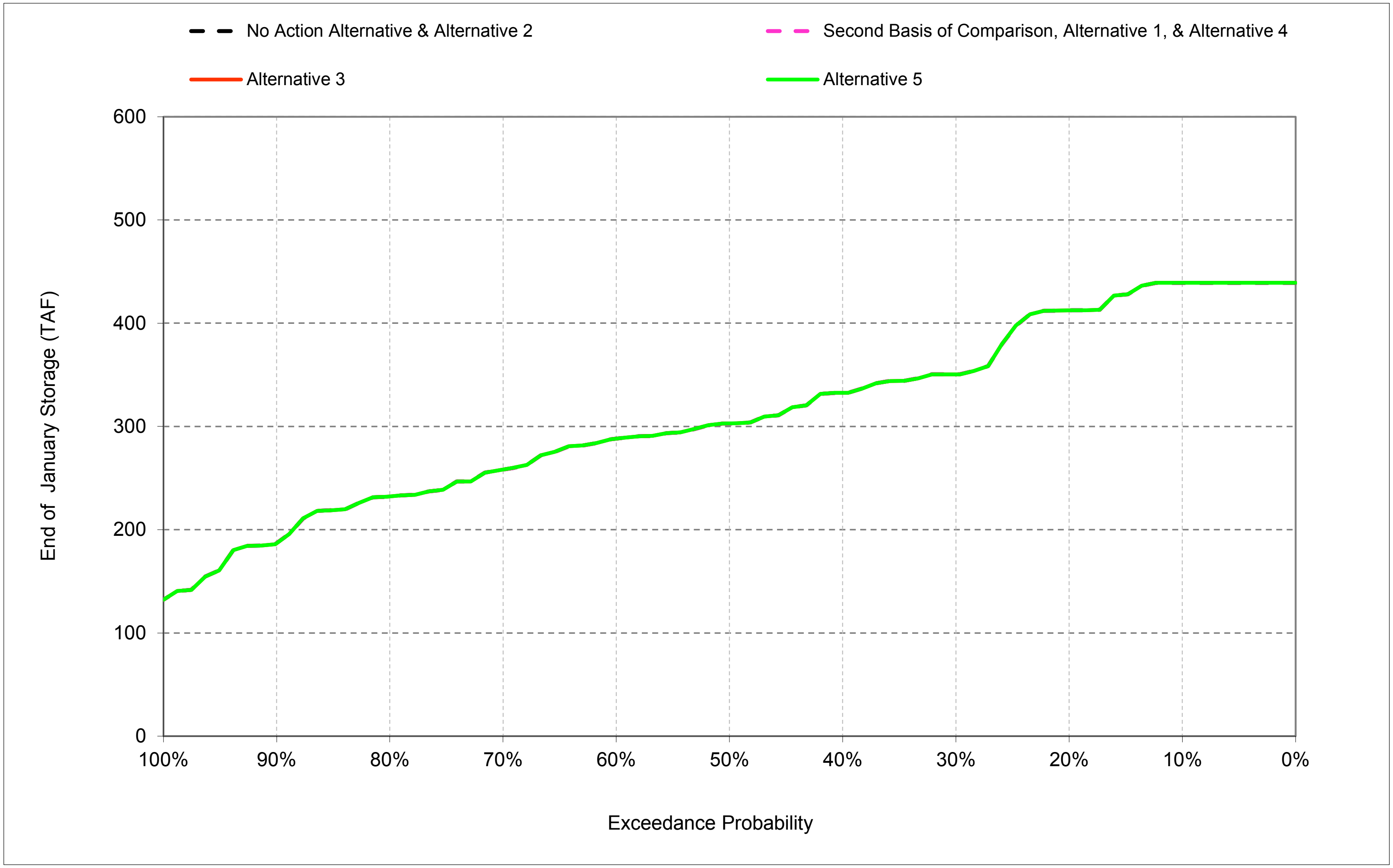
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-3. Millerton Lake, End of December Storage



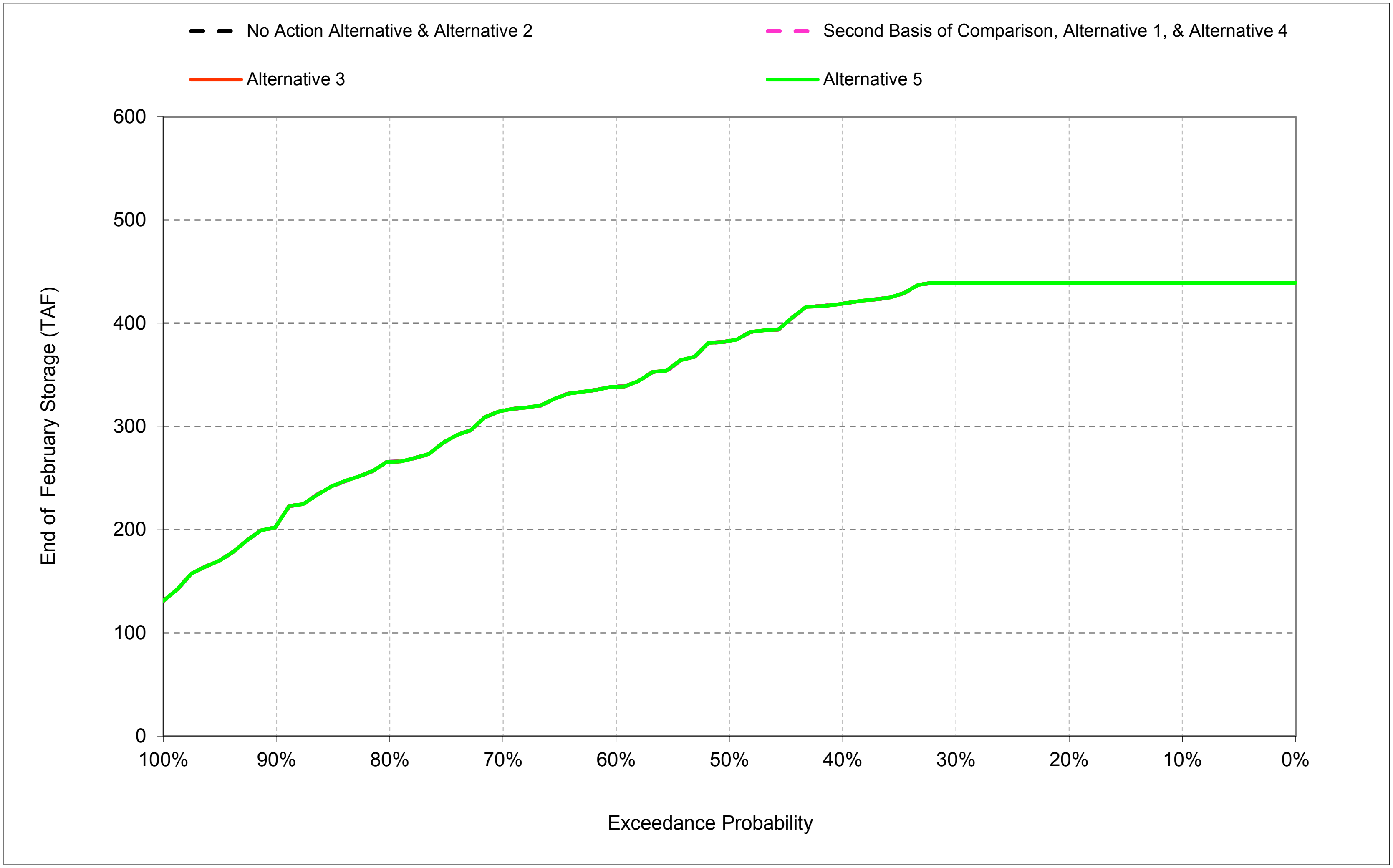
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-4. Millerton Lake, End of January Storage



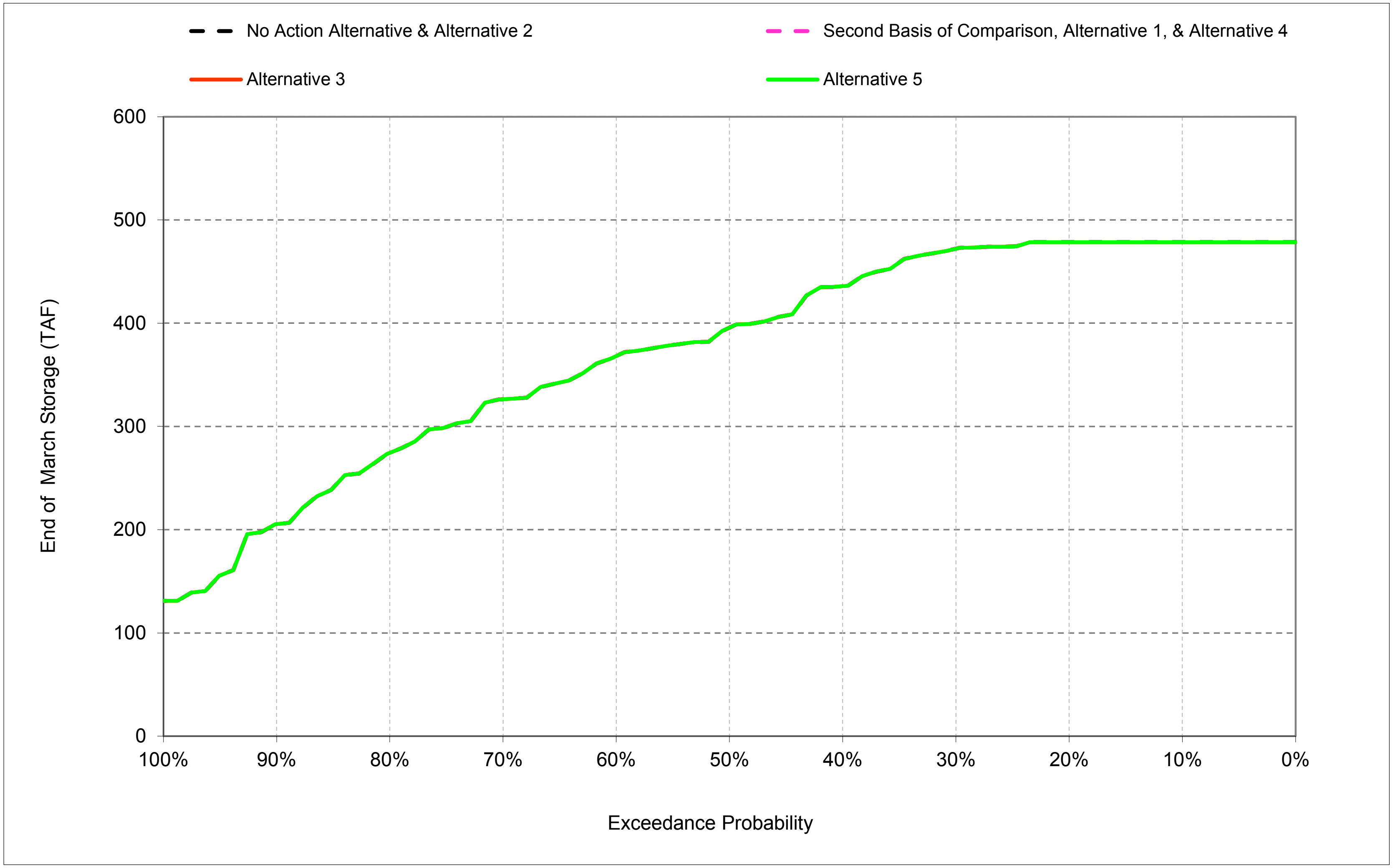
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-5. Millerton Lake, End of February Storage



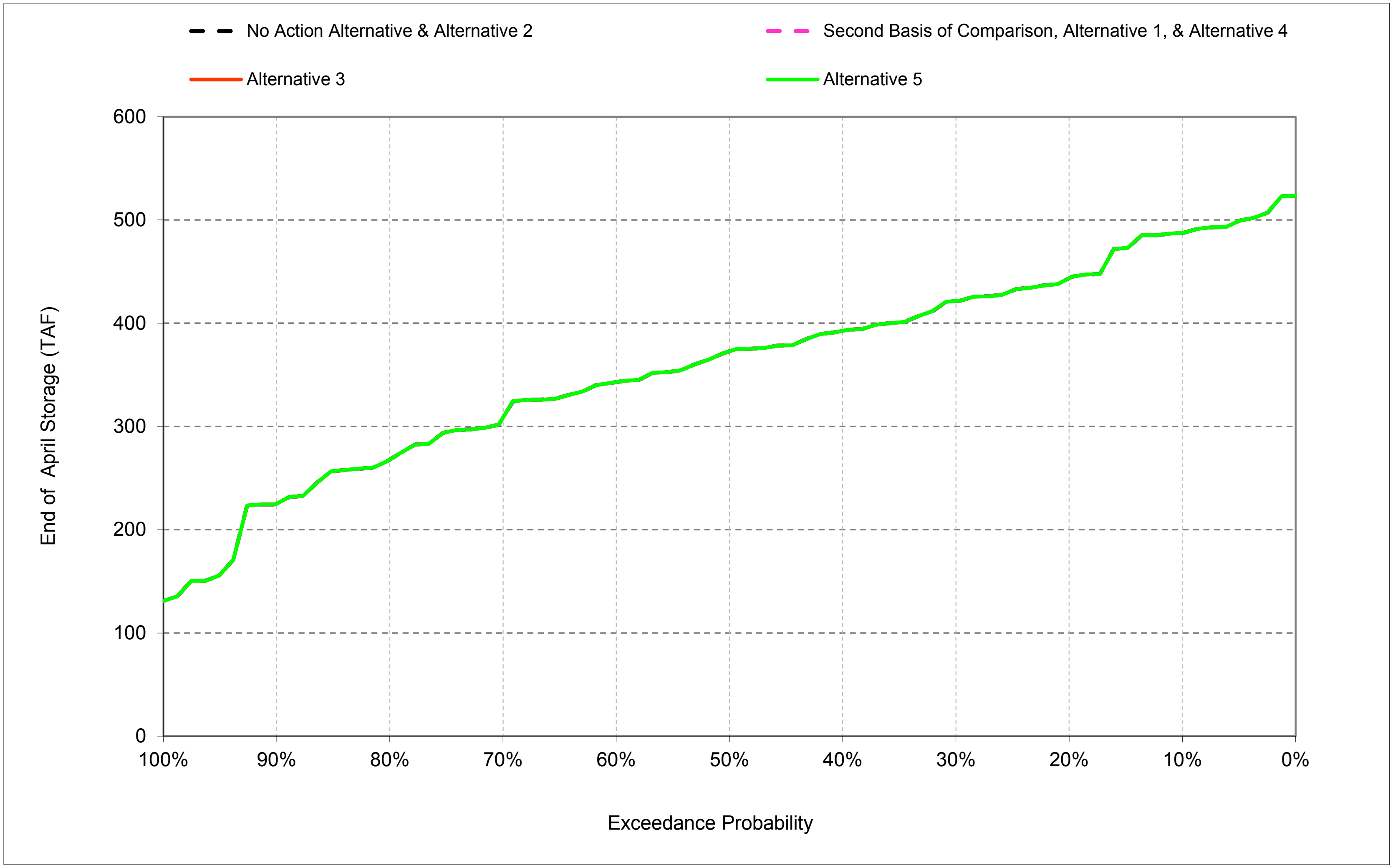
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-6. Millerton Lake, End of March Storage



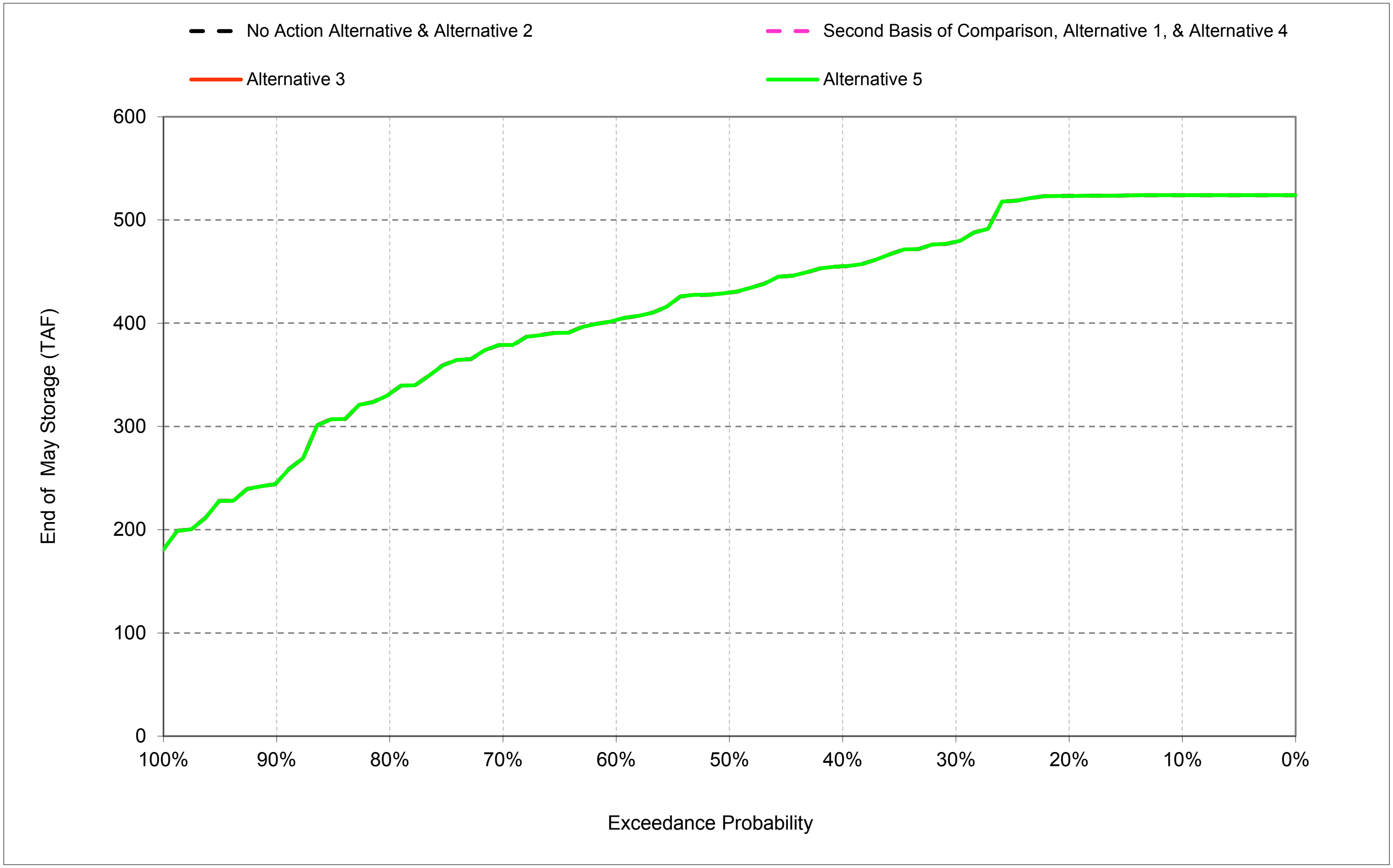
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-7. Millerton Lake, End of April Storage



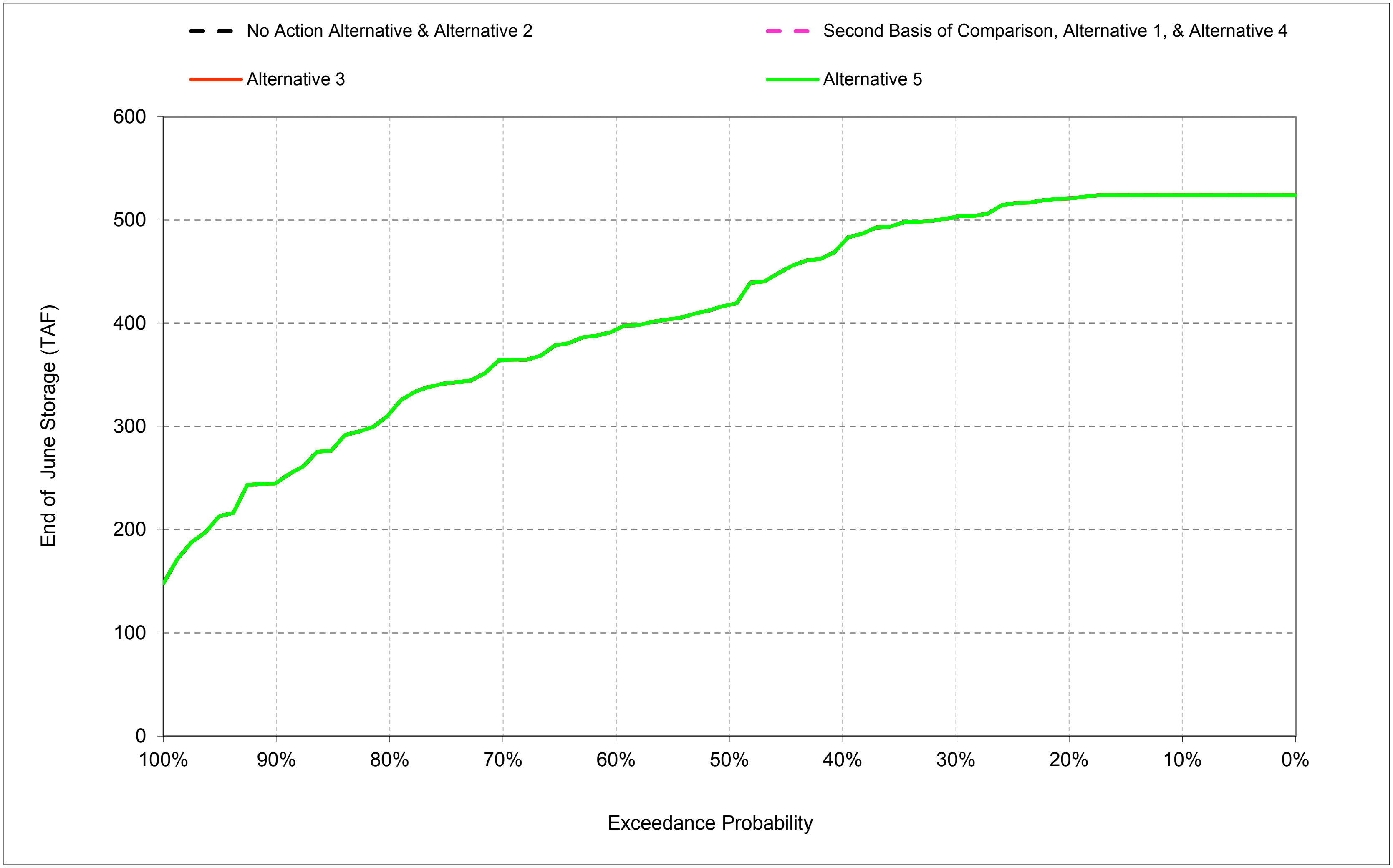
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-8. Millerton Lake, End of May Storage



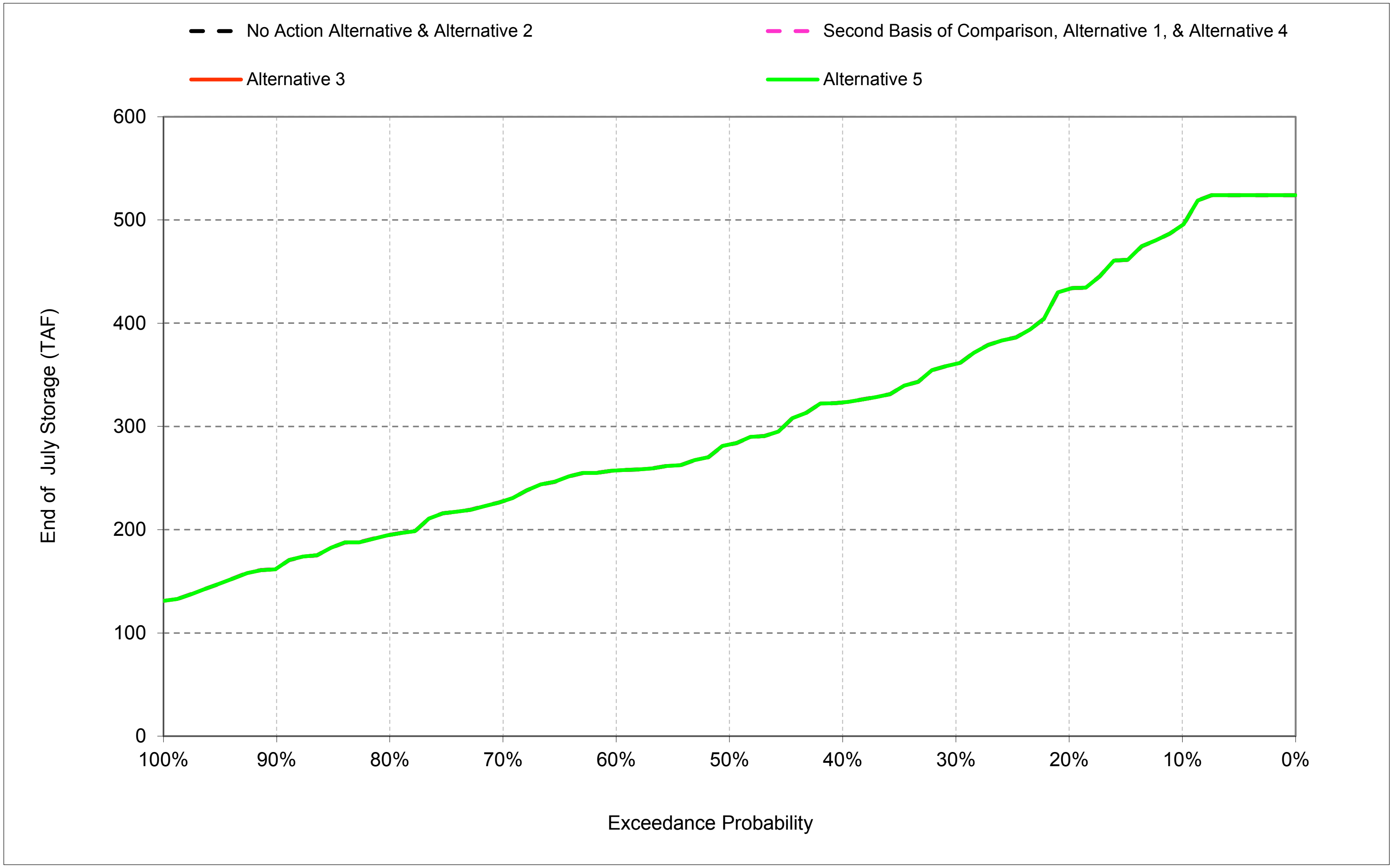
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-9. Millerton Lake, End of June Storage



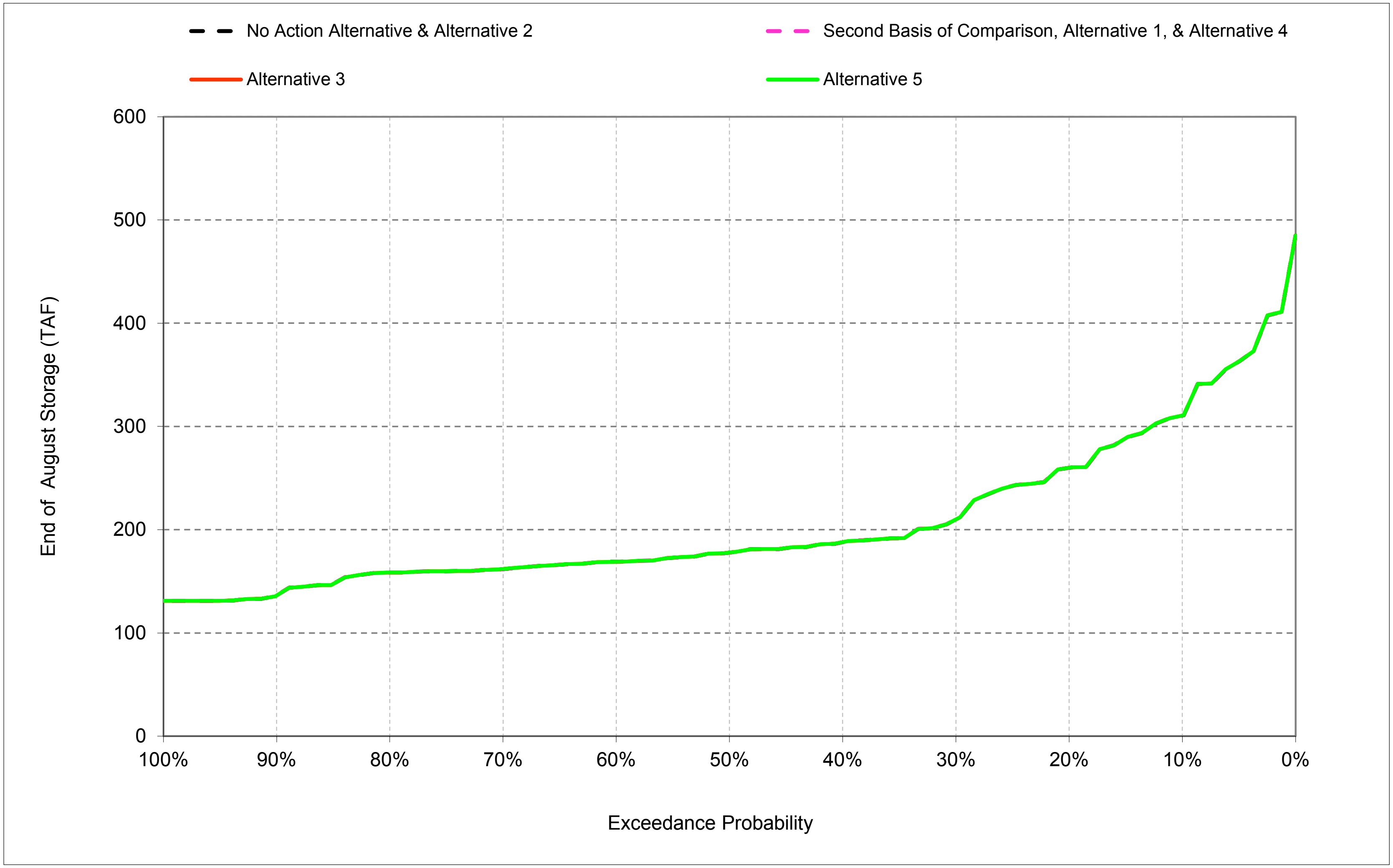
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-10. Millerton Lake, End of July Storage



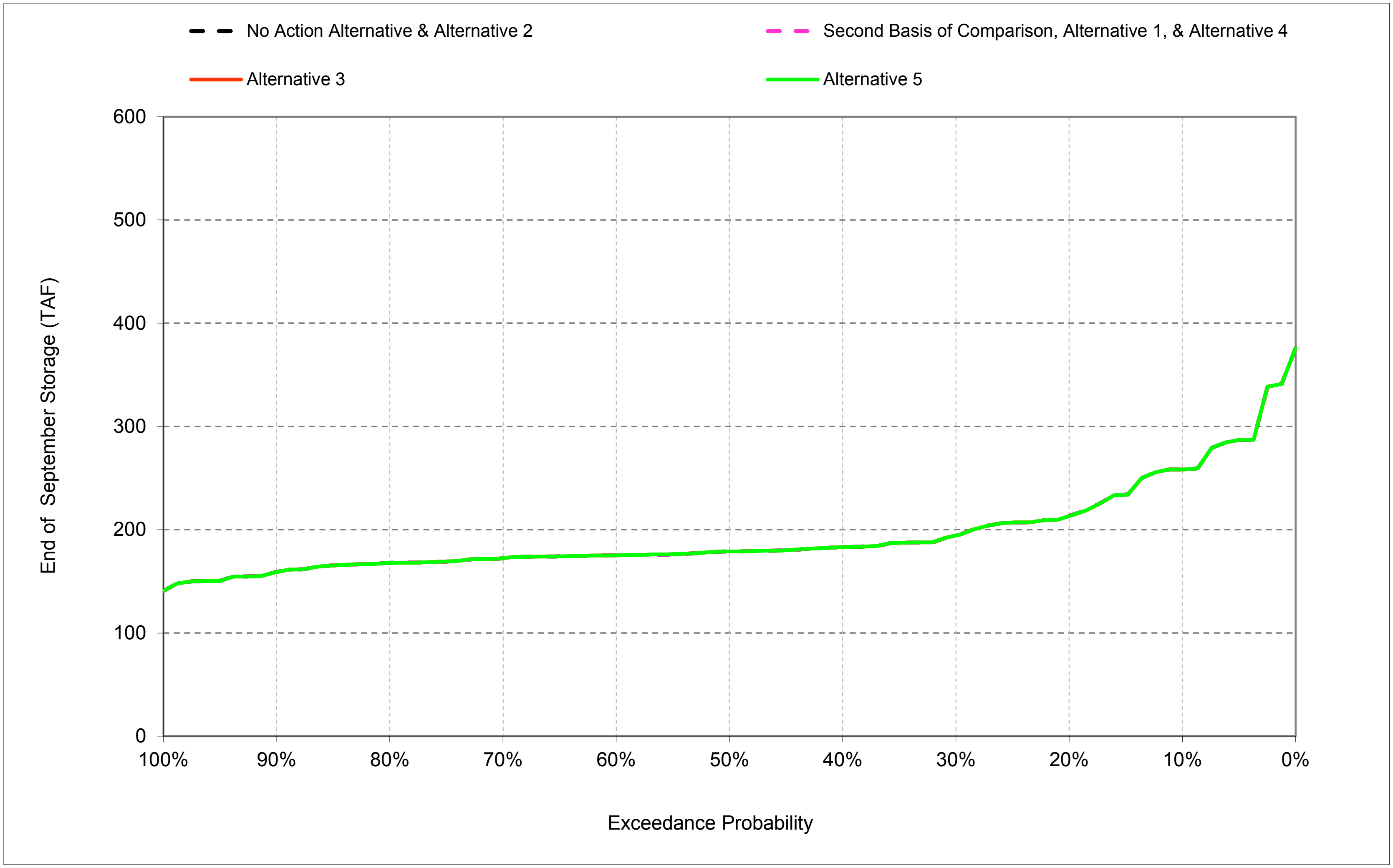
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-11. Millerton Lake, End of August Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-7-12. Millerton Lake, End of September Storage



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-1. Millerton Lake, End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 1

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 1 minus No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-2. Millerton Lake, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

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No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-4. Millerton Lake, End of Month Storage

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-5. Millerton Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-6. Millerton Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	258	292	374	439	439	479	488	524	524	495	311	258
20%	224	267	318	412	439	479	444	523	521	433	260	213
30%	211	250	293	351	439	472	421	479	503	361	210	194
40%	197	223	270	333	419	436	393	455	477	323	188	183
50%	189	210	252	303	383	396	373	430	418	283	178	179
60%	178	194	232	288	339	368	343	403	394	257	169	175
70%	172	176	213	258	315	326	308	379	364	228	162	172
80%	162	168	197	232	266	274	268	332	313	195	158	168
90%	155	154	172	187	204	205	225	245	246	163	136	159
Long Term												
Full Simulation Period[b]	199	220	261	310	353	372	358	415	411	307	207	195
Water Year Types[c]												
Wet (23%)	205	228	306	382	426	448	356	426	509	464	312	256
Above Normal (24%)	202	226	270	340	417	447	403	491	496	355	210	184
Below Normal (10%)	192	227	253	297	354	360	348	401	393	283	185	180
Dry (16%)	213	238	266	302	327	343	386	426	372	231	162	181
Critical (27%)	185	194	212	231	247	260	306	334	278	182	148	168

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

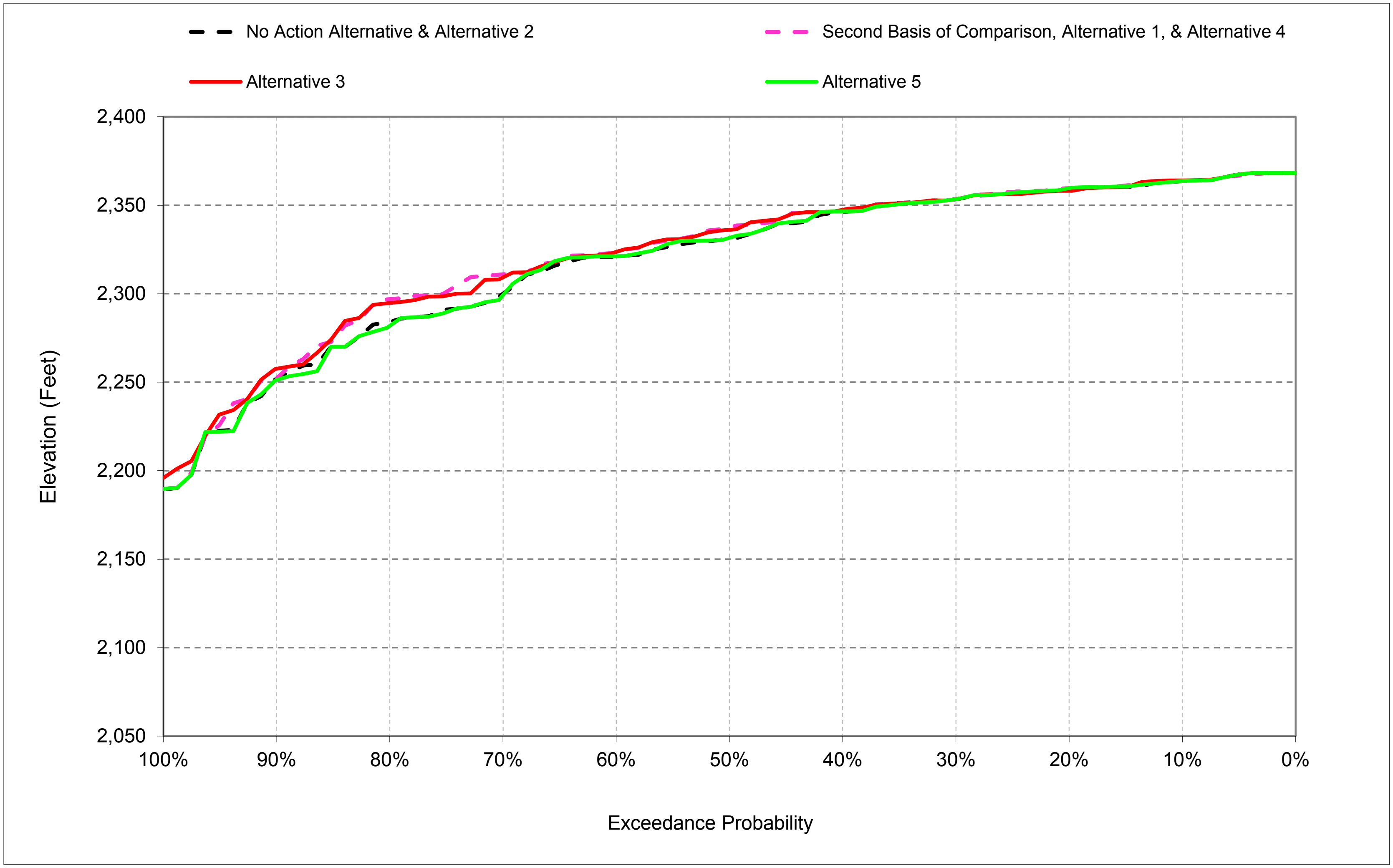
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

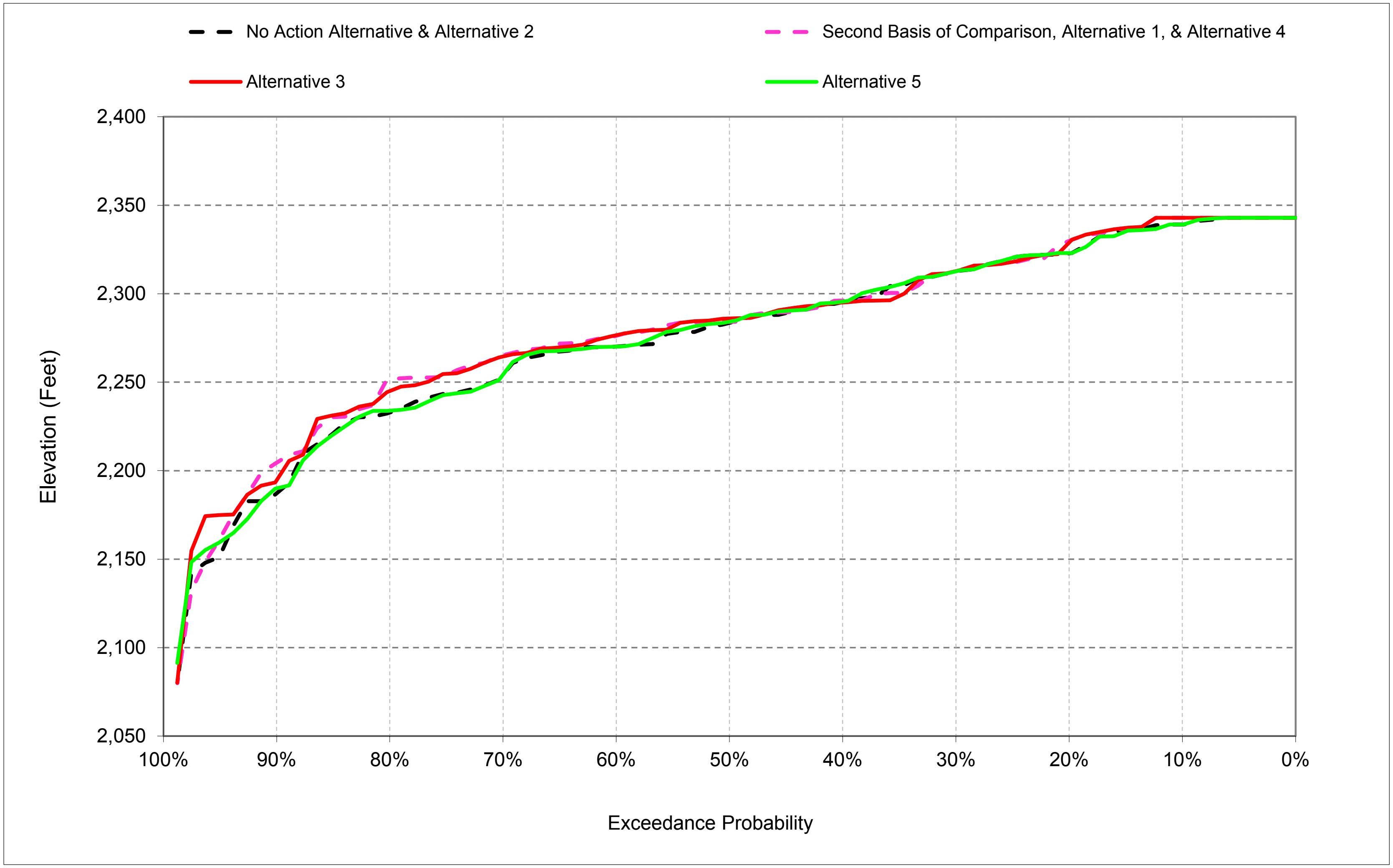
C.8. Trinity Lake Elevation

Figure C-8-1. Trinity Lake, Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-8-2. Trinity Lake, Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-1. Trinity Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,331	2,332	2,337	2,345	2,350	2,360	2,364	2,361	2,359	2,353	2,339
20%	2,325	2,322	2,328	2,336	2,345	2,350	2,358	2,359	2,356	2,348	2,337	2,324
30%	2,306	2,309	2,318	2,326	2,341	2,349	2,357	2,353	2,348	2,338	2,326	2,314
40%	2,293	2,292	2,307	2,317	2,325	2,343	2,351	2,346	2,338	2,326	2,310	2,297
50%	2,278	2,280	2,291	2,303	2,317	2,325	2,337	2,331	2,320	2,308	2,295	2,286
60%	2,268	2,271	2,280	2,284	2,302	2,317	2,327	2,321	2,313	2,296	2,282	2,271
70%	2,259	2,258	2,266	2,271	2,281	2,291	2,301	2,300	2,294	2,284	2,271	2,262
80%	2,235	2,238	2,241	2,252	2,259	2,270	2,287	2,284	2,278	2,262	2,246	2,236
90%	2,192	2,201	2,205	2,206	2,221	2,246	2,254	2,252	2,245	2,229	2,202	2,195
Long Term												
Full Simulation Period[b]	2,270	2,271	2,278	2,286	2,298	2,310	2,321	2,319	2,314	2,302	2,288	2,276
Water Year Types[c]												
Wet (32%)	2,300	2,303	2,313	2,324	2,338	2,347	2,357	2,358	2,355	2,347	2,338	2,327
Above Normal (16%)	2,261	2,264	2,276	2,294	2,314	2,330	2,343	2,341	2,335	2,325	2,313	2,302
Below Normal (13%)	2,289	2,289	2,291	2,299	2,307	2,315	2,327	2,321	2,313	2,299	2,283	2,272
Dry (24%)	2,263	2,265	2,268	2,269	2,279	2,292	2,305	2,301	2,294	2,279	2,264	2,254
Critical (15%)	2,210	2,207	2,210	2,213	2,220	2,235	2,242	2,238	2,235	2,220	2,196	2,182

Alternative 1

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,358	2,353	2,343
20%	2,328	2,331	2,332	2,337	2,345	2,350	2,359	2,360	2,355	2,348	2,338	2,330
30%	2,309	2,310	2,323	2,329	2,343	2,350	2,357	2,353	2,349	2,339	2,327	2,315
40%	2,293	2,298	2,308	2,320	2,333	2,346	2,352	2,347	2,338	2,325	2,309	2,296
50%	2,283	2,283	2,294	2,308	2,318	2,330	2,346	2,338	2,326	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,289	2,306	2,320	2,326	2,324	2,318	2,302	2,288	2,278
70%	2,267	2,266	2,274	2,278	2,291	2,301	2,315	2,311	2,306	2,294	2,279	2,267
80%	2,249	2,250	2,253	2,261	2,269	2,283	2,299	2,297	2,289	2,273	2,261	2,252
90%	2,207	2,208	2,212	2,220	2,232	2,246	2,261	2,252	2,245	2,230	2,215	2,209
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,325	2,322	2,317	2,305	2,291	2,280
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,270	2,273	2,286	2,303	2,320	2,335	2,347	2,346	2,339	2,329	2,315	2,304
Below Normal (13%)	2,295	2,296	2,298	2,305	2,313	2,320	2,331	2,326	2,318	2,303	2,287	2,274
Dry (24%)	2,266	2,269	2,272	2,274	2,284	2,296	2,309	2,304	2,298	2,284	2,269	2,259
Critical (15%)	2,218	2,216	2,217	2,222	2,229	2,243	2,250	2,246	2,243	2,227	2,204	2,191

Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	1	0	0	0	0	1	0	0	0	0	4
20%	3	9	5	1	0	0	0	0	-1	0	1	6
30%	3	1	5	4	3	1	0	0	1	1	1	1
40%	1	6	1	3	7	2	1	0	0	-1	0	-1
50%	5	2	2	6	2	4	8	6	6	3	0	0
60%	5	5	-1	5	3	3	-1	3	4	6	6	7
70%	8	8	8	6	10	10	13	11	12	10	7	5
80%	14	12	12	9	10	14	12	13	11	11	15	16
90%	15	8	7	14	11	0	7	0	0	2	13	14
Long Term												
Full Simulation Period[b]	5	5	5	5	4	4	3	4	4	3	3	4
Water Year Types[c]												
Wet (32%)	1	2	1	1	1	0	0	0	0	0	0	2
Above Normal (16%)	8	10	10	9	7	5	4	4	4	4	2	2
Below Normal (13%)	6	7	7	6	6	6	4	5	5	4	3	3
Dry (24%)	3	4	4	5	5	4	4	4	5	5	5	5
Critical (15%)	8	8	8	9	8	8	8	8	7	8	8	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-2. Trinity Lake, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	2,332	2,331	2,332	2,337	2,345	2,350	2,360	2,364	2,361	2,359	2,353	2,339
20%	2,325	2,322	2,328	2,336	2,345	2,350	2,358	2,359	2,356	2,348	2,337	2,324
30%	2,306	2,309	2,318	2,326	2,341	2,349	2,357	2,353	2,348	2,338	2,326	2,314
40%	2,293	2,292	2,307	2,317	2,325	2,343	2,351	2,346	2,338	2,326	2,310	2,297
50%	2,278	2,280	2,291	2,303	2,317	2,325	2,337	2,331	2,320	2,308	2,295	2,286
60%	2,268	2,271	2,280	2,284	2,302	2,317	2,327	2,321	2,313	2,296	2,282	2,271
70%	2,259	2,258	2,266	2,271	2,281	2,291	2,301	2,300	2,294	2,284	2,271	2,262
80%	2,235	2,238	2,241	2,252	2,259	2,270	2,287	2,284	2,278	2,262	2,246	2,236
90%	2,192	2,201	2,205	2,206	2,221	2,246	2,254	2,252	2,245	2,229	2,202	2,195
Long Term												
Full Simulation Period[b]	2,270	2,271	2,278	2,286	2,298	2,310	2,321	2,319	2,314	2,302	2,288	2,276
Water Year Types[c]												
Wet (32%)	2,300	2,303	2,313	2,324	2,338	2,347	2,357	2,358	2,355	2,347	2,338	2,327
Above Normal (16%)	2,261	2,264	2,276	2,294	2,314	2,330	2,343	2,341	2,335	2,325	2,313	2,302
Below Normal (13%)	2,289	2,289	2,291	2,299	2,307	2,315	2,327	2,321	2,313	2,299	2,283	2,272
Dry (24%)	2,263	2,265	2,268	2,269	2,279	2,292	2,305	2,301	2,294	2,279	2,264	2,254
Critical (15%)	2,210	2,207	2,210	2,213	2,220	2,235	2,242	2,238	2,235	2,220	2,196	2,182

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,356	2,350	2,343
20%	2,329	2,331	2,332	2,337	2,345	2,350	2,359	2,358	2,356	2,348	2,337	2,330
30%	2,310	2,312	2,321	2,328	2,342	2,349	2,357	2,353	2,348	2,339	2,327	2,315
40%	2,291	2,294	2,309	2,317	2,333	2,345	2,351	2,347	2,340	2,324	2,309	2,296
50%	2,282	2,282	2,296	2,310	2,320	2,330	2,344	2,336	2,327	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,287	2,306	2,321	2,327	2,324	2,317	2,302	2,289	2,278
70%	2,266	2,266	2,275	2,276	2,289	2,300	2,313	2,309	2,305	2,293	2,278	2,266
80%	2,245	2,250	2,251	2,260	2,272	2,281	2,297	2,295	2,288	2,272	2,257	2,248
90%	2,206	2,206	2,205	2,213	2,229	2,246	2,262	2,258	2,251	2,236	2,215	2,206
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,324	2,322	2,317	2,305	2,291	2,281
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,268	2,271	2,284	2,301	2,319	2,334	2,347	2,345	2,339	2,328	2,315	2,304
Below Normal (13%)	2,293	2,295	2,297	2,304	2,312	2,319	2,330	2,325	2,317	2,302	2,286	2,274
Dry (24%)	2,265	2,268	2,271	2,273	2,283	2,296	2,309	2,305	2,299	2,284	2,269	2,260
Critical (15%)	2,226	2,220	2,222	2,225	2,231	2,244	2,252	2,248	2,244	2,229	2,204	2,193

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	0	1	0	0	0	0	1	0	0	-3	-2	4
20%	4	8	4	1	0	0	0	-1	0	0	0	6
30%	3	3	3	2	1	-1	0	0	0	1	2	2
40%	-2	3	1	0	8	1	-1	1	2	-1	0	-1
50%	4	2	4	7	3	5	7	5	6	3	0	0
60%	5	5	0	4	3	4	0	2	4	6	6	7
70%	7	8	8	5	8	9	12	9	11	9	7	4
80%	10	12	10	8	13	11	10	11	9	10	11	12
90%	14	6	0	7	8	0	9	6	6	7	13	11
Long Term												
Full Simulation Period[b]	5	5	5	5	4	4	3	4	4	3	3	4
Water Year Types[c]												
Wet (32%)	1	2	1	1	1	0	0	0	0	0	0	2
Above Normal (16%)	7	8	8	7	5	4	4	4	4	3	2	2
Below Normal (13%)	4	5	6	5	5	5	3	4	4	3	3	2
Dry (24%)	3	3	3	4	4	4	4	4	5	5	5	6
Critical (15%)	16	13	13	12	11	10	9	9	9	9	8	11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-3. Trinity Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,331	2,332	2,337	2,345	2,350	2,360	2,364	2,361	2,359	2,353	2,339
20%	2,325	2,322	2,328	2,336	2,345	2,350	2,358	2,359	2,356	2,348	2,337	2,324
30%	2,306	2,309	2,318	2,326	2,341	2,349	2,357	2,353	2,348	2,338	2,326	2,314
40%	2,293	2,292	2,307	2,317	2,325	2,343	2,351	2,346	2,338	2,326	2,310	2,297
50%	2,278	2,280	2,291	2,303	2,317	2,325	2,337	2,331	2,320	2,308	2,295	2,286
60%	2,268	2,271	2,280	2,284	2,302	2,317	2,327	2,321	2,313	2,296	2,282	2,271
70%	2,259	2,258	2,266	2,271	2,281	2,291	2,301	2,300	2,294	2,284	2,271	2,262
80%	2,235	2,238	2,241	2,252	2,259	2,270	2,287	2,284	2,278	2,262	2,246	2,236
90%	2,192	2,201	2,205	2,206	2,221	2,246	2,254	2,252	2,245	2,229	2,202	2,195
Long Term												
Full Simulation Period[b]	2,270	2,271	2,278	2,286	2,298	2,310	2,321	2,319	2,314	2,302	2,288	2,276
Water Year Types[c]												
Wet (32%)	2,300	2,303	2,313	2,324	2,338	2,347	2,357	2,358	2,355	2,347	2,338	2,327
Above Normal (16%)	2,261	2,264	2,276	2,294	2,314	2,330	2,343	2,341	2,335	2,325	2,313	2,302
Below Normal (13%)	2,289	2,289	2,291	2,299	2,307	2,315	2,327	2,321	2,313	2,299	2,283	2,272
Dry (24%)	2,263	2,265	2,268	2,269	2,279	2,292	2,305	2,301	2,294	2,279	2,264	2,254
Critical (15%)	2,210	2,207	2,210	2,213	2,220	2,235	2,242	2,238	2,235	2,220	2,196	2,182

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,330	2,332	2,337	2,345	2,350	2,360	2,364	2,361	2,359	2,353	2,339
20%	2,325	2,322	2,328	2,336	2,345	2,350	2,358	2,360	2,356	2,348	2,336	2,323
30%	2,306	2,309	2,319	2,326	2,341	2,349	2,357	2,353	2,348	2,338	2,326	2,314
40%	2,296	2,292	2,308	2,318	2,325	2,344	2,352	2,347	2,338	2,326	2,311	2,299
50%	2,279	2,281	2,292	2,304	2,317	2,326	2,336	2,332	2,322	2,308	2,296	2,286
60%	2,269	2,273	2,281	2,284	2,302	2,317	2,328	2,321	2,314	2,301	2,283	2,271
70%	2,261	2,259	2,266	2,271	2,281	2,292	2,301	2,299	2,293	2,283	2,270	2,263
80%	2,235	2,238	2,241	2,252	2,259	2,270	2,288	2,282	2,277	2,262	2,248	2,235
90%	2,190	2,200	2,201	2,206	2,221	2,245	2,253	2,251	2,246	2,232	2,203	2,193
Long Term												
Full Simulation Period[b]	2,270	2,271	2,278	2,286	2,299	2,310	2,321	2,319	2,314	2,302	2,289	2,277
Water Year Types[c]												
Wet (32%)	2,300	2,303	2,313	2,325	2,338	2,347	2,357	2,358	2,355	2,347	2,338	2,326
Above Normal (16%)	2,259	2,262	2,276	2,294	2,314	2,330	2,343	2,342	2,335	2,326	2,313	2,303
Below Normal (13%)	2,289	2,290	2,292	2,299	2,308	2,315	2,326	2,321	2,313	2,299	2,284	2,272
Dry (24%)	2,263	2,265	2,268	2,269	2,279	2,292	2,305	2,301	2,294	2,279	2,265	2,254
Critical (15%)	2,209	2,206	2,209	2,212	2,220	2,234	2,241	2,237	2,235	2,221	2,199	2,183

Alternative 5 minus No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	1	0	0	0	0	0	0	0	-1	-1
30%	0	0	1	0	0	0	0	0	0	0	0	0
40%	4	0	0	1	0	1	1	0	0	0	1	2
50%	1	1	1	1	1	0	-1	0	2	0	1	1
60%	1	2	1	0	0	0	0	0	0	5	1	0
70%	2	2	-1	-1	0	1	0	-1	0	-1	-1	1
80%	0	-1	0	0	0	0	1	-2	-1	1	2	-1
90%	-2	0	-4	0	0	-1	-1	-1	1	3	1	-2
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	1	1	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	-2	-2	0	0	0	0	0	0	0	0	1	1
Below Normal (13%)	1	1	1	1	1	0	0	0	0	0	1	0
Dry (24%)	1	0	0	0	0	0	0	0	0	0	1	1
Critical (15%)	0	-1	-1	-1	-1	-1	-1	-1	-1	2	3	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-4. Trinity Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,358	2,353	2,343
20%	2,328	2,331	2,332	2,337	2,345	2,350	2,359	2,360	2,355	2,348	2,338	2,330
30%	2,309	2,310	2,323	2,329	2,343	2,350	2,357	2,353	2,349	2,339	2,327	2,315
40%	2,293	2,298	2,308	2,320	2,333	2,346	2,352	2,347	2,338	2,325	2,309	2,296
50%	2,283	2,283	2,294	2,308	2,318	2,330	2,346	2,338	2,326	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,289	2,306	2,320	2,326	2,324	2,318	2,302	2,288	2,278
70%	2,267	2,266	2,274	2,278	2,291	2,301	2,315	2,311	2,306	2,294	2,279	2,267
80%	2,249	2,250	2,253	2,261	2,269	2,283	2,299	2,297	2,289	2,273	2,261	2,252
90%	2,207	2,208	2,212	2,220	2,232	2,246	2,261	2,252	2,245	2,230	2,215	2,209
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,325	2,322	2,317	2,305	2,291	2,280
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,270	2,273	2,286	2,303	2,320	2,335	2,347	2,346	2,339	2,329	2,315	2,304
Below Normal (13%)	2,295	2,296	2,298	2,305	2,313	2,320	2,331	2,326	2,318	2,303	2,287	2,274
Dry (24%)	2,266	2,269	2,272	2,274	2,284	2,296	2,309	2,304	2,298	2,284	2,269	2,259
Critical (15%)	2,218	2,216	2,217	2,222	2,229	2,243	2,250	2,246	2,243	2,227	2,204	2,191

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,331	2,332	2,337	2,345	2,350	2,360	2,364	2,361	2,359	2,353	2,339
20%	2,325	2,322	2,328	2,336	2,345	2,350	2,358	2,359	2,356	2,348	2,337	2,324
30%	2,306	2,309	2,318	2,326	2,341	2,349	2,357	2,353	2,348	2,338	2,326	2,314
40%	2,293	2,292	2,307	2,317	2,325	2,343	2,351	2,346	2,338	2,326	2,310	2,297
50%	2,278	2,280	2,291	2,303	2,317	2,325	2,337	2,331	2,320	2,308	2,295	2,286
60%	2,268	2,271	2,280	2,284	2,302	2,317	2,327	2,321	2,313	2,296	2,282	2,271
70%	2,259	2,258	2,266	2,271	2,281	2,291	2,301	2,300	2,294	2,284	2,271	2,262
80%	2,235	2,238	2,241	2,252	2,259	2,270	2,287	2,284	2,278	2,262	2,246	2,236
90%	2,192	2,201	2,205	2,206	2,221	2,246	2,254	2,252	2,245	2,229	2,202	2,195
Long Term												
Full Simulation Period[b]	2,270	2,271	2,278	2,286	2,298	2,310	2,321	2,319	2,314	2,302	2,288	2,276
Water Year Types[c]												
Wet (32%)	2,300	2,303	2,313	2,324	2,338	2,347	2,357	2,358	2,355	2,347	2,338	2,327
Above Normal (16%)	2,261	2,264	2,276	2,294	2,314	2,330	2,343	2,341	2,335	2,325	2,313	2,302
Below Normal (13%)	2,289	2,289	2,291	2,299	2,307	2,315	2,327	2,321	2,313	2,299	2,283	2,272
Dry (24%)	2,263	2,265	2,268	2,269	2,279	2,292	2,305	2,301	2,294	2,279	2,264	2,254
Critical (15%)	2,210	2,207	2,210	2,213	2,220	2,235	2,242	2,238	2,235	2,220	2,196	2,182

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	-1	0	0	0	0	-1	0	0	0	0	-4
20%	-3	-9	-5	-1	0	0	0	0	1	0	-1	-6
30%	-3	-1	-5	-4	-3	-1	0	0	-1	-1	-1	-1
40%	-1	-6	-1	-3	-7	-2	-1	0	0	1	0	1
50%	-5	-2	-2	-6	-2	-4	-8	-6	-6	-3	0	0
60%	-5	-5	1	-5	-3	-3	1	-3	-4	-6	-6	-7
70%	-8	-8	-8	-6	-10	-10	-13	-11	-12	-10	-7	-5
80%	-14	-12	-12	-9	-10	-14	-12	-13	-11	-11	-15	-16
90%	-15	-8	-7	-14	-11	0	-7	0	0	-2	-13	-14
Long Term												
Full Simulation Period[b]	-5	-5	-5	-5	-4	-4	-3	-4	-4	-3	-3	-4
Water Year Types[c]												
Wet (32%)	-1	-2	-1	-1	-1	0	0	0	0	0	0	-2
Above Normal (16%)	-8	-10	-10	-9	-7	-5	-4	-4	-4	-4	-2	-2
Below Normal (13%)	-6	-7	-7	-6	-6	-6	-4	-5	-5	-4	-3	-3
Dry (24%)	-3	-4	-4	-5	-5	-4	-4	-4	-5	-5	-5	-5
Critical (15%)	-8	-8	-8	-9	-8	-8	-8	-8	-7	-8	-8	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-5. Trinity Lake, End of Month Elevation

Second Basis of Comparison

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,358	2,353	2,343
20%	2,328	2,331	2,332	2,337	2,345	2,350	2,359	2,360	2,355	2,348	2,338	2,330
30%	2,309	2,310	2,323	2,329	2,343	2,350	2,357	2,353	2,349	2,339	2,327	2,315
40%	2,293	2,298	2,308	2,320	2,333	2,346	2,352	2,347	2,338	2,325	2,309	2,296
50%	2,283	2,283	2,294	2,308	2,318	2,330	2,346	2,338	2,326	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,289	2,306	2,320	2,326	2,324	2,318	2,302	2,288	2,278
70%	2,267	2,266	2,274	2,278	2,291	2,301	2,315	2,311	2,306	2,294	2,279	2,267
80%	2,249	2,250	2,253	2,261	2,269	2,283	2,299	2,297	2,289	2,273	2,261	2,252
90%	2,207	2,208	2,212	2,220	2,232	2,246	2,261	2,252	2,245	2,230	2,215	2,209
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,325	2,322	2,317	2,305	2,291	2,280
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,270	2,273	2,286	2,303	2,320	2,335	2,347	2,346	2,339	2,329	2,315	2,304
Below Normal (13%)	2,295	2,296	2,298	2,305	2,313	2,320	2,331	2,326	2,318	2,303	2,287	2,274
Dry (24%)	2,266	2,269	2,272	2,274	2,284	2,296	2,309	2,304	2,298	2,284	2,269	2,259
Critical (15%)	2,218	2,216	2,217	2,222	2,229	2,243	2,250	2,246	2,243	2,227	2,204	2,191

Alternative 3

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,356	2,350	2,343
20%	2,329	2,331	2,332	2,337	2,345	2,350	2,359	2,358	2,356	2,348	2,337	2,330
30%	2,310	2,312	2,321	2,328	2,342	2,349	2,357	2,353	2,348	2,339	2,327	2,315
40%	2,291	2,294	2,309	2,317	2,333	2,345	2,351	2,347	2,340	2,324	2,309	2,296
50%	2,282	2,282	2,296	2,310	2,320	2,330	2,344	2,336	2,327	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,287	2,306	2,321	2,327	2,324	2,317	2,302	2,289	2,278
70%	2,266	2,266	2,275	2,276	2,289	2,300	2,313	2,309	2,305	2,293	2,278	2,266
80%	2,245	2,250	2,251	2,260	2,272	2,281	2,297	2,295	2,288	2,272	2,257	2,248
90%	2,206	2,206	2,205	2,213	2,229	2,246	2,262	2,258	2,251	2,236	2,215	2,206
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,324	2,322	2,317	2,305	2,291	2,281
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,268	2,271	2,284	2,301	2,319	2,334	2,347	2,345	2,339	2,328	2,315	2,304
Below Normal (13%)	2,293	2,295	2,297	2,304	2,312	2,319	2,330	2,325	2,317	2,302	2,286	2,274
Dry (24%)	2,265	2,268	2,271	2,273	2,283	2,296	2,309	2,305	2,299	2,284	2,269	2,260
Critical (15%)	2,226	2,220	2,222	2,225	2,231	2,244	2,252	2,248	2,244	2,229	2,204	2,193

Alternative 3 minus Second Basis of Comparison

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	-2	-2	0
20%	1	-1	0	0	0	0	0	-2	1	0	-1	0
30%	1	2	-2	-1	-1	-1	0	0	-1	0	0	0
40%	-2	-4	0	-3	0	-1	-1	1	2	-1	0	-1
50%	-1	-1	2	2	1	0	-2	-1	1	0	0	0
60%	-1	0	0	-1	0	1	1	0	0	0	0	0
70%	-1	0	1	-2	-2	-1	-1	-2	-1	-1	0	-1
80%	-4	0	-2	-1	2	-2	-2	-2	-1	-1	-4	-5
90%	-1	-2	-7	-6	-3	0	2	5	6	6	0	-3
Long Term												
Full Simulation Period[b]	1	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	-2	-2	-2	-2	-1	-1	-1	-1	0	-1	0	0
Below Normal (13%)	-2	-2	-1	-1	-1	-1	-1	-1	-1	-1	0	-1
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	8	5	5	4	3	2	1	2	2	1	0	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-6. Trinity Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,358	2,353	2,343
20%	2,328	2,331	2,332	2,337	2,345	2,350	2,359	2,360	2,355	2,348	2,338	2,330
30%	2,309	2,310	2,323	2,329	2,343	2,350	2,357	2,353	2,349	2,339	2,327	2,315
40%	2,293	2,298	2,308	2,320	2,333	2,346	2,352	2,347	2,338	2,325	2,309	2,296
50%	2,283	2,283	2,294	2,308	2,318	2,330	2,346	2,338	2,326	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,289	2,306	2,320	2,326	2,324	2,318	2,302	2,288	2,278
70%	2,267	2,266	2,274	2,278	2,291	2,301	2,315	2,311	2,306	2,294	2,279	2,267
80%	2,249	2,250	2,253	2,261	2,269	2,283	2,299	2,297	2,289	2,273	2,261	2,252
90%	2,207	2,208	2,212	2,220	2,232	2,246	2,261	2,252	2,245	2,230	2,215	2,209
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,325	2,322	2,317	2,305	2,291	2,280
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,270	2,273	2,286	2,303	2,320	2,335	2,347	2,346	2,339	2,329	2,315	2,304
Below Normal (13%)	2,295	2,296	2,298	2,305	2,313	2,320	2,331	2,326	2,318	2,303	2,287	2,274
Dry (24%)	2,266	2,269	2,272	2,274	2,284	2,296	2,309	2,304	2,298	2,284	2,269	2,259
Critical (15%)	2,218	2,216	2,217	2,222	2,229	2,243	2,250	2,246	2,243	2,227	2,204	2,191

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,330	2,332	2,337	2,345	2,350	2,360	2,364	2,361	2,359	2,353	2,339
20%	2,325	2,322	2,328	2,336	2,345	2,350	2,358	2,360	2,356	2,348	2,336	2,323
30%	2,306	2,309	2,319	2,326	2,341	2,349	2,357	2,353	2,348	2,338	2,326	2,314
40%	2,296	2,292	2,308	2,318	2,325	2,344	2,352	2,347	2,338	2,326	2,311	2,299
50%	2,279	2,281	2,292	2,304	2,317	2,326	2,336	2,332	2,322	2,308	2,296	2,286
60%	2,269	2,273	2,281	2,284	2,302	2,317	2,328	2,321	2,314	2,301	2,283	2,271
70%	2,261	2,259	2,266	2,271	2,281	2,292	2,301	2,299	2,293	2,283	2,270	2,263
80%	2,235	2,238	2,241	2,252	2,259	2,270	2,288	2,282	2,277	2,262	2,248	2,235
90%	2,190	2,200	2,201	2,206	2,221	2,245	2,253	2,251	2,246	2,232	2,203	2,193
Long Term												
Full Simulation Period[b]	2,270	2,271	2,278	2,286	2,299	2,310	2,321	2,319	2,314	2,302	2,289	2,277
Water Year Types[c]												
Wet (32%)	2,300	2,303	2,313	2,325	2,338	2,347	2,357	2,358	2,355	2,347	2,338	2,326
Above Normal (16%)	2,259	2,262	2,276	2,294	2,314	2,330	2,343	2,342	2,335	2,326	2,313	2,303
Below Normal (13%)	2,289	2,290	2,292	2,299	2,308	2,315	2,326	2,321	2,313	2,299	2,284	2,272
Dry (24%)	2,263	2,265	2,268	2,269	2,279	2,292	2,305	2,301	2,294	2,279	2,265	2,254
Critical (15%)	2,209	2,206	2,209	2,212	2,220	2,234	2,241	2,237	2,235	2,221	2,199	2,183

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	-2	0	0	0	0	-1	0	0	1	0	-4
20%	-3	-9	-4	-1	0	0	0	0	1	0	-2	-7
30%	-3	-1	-4	-3	-2	0	0	0	-1	-1	-1	-1
40%	3	-6	-1	-2	-7	-1	0	0	0	1	2	2
50%	-4	-1	-2	-4	-1	-4	-10	-6	-4	-3	0	0
60%	-5	-3	2	-5	-4	-3	2	-2	-4	-2	-5	-7
70%	-6	-7	-8	-7	-10	-9	-14	-12	-12	-11	-9	-5
80%	-14	-12	-12	-9	-10	-13	-11	-15	-12	-10	-13	-18
90%	-17	-8	-11	-14	-11	-1	-8	-1	1	2	-12	-16
Long Term												
Full Simulation Period[b]	-5	-5	-5	-5	-4	-4	-4	-4	-4	-3	-2	-3
Water Year Types[c]												
Wet (32%)	-1	-2	-1	-1	0	0	0	0	0	0	0	-2
Above Normal (16%)	-10	-11	-11	-9	-7	-5	-4	-4	-4	-3	-2	-1
Below Normal (13%)	-5	-6	-6	-5	-5	-5	-5	-5	-5	-3	-3	-2
Dry (24%)	-2	-3	-3	-5	-4	-4	-4	-4	-4	-4	-5	-5
Critical (15%)	-9	-9	-8	-9	-9	-9	-9	-9	-8	-6	-5	-8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

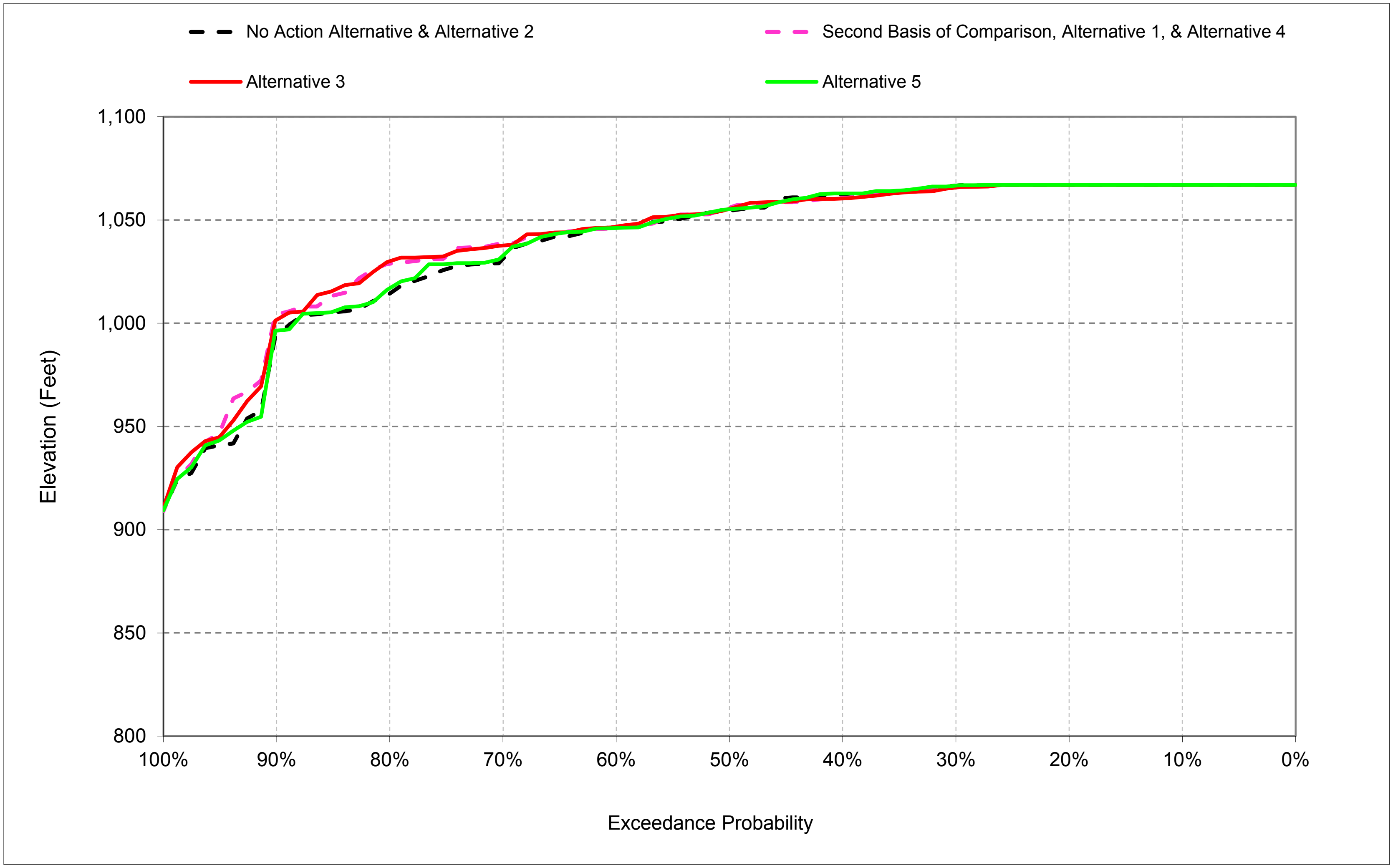
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

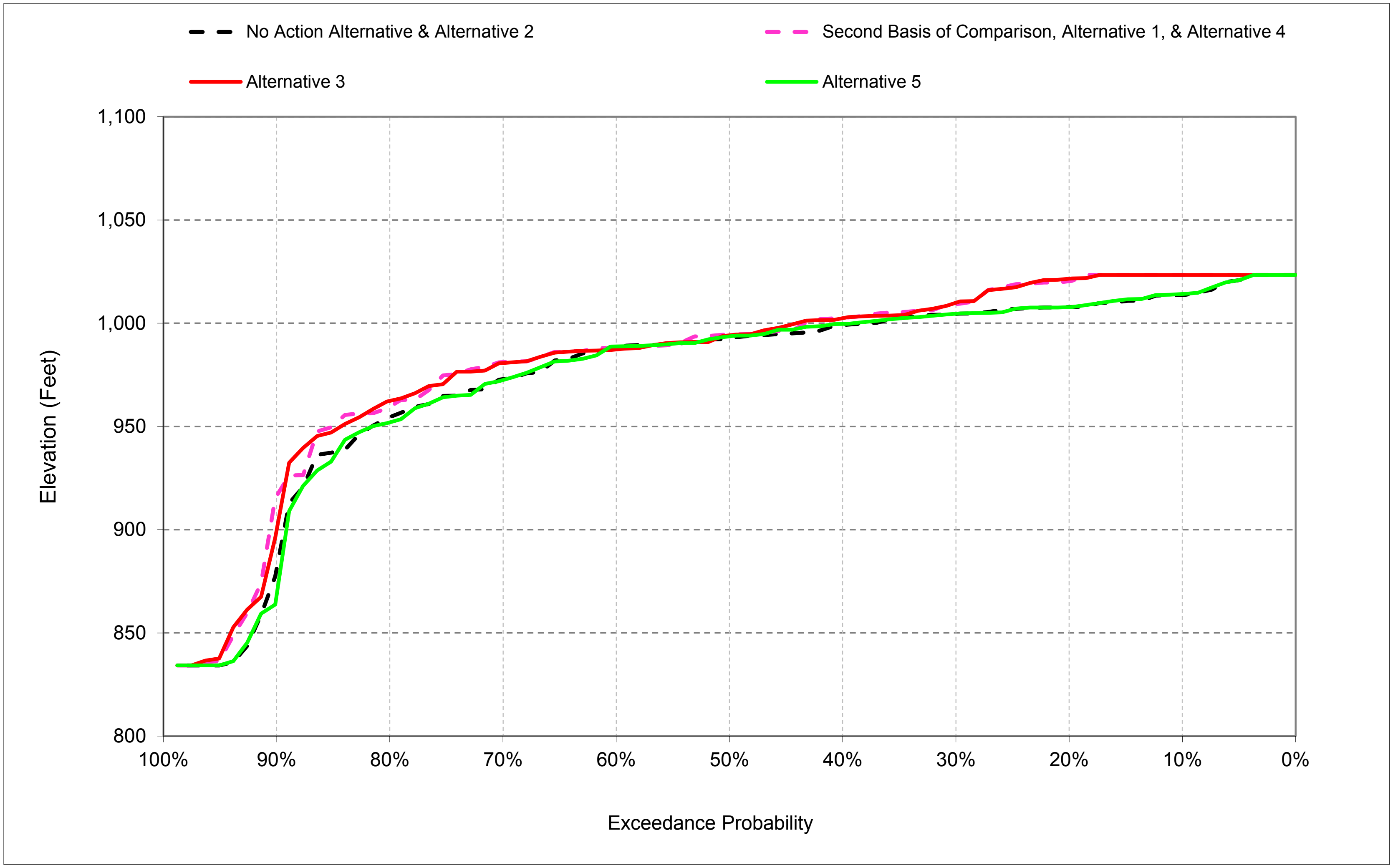
C.9. Shasta Lake Elevation

Figure C-9-1. Shasta Lake, Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-9-2. Shasta Lake, Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-1. Shasta Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,015	1,015	1,020	1,033	1,041	1,055	1,064	1,067	1,063	1,044	1,031	1,014
20%	1,005	1,003	1,019	1,029	1,036	1,051	1,063	1,067	1,057	1,039	1,027	1,008
30%	1,000	996	1,017	1,022	1,033	1,047	1,061	1,067	1,054	1,031	1,016	1,005
40%	994	992	1,007	1,017	1,027	1,045	1,057	1,062	1,048	1,020	1,007	1,000
50%	988	986	996	1,013	1,023	1,039	1,052	1,054	1,039	1,014	999	994
60%	984	981	986	1,004	1,018	1,031	1,047	1,046	1,030	1,006	994	989
70%	969	970	975	990	1,012	1,024	1,038	1,031	1,019	993	984	974
80%	953	953	964	981	996	1,012	1,025	1,014	998	974	961	957
90%	907	905	912	954	967	987	993	994	976	943	917	914
Long Term												
Full Simulation Period[b]	972	971	982	998	1,012	1,028	1,038	1,038	1,024	1,000	985	976
Water Year Types[c]												
Wet (32%)	991	992	1,008	1,023	1,031	1,041	1,058	1,064	1,056	1,037	1,024	1,005
Above Normal (16%)	967	968	982	1,012	1,025	1,048	1,062	1,063	1,049	1,024	1,009	999
Below Normal (13%)	986	985	991	1,009	1,025	1,040	1,048	1,045	1,031	1,006	989	987
Dry (24%)	969	967	975	986	1,006	1,027	1,037	1,034	1,018	995	982	980
Critical (15%)	927	923	929	939	951	968	965	958	935	899	876	872

Alternative 1

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,017	1,017	1,022	1,033	1,044	1,055	1,065	1,067	1,063	1,044	1,030	1,023
20%	1,017	1,017	1,020	1,030	1,039	1,051	1,063	1,067	1,057	1,039	1,023	1,020
30%	1,012	1,015	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,030	1,014	1,010
40%	1,003	1,007	1,017	1,023	1,031	1,046	1,058	1,061	1,044	1,019	1,005	1,003
50%	993	995	1,012	1,020	1,027	1,044	1,054	1,056	1,037	1,012	997	995
60%	985	988	1,003	1,013	1,021	1,037	1,050	1,046	1,027	1,004	990	988
70%	975	982	991	1,001	1,017	1,028	1,043	1,039	1,020	997	986	982
80%	961	964	966	989	1,005	1,024	1,034	1,029	1,004	979	963	963
90%	918	913	926	959	978	996	994	1,004	989	955	931	926
Long Term												
Full Simulation Period[b]	979	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	986	983
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,037	1,022	1,017
Above Normal (16%)	974	978	992	1,019	1,028	1,048	1,062	1,062	1,046	1,021	1,005	1,003
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,053	1,049	1,031	1,006	987	986
Dry (24%)	972	974	982	992	1,012	1,032	1,041	1,038	1,020	997	984	982
Critical (15%)	938	935	941	950	961	977	974	967	943	910	889	884

Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2	2	2	1	4	0	1	0	-1	0	-1	10
20%	11	14	2	1	3	0	1	0	0	-1	-4	13
30%	12	19	2	6	2	1	0	0	-1	-1	-2	5
40%	9	15	10	5	3	1	1	-2	-3	-1	-2	4
50%	4	10	16	7	4	5	1	2	-2	-2	-3	1
60%	1	7	16	9	3	6	2	0	-3	-2	-3	-1
70%	6	12	15	12	5	4	5	7	1	4	2	7
80%	9	11	2	8	9	12	9	15	6	5	2	6
90%	11	8	14	5	11	9	1	10	13	12	13	13
Long Term												
Full Simulation Period[b]	7	10	8	6	5	4	3	3	1	2	1	7
Water Year Types[c]												
Wet (32%)	6	10	4	1	0	0	0	0	-1	0	-2	12
Above Normal (16%)	7	10	10	7	3	1	0	0	-2	-3	-4	4
Below Normal (13%)	11	14	13	10	9	6	5	4	1	1	-2	-1
Dry (24%)	3	7	7	6	6	6	5	4	2	2	3	2
Critical (15%)	11	12	12	11	10	9	9	9	8	11	13	12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-2. Shasta Lake, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,015	1,015	1,020	1,033	1,041	1,055	1,064	1,067	1,063	1,044	1,031	1,014
20%	1,005	1,003	1,019	1,029	1,036	1,051	1,063	1,067	1,057	1,039	1,027	1,008
30%	1,000	996	1,017	1,022	1,033	1,047	1,061	1,067	1,054	1,031	1,016	1,005
40%	994	992	1,007	1,017	1,027	1,045	1,057	1,062	1,048	1,020	1,007	1,000
50%	988	986	996	1,013	1,023	1,039	1,052	1,054	1,039	1,014	999	994
60%	984	981	986	1,004	1,018	1,031	1,047	1,046	1,030	1,006	994	989
70%	969	970	975	990	1,012	1,024	1,038	1,031	1,019	993	984	974
80%	953	953	964	981	996	1,012	1,025	1,014	998	974	961	957
90%	907	905	912	954	967	987	993	994	976	943	917	914
Long Term												
Full Simulation Period[b]	972	971	982	998	1,012	1,028	1,038	1,038	1,024	1,000	985	976
Water Year Types[c]												
Wet (32%)	991	992	1,008	1,023	1,031	1,041	1,058	1,064	1,056	1,037	1,024	1,005
Above Normal (16%)	967	968	982	1,012	1,025	1,048	1,062	1,063	1,049	1,024	1,009	999
Below Normal (13%)	986	985	991	1,009	1,025	1,040	1,048	1,045	1,031	1,006	989	987
Dry (24%)	969	967	975	986	1,006	1,027	1,037	1,034	1,018	995	982	980
Critical (15%)	927	923	929	939	951	968	965	958	935	899	876	872

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,017	1,017	1,021	1,034	1,044	1,055	1,064	1,067	1,063	1,043	1,031	1,023
20%	1,015	1,017	1,020	1,030	1,039	1,052	1,063	1,067	1,057	1,039	1,024	1,022
30%	1,010	1,013	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,029	1,013	1,011
40%	1,003	1,009	1,017	1,022	1,032	1,046	1,057	1,060	1,044	1,019	1,006	1,003
50%	992	996	1,010	1,018	1,027	1,042	1,054	1,055	1,038	1,012	996	995
60%	983	988	1,003	1,014	1,020	1,038	1,050	1,047	1,028	1,006	992	988
70%	977	979	990	1,001	1,017	1,028	1,044	1,038	1,022	997	986	981
80%	962	962	969	989	1,005	1,023	1,034	1,030	1,006	983	966	964
90%	926	925	930	962	977	998	993	1,002	990	961	942	933
Long Term												
Full Simulation Period[b]	978	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	987	982
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,036	1,022	1,017
Above Normal (16%)	973	976	990	1,018	1,028	1,048	1,062	1,062	1,046	1,021	1,006	1,004
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,054	1,049	1,032	1,008	991	986
Dry (24%)	974	976	983	993	1,013	1,033	1,042	1,039	1,021	998	985	983
Critical (15%)	935	933	939	948	960	975	972	966	941	910	888	882

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	2	2	1	1	3	0	0	0	-1	-1	0	10
20%	9	14	1	1	3	0	0	0	0	-1	-3	14
30%	10	17	2	6	3	1	0	-1	-1	-2	-2	6
40%	9	17	10	5	5	1	0	-2	-3	-1	-1	3
50%	4	11	14	5	4	4	1	1	-1	-1	-3	1
60%	-1	7	16	9	2	7	3	0	-2	0	-2	-2
70%	8	9	15	11	5	4	6	6	3	4	3	7
80%	9	9	5	8	9	11	9	16	8	8	5	7
90%	20	20	18	8	10	11	0	8	14	17	25	20
Long Term												
Full Simulation Period[b]	7	10	8	6	5	4	3	3	1	2	2	6
Water Year Types[c]												
Wet (32%)	6	10	4	1	0	0	0	0	-1	-1	-2	12
Above Normal (16%)	5	8	8	6	2	0	0	-1	-2	-2	-3	5
Below Normal (13%)	11	14	13	10	9	6	6	4	2	2	2	-2
Dry (24%)	5	9	8	7	7	6	6	5	3	3	3	2
Critical (15%)	8	10	10	9	8	7	8	8	7	11	11	11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-3. Shasta Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,015	1,015	1,020	1,033	1,041	1,055	1,064	1,067	1,063	1,044	1,031	1,014
20%	1,005	1,003	1,019	1,029	1,036	1,051	1,063	1,067	1,057	1,039	1,027	1,008
30%	1,000	996	1,017	1,022	1,033	1,047	1,061	1,067	1,054	1,031	1,016	1,005
40%	994	992	1,007	1,017	1,027	1,045	1,057	1,062	1,048	1,020	1,007	1,000
50%	988	986	996	1,013	1,023	1,039	1,052	1,054	1,039	1,014	999	994
60%	984	981	986	1,004	1,018	1,031	1,047	1,046	1,030	1,006	994	989
70%	969	970	975	990	1,012	1,024	1,038	1,031	1,019	993	984	974
80%	953	953	964	981	996	1,012	1,025	1,014	998	974	961	957
90%	907	905	912	954	967	987	993	994	976	943	917	914
Long Term												
Full Simulation Period[b]	972	971	982	998	1,012	1,028	1,038	1,038	1,024	1,000	985	976
Water Year Types[c]												
Wet (32%)	991	992	1,008	1,023	1,031	1,041	1,058	1,064	1,056	1,037	1,024	1,005
Above Normal (16%)	967	968	982	1,012	1,025	1,048	1,062	1,063	1,049	1,024	1,009	999
Below Normal (13%)	986	985	991	1,009	1,025	1,040	1,048	1,045	1,031	1,006	989	987
Dry (24%)	969	967	975	986	1,006	1,027	1,037	1,034	1,018	995	982	980
Critical (15%)	927	923	929	939	951	968	965	958	935	899	876	872

Alternative 5

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,015	1,017	1,020	1,033	1,041	1,055	1,065	1,067	1,063	1,044	1,031	1,014
20%	1,007	1,002	1,019	1,029	1,037	1,051	1,063	1,067	1,057	1,039	1,026	1,008
30%	1,001	996	1,017	1,022	1,033	1,047	1,061	1,067	1,054	1,031	1,016	1,005
40%	995	992	1,008	1,018	1,028	1,045	1,057	1,063	1,046	1,020	1,007	1,000
50%	989	986	996	1,014	1,023	1,039	1,052	1,055	1,040	1,015	1,000	994
60%	984	981	986	1,005	1,018	1,032	1,047	1,046	1,032	1,007	995	989
70%	970	970	976	990	1,013	1,024	1,038	1,033	1,019	994	984	974
80%	951	953	964	981	996	1,013	1,027	1,017	1,000	976	959	955
90%	904	902	908	952	970	987	992	996	980	944	913	910
Long Term												
Full Simulation Period[b]	972	971	982	998	1,012	1,028	1,038	1,039	1,025	1,001	985	976
Water Year Types[c]												
Wet (32%)	991	992	1,008	1,023	1,031	1,041	1,058	1,064	1,056	1,037	1,024	1,005
Above Normal (16%)	967	968	982	1,012	1,025	1,048	1,062	1,063	1,049	1,024	1,009	999
Below Normal (13%)	987	985	992	1,009	1,025	1,040	1,048	1,045	1,031	1,006	990	988
Dry (24%)	969	967	975	986	1,006	1,027	1,037	1,035	1,019	996	982	980
Critical (15%)	925	921	928	938	950	967	965	959	937	899	874	869

Alternative 5 minus No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	1	0	0	0	0	0	0	0	0	0	1
20%	1	-1	0	0	0	0	0	0	0	-1	0	0
30%	1	0	0	0	0	0	0	0	0	0	1	0
40%	1	0	1	0	0	0	0	0	-1	0	0	1
50%	1	0	1	1	0	0	0	1	0	1	1	0
60%	0	0	0	0	0	1	0	0	2	1	1	0
70%	1	0	1	1	1	0	1	2	0	1	0	0
80%	-2	0	0	0	0	1	2	3	2	2	-3	-3
90%	-3	-3	-4	-2	3	1	-1	2	4	1	-4	-3
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	1	1	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	1	1	1	1	0	0	1	1	1	0	1	1
Dry (24%)	0	0	0	0	0	0	0	1	1	1	0	0
Critical (15%)	-2	-2	-1	-1	-1	-1	0	1	3	-1	-2	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-4. Shasta Lake, End of Month Elevation

Second Basis of Comparison

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,017	1,017	1,022	1,033	1,044	1,055	1,065	1,067	1,063	1,044	1,030	1,023
20%	1,017	1,017	1,020	1,030	1,039	1,051	1,063	1,067	1,057	1,039	1,023	1,020
30%	1,012	1,015	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,030	1,014	1,010
40%	1,003	1,007	1,017	1,023	1,031	1,046	1,058	1,061	1,044	1,019	1,005	1,003
50%	993	995	1,012	1,020	1,027	1,044	1,054	1,056	1,037	1,012	997	995
60%	985	988	1,003	1,013	1,021	1,037	1,050	1,046	1,027	1,004	990	988
70%	975	982	991	1,001	1,017	1,028	1,043	1,039	1,020	997	986	982
80%	961	964	966	989	1,005	1,024	1,034	1,029	1,004	979	963	963
90%	918	913	926	959	978	996	994	1,004	989	955	931	926
Long Term												
Full Simulation Period[b]	979	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	986	983
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,037	1,022	1,017
Above Normal (16%)	974	978	992	1,019	1,028	1,048	1,062	1,062	1,046	1,021	1,005	1,003
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,053	1,049	1,031	1,006	987	986
Dry (24%)	972	974	982	992	1,012	1,032	1,041	1,038	1,020	997	984	982
Critical (15%)	938	935	941	950	961	977	974	967	943	910	889	884

No Action Alternative

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,015	1,015	1,020	1,033	1,041	1,055	1,064	1,067	1,063	1,044	1,031	1,014
20%	1,005	1,003	1,019	1,029	1,036	1,051	1,063	1,067	1,057	1,039	1,027	1,008
30%	1,000	996	1,017	1,022	1,033	1,047	1,061	1,067	1,054	1,031	1,016	1,005
40%	994	992	1,007	1,017	1,027	1,045	1,057	1,062	1,048	1,020	1,007	1,000
50%	988	986	996	1,013	1,023	1,039	1,052	1,054	1,039	1,014	999	994
60%	984	981	986	1,004	1,018	1,031	1,047	1,046	1,030	1,006	994	989
70%	969	970	975	990	1,012	1,024	1,038	1,031	1,019	993	984	974
80%	953	953	964	981	996	1,012	1,025	1,014	998	974	961	957
90%	907	905	912	954	967	987	993	994	976	943	917	914
Long Term												
Full Simulation Period[b]	972	971	982	998	1,012	1,028	1,038	1,038	1,024	1,000	985	976
Water Year Types[c]												
Wet (32%)	991	992	1,008	1,023	1,031	1,041	1,058	1,064	1,056	1,037	1,024	1,005
Above Normal (16%)	967	968	982	1,012	1,025	1,048	1,062	1,063	1,049	1,024	1,009	999
Below Normal (13%)	986	985	991	1,009	1,025	1,040	1,048	1,045	1,031	1,006	989	987
Dry (24%)	969	967	975	986	1,006	1,027	1,037	1,034	1,018	995	982	980
Critical (15%)	927	923	929	939	951	968	965	958	935	899	876	872

No Action Alternative minus Second Basis of Comparison

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2	-2	-2	-1	-4	0	-1	0	1	0	1	-10
20%	-11	-14	-2	-1	-3	0	-1	0	0	1	4	-13
30%	-12	-19	-2	-6	-2	-1	0	0	1	1	2	-5
40%	-9	-15	-10	-5	-3	-1	-1	2	3	1	2	-4
50%	-4	-10	-16	-7	-4	-5	-1	-2	2	2	3	-1
60%	-1	-7	-16	-9	-3	-6	-2	0	3	2	3	1
70%	-6	-12	-15	-12	-5	-4	-5	-7	-1	-4	-2	-7
80%	-9	-11	-2	-8	-9	-12	-9	-15	-6	-5	-2	-6
90%	-11	-8	-14	-5	-11	-9	-1	-10	-13	-12	-13	-13
Long Term												
Full Simulation Period[b]	-7	-10	-8	-6	-5	-4	-3	-3	-1	-2	-1	-7
Water Year Types[c]												
Wet (32%)	-6	-10	-4	-1	0	0	0	0	1	0	2	-12
Above Normal (16%)	-7	-10	-10	-7	-3	-1	0	0	2	3	4	-4
Below Normal (13%)	-11	-14	-13	-10	-9	-6	-5	-4	-1	-1	2	1
Dry (24%)	-3	-7	-7	-6	-6	-6	-5	-4	-2	-2	-3	-2
Critical (15%)	-11	-12	-12	-11	-10	-9	-9	-9	-8	-11	-13	-12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-5. Shasta Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,017	1,017	1,022	1,033	1,044	1,055	1,065	1,067	1,063	1,044	1,030	1,023
20%	1,017	1,017	1,020	1,030	1,039	1,051	1,063	1,067	1,057	1,039	1,023	1,020
30%	1,012	1,015	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,030	1,014	1,010
40%	1,003	1,007	1,017	1,023	1,031	1,046	1,058	1,061	1,044	1,019	1,005	1,003
50%	993	995	1,012	1,020	1,027	1,044	1,054	1,056	1,037	1,012	997	995
60%	985	988	1,003	1,013	1,021	1,037	1,050	1,046	1,027	1,004	990	988
70%	975	982	991	1,001	1,017	1,028	1,043	1,039	1,020	997	986	982
80%	961	964	966	989	1,005	1,024	1,034	1,029	1,004	979	963	963
90%	918	913	926	959	978	996	994	1,004	989	955	931	926
Long Term												
Full Simulation Period[b]	979	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	986	983
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,037	1,022	1,017
Above Normal (16%)	974	978	992	1,019	1,028	1,048	1,062	1,062	1,046	1,021	1,005	1,003
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,053	1,049	1,031	1,006	987	986
Dry (24%)	972	974	982	992	1,012	1,032	1,041	1,038	1,020	997	984	982
Critical (15%)	938	935	941	950	961	977	974	967	943	910	889	884

Alternative 3

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,017	1,017	1,021	1,034	1,044	1,055	1,064	1,067	1,063	1,043	1,031	1,023
20%	1,015	1,017	1,020	1,030	1,039	1,052	1,063	1,067	1,057	1,039	1,024	1,022
30%	1,010	1,013	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,029	1,013	1,011
40%	1,003	1,009	1,017	1,022	1,032	1,046	1,057	1,060	1,044	1,019	1,006	1,003
50%	992	996	1,010	1,018	1,027	1,042	1,054	1,055	1,038	1,012	996	995
60%	983	988	1,003	1,014	1,020	1,038	1,050	1,047	1,028	1,006	992	988
70%	977	979	990	1,001	1,017	1,028	1,044	1,038	1,022	997	986	981
80%	962	962	969	989	1,005	1,023	1,034	1,030	1,006	983	966	964
90%	926	925	930	962	977	998	993	1,002	990	961	942	933
Long Term												
Full Simulation Period[b]	978	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	987	982
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,036	1,022	1,017
Above Normal (16%)	973	976	990	1,018	1,028	1,048	1,062	1,062	1,046	1,021	1,006	1,004
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,054	1,049	1,032	1,008	991	986
Dry (24%)	974	976	983	993	1,013	1,033	1,042	1,039	1,021	998	985	983
Critical (15%)	935	933	939	948	960	975	972	966	941	910	888	882

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	-1	0	0	-1	1	0
20%	-2	0	0	0	0	0	0	0	0	0	2	1
30%	-1	-2	0	0	0	0	0	-1	0	-1	0	0
40%	0	2	0	-1	1	0	0	0	0	0	1	0
50%	0	1	-2	-2	0	-2	0	-1	1	0	-1	0
60%	-3	0	0	0	-1	1	0	1	0	2	1	-1
70%	2	-3	0	0	0	0	0	-1	2	1	1	0
80%	0	-2	3	0	0	-1	0	1	2	4	3	1
90%	8	12	4	3	-1	2	-1	-3	1	6	11	7
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	1	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	-1	0	0
Above Normal (16%)	-2	-2	-2	-1	0	-1	0	-1	0	0	1	1
Below Normal (13%)	0	0	0	0	0	0	0	1	1	1	4	0
Dry (24%)	2	2	1	1	1	1	1	1	1	1	0	0
Critical (15%)	-3	-2	-2	-2	-2	-2	-1	-1	-1	0	-1	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-6. Shasta Lake, End of Month Elevation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,017	1,017	1,022	1,033	1,044	1,055	1,065	1,067	1,063	1,044	1,030	1,023
20%	1,017	1,017	1,020	1,030	1,039	1,051	1,063	1,067	1,057	1,039	1,023	1,020
30%	1,012	1,015	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,030	1,014	1,010
40%	1,003	1,007	1,017	1,023	1,031	1,046	1,058	1,061	1,044	1,019	1,005	1,003
50%	993	995	1,012	1,020	1,027	1,044	1,054	1,056	1,037	1,012	997	995
60%	985	988	1,003	1,013	1,021	1,037	1,050	1,046	1,027	1,004	990	988
70%	975	982	991	1,001	1,017	1,028	1,043	1,039	1,020	997	986	982
80%	961	964	966	989	1,005	1,024	1,034	1,029	1,004	979	963	963
90%	918	913	926	959	978	996	994	1,004	989	955	931	926
Long Term												
Full Simulation Period[b]	979	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	986	983
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,037	1,022	1,017
Above Normal (16%)	974	978	992	1,019	1,028	1,048	1,062	1,062	1,046	1,021	1,005	1,003
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,053	1,049	1,031	1,006	987	986
Dry (24%)	972	974	982	992	1,012	1,032	1,041	1,038	1,020	997	984	982
Critical (15%)	938	935	941	950	961	977	974	967	943	910	889	884

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,015	1,017	1,020	1,033	1,041	1,055	1,065	1,067	1,063	1,044	1,031	1,014
20%	1,007	1,002	1,019	1,029	1,037	1,051	1,063	1,067	1,057	1,039	1,026	1,008
30%	1,001	996	1,017	1,022	1,033	1,047	1,061	1,067	1,054	1,031	1,016	1,005
40%	995	992	1,008	1,018	1,028	1,045	1,057	1,063	1,046	1,020	1,007	1,000
50%	989	986	996	1,014	1,023	1,039	1,052	1,055	1,040	1,015	1,000	994
60%	984	981	986	1,005	1,018	1,032	1,047	1,046	1,032	1,007	995	989
70%	970	970	976	990	1,013	1,024	1,038	1,033	1,019	994	984	974
80%	951	953	964	981	996	1,013	1,027	1,017	1,000	976	959	955
90%	904	902	908	952	970	987	992	996	980	944	913	910
Long Term												
Full Simulation Period[b]	972	971	982	998	1,012	1,028	1,038	1,039	1,025	1,001	985	976
Water Year Types[c]												
Wet (32%)	991	992	1,008	1,023	1,031	1,041	1,058	1,064	1,056	1,037	1,024	1,005
Above Normal (16%)	967	968	982	1,012	1,025	1,048	1,062	1,063	1,049	1,024	1,009	999
Below Normal (13%)	987	985	992	1,009	1,025	1,040	1,048	1,045	1,031	1,006	990	988
Dry (24%)	969	967	975	986	1,006	1,027	1,037	1,035	1,019	996	982	980
Critical (15%)	925	921	928	938	950	967	965	959	937	899	874	869

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	-2	0	-2	-1	-4	0	0	0	1	0	1	-9
20%	-10	-15	-2	-1	-2	0	-1	0	0	0	4	-13
30%	-11	-19	-2	-6	-2	-1	0	0	1	1	3	-5
40%	-8	-15	-9	-5	-3	-1	-1	2	2	1	2	-3
50%	-3	-9	-16	-5	-4	-6	-1	-1	3	2	3	-1
60%	-1	-7	-17	-9	-3	-6	-3	0	4	3	4	1
70%	-6	-12	-15	-11	-4	-4	-5	-6	-2	-3	-2	-7
80%	-11	-11	-2	-8	-9	-11	-7	-12	-4	-3	-4	-8
90%	-15	-11	-18	-7	-8	-8	-2	-8	-9	-11	-18	-16
Long Term												
Full Simulation Period[b]	-7	-10	-8	-6	-5	-4	-3	-2	0	-1	-1	-7
Water Year Types[c]												
Wet (32%)	-6	-10	-4	-1	0	0	0	0	1	0	2	-12
Above Normal (16%)	-7	-10	-10	-7	-3	-1	-1	0	2	3	4	-4
Below Normal (13%)	-10	-13	-12	-10	-8	-6	-5	-3	0	0	3	2
Dry (24%)	-3	-7	-7	-6	-6	-5	-4	-3	-1	-1	-3	-2
Critical (15%)	-13	-14	-14	-12	-11	-10	-9	-8	-5	-11	-15	-14

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

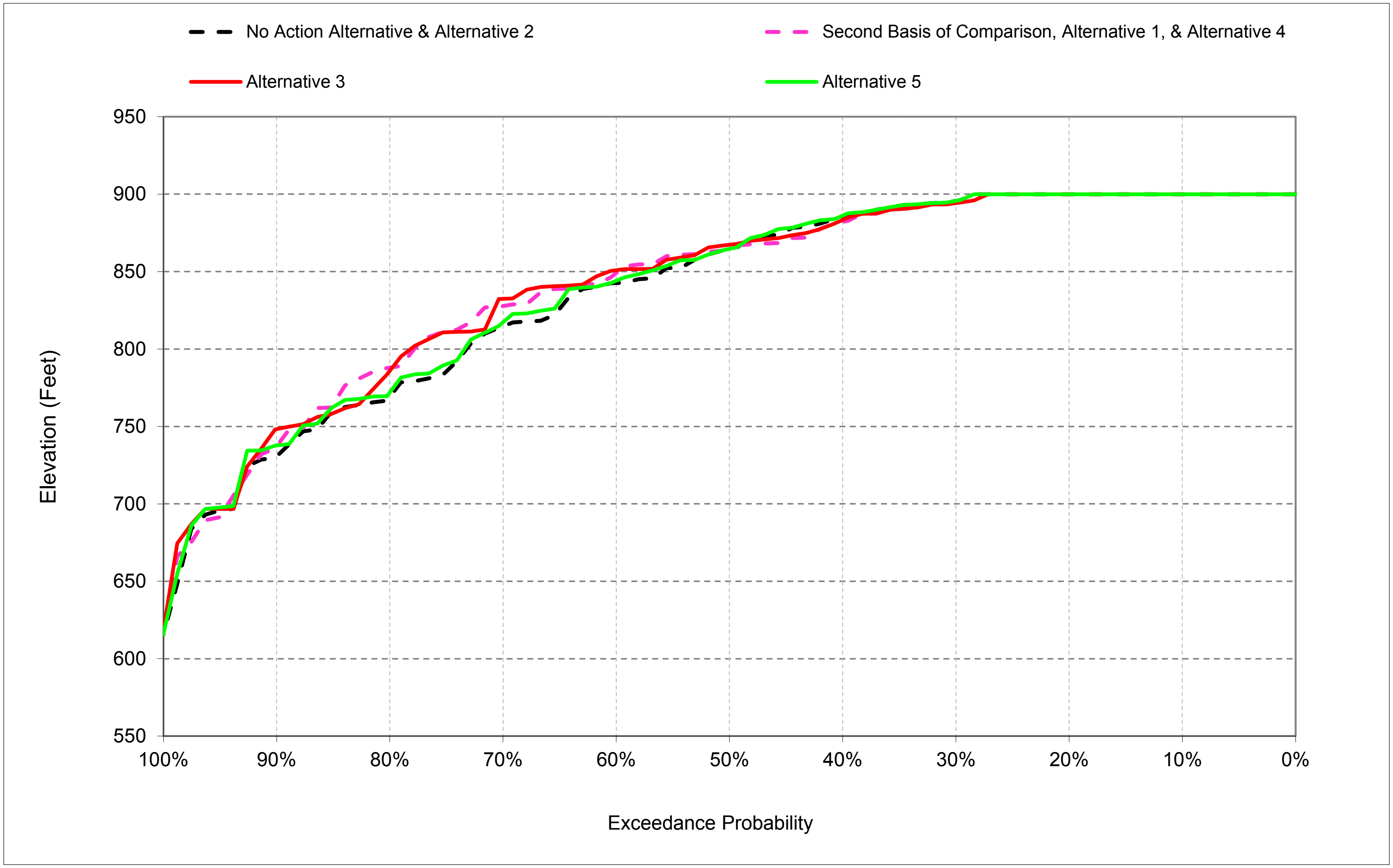
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

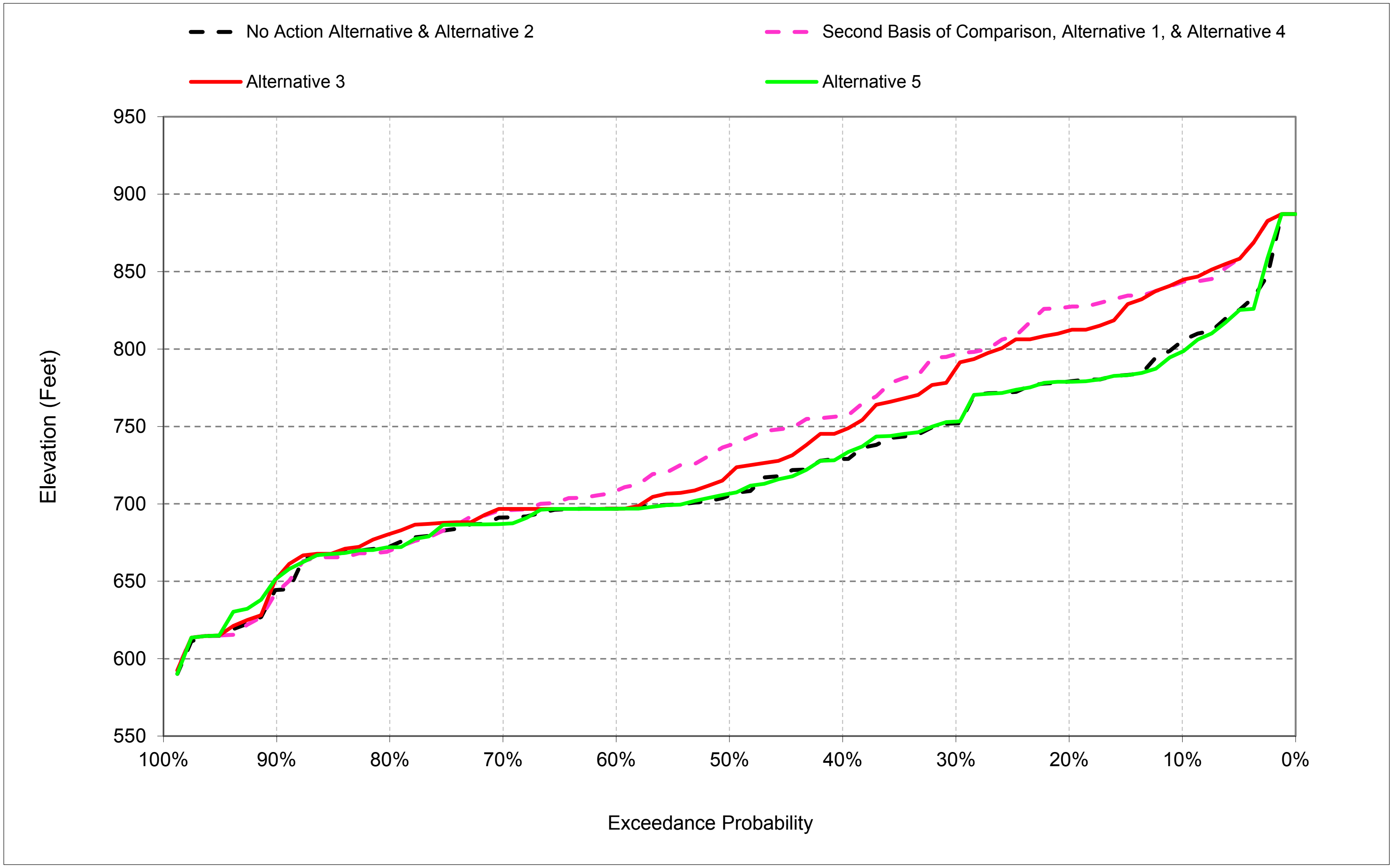
C.10. Oroville Lake Elevation

Figure C-10-1. Lake Oroville, Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-10-2. Lake Oroville, Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-1. Lake Oroville, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	788	795	844	849	858	866	887	900	900	866	847	805
20%	760	762	786	837	849	861	884	900	900	860	829	779
30%	742	748	762	813	849	856	882	896	888	846	815	765
40%	716	717	739	776	833	849	877	885	871	827	779	733
50%	697	697	715	751	800	839	858	865	852	804	755	708
60%	687	682	698	740	773	810	836	843	826	765	729	697
70%	679	669	679	704	749	786	805	815	783	723	698	691
80%	668	658	665	685	719	751	773	769	750	696	683	676
90%	650	648	648	668	696	727	749	731	699	679	664	647
Long Term												
Full Simulation Period[b]	711	710	728	758	789	811	831	838	824	783	755	724
Water Year Types[c]												
Wet (32%)	743	748	794	829	852	859	884	897	894	861	836	790
Above Normal (16%)	698	703	722	776	828	856	880	890	879	835	794	746
Below Normal (13%)	730	725	726	751	793	818	838	842	828	773	729	704
Dry (24%)	688	683	686	704	737	775	798	800	775	724	702	684
Critical (15%)	674	667	664	678	693	712	715	712	693	663	648	640

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	837	832	849	850	860	867	887	900	900	866	853	843
20%	811	814	827	849	852	863	884	900	900	861	835	827
30%	776	786	800	833	849	859	882	896	883	848	823	797
40%	752	761	785	820	849	852	877	882	862	820	783	762
50%	719	721	754	802	834	849	868	865	840	798	762	741
60%	685	679	716	754	797	839	856	849	825	774	740	712
70%	672	667	677	704	770	807	831	828	789	758	719	696
80%	666	662	666	680	733	763	782	788	759	720	695	673
90%	651	644	647	667	691	725	736	737	707	683	666	652
Long Term												
Full Simulation Period[b]	730	729	746	771	799	818	838	842	823	788	762	744
Water Year Types[c]												
Wet (32%)	768	773	810	837	854	859	884	896	891	861	844	831
Above Normal (16%)	717	723	745	796	838	859	882	888	869	826	790	763
Below Normal (13%)	757	752	757	779	812	834	854	852	823	775	743	719
Dry (24%)	706	701	705	721	755	791	814	813	784	748	718	698
Critical (15%)	677	668	668	680	694	715	716	714	691	664	647	636

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	49	38	5	1	2	1	0	0	0	0	7	38
20%	51	52	40	12	3	2	0	0	0	1	6	48
30%	34	39	37	20	0	3	0	0	-5	2	8	32
40%	36	44	46	44	16	4	0	-3	-9	-7	4	28
50%	22	24	39	51	34	10	10	1	-12	-6	7	34
60%	-2	-2	18	14	24	29	20	6	-1	9	11	14
70%	-7	-2	-2	0	20	20	26	13	6	34	20	5
80%	-2	4	1	-4	15	12	9	19	9	24	12	-3
90%	1	-3	-2	-1	-5	-2	-13	6	8	4	2	5
Long Term												
Full Simulation Period[b]	19	19	18	14	10	7	6	4	-1	5	8	21
Water Year Types[c]												
Wet (32%)	24	25	16	8	3	0	0	-1	-3	0	8	41
Above Normal (16%)	19	21	24	20	10	3	2	-3	-10	-10	-4	18
Below Normal (13%)	27	27	31	28	20	17	16	9	-5	1	14	14
Dry (24%)	18	18	18	17	18	16	15	14	9	24	17	15
Critical (15%)	3	1	3	3	1	3	2	2	-2	0	-1	-4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-2. Lake Oroville, End of Month Elevation

No Action Alternative

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	788	795	844	849	858	866	887	900	900	866	847	805
20%	760	762	786	837	849	861	884	900	900	860	829	779
30%	742	748	762	813	849	856	882	896	888	846	815	765
40%	716	717	739	776	833	849	877	885	871	827	779	733
50%	697	697	715	751	800	839	858	865	852	804	755	708
60%	687	682	698	740	773	810	836	843	826	765	729	697
70%	679	669	679	704	749	786	805	815	783	723	698	691
80%	668	658	665	685	719	751	773	769	750	696	683	676
90%	650	648	648	668	696	727	749	731	699	679	664	647
Long Term												
Full Simulation Period[b]	711	710	728	758	789	811	831	838	824	783	755	724
Water Year Types[c]												
Wet (32%)	743	748	794	829	852	859	884	897	894	861	836	790
Above Normal (16%)	698	703	722	776	828	856	880	890	879	835	794	746
Below Normal (13%)	730	725	726	751	793	818	838	842	828	773	729	704
Dry (24%)	688	683	686	704	737	775	798	800	775	724	702	684
Critical (15%)	674	667	664	678	693	712	715	712	693	663	648	640

Alternative 3

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	839	832	849	850	859	867	887	900	900	866	849	845
20%	793	799	829	849	850	862	884	900	899	856	830	812
30%	773	771	791	826	849	859	882	894	875	833	811	787
40%	745	751	768	811	844	852	877	883	860	815	781	752
50%	699	703	746	794	834	849	869	867	846	794	753	724
60%	691	682	713	750	796	839	855	851	826	769	719	698
70%	680	674	680	710	765	801	831	832	802	741	705	697
80%	670	660	666	686	723	756	786	786	757	709	697	684
90%	652	650	650	669	696	723	748	748	703	687	673	662
Long Term												
Full Simulation Period[b]	727	726	744	770	798	818	838	842	824	783	755	739
Water Year Types[c]												
Wet (32%)	763	767	805	834	853	859	884	895	889	856	836	825
Above Normal (16%)	711	717	738	791	836	859	882	889	872	827	786	758
Below Normal (13%)	758	754	759	781	813	835	854	855	836	780	730	710
Dry (24%)	702	697	703	720	752	789	811	810	779	733	709	691
Critical (15%)	679	671	671	684	699	718	719	718	693	665	648	640

Alternative 3 minus No Action Alternative

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	50	38	5	1	2	1	0	0	0	1	2	39
20%	33	37	43	12	1	1	0	0	-1	-4	1	33
30%	31	24	28	13	0	3	0	-1	-13	-13	-4	23
40%	29	34	29	36	11	3	0	-2	-11	-12	2	19
50%	2	6	31	43	33	10	11	3	-6	-10	-2	17
60%	4	1	15	10	23	29	19	8	-1	4	-10	0
70%	1	5	2	6	16	15	26	18	19	18	6	5
80%	1	2	1	2	4	5	13	17	6	13	14	8
90%	1	2	2	1	0	-4	-1	18	4	8	10	15
Long Term												
Full Simulation Period[b]	16	16	15	13	9	7	6	4	-1	0	1	16
Water Year Types[c]												
Wet (32%)	19	19	11	5	2	0	0	-1	-5	-5	0	35
Above Normal (16%)	13	14	16	15	9	4	2	-2	-7	-9	-9	13
Below Normal (13%)	28	29	32	30	21	17	16	13	8	6	1	6
Dry (24%)	14	14	16	16	15	13	13	10	3	8	7	7
Critical (15%)	5	5	7	7	6	6	5	6	0	2	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-3. Lake Oroville, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	788	795	844	849	858	866	887	900	900	866	847	805
20%	760	762	786	837	849	861	884	900	900	860	829	779
30%	742	748	762	813	849	856	882	896	888	846	815	765
40%	716	717	739	776	833	849	877	885	871	827	779	733
50%	697	697	715	751	800	839	858	865	852	804	755	708
60%	687	682	698	740	773	810	836	843	826	765	729	697
70%	679	669	679	704	749	786	805	815	783	723	698	691
80%	668	658	665	685	719	751	773	769	750	696	683	676
90%	650	648	648	668	696	727	749	731	699	679	664	647
Long Term												
Full Simulation Period[b]	711	710	728	758	789	811	831	838	824	783	755	724
Water Year Types[c]												
Wet (32%)	743	748	794	829	852	859	884	897	894	861	836	790
Above Normal (16%)	698	703	722	776	828	856	880	890	879	835	794	746
Below Normal (13%)	730	725	726	751	793	818	838	842	828	773	729	704
Dry (24%)	688	683	686	704	737	775	798	800	775	724	702	684
Critical (15%)	674	667	664	678	693	712	715	712	693	663	648	640

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	788	795	847	849	858	866	887	900	900	864	843	798
20%	760	762	787	840	849	861	884	900	900	860	830	779
30%	742	747	763	810	849	856	882	896	888	847	815	765
40%	716	712	735	776	833	849	877	886	872	829	783	736
50%	697	698	720	753	801	839	858	865	853	805	757	710
60%	688	685	698	740	777	812	836	844	830	769	720	697
70%	679	673	679	705	751	787	806	817	788	725	697	689
80%	668	662	667	687	721	753	774	772	754	696	684	673
90%	648	648	649	671	698	727	748	738	704	687	673	658
Long Term												
Full Simulation Period[b]	711	710	729	758	789	812	832	839	826	785	755	724
Water Year Types[c]												
Wet (32%)	742	746	793	829	852	859	884	897	894	860	835	789
Above Normal (16%)	698	701	720	775	827	856	880	891	880	836	795	747
Below Normal (13%)	731	726	728	752	794	818	839	845	831	777	730	704
Dry (24%)	691	685	688	706	738	777	799	804	779	727	703	685
Critical (15%)	676	668	665	679	694	712	716	715	696	667	650	642

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	-1	0	3	0	0	0	0	0	0	-1	-4	-7
20%	0	0	0	3	0	0	0	0	0	0	0	0
30%	0	-1	1	-2	0	0	0	0	0	1	1	1
40%	0	-4	-4	0	0	0	0	1	1	1	4	2
50%	0	1	5	2	1	0	0	0	1	2	2	2
60%	1	3	0	0	4	1	1	2	4	4	-9	0
70%	1	4	0	0	2	1	1	3	5	2	-2	-3
80%	0	4	2	3	2	2	0	3	3	0	1	-3
90%	-3	0	1	3	1	0	-1	7	6	8	10	12
Long Term												
Full Simulation Period[b]	1	0	0	1	1	0	1	2	2	2	1	0
Water Year Types[c]												
Wet (32%)	-1	-1	-1	0	0	0	0	0	0	0	-1	-1
Above Normal (16%)	0	-1	-2	-1	-1	0	0	1	1	1	1	1
Below Normal (13%)	1	1	2	1	1	1	1	2	3	4	1	0
Dry (24%)	3	2	2	2	1	1	1	4	4	3	1	1
Critical (15%)	2	1	1	1	1	0	1	2	3	4	2	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-4. Lake Oroville, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	832	849	850	860	867	887	900	900	866	853	843
20%	811	814	827	849	852	863	884	900	900	861	835	827
30%	776	786	800	833	849	859	882	896	883	848	823	797
40%	752	761	785	820	849	852	877	882	862	820	783	762
50%	719	721	754	802	834	849	868	865	840	798	762	741
60%	685	679	716	754	797	839	856	849	825	774	740	712
70%	672	667	677	704	770	807	831	828	789	758	719	696
80%	666	662	666	680	733	763	782	788	759	720	695	673
90%	651	644	647	667	691	725	736	737	707	683	666	652
Long Term												
Full Simulation Period[b]	730	729	746	771	799	818	838	842	823	788	762	744
Water Year Types[c]												
Wet (32%)	768	773	810	837	854	859	884	896	891	861	844	831
Above Normal (16%)	717	723	745	796	838	859	882	888	869	826	790	763
Below Normal (13%)	757	752	757	779	812	834	854	852	823	775	743	719
Dry (24%)	706	701	705	721	755	791	814	813	784	748	718	698
Critical (15%)	677	668	668	680	694	715	716	714	691	664	647	636

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	788	795	844	849	858	866	887	900	900	866	847	805
20%	760	762	786	837	849	861	884	900	900	860	829	779
30%	742	748	762	813	849	856	882	896	888	846	815	765
40%	716	717	739	776	833	849	877	885	871	827	779	733
50%	697	697	715	751	800	839	858	865	852	804	755	708
60%	687	682	698	740	773	810	836	843	826	765	729	697
70%	679	669	679	704	749	786	805	815	783	723	698	691
80%	668	658	665	685	719	751	773	769	750	696	683	676
90%	650	648	648	668	696	727	749	731	699	679	664	647
Long Term												
Full Simulation Period[b]	711	710	728	758	789	811	831	838	824	783	755	724
Water Year Types[c]												
Wet (32%)	743	748	794	829	852	859	884	897	894	861	836	790
Above Normal (16%)	698	703	722	776	828	856	880	890	879	835	794	746
Below Normal (13%)	730	725	726	751	793	818	838	842	828	773	729	704
Dry (24%)	688	683	686	704	737	775	798	800	775	724	702	684
Critical (15%)	674	667	664	678	693	712	715	712	693	663	648	640

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-49	-38	-5	-1	-2	-1	0	0	0	0	-7	-38
20%	-51	-52	-40	-12	-3	-2	0	0	0	-1	-6	-48
30%	-34	-39	-37	-20	0	-3	0	0	5	-2	-8	-32
40%	-36	-44	-46	-44	-16	-4	0	3	9	7	-4	-28
50%	-22	-24	-39	-51	-34	-10	-10	-1	12	6	-7	-34
60%	2	2	-18	-14	-24	-29	-20	-6	1	-9	-11	-14
70%	7	2	2	0	-20	-20	-26	-13	-6	-34	-20	-5
80%	2	-4	-1	4	-15	-12	-9	-19	-9	-24	-12	3
90%	-1	3	2	1	5	2	13	-6	-8	-4	-2	-5
Long Term												
Full Simulation Period[b]	-19	-19	-18	-14	-10	-7	-6	-4	1	-5	-8	-21
Water Year Types[c]												
Wet (32%)	-24	-25	-16	-8	-3	0	0	1	3	0	-8	-41
Above Normal (16%)	-19	-21	-24	-20	-10	-3	-2	3	10	10	4	-18
Below Normal (13%)	-27	-27	-31	-28	-20	-17	-16	-9	5	-1	-14	-14
Dry (24%)	-18	-18	-18	-17	-18	-16	-15	-14	-9	-24	-17	-15
Critical (15%)	-3	-1	-3	-3	-1	-3	-2	-2	2	0	1	4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-5. Lake Oroville, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	832	849	850	860	867	887	900	900	866	853	843
20%	811	814	827	849	852	863	884	900	900	861	835	827
30%	776	786	800	833	849	859	882	896	883	848	823	797
40%	752	761	785	820	849	852	877	882	862	820	783	762
50%	719	721	754	802	834	849	868	865	840	798	762	741
60%	685	679	716	754	797	839	856	849	825	774	740	712
70%	672	667	677	704	770	807	831	828	789	758	719	696
80%	666	662	666	680	733	763	782	788	759	720	695	673
90%	651	644	647	667	691	725	736	737	707	683	666	652
Long Term												
Full Simulation Period[b]	730	729	746	771	799	818	838	842	823	788	762	744
Water Year Types[c]												
Wet (32%)	768	773	810	837	854	859	884	896	891	861	844	831
Above Normal (16%)	717	723	745	796	838	859	882	888	869	826	790	763
Below Normal (13%)	757	752	757	779	812	834	854	852	823	775	743	719
Dry (24%)	706	701	705	721	755	791	814	813	784	748	718	698
Critical (15%)	677	668	668	680	694	715	716	714	691	664	647	636

Alternative 3

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	839	832	849	850	859	867	887	900	900	866	849	845
20%	793	799	829	849	850	862	884	900	899	856	830	812
30%	773	771	791	826	849	859	882	894	875	833	811	787
40%	745	751	768	811	844	852	877	883	860	815	781	752
50%	699	703	746	794	834	849	869	867	846	794	753	724
60%	691	682	713	750	796	839	855	851	826	769	719	698
70%	680	674	680	710	765	801	831	832	802	741	705	697
80%	670	660	666	686	723	756	786	786	757	709	697	684
90%	652	650	650	669	696	723	748	748	703	687	673	662
Long Term												
Full Simulation Period[b]	727	726	744	770	798	818	838	842	824	783	755	739
Water Year Types[c]												
Wet (32%)	763	767	805	834	853	859	884	895	889	856	836	825
Above Normal (16%)	711	717	738	791	836	859	882	889	872	827	786	758
Below Normal (13%)	758	754	759	781	813	835	854	855	836	780	730	710
Dry (24%)	702	697	703	720	752	789	811	810	779	733	709	691
Critical (15%)	679	671	671	684	699	718	719	718	693	665	648	640

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2	0	0	0	0	0	0	0	0	1	-4	1
20%	-18	-15	2	0	-2	0	0	0	-1	-5	-5	-15
30%	-3	-15	-9	-7	0	0	0	-1	-7	-14	-12	-9
40%	-7	-10	-17	-9	-4	0	0	1	-2	-5	-2	-10
50%	-20	-19	-8	-8	-1	0	1	2	6	-4	-9	-17
60%	6	3	-3	-5	-1	0	0	2	1	-5	-21	-14
70%	8	7	4	6	-4	-5	0	5	12	-17	-14	1
80%	4	-2	0	6	-10	-7	4	-2	-3	-11	1	10
90%	1	5	3	2	5	-1	12	11	-4	4	8	10
Long Term												
Full Simulation Period[b]	-3	-3	-2	-1	-1	0	0	0	1	-4	-7	-5
Water Year Types[c]												
Wet (32%)	-5	-6	-4	-2	-1	0	0	0	-2	-5	-8	-6
Above Normal (16%)	-6	-7	-8	-5	-2	1	1	1	3	1	-5	-5
Below Normal (13%)	1	2	2	2	1	1	0	3	13	5	-13	-8
Dry (24%)	-4	-4	-2	-2	-3	-3	-3	-4	-6	-16	-10	-7
Critical (15%)	2	3	3	4	5	3	3	4	2	1	1	4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-6. Lake Oroville, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	832	849	850	860	867	887	900	900	866	853	843
20%	811	814	827	849	852	863	884	900	900	861	835	827
30%	776	786	800	833	849	859	882	896	883	848	823	797
40%	752	761	785	820	849	852	877	882	862	820	783	762
50%	719	721	754	802	834	849	868	865	840	798	762	741
60%	685	679	716	754	797	839	856	849	825	774	740	712
70%	672	667	677	704	770	807	831	828	789	758	719	696
80%	666	662	666	680	733	763	782	788	759	720	695	673
90%	651	644	647	667	691	725	736	737	707	683	666	652
Long Term												
Full Simulation Period[b]	730	729	746	771	799	818	838	842	823	788	762	744
Water Year Types[c]												
Wet (32%)	768	773	810	837	854	859	884	896	891	861	844	831
Above Normal (16%)	717	723	745	796	838	859	882	888	869	826	790	763
Below Normal (13%)	757	752	757	779	812	834	854	852	823	775	743	719
Dry (24%)	706	701	705	721	755	791	814	813	784	748	718	698
Critical (15%)	677	668	668	680	694	715	716	714	691	664	647	636

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	788	795	847	849	858	866	887	900	900	864	843	798
20%	760	762	787	840	849	861	884	900	900	860	830	779
30%	742	747	763	810	849	856	882	896	888	847	815	765
40%	716	712	735	776	833	849	877	886	872	829	783	736
50%	697	698	720	753	801	839	858	865	853	805	757	710
60%	688	685	698	740	777	812	836	844	830	769	720	697
70%	679	673	679	705	751	787	806	817	788	725	697	689
80%	668	662	667	687	721	753	774	772	754	696	684	673
90%	648	648	649	671	698	727	748	738	704	687	673	658
Long Term												
Full Simulation Period[b]	711	710	729	758	789	812	832	839	826	785	755	724
Water Year Types[c]												
Wet (32%)	742	746	793	829	852	859	884	897	894	860	835	789
Above Normal (16%)	698	701	720	775	827	856	880	891	880	836	795	747
Below Normal (13%)	731	726	728	752	794	818	839	845	831	777	730	704
Dry (24%)	691	685	688	706	738	777	799	804	779	727	703	685
Critical (15%)	676	668	665	679	694	712	716	715	696	667	650	642

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-49	-38	-2	-1	-2	-1	0	0	0	-1	-10	-45
20%	-51	-52	-40	-9	-3	-2	0	0	0	-1	-6	-48
30%	-34	-40	-37	-23	0	-3	0	0	6	-1	-8	-31
40%	-36	-48	-50	-44	-16	-4	0	4	10	9	1	-26
50%	-22	-24	-34	-49	-33	-10	-10	-1	13	7	-4	-32
60%	3	5	-18	-15	-21	-27	-19	-5	5	-5	-20	-15
70%	8	6	2	0	-18	-19	-25	-11	-2	-32	-22	-8
80%	2	0	1	7	-13	-10	-9	-16	-5	-24	-12	0
90%	-3	3	2	4	6	2	12	0	-2	4	8	7
Long Term												
Full Simulation Period[b]	-18	-19	-17	-13	-9	-7	-6	-2	3	-3	-7	-20
Water Year Types[c]												
Wet (32%)	-26	-26	-16	-7	-3	0	0	1	3	-1	-9	-42
Above Normal (16%)	-19	-22	-25	-21	-11	-3	-2	3	11	10	5	-17
Below Normal (13%)	-26	-26	-29	-27	-19	-16	-15	-7	8	2	-13	-14
Dry (24%)	-15	-16	-16	-16	-17	-15	-14	-9	-5	-22	-15	-13
Critical (15%)	-1	0	-2	-1	-1	-3	-1	1	5	4	3	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

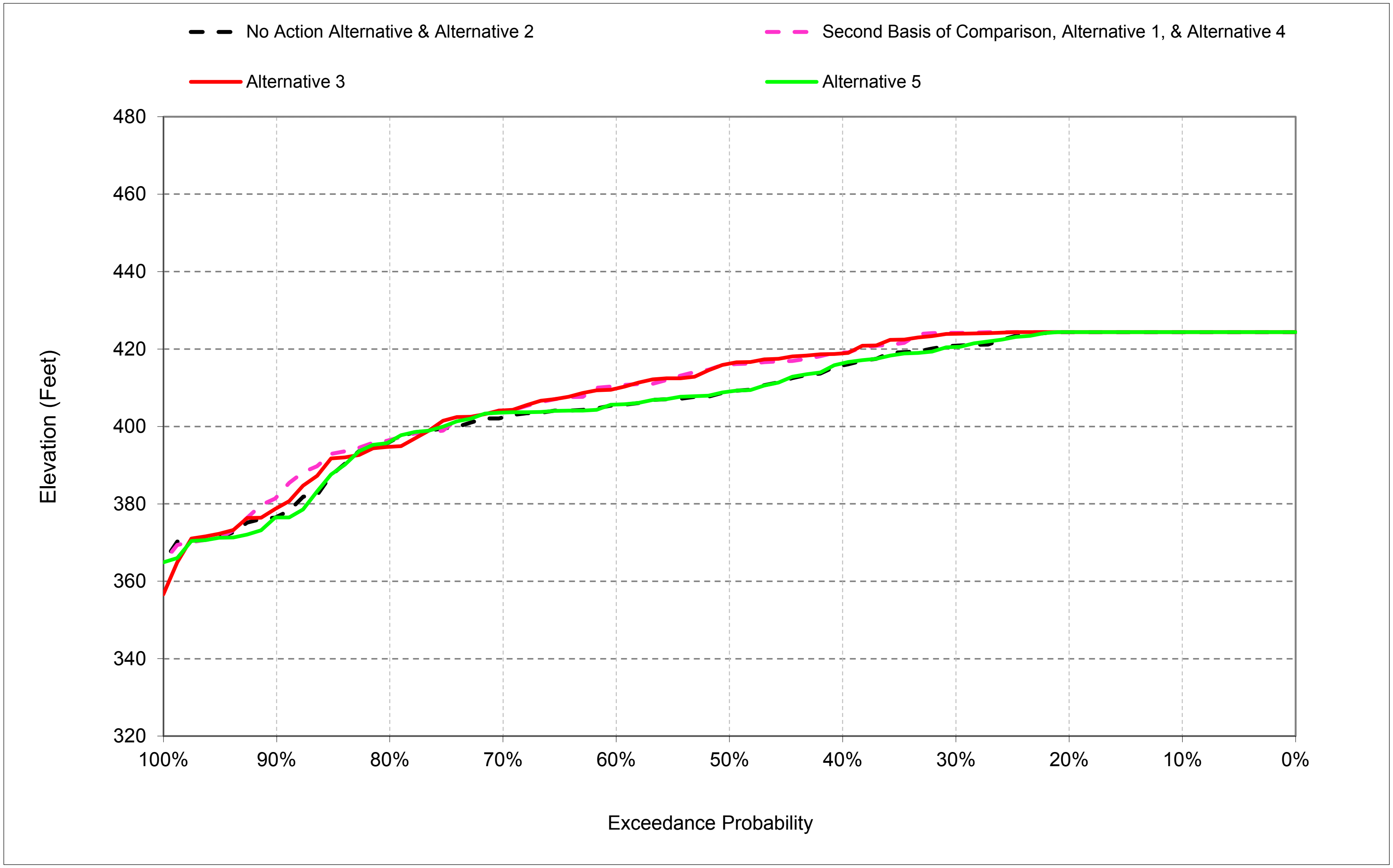
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

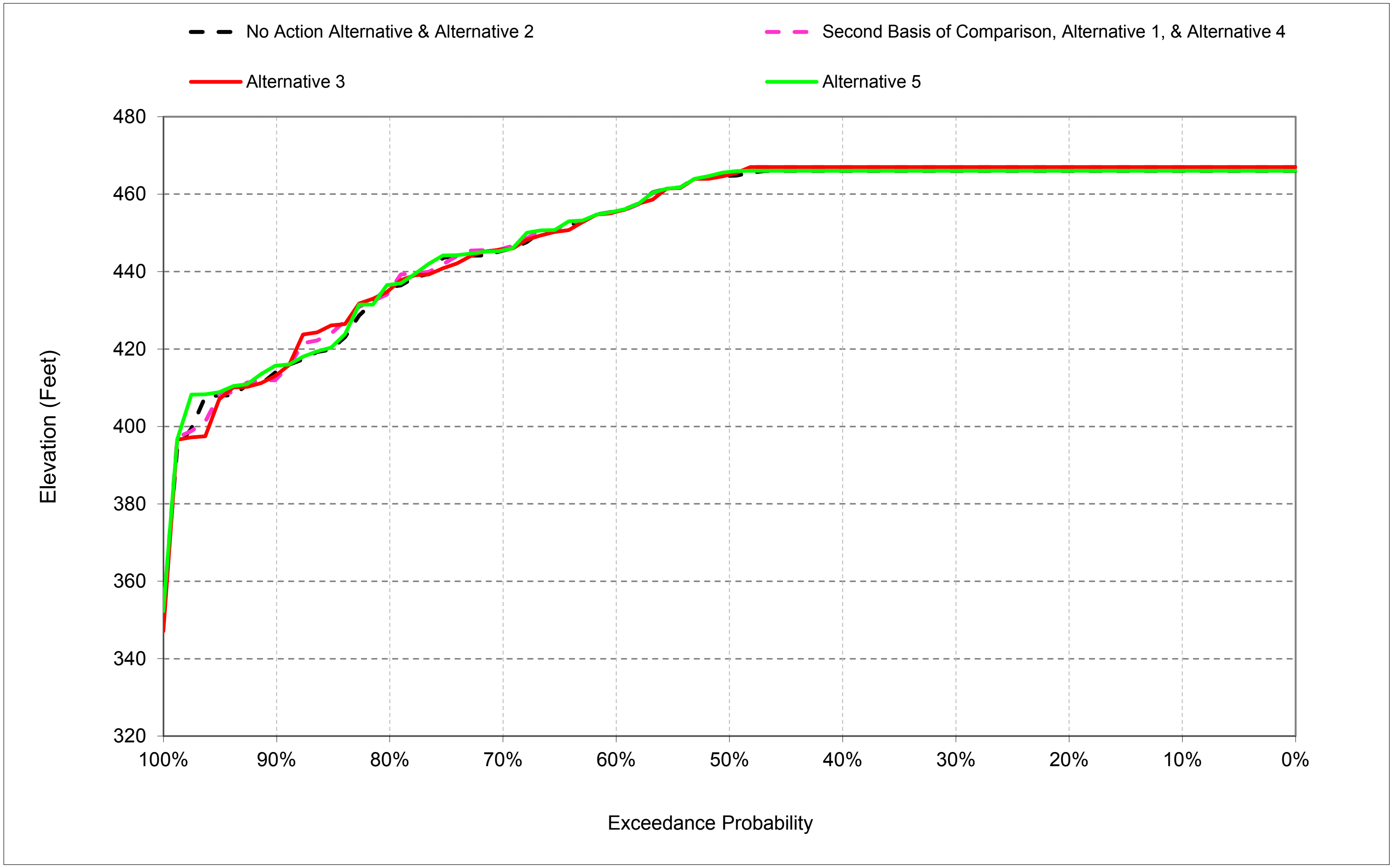
C.11. Folsom Lake Elevation

Figure C-11-1 . Folsom Lake, Reservoir Pool Elevation, December



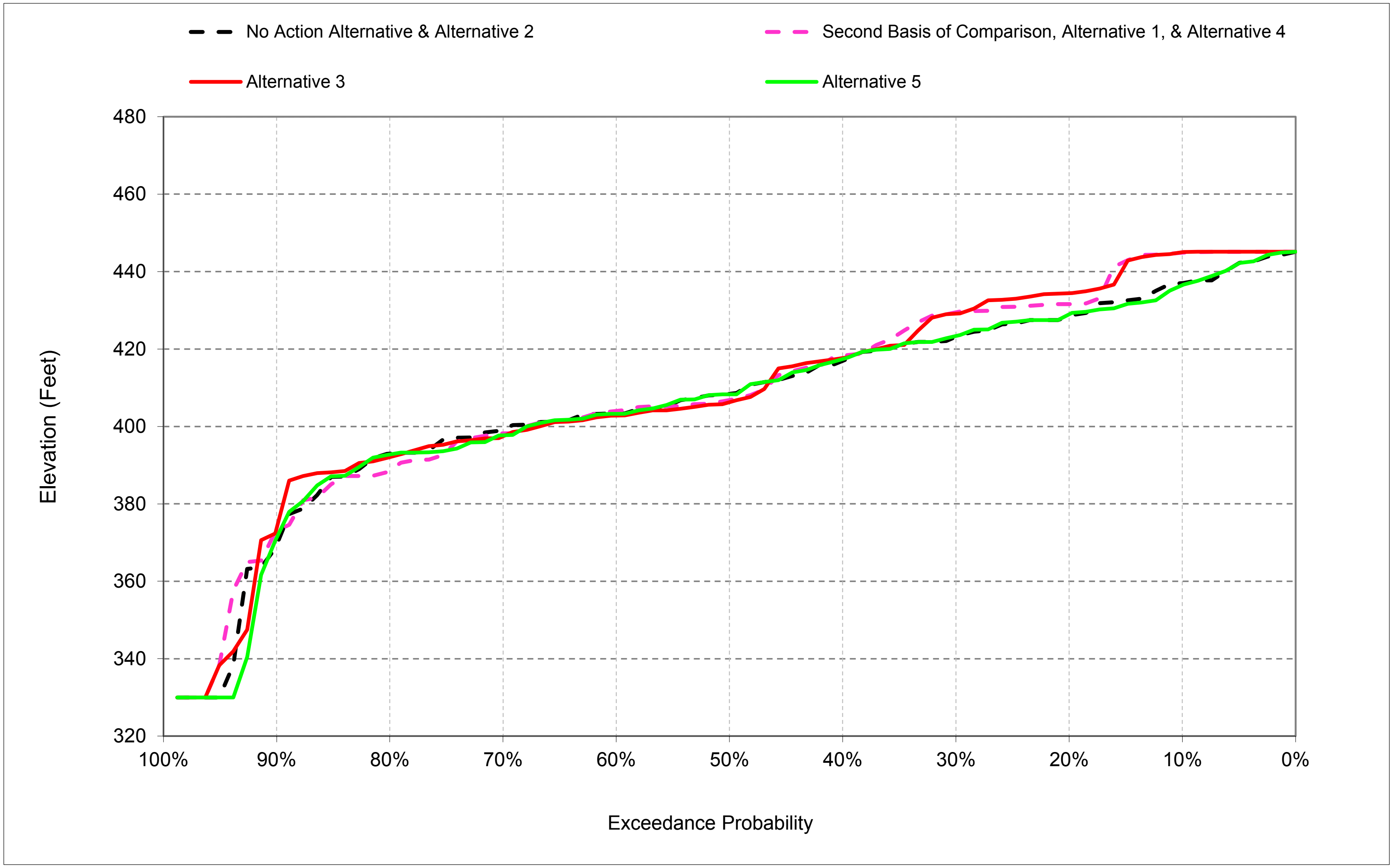
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-11-2. Folsom Lake, Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-11-3. Folsom Lake, Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-1. Folsom Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	460	449	437
20%	421	415	424	424	424	435	449	466	466	453	443	428
30%	416	411	421	423	423	435	449	466	466	444	438	423
40%	410	407	416	421	423	434	449	466	463	436	429	419
50%	405	404	409	413	420	433	449	465	457	427	418	410
60%	397	403	405	409	415	431	449	456	446	419	410	404
70%	393	397	402	407	411	428	443	445	438	407	401	400
80%	387	389	396	399	405	421	432	436	422	401	397	393
90%	373	378	377	388	402	407	413	414	407	392	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	450	444	424	416	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	464	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	430	422	413
Below Normal (13%)	408	406	411	414	420	431	445	454	447	418	411	409
Dry (24%)	400	399	403	405	413	426	438	445	434	414	408	405
Critical (15%)	386	384	389	390	396	406	411	412	401	386	374	366

Alternative 1

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	460	449	445
20%	426	424	424	424	424	436	449	467	467	451	439	432
30%	423	419	424	424	423	435	449	467	467	443	433	429
40%	412	416	419	423	423	434	449	467	460	434	425	419
50%	404	407	416	419	421	433	449	465	450	422	412	408
60%	396	402	410	412	416	431	449	455	444	417	409	405
70%	394	397	404	407	411	429	443	446	432	408	402	399
80%	386	393	396	402	408	424	433	435	422	400	392	391
90%	379	380	382	390	403	410	415	412	407	389	377	375
Long Term												
Full Simulation Period[b]	404	404	410	412	415	427	440	451	444	423	413	409
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	464	449	438	433
Above Normal (16%)	397	400	410	421	421	433	448	465	456	427	419	414
Below Normal (13%)	415	414	416	417	421	432	446	455	443	410	401	398
Dry (24%)	401	401	405	407	414	427	439	446	435	413	406	403
Critical (15%)	389	386	390	391	397	406	410	411	404	391	378	372

Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	12	5	0	0	0	0	0	1	1	0	0	8
20%	6	8	0	0	0	0	0	1	1	-1	-5	3
30%	7	8	3	1	0	0	0	1	1	-1	-5	6
40%	2	9	3	2	0	0	0	1	-2	-3	-5	0
50%	-2	3	7	6	1	0	0	1	-7	-6	-6	-2
60%	0	0	5	3	0	0	0	0	-2	-2	-2	1
70%	1	0	2	1	0	1	0	1	-6	1	1	-2
80%	-1	4	0	3	3	3	1	-1	-1	-1	-5	-2
90%	6	2	5	2	1	3	1	-2	-1	-3	-7	-2
Long Term												
Full Simulation Period[b]	3	4	2	2	1	0	0	1	0	-1	-3	2
Water Year Types[c]												
Wet (32%)	4	5	1	1	0	0	0	1	0	-1	-3	8
Above Normal (16%)	2	5	5	3	1	0	0	1	-3	-4	-4	1
Below Normal (13%)	7	7	4	4	1	1	1	1	-4	-8	-10	-10
Dry (24%)	1	2	2	2	1	1	1	1	1	-1	-1	-1
Critical (15%)	3	2	2	1	0	0	-1	0	2	5	4	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-2. Folsom Lake, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	460	449	437
20%	421	415	424	424	424	435	449	466	466	453	443	428
30%	416	411	421	423	423	435	449	466	466	444	438	423
40%	410	407	416	421	423	434	449	466	463	436	429	419
50%	405	404	409	413	420	433	449	465	457	427	418	410
60%	397	403	405	409	415	431	449	456	446	419	410	404
70%	393	397	402	407	411	428	443	445	438	407	401	400
80%	387	389	396	399	405	421	432	436	422	401	397	393
90%	373	378	377	388	402	407	413	414	407	392	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	450	444	424	416	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	464	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	430	422	413
Below Normal (13%)	408	406	411	414	420	431	445	454	447	418	411	409
Dry (24%)	400	399	403	405	413	426	438	445	434	414	408	405
Critical (15%)	386	384	389	390	396	406	411	412	401	386	374	366

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	462	449	445
20%	427	424	424	424	424	435	449	467	467	451	441	434
30%	422	421	424	424	423	435	449	467	465	443	434	429
40%	414	415	419	423	423	434	449	467	459	433	424	419
50%	403	408	416	418	422	433	449	465	449	422	412	407
60%	396	402	410	412	416	431	449	455	445	414	408	403
70%	393	397	404	407	411	429	443	446	435	407	401	399
80%	389	393	395	402	408	424	435	435	422	403	395	393
90%	380	381	379	387	402	409	414	413	407	390	385	386
Long Term												
Full Simulation Period[b]	404	404	409	412	415	427	440	451	444	423	414	409
Water Year Types[c]												
Wet (32%)	413	412	419	419	418	432	448	465	463	448	438	433
Above Normal (16%)	395	397	408	421	421	433	448	465	455	425	418	413
Below Normal (13%)	416	415	416	417	421	432	446	454	446	415	404	401
Dry (24%)	401	401	405	407	414	426	438	445	434	414	407	404
Critical (15%)	388	386	390	390	396	406	411	411	403	389	379	372

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	11	5	0	0	0	0	0	1	1	1	0	8
20%	7	9	0	0	0	0	0	1	1	-1	-2	6
30%	6	9	3	1	0	0	0	1	-1	-1	-4	6
40%	4	9	3	2	0	0	0	1	-3	-4	-5	0
50%	-2	3	7	6	2	0	0	0	-8	-6	-6	-2
60%	-1	-1	4	3	0	0	0	0	-1	-4	-3	-1
70%	0	1	2	1	0	1	0	0	-2	1	0	-2
80%	1	4	-1	4	3	3	2	-1	0	1	-2	0
90%	7	2	2	0	0	2	1	-1	0	-3	0	9
Long Term												
Full Simulation Period[b]	3	4	2	2	0	0	0	1	-1	-1	-2	2
Water Year Types[c]												
Wet (32%)	4	5	1	1	0	0	0	1	-1	-1	-3	8
Above Normal (16%)	0	2	3	3	1	0	0	1	-3	-5	-4	0
Below Normal (13%)	8	8	5	4	1	1	1	1	-1	-3	-7	-8
Dry (24%)	1	2	1	1	0	0	0	0	0	-1	-1	-1
Critical (15%)	2	2	1	1	0	0	0	0	2	3	5	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-3. Folsom Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	460	449	437
20%	421	415	424	424	424	435	449	466	466	453	443	428
30%	416	411	421	423	423	435	449	466	466	444	438	423
40%	410	407	416	421	423	434	449	466	463	436	429	419
50%	405	404	409	413	420	433	449	465	457	427	418	410
60%	397	403	405	409	415	431	449	456	446	419	410	404
70%	393	397	402	407	411	428	443	445	438	407	401	400
80%	387	389	396	399	405	421	432	436	422	401	397	393
90%	373	378	377	388	402	407	413	414	407	392	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	450	444	424	416	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	464	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	430	422	413
Below Normal (13%)	408	406	411	414	420	431	445	454	447	418	411	409
Dry (24%)	400	399	403	405	413	426	438	445	434	414	408	405
Critical (15%)	386	384	389	390	396	406	411	412	401	386	374	366

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	457	449	437
20%	421	415	424	424	424	435	449	466	466	452	443	429
30%	416	411	421	423	423	435	449	466	466	444	436	423
40%	410	407	416	421	423	434	449	466	463	437	429	419
50%	405	405	409	413	420	433	449	466	457	428	418	410
60%	397	403	406	410	415	431	449	456	447	419	411	404
70%	393	397	404	406	410	428	444	446	438	408	402	398
80%	387	390	396	399	405	421	432	437	423	401	396	393
90%	374	378	376	388	401	407	414	416	407	393	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	451	444	424	415	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	465	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	431	423	413
Below Normal (13%)	406	405	410	413	420	431	445	454	447	417	411	408
Dry (24%)	400	400	404	406	413	426	438	446	435	413	406	403
Critical (15%)	386	384	389	390	396	406	412	414	400	385	370	365

Alternative 5 minus No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	-4	0	-1
20%	0	0	0	0	0	0	0	0	0	-1	0	0
30%	1	0	0	0	0	0	0	0	0	0	-2	0
40%	0	0	1	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	1	0	0	0	0
60%	0	0	0	1	0	0	0	0	1	0	1	0
70%	0	0	1	0	-1	0	0	0	0	1	1	-2
80%	0	1	0	1	0	0	-1	1	0	0	-1	0
90%	0	0	0	0	0	0	1	2	0	0	1	1
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	-1	-1	-1
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	-1	0	0
Above Normal (16%)	-1	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	-2	-2	-1	0	0	0	0	0	0	-1	0	0
Dry (24%)	0	0	0	0	0	0	0	1	1	-1	-2	-2
Critical (15%)	0	0	0	0	0	0	1	2	-1	-2	-3	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-4. Folsom Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	460	449	445
20%	426	424	424	424	424	436	449	467	467	451	439	432
30%	423	419	424	424	423	435	449	467	467	443	433	429
40%	412	416	419	423	423	434	449	467	460	434	425	419
50%	404	407	416	419	421	433	449	465	450	422	412	408
60%	396	402	410	412	416	431	449	455	444	417	409	405
70%	394	397	404	407	411	429	443	446	432	408	402	399
80%	386	393	396	402	408	424	433	435	422	400	392	391
90%	379	380	382	390	403	410	415	412	407	389	377	375
Long Term												
Full Simulation Period[b]	404	404	410	412	415	427	440	451	444	423	413	409
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	464	449	438	433
Above Normal (16%)	397	400	410	421	421	433	448	465	456	427	419	414
Below Normal (13%)	415	414	416	417	421	432	446	455	443	410	401	398
Dry (24%)	401	401	405	407	414	427	439	446	435	413	406	403
Critical (15%)	389	386	390	391	397	406	410	411	404	391	378	372

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	460	449	437
20%	421	415	424	424	424	435	449	466	466	453	443	428
30%	416	411	421	423	423	435	449	466	466	444	438	423
40%	410	407	416	421	423	434	449	466	463	436	429	419
50%	405	404	409	413	420	433	449	465	457	427	418	410
60%	397	403	405	409	415	431	449	456	446	419	410	404
70%	393	397	402	407	411	428	443	445	438	407	401	400
80%	387	389	396	399	405	421	432	436	422	401	397	393
90%	373	378	377	388	402	407	413	414	407	392	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	450	444	424	416	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	464	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	430	422	413
Below Normal (13%)	408	406	411	414	420	431	445	454	447	418	411	409
Dry (24%)	400	399	403	405	413	426	438	445	434	414	408	405
Critical (15%)	386	384	389	390	396	406	411	412	401	386	374	366

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-12	-5	0	0	0	0	0	-1	-1	0	0	-8
20%	-6	-8	0	0	0	0	0	-1	-1	1	5	-3
30%	-7	-8	-3	-1	0	0	0	-1	-1	1	5	-6
40%	-2	-9	-3	-2	0	0	0	-1	2	3	5	0
50%	2	-3	-7	-6	-1	0	0	-1	7	6	6	2
60%	0	0	-5	-3	0	0	0	0	2	2	2	-1
70%	-1	0	-2	-1	0	-1	0	-1	6	-1	-1	2
80%	1	-4	0	-3	-3	-3	-1	1	1	1	5	2
90%	-6	-2	-5	-2	-1	-3	-1	2	1	3	7	2
Long Term												
Full Simulation Period[b]	-3	-4	-2	-2	-1	0	0	-1	0	1	3	-2
Water Year Types[c]												
Wet (32%)	-4	-5	-1	-1	0	0	0	-1	0	1	3	-8
Above Normal (16%)	-2	-5	-5	-3	-1	0	0	-1	3	4	4	-1
Below Normal (13%)	-7	-7	-4	-4	-1	-1	-1	-1	4	8	10	10
Dry (24%)	-1	-2	-2	-2	-1	-1	-1	-1	-1	1	1	1
Critical (15%)	-3	-2	-2	-1	0	0	1	0	-2	-5	-4	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-5. Folsom Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	460	449	445
20%	426	424	424	424	424	436	449	467	467	451	439	432
30%	423	419	424	424	423	435	449	467	467	443	433	429
40%	412	416	419	423	423	434	449	467	460	434	425	419
50%	404	407	416	419	421	433	449	465	450	422	412	408
60%	396	402	410	412	416	431	449	455	444	417	409	405
70%	394	397	404	407	411	429	443	446	432	408	402	399
80%	386	393	396	402	408	424	433	435	422	400	392	391
90%	379	380	382	390	403	410	415	412	407	389	377	375
Long Term												
Full Simulation Period[b]	404	404	410	412	415	427	440	451	444	423	413	409
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	464	449	438	433
Above Normal (16%)	397	400	410	421	421	433	448	465	456	427	419	414
Below Normal (13%)	415	414	416	417	421	432	446	455	443	410	401	398
Dry (24%)	401	401	405	407	414	427	439	446	435	413	406	403
Critical (15%)	389	386	390	391	397	406	410	411	404	391	378	372

Alternative 3

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	462	449	445
20%	427	424	424	424	424	435	449	467	467	451	441	434
30%	422	421	424	424	423	435	449	467	465	443	434	429
40%	414	415	419	423	423	434	449	467	459	433	424	419
50%	403	408	416	418	422	433	449	465	449	422	412	407
60%	396	402	410	412	416	431	449	455	445	414	408	403
70%	393	397	404	407	411	429	443	446	435	407	401	399
80%	389	393	395	402	408	424	435	435	422	403	395	393
90%	380	381	379	387	402	409	414	413	407	390	385	386
Long Term												
Full Simulation Period[b]	404	404	409	412	415	427	440	451	444	423	414	409
Water Year Types[c]												
Wet (32%)	413	412	419	419	418	432	448	465	463	448	438	433
Above Normal (16%)	395	397	408	421	421	433	448	465	455	425	418	413
Below Normal (13%)	416	415	416	417	421	432	446	454	446	415	404	401
Dry (24%)	401	401	405	407	414	426	438	445	434	414	407	404
Critical (15%)	388	386	390	390	396	406	411	411	403	389	379	372

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	1	0	0
20%	1	0	0	0	0	0	0	0	0	0	2	3
30%	-1	1	0	0	0	0	0	0	-1	0	1	0
40%	2	-1	0	0	0	0	0	0	-1	-1	0	0
50%	-1	0	0	0	1	0	0	0	-1	0	0	0
60%	-1	0	-1	0	0	0	0	0	0	-2	-1	-1
70%	-1	0	0	0	0	0	0	0	3	0	-1	0
80%	2	-1	-2	0	0	0	2	0	0	3	4	2
90%	1	0	-3	-2	-1	-1	-1	1	0	1	8	11
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	1	0
Water Year Types[c]												
Wet (32%)	1	1	0	0	0	0	0	0	-1	0	0	0
Above Normal (16%)	-2	-3	-3	0	0	0	0	0	-1	-1	-1	-1
Below Normal (13%)	1	1	0	0	0	0	0	0	3	5	3	3
Dry (24%)	0	0	0	0	-1	-1	-1	-1	-1	1	0	0
Critical (15%)	-1	0	0	0	0	0	0	0	0	-2	1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-6. Folsom Lake, End of Month Elevation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	460	449	445
20%	426	424	424	424	424	436	449	467	467	451	439	432
30%	423	419	424	424	423	435	449	467	467	443	433	429
40%	412	416	419	423	423	434	449	467	460	434	425	419
50%	404	407	416	419	421	433	449	465	450	422	412	408
60%	396	402	410	412	416	431	449	455	444	417	409	405
70%	394	397	404	407	411	429	443	446	432	408	402	399
80%	386	393	396	402	408	424	433	435	422	400	392	391
90%	379	380	382	390	403	410	415	412	407	389	377	375
Long Term												
Full Simulation Period[b]	404	404	410	412	415	427	440	451	444	423	413	409
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	464	449	438	433
Above Normal (16%)	397	400	410	421	421	433	448	465	456	427	419	414
Below Normal (13%)	415	414	416	417	421	432	446	455	443	410	401	398
Dry (24%)	401	401	405	407	414	427	439	446	435	413	406	403
Critical (15%)	389	386	390	391	397	406	410	411	404	391	378	372

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	457	449	437
20%	421	415	424	424	424	435	449	466	466	452	443	429
30%	416	411	421	423	423	435	449	466	466	444	436	423
40%	410	407	416	421	423	434	449	466	463	437	429	419
50%	405	405	409	413	420	433	449	466	457	428	418	410
60%	397	403	406	410	415	431	449	456	447	419	411	404
70%	393	397	404	406	410	428	444	446	438	408	402	398
80%	387	390	396	399	405	421	432	437	423	401	396	393
90%	374	378	376	388	401	407	414	416	407	393	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	451	444	424	415	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	465	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	431	423	413
Below Normal (13%)	406	405	410	413	420	431	445	454	447	417	411	408
Dry (24%)	400	400	404	406	413	426	438	446	435	413	406	403
Critical (15%)	386	384	389	390	396	406	412	414	400	385	370	365

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	-12	-4	0	0	0	0	0	-1	-1	-4	0	-8
20%	-6	-9	0	0	0	0	0	-1	-1	0	5	-3
30%	-6	-8	-4	-1	0	0	0	-1	-1	1	3	-6
40%	-2	-9	-3	-2	0	0	0	-1	2	3	5	0
50%	2	-3	-7	-5	-1	0	0	1	7	6	6	2
60%	0	0	-5	-3	0	0	0	0	3	2	2	-1
70%	-1	-1	-1	-1	-1	-1	0	0	6	0	0	0
80%	0	-3	0	-3	-3	-3	-1	2	1	2	4	2
90%	-5	-2	-5	-2	-1	-3	-1	3	1	4	8	3
Long Term												
Full Simulation Period[b]	-3	-4	-3	-2	0	0	0	0	0	1	1	-2
Water Year Types[c]												
Wet (32%)	-4	-5	-1	-1	0	0	0	-1	0	0	3	-8
Above Normal (16%)	-3	-6	-5	-3	-1	0	0	-1	3	4	4	-1
Below Normal (13%)	-9	-9	-6	-4	-1	-1	0	-1	5	7	10	10
Dry (24%)	-1	-1	-1	-2	-1	-1	-1	-1	0	0	0	0
Critical (15%)	-3	-3	-2	-1	0	0	2	2	-3	-6	-8	-7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

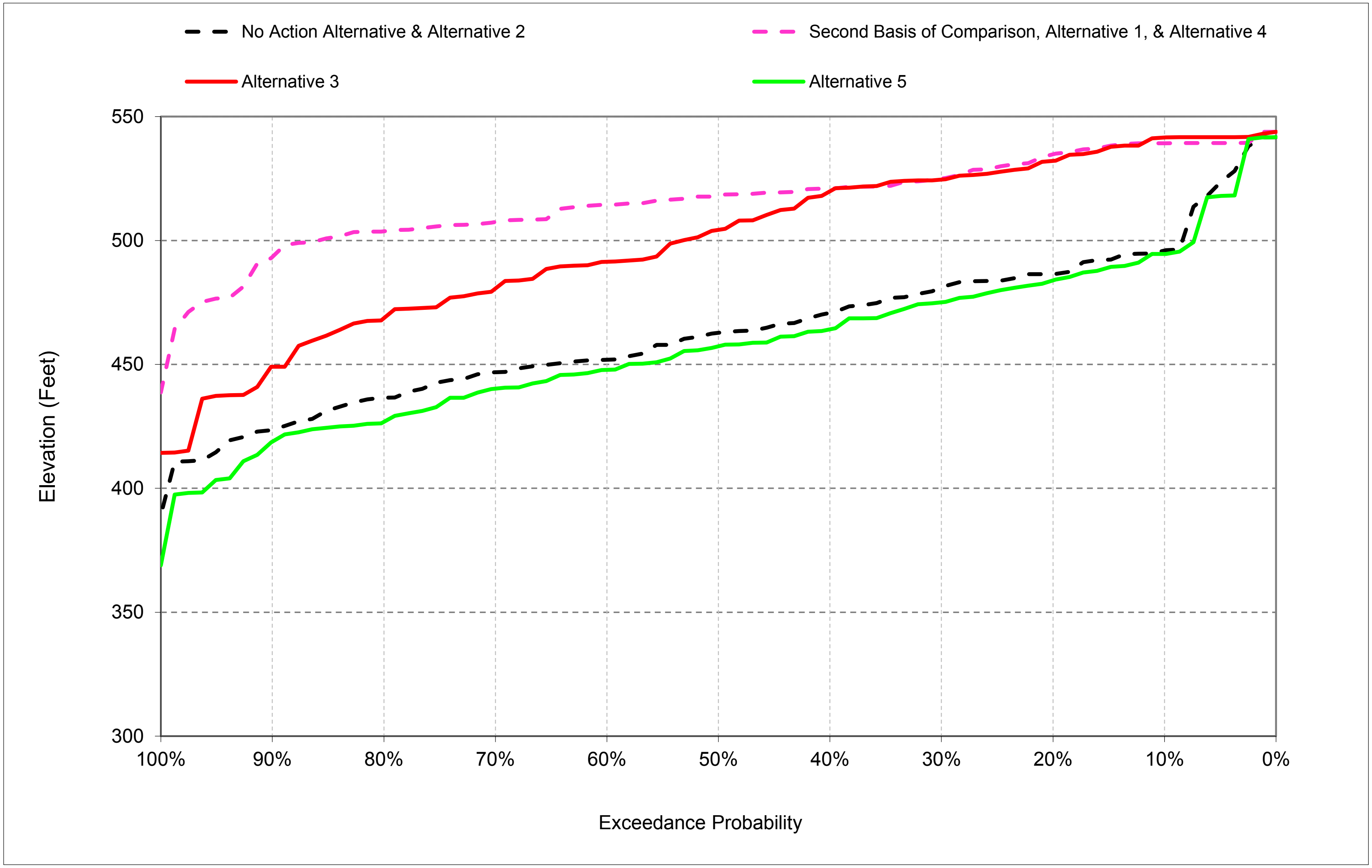
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

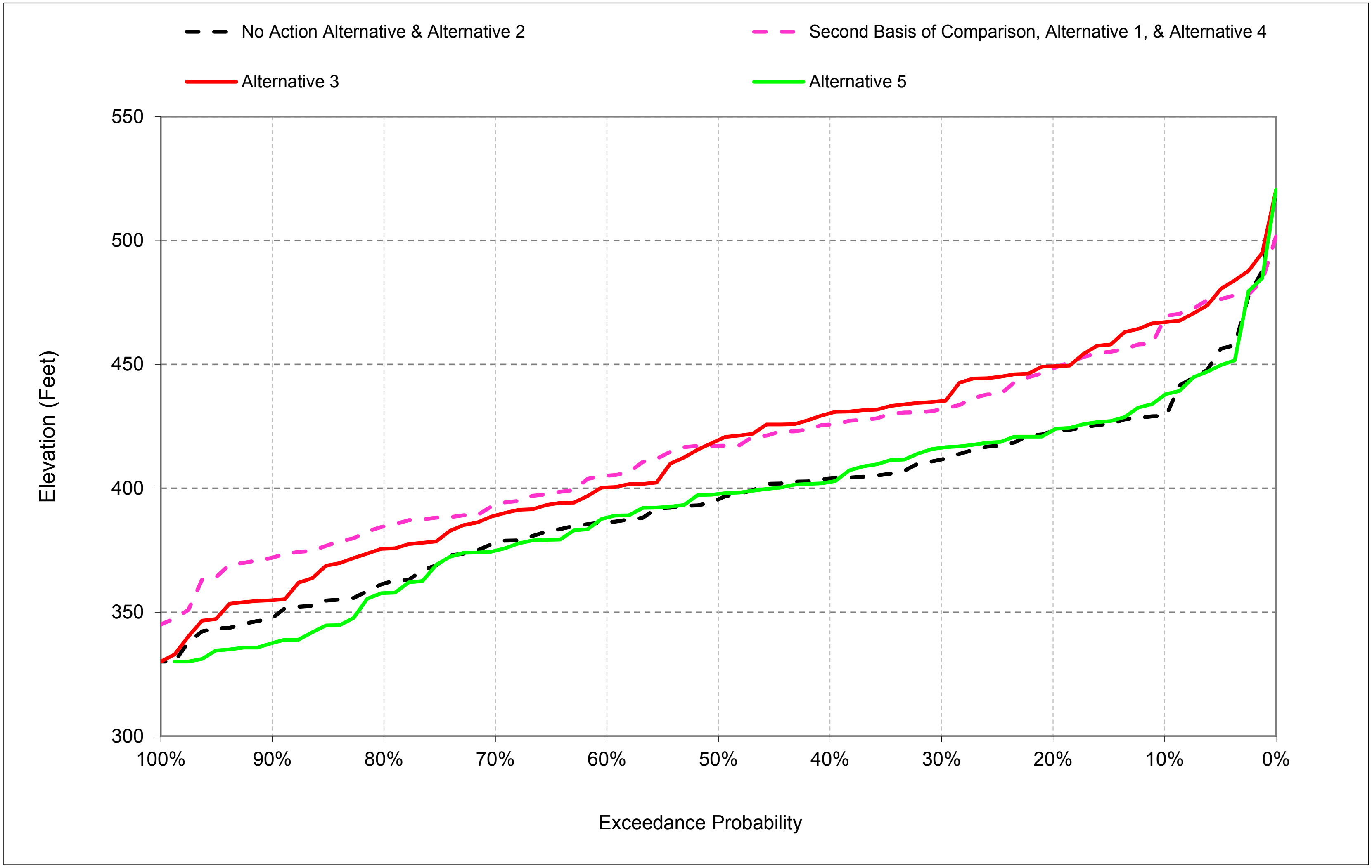
C.12. San Luis Lake Elevation

Figure C-12-1. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-12-2. San Luis Reservoir (SWP and CVP), Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-1. San Luis Reservoir (SWP and CVP), End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	456	483	519	543	544	528	496	469	450	435	429
20%	424	437	468	489	511	533	520	487	455	439	417	423
30%	405	425	460	484	506	525	510	481	444	430	405	412
40%	397	416	451	478	499	518	503	471	432	417	398	404
50%	393	407	434	466	491	510	495	463	422	404	388	396
60%	386	395	426	454	478	500	487	452	417	395	381	386
70%	374	386	421	450	467	482	473	447	410	388	369	378
80%	364	377	409	433	457	478	464	437	397	377	357	362
90%	351	369	392	427	447	461	455	424	380	370	347	348
Long Term												
Full Simulation Period[b]	394	409	439	467	488	504	492	464	428	410	391	395
Water Year Types[c]												
Wet (32%)	399	414	443	473	500	523	507	475	444	422	409	416
Above Normal (16%)	391	411	445	472	492	512	493	456	415	389	386	398
Below Normal (13%)	397	410	442	465	481	496	481	448	400	393	383	389
Dry (24%)	391	406	437	466	484	498	490	468	434	426	390	389
Critical (15%)	390	400	423	454	470	475	469	453	422	399	369	366

Alternative 1

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	469	494	519	543	544	544	544	539	520	487	462	468
20%	452	470	503	532	544	544	544	535	504	473	445	448
30%	439	459	491	528	544	544	544	525	497	465	429	432
40%	433	454	478	515	540	544	544	521	486	455	419	426
50%	423	441	467	509	536	544	543	518	481	447	413	417
60%	408	427	459	501	531	544	537	514	476	442	408	405
70%	391	416	450	496	525	539	531	507	473	437	404	393
80%	377	404	438	482	514	530	527	504	468	433	399	385
90%	363	378	416	469	500	518	520	493	459	427	388	372
Long Term												
Full Simulation Period[b]	418	439	468	505	526	536	533	516	484	451	419	416
Water Year Types[c]												
Wet (32%)	426	451	485	520	538	543	543	529	497	468	440	443
Above Normal (16%)	412	437	470	513	534	541	540	518	477	437	409	411
Below Normal (13%)	435	457	483	519	533	539	533	510	476	448	412	406
Dry (24%)	407	425	450	492	518	535	530	513	484	453	415	406
Critical (15%)	409	419	441	475	502	512	509	494	468	432	400	389

Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	30	38	36	24	1	0	16	43	51	38	27	39
20%	28	33	36	42	32	11	24	48	49	34	29	25
30%	34	34	31	44	37	19	34	44	53	35	24	20
40%	36	38	28	37	41	26	41	50	54	38	21	22
50%	30	35	33	43	44	34	47	55	59	42	25	22
60%	22	32	33	46	53	44	50	63	60	47	27	19
70%	18	30	29	47	58	56	58	61	63	50	35	15
80%	12	27	29	49	57	52	63	67	72	57	42	23
90%	12	9	24	43	53	57	65	70	79	57	41	24
Long Term												
Full Simulation Period[b]	24	30	29	38	38	31	41	52	56	41	28	21
Water Year Types[c]												
Wet (32%)	26	37	42	46	38	20	36	53	53	46	30	27
Above Normal (16%)	21	26	25	41	41	29	47	61	62	48	23	14
Below Normal (13%)	38	47	42	54	52	43	52	62	76	56	30	17
Dry (24%)	17	19	12	25	34	37	40	45	51	27	25	18
Critical (15%)	19	20	18	21	32	38	40	41	45	32	32	24

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-2. San Luis Reservoir (SWP and CVP), End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	456	483	519	543	544	528	496	469	450	435	429
20%	424	437	468	489	511	533	520	487	455	439	417	423
30%	405	425	460	484	506	525	510	481	444	430	405	412
40%	397	416	451	478	499	518	503	471	432	417	398	404
50%	393	407	434	466	491	510	495	463	422	404	388	396
60%	386	395	426	454	478	500	487	452	417	395	381	386
70%	374	386	421	450	467	482	473	447	410	388	369	378
80%	364	377	409	433	457	478	464	437	397	377	357	362
90%	351	369	392	427	447	461	455	424	380	370	347	348
Long Term												
Full Simulation Period[b]	394	409	439	467	488	504	492	464	428	410	391	395
Water Year Types[c]												
Wet (32%)	399	414	443	473	500	523	507	475	444	422	409	416
Above Normal (16%)	391	411	445	472	492	512	493	456	415	389	386	398
Below Normal (13%)	397	410	442	465	481	496	481	448	400	393	383	389
Dry (24%)	391	406	437	466	484	498	490	468	434	426	390	389
Critical (15%)	390	400	423	454	470	475	469	453	422	399	369	366

Alternative 3

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	475	494	514	532	544	544	544	542	515	493	465	467
20%	451	475	494	517	537	544	544	532	503	477	450	449
30%	442	459	483	506	527	543	541	525	491	465	440	435
40%	432	451	477	498	516	533	538	520	484	451	423	430
50%	423	439	465	489	509	526	522	504	468	444	418	419
60%	402	428	455	482	499	517	514	491	457	432	408	400
70%	380	417	445	473	494	508	503	481	449	421	393	389
80%	372	396	429	459	479	491	490	469	436	408	382	376
90%	356	377	410	439	453	469	471	449	411	392	366	355
Long Term												
Full Simulation Period[b]	416	437	463	487	504	516	515	499	469	443	416	414
Water Year Types[c]												
Wet (32%)	427	452	477	503	525	537	539	529	502	473	447	449
Above Normal (16%)	406	431	459	482	504	520	521	505	467	433	417	420
Below Normal (13%)	431	454	480	497	509	519	512	484	440	423	405	401
Dry (24%)	410	430	456	480	494	508	506	490	464	444	405	397
Critical (15%)	399	409	430	458	472	475	473	457	434	403	375	371

Alternative 3 minus No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	36	38	31	13	1	0	16	46	46	43	30	38
20%	27	38	27	28	26	11	24	46	48	38	34	26
30%	38	34	23	22	20	19	32	44	47	36	35	24
40%	35	34	26	20	17	15	35	49	52	34	25	26
50%	30	32	31	23	17	16	27	42	46	40	30	24
60%	16	34	30	28	21	17	27	40	40	37	27	14
70%	6	31	24	23	26	25	30	34	39	34	24	11
80%	7	19	20	26	22	13	26	32	39	31	24	14
90%	5	8	18	13	7	8	16	25	31	22	19	7
Long Term												
Full Simulation Period[b]	22	28	24	19	16	11	23	36	41	32	25	19
Water Year Types[c]												
Wet (32%)	28	38	34	29	24	14	32	53	58	52	38	33
Above Normal (16%)	14	21	15	11	11	8	28	49	51	44	31	23
Below Normal (13%)	33	44	39	32	28	23	30	36	40	30	23	12
Dry (24%)	19	24	18	14	10	10	16	23	30	18	15	9
Critical (15%)	9	10	6	4	2	1	4	4	12	4	6	5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-3. San Luis Reservoir (SWP and CVP), End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	456	483	519	543	544	528	496	469	450	435	429
20%	424	437	468	489	511	533	520	487	455	439	417	423
30%	405	425	460	484	506	525	510	481	444	430	405	412
40%	397	416	451	478	499	518	503	471	432	417	398	404
50%	393	407	434	466	491	510	495	463	422	404	388	396
60%	386	395	426	454	478	500	487	452	417	395	381	386
70%	374	386	421	450	467	482	473	447	410	388	369	378
80%	364	377	409	433	457	478	464	437	397	377	357	362
90%	351	369	392	427	447	461	455	424	380	370	347	348
Long Term												
Full Simulation Period[b]	394	409	439	467	488	504	492	464	428	410	391	395
Water Year Types[c]												
Wet (32%)	399	414	443	473	500	523	507	475	444	422	409	416
Above Normal (16%)	391	411	445	472	492	512	493	456	415	389	386	398
Below Normal (13%)	397	410	442	465	481	496	481	448	400	393	383	389
Dry (24%)	391	406	437	466	484	498	490	468	434	426	390	389
Critical (15%)	390	400	423	454	470	475	469	453	422	399	369	366

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	436	451	482	507	541	544	526	495	473	450	433	438
20%	422	440	466	491	513	534	519	484	454	440	424	423
30%	410	425	457	484	507	527	509	475	440	427	408	416
40%	402	416	452	475	499	518	500	464	423	411	395	403
50%	395	408	440	466	490	509	492	457	419	402	386	398
60%	385	398	426	457	480	498	481	448	412	390	379	388
70%	371	386	421	450	469	489	472	440	400	383	368	375
80%	363	376	408	435	459	479	464	427	389	371	353	358
90%	348	361	391	428	446	457	445	419	377	363	340	338
Long Term												
Full Simulation Period[b]	394	408	438	467	488	504	489	457	422	406	390	394
Water Year Types[c]												
Wet (32%)	402	417	446	475	501	525	509	478	448	427	416	422
Above Normal (16%)	391	408	443	471	492	512	494	456	416	390	386	398
Below Normal (13%)	399	411	443	467	483	498	481	444	397	390	381	388
Dry (24%)	389	404	436	465	483	497	482	451	417	413	381	381
Critical (15%)	383	393	417	450	467	471	460	437	405	383	359	357

Alternative 5 minus No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3	-5	-1	-11	-2	0	-1	-1	5	0	-2	8
20%	-2	3	-2	1	1	2	-1	-3	-1	1	7	0
30%	6	0	-3	1	1	2	-1	-6	-4	-3	2	5
40%	5	-1	1	-3	-1	1	-3	-7	-9	-7	-3	-1
50%	2	1	7	0	-1	-1	-4	-5	-3	-2	-2	2
60%	0	4	0	3	2	-1	-5	-4	-5	-5	-2	2
70%	-3	0	1	1	2	6	-1	-7	-10	-5	-1	-3
80%	-2	-1	-1	3	2	1	0	-10	-7	-6	-4	-4
90%	-3	-7	-1	1	-1	-4	-10	-5	-3	-7	-6	-10
Long Term												
Full Simulation Period[b]	0	-1	0	0	0	0	-3	-6	-6	-4	-2	-1
Water Year Types[c]												
Wet (32%)	3	3	3	1	1	1	2	3	4	5	6	6
Above Normal (16%)	0	-3	-2	-1	0	0	0	0	1	1	1	1
Below Normal (13%)	2	1	2	2	2	2	-1	-4	-3	-3	-2	-1
Dry (24%)	-2	-2	-1	-1	-1	-1	-8	-16	-17	-13	-9	-7
Critical (15%)	-7	-7	-6	-4	-3	-3	-9	-16	-18	-16	-10	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-4. San Luis Reservoir (SWP and CVP), End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	469	494	519	543	544	544	544	539	520	487	462	468
20%	452	470	503	532	544	544	544	535	504	473	445	448
30%	439	459	491	528	544	544	544	525	497	465	429	432
40%	433	454	478	515	540	544	544	521	486	455	419	426
50%	423	441	467	509	536	544	543	518	481	447	413	417
60%	408	427	459	501	531	544	537	514	476	442	408	405
70%	391	416	450	496	525	539	531	507	473	437	404	393
80%	377	404	438	482	514	530	527	504	468	433	399	385
90%	363	378	416	469	500	518	520	493	459	427	388	372
Long Term												
Full Simulation Period[b]	418	439	468	505	526	536	533	516	484	451	419	416
Water Year Types[c]												
Wet (32%)	426	451	485	520	538	543	543	529	497	468	440	443
Above Normal (16%)	412	437	470	513	534	541	540	518	477	437	409	411
Below Normal (13%)	435	457	483	519	533	539	533	510	476	448	412	406
Dry (24%)	407	425	450	492	518	535	530	513	484	453	415	406
Critical (15%)	409	419	441	475	502	512	509	494	468	432	400	389

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	456	483	519	543	544	528	496	469	450	435	429
20%	424	437	468	489	511	533	520	487	455	439	417	423
30%	405	425	460	484	506	525	510	481	444	430	405	412
40%	397	416	451	478	499	518	503	471	432	417	398	404
50%	393	407	434	466	491	510	495	463	422	404	388	396
60%	386	395	426	454	478	500	487	452	417	395	381	386
70%	374	386	421	450	467	482	473	447	410	388	369	378
80%	364	377	409	433	457	478	464	437	397	377	357	362
90%	351	369	392	427	447	461	455	424	380	370	347	348
Long Term												
Full Simulation Period[b]	394	409	439	467	488	504	492	464	428	410	391	395
Water Year Types[c]												
Wet (32%)	399	414	443	473	500	523	507	475	444	422	409	416
Above Normal (16%)	391	411	445	472	492	512	493	456	415	389	386	398
Below Normal (13%)	397	410	442	465	481	496	481	448	400	393	383	389
Dry (24%)	391	406	437	466	484	498	490	468	434	426	390	389
Critical (15%)	390	400	423	454	470	475	469	453	422	399	369	366

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-30	-38	-36	-24	-1	0	-16	-43	-51	-38	-27	-39
20%	-28	-33	-36	-42	-32	-11	-24	-48	-49	-34	-29	-25
30%	-34	-34	-31	-44	-37	-19	-34	-44	-53	-35	-24	-20
40%	-36	-38	-28	-37	-41	-26	-41	-50	-54	-38	-21	-22
50%	-30	-35	-33	-43	-44	-34	-47	-55	-59	-42	-25	-22
60%	-22	-32	-33	-46	-53	-44	-50	-63	-60	-47	-27	-19
70%	-18	-30	-29	-47	-58	-56	-58	-61	-63	-50	-35	-15
80%	-12	-27	-29	-49	-57	-52	-63	-67	-72	-57	-42	-23
90%	-12	-9	-24	-43	-53	-57	-65	-70	-79	-57	-41	-24
Long Term												
Full Simulation Period[b]	-24	-30	-29	-38	-38	-31	-41	-52	-56	-41	-28	-21
Water Year Types[c]												
Wet (32%)	-26	-37	-42	-46	-38	-20	-36	-53	-53	-46	-30	-27
Above Normal (16%)	-21	-26	-25	-41	-41	-29	-47	-61	-62	-48	-23	-14
Below Normal (13%)	-38	-47	-42	-54	-52	-43	-52	-62	-76	-56	-30	-17
Dry (24%)	-17	-19	-12	-25	-34	-37	-40	-45	-51	-27	-25	-18
Critical (15%)	-19	-20	-18	-21	-32	-38	-40	-41	-45	-32	-32	-24

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-5. San Luis Reservoir (SWP and CVP), End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	469	494	519	543	544	544	544	539	520	487	462	468
20%	452	470	503	532	544	544	544	535	504	473	445	448
30%	439	459	491	528	544	544	544	525	497	465	429	432
40%	433	454	478	515	540	544	544	521	486	455	419	426
50%	423	441	467	509	536	544	543	518	481	447	413	417
60%	408	427	459	501	531	544	537	514	476	442	408	405
70%	391	416	450	496	525	539	531	507	473	437	404	393
80%	377	404	438	482	514	530	527	504	468	433	399	385
90%	363	378	416	469	500	518	520	493	459	427	388	372
Long Term												
Full Simulation Period[b]	418	439	468	505	526	536	533	516	484	451	419	416
Water Year Types[c]												
Wet (32%)	426	451	485	520	538	543	543	529	497	468	440	443
Above Normal (16%)	412	437	470	513	534	541	540	518	477	437	409	411
Below Normal (13%)	435	457	483	519	533	539	533	510	476	448	412	406
Dry (24%)	407	425	450	492	518	535	530	513	484	453	415	406
Critical (15%)	409	419	441	475	502	512	509	494	468	432	400	389

Alternative 3

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	475	494	514	532	544	544	544	542	515	493	465	467
20%	451	475	494	517	537	544	544	532	503	477	450	449
30%	442	459	483	506	527	543	541	525	491	465	440	435
40%	432	451	477	498	516	533	538	520	484	451	423	430
50%	423	439	465	489	509	526	522	504	468	444	418	419
60%	402	428	455	482	499	517	514	491	457	432	408	400
70%	380	417	445	473	494	508	503	481	449	421	393	389
80%	372	396	429	459	479	491	490	469	436	408	382	376
90%	356	377	410	439	453	469	471	449	411	392	366	355
Long Term												
Full Simulation Period[b]	416	437	463	487	504	516	515	499	469	443	416	414
Water Year Types[c]												
Wet (32%)	427	452	477	503	525	537	539	529	502	473	447	449
Above Normal (16%)	406	431	459	482	504	520	521	505	467	433	417	420
Below Normal (13%)	431	454	480	497	509	519	512	484	440	423	405	401
Dry (24%)	410	430	456	480	494	508	506	490	464	444	405	397
Critical (15%)	399	409	430	458	472	475	473	457	434	403	375	371

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	0	-4	-11	0	0	0	2	-5	5	3	-1
20%	-1	5	-9	-14	-7	0	0	-3	-1	4	5	1
30%	4	0	-8	-22	-17	0	-3	0	-6	1	11	3
40%	-1	-3	-2	-17	-24	-11	-6	-1	-2	-4	4	5
50%	1	-2	-3	-20	-27	-18	-20	-14	-13	-2	5	2
60%	-6	2	-4	-18	-32	-27	-23	-23	-20	-10	0	-5
70%	-12	1	-5	-24	-31	-31	-28	-27	-24	-16	-11	-4
80%	-5	-8	-9	-23	-35	-39	-37	-35	-33	-26	-18	-9
90%	-7	-1	-6	-30	-47	-49	-49	-44	-48	-35	-22	-17
Long Term												
Full Simulation Period[b]	-2	-1	-5	-18	-22	-20	-19	-17	-15	-9	-3	-2
Water Year Types[c]												
Wet (32%)	1	1	-8	-17	-13	-6	-5	0	5	6	8	6
Above Normal (16%)	-7	-6	-11	-31	-30	-21	-20	-13	-11	-4	8	9
Below Normal (13%)	-4	-3	-3	-22	-24	-20	-22	-26	-36	-26	-7	-4
Dry (24%)	3	5	6	-11	-24	-27	-24	-23	-21	-9	-9	-9
Critical (15%)	-10	-10	-12	-17	-30	-37	-36	-36	-34	-28	-25	-19

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-6. San Luis Reservoir (SWP and CVP), End of Month Elevation

Second Basis of Comparison

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	469	494	519	543	544	544	544	539	520	487	462	468
20%	452	470	503	532	544	544	544	535	504	473	445	448
30%	439	459	491	528	544	544	544	525	497	465	429	432
40%	433	454	478	515	540	544	544	521	486	455	419	426
50%	423	441	467	509	536	544	543	518	481	447	413	417
60%	408	427	459	501	531	544	537	514	476	442	408	405
70%	391	416	450	496	525	539	531	507	473	437	404	393
80%	377	404	438	482	514	530	527	504	468	433	399	385
90%	363	378	416	469	500	518	520	493	459	427	388	372
Long Term												
Full Simulation Period[b]	418	439	468	505	526	536	533	516	484	451	419	416
Water Year Types[c]												
Wet (32%)	426	451	485	520	538	543	543	529	497	468	440	443
Above Normal (16%)	412	437	470	513	534	541	540	518	477	437	409	411
Below Normal (13%)	435	457	483	519	533	539	533	510	476	448	412	406
Dry (24%)	407	425	450	492	518	535	530	513	484	453	415	406
Critical (15%)	409	419	441	475	502	512	509	494	468	432	400	389

Alternative 5

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	436	451	482	507	541	544	526	495	473	450	433	438
20%	422	440	466	491	513	534	519	484	454	440	424	423
30%	410	425	457	484	507	527	509	475	440	427	408	416
40%	402	416	452	475	499	518	500	464	423	411	395	403
50%	395	408	440	466	490	509	492	457	419	402	386	398
60%	385	398	426	457	480	498	481	448	412	390	379	388
70%	371	386	421	450	469	489	472	440	400	383	368	375
80%	363	376	408	435	459	479	464	427	389	371	353	358
90%	348	361	391	428	446	457	445	419	377	363	340	338
Long Term												
Full Simulation Period[b]	394	408	438	467	488	504	489	457	422	406	390	394
Water Year Types[c]												
Wet (32%)	402	417	446	475	501	525	509	478	448	427	416	422
Above Normal (16%)	391	408	443	471	492	512	494	456	416	390	386	398
Below Normal (13%)	399	411	443	467	483	498	481	444	397	390	381	388
Dry (24%)	389	404	436	465	483	497	482	451	417	413	381	381
Critical (15%)	383	393	417	450	467	471	460	437	405	383	359	357

Alternative 5 minus Second Basis of Comparison

	End of Month Elevation (Feet)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-34	-43	-37	-36	-3	0	-17	-45	-46	-37	-30	-31
20%	-30	-30	-37	-41	-31	-9	-25	-51	-50	-33	-21	-25
30%	-28	-34	-34	-43	-36	-17	-35	-50	-57	-38	-22	-16
40%	-31	-38	-26	-40	-42	-26	-44	-57	-63	-45	-24	-23
50%	-28	-33	-27	-43	-45	-35	-51	-61	-62	-44	-27	-19
60%	-22	-28	-33	-44	-51	-46	-56	-67	-65	-52	-29	-17
70%	-20	-30	-28	-46	-56	-50	-59	-67	-73	-54	-36	-18
80%	-14	-28	-30	-47	-55	-51	-63	-77	-79	-63	-46	-27
90%	-15	-17	-25	-42	-54	-61	-75	-75	-82	-64	-47	-35
Long Term												
Full Simulation Period[b]	-24	-30	-29	-38	-39	-31	-44	-58	-62	-45	-30	-22
Water Year Types[c]												
Wet (32%)	-24	-34	-40	-45	-36	-19	-34	-51	-49	-41	-24	-22
Above Normal (16%)	-21	-29	-28	-42	-41	-29	-47	-62	-61	-47	-23	-13
Below Normal (13%)	-36	-46	-40	-53	-50	-41	-53	-66	-80	-58	-31	-17
Dry (24%)	-18	-21	-14	-26	-35	-38	-48	-62	-68	-39	-34	-25
Critical (15%)	-26	-26	-24	-26	-36	-41	-49	-57	-63	-48	-42	-33

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

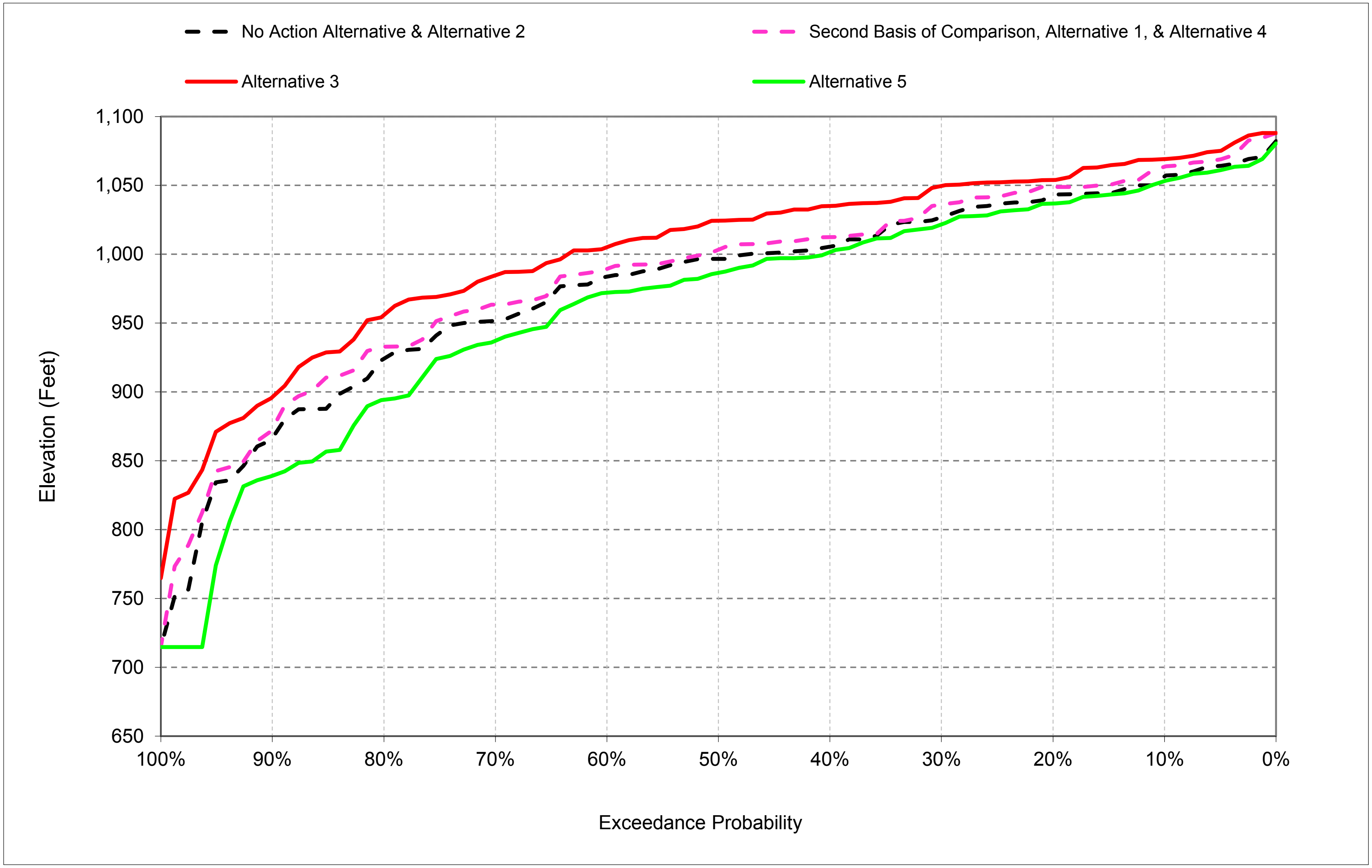
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

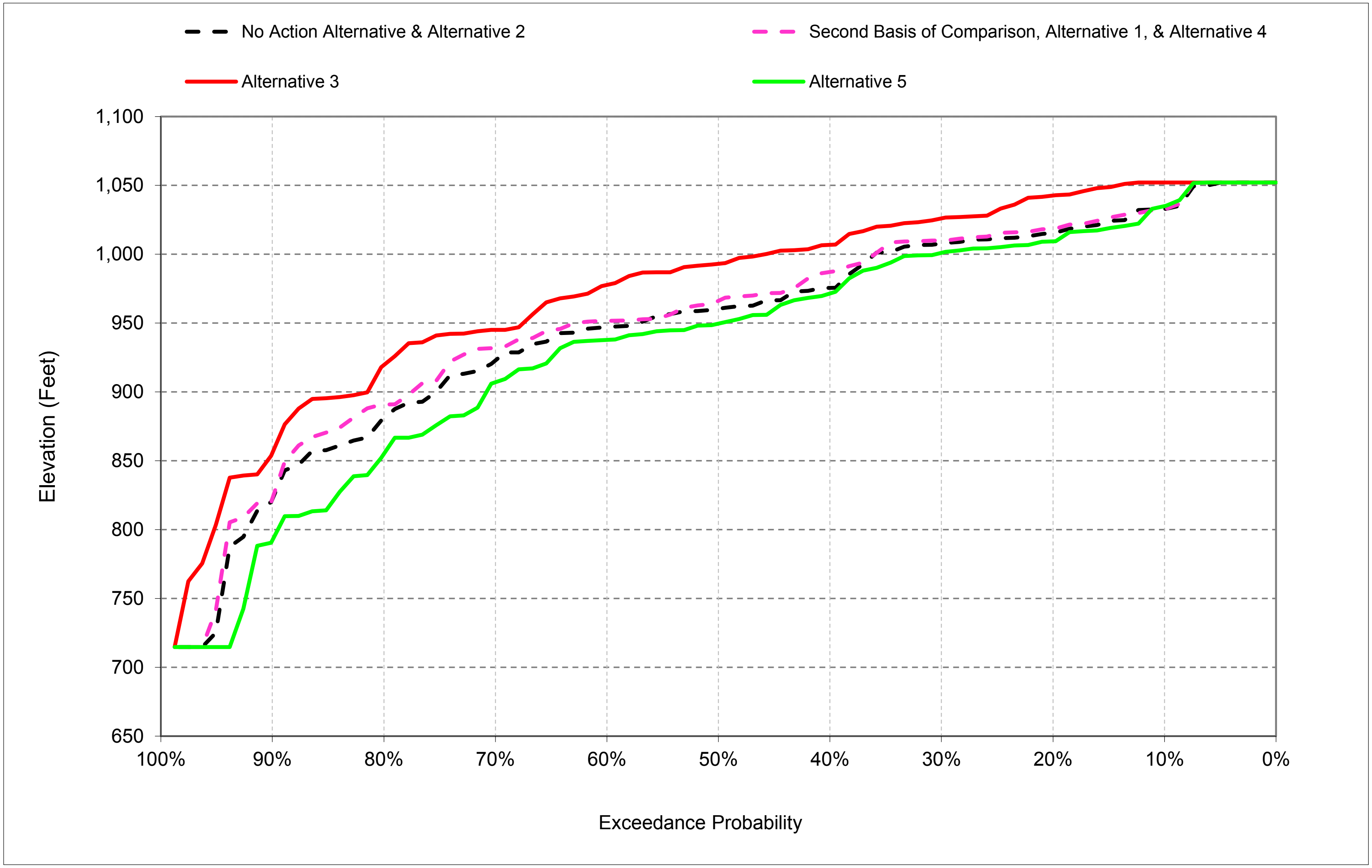
C.13. New Melones Lake Elevation

Figure C-13-1. New Melones Reservoir, Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-13-2. New Melones Reservoir, Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-1. New Melones Reservoir, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,050	1,047	1,057	1,059	1,050	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	961
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	929
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	945	951	958	968	974	973	976	976	965	954	948
Water Year Types[c]												
Wet (32%)	980	982	990	1,004	1,016	1,023	1,026	1,039	1,047	1,040	1,029	1,022
Above Normal (16%)	932	937	945	960	974	986	988	997	996	985	973	897
Below Normal (13%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (24%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (15%)	856	856	862	864	870	871	860	848	840	828	818	812

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	4	2	0	-1	2	4	6	7	0	0	0	0
20%	5	2	2	0	8	13	5	6	1	3	3	3
30%	4	5	6	3	1	1	7	9	5	4	3	2
40%	12	13	5	4	3	6	6	7	8	8	10	12
50%	10	11	12	5	4	1	2	7	8	10	9	7
60%	8	7	6	8	8	9	12	6	5	3	4	4
70%	10	10	7	9	8	6	9	12	8	9	9	4
80%	13	11	9	14	18	19	11	9	4	6	5	3
90%	16	17	15	14	26	19	7	7	14	11	8	6
Long Term												
Full Simulation Period[b]	9	8	7	6	6	6	9	8	6	5	5	5
Water Year Types[c]												
Wet (32%)	9	8	7	6	5	8	8	8	3	3	3	3
Above Normal (16%)	9	7	6	6	6	6	8	7	5	5	5	5
Below Normal (13%)	9	8	7	7	6	6	9	8	7	8	8	8
Dry (24%)	8	7	6	6	5	5	8	7	7	7	7	7
Critical (15%)	10	10	9	8	8	8	11	8	10	6	5	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-2. New Melones Reservoir, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,050	1,047	1,057	1,059	1,050	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	961
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	929
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	945	951	958	968	974	973	976	976	965	954	948
Water Year Types[c]												
Wet (32%)	980	982	990	1,004	1,016	1,023	1,026	1,039	1,047	1,040	1,029	1,022
Above Normal (16%)	932	937	945	960	974	986	988	997	996	985	973	897
Below Normal (13%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (24%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (15%)	856	856	862	864	870	871	860	848	840	828	818	812

Alternative 3

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,049	1,048	1,050	1,050	1,050	1,055	1,057	1,069	1,076	1,070	1,061	1,052
20%	1,043	1,043	1,044	1,044	1,050	1,054	1,051	1,054	1,065	1,057	1,048	1,043
30%	1,025	1,025	1,031	1,038	1,045	1,050	1,044	1,050	1,051	1,040	1,031	1,027
40%	1,011	1,012	1,019	1,030	1,038	1,041	1,036	1,035	1,032	1,022	1,012	1,007
50%	995	994	996	1,008	1,018	1,024	1,020	1,024	1,020	1,008	998	994
60%	980	981	982	988	995	1,002	1,001	1,005	1,005	995	984	979
70%	946	950	964	967	978	975	974	985	976	963	952	945
80%	924	922	930	934	943	953	947	956	949	940	932	926
90%	877	879	879	886	906	911	897	896	918	901	886	876
Long Term												
Full Simulation Period[b]	974	974	978	985	993	999	998	1,002	1,003	992	981	975
Water Year Types[c]												
Wet (32%)	1,003	1,004	1,010	1,022	1,030	1,038	1,042	1,055	1,064	1,056	1,045	1,037
Above Normal (16%)	964	967	974	987	999	1,009	1,012	1,021	1,022	1,013	1,002	924
Below Normal (13%)	998	998	1,000	1,002	1,011	1,014	1,011	1,012	1,010	1,000	989	983
Dry (24%)	974	973	974	977	981	985	983	982	978	966	954	948
Critical (15%)	899	899	902	904	909	909	899	889	883	870	858	852

Alternative 3 minus No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	20	20	15	9	4	4	10	12	18	20	21	19
20%	29	28	27	23	20	22	15	11	25	25	27	27
30%	20	19	24	26	24	25	23	23	20	17	18	18
40%	35	36	24	26	26	27	25	30	26	27	29	31
50%	39	37	36	28	23	19	21	28	29	32	33	33
60%	37	36	31	29	29	26	25	21	29	29	30	32
70%	22	21	26	25	33	28	24	33	25	24	24	16
80%	45	41	43	48	45	41	30	32	26	28	35	38
90%	42	43	42	39	49	48	33	30	42	39	36	33
Long Term												
Full Simulation Period[b]	30	29	28	27	25	25	25	26	27	27	27	27
Water Year Types[c]												
Wet (32%)	23	22	20	18	14	16	15	16	17	16	16	16
Above Normal (16%)	32	30	29	28	25	23	24	24	27	28	29	27
Below Normal (13%)	30	29	28	27	26	26	26	27	27	28	28	28
Dry (24%)	32	31	30	30	30	29	29	29	31	31	32	33
Critical (15%)	43	43	40	40	38	38	39	41	43	41	40	40

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-3. New Melones Reservoir, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,050	1,047	1,057	1,059	1,050	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	961
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	929
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	945	951	958	968	974	973	976	976	965	954	948
Water Year Types[c]												
Wet (32%)	980	982	990	1,004	1,016	1,023	1,026	1,039	1,047	1,040	1,029	1,022
Above Normal (16%)	932	937	945	960	974	986	988	997	996	985	973	897
Below Normal (13%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (24%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (15%)	856	856	862	864	870	871	860	848	840	828	818	812

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,036	1,041	1,047	1,049	1,043	1,053	1,062	1,053	1,043	1,035
20%	1,011	1,011	1,012	1,015	1,031	1,032	1,028	1,037	1,034	1,026	1,015	1,009
30%	999	998	1,001	1,007	1,015	1,019	1,020	1,022	1,024	1,016	1,005	1,002
40%	973	973	985	996	1,004	1,010	1,003	1,002	1,003	992	979	973
50%	945	948	959	970	996	998	991	987	978	965	953	951
60%	937	940	943	949	957	961	961	972	968	957	944	938
70%	904	911	921	928	932	936	941	937	939	927	915	909
80%	860	860	874	874	874	889	880	894	902	887	873	867
90%	803	807	808	824	834	838	826	839	847	833	818	810
Long Term												
Full Simulation Period[b]	931	933	939	947	957	964	961	962	963	952	941	935
Water Year Types[c]												
Wet (32%)	969	971	980	995	1,007	1,016	1,020	1,031	1,040	1,033	1,022	1,015
Above Normal (16%)	924	930	939	954	968	980	982	988	987	975	963	890
Below Normal (13%)	954	956	959	962	973	977	972	970	968	957	944	938
Dry (24%)	930	930	932	934	939	945	940	936	931	918	905	898
Critical (15%)	837	838	842	845	853	855	834	818	815	804	796	791

Alternative 5 minus No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	1	0	2	-1	-4	-3	4	3	3	2
20%	-2	-4	-5	-6	1	0	-8	-6	-6	-6	-6	-6
30%	-7	-8	-7	-5	-6	-6	-1	-5	-6	-7	-7	-6
40%	-3	-3	-9	-8	-7	-5	-8	-4	-3	-3	-5	-3
50%	-11	-9	-1	-10	0	-8	-7	-10	-13	-12	-12	-10
60%	-6	-6	-7	-10	-8	-15	-16	-12	-8	-9	-9	-9
70%	-21	-18	-17	-14	-13	-11	-10	-15	-13	-12	-14	-19
80%	-19	-21	-13	-13	-23	-22	-38	-30	-21	-25	-24	-21
90%	-32	-28	-29	-23	-23	-25	-38	-27	-28	-29	-32	-33
Long Term												
Full Simulation Period[b]	-12	-12	-12	-11	-11	-10	-12	-14	-13	-13	-13	-13
Water Year Types[c]												
Wet (32%)	-11	-11	-10	-9	-8	-7	-7	-7	-7	-7	-6	-6
Above Normal (16%)	-8	-7	-6	-6	-6	-6	-6	-8	-8	-9	-10	-7
Below Normal (13%)	-13	-13	-13	-13	-12	-12	-13	-15	-15	-15	-16	-16
Dry (24%)	-13	-13	-12	-13	-12	-12	-15	-17	-17	-17	-17	-17
Critical (15%)	-19	-18	-20	-19	-17	-16	-26	-30	-25	-24	-22	-21

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-4. New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,050	1,047	1,057	1,059	1,050	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	961
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	929
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	945	951	958	968	974	973	976	976	965	954	948
Water Year Types[c]												
Wet (32%)	980	982	990	1,004	1,016	1,023	1,026	1,039	1,047	1,040	1,029	1,022
Above Normal (16%)	932	937	945	960	974	986	988	997	996	985	973	897
Below Normal (13%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (24%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (15%)	856	856	862	864	870	871	860	848	840	828	818	812

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4	-2	0	1	-2	-4	-6	-7	0	0	0	0
20%	-5	-2	-2	0	-8	-13	-5	-6	-1	-3	-3	-3
30%	-4	-5	-6	-3	-1	-1	-7	-9	-5	-4	-3	-2
40%	-12	-13	-5	-4	-3	-6	-6	-7	-8	-8	-10	-12
50%	-10	-11	-12	-5	-4	-1	-2	-7	-8	-10	-9	-7
60%	-8	-7	-6	-8	-8	-9	-12	-6	-5	-3	-4	-4
70%	-10	-10	-7	-9	-8	-6	-9	-12	-8	-9	-9	-4
80%	-13	-11	-9	-14	-18	-19	-11	-9	-4	-6	-5	-3
90%	-16	-17	-15	-14	-26	-19	-7	-7	-14	-11	-8	-6
Long Term												
Full Simulation Period[b]	-9	-8	-7	-6	-6	-6	-9	-8	-6	-5	-5	-5
Water Year Types[c]												
Wet (32%)	-9	-8	-7	-6	-5	-8	-8	-8	-3	-3	-3	-3
Above Normal (16%)	-9	-7	-6	-6	-6	-6	-8	-7	-5	-5	-5	-5
Below Normal (13%)	-9	-8	-7	-7	-6	-6	-9	-8	-7	-8	-8	-8
Dry (24%)	-8	-7	-6	-6	-5	-5	-8	-7	-7	-7	-7	-7
Critical (15%)	-10	-10	-9	-8	-8	-8	-11	-8	-10	-6	-5	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-5. New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Alternative 3

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,049	1,048	1,050	1,050	1,050	1,055	1,057	1,069	1,076	1,070	1,061	1,052
20%	1,043	1,043	1,044	1,044	1,050	1,054	1,051	1,054	1,065	1,057	1,048	1,043
30%	1,025	1,025	1,031	1,038	1,045	1,050	1,044	1,050	1,051	1,040	1,031	1,027
40%	1,011	1,012	1,019	1,030	1,038	1,041	1,036	1,035	1,032	1,022	1,012	1,007
50%	995	994	996	1,008	1,018	1,024	1,020	1,024	1,020	1,008	998	994
60%	980	981	982	988	995	1,002	1,001	1,005	1,005	995	984	979
70%	946	950	964	967	978	975	974	985	976	963	952	945
80%	924	922	930	934	943	953	947	956	949	940	932	926
90%	877	879	879	886	906	911	897	896	918	901	886	876
Long Term												
Full Simulation Period[b]	974	974	978	985	993	999	998	1,002	1,003	992	981	975
Water Year Types[c]												
Wet (32%)	1,003	1,004	1,010	1,022	1,030	1,038	1,042	1,055	1,064	1,056	1,045	1,037
Above Normal (16%)	964	967	974	987	999	1,009	1,012	1,021	1,022	1,013	1,002	924
Below Normal (13%)	998	998	1,000	1,002	1,011	1,014	1,011	1,012	1,010	1,000	989	983
Dry (24%)	974	973	974	977	981	985	983	982	978	966	954	948
Critical (15%)	899	899	902	904	909	909	899	889	883	870	858	852

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	17	17	14	10	2	0	4	6	18	20	22	19
20%	25	25	25	22	12	9	10	5	24	21	24	24
30%	16	15	18	23	23	23	16	14	15	14	15	17
40%	23	24	20	22	23	21	19	23	18	19	19	19
50%	29	26	24	22	19	18	19	21	21	22	25	25
60%	29	29	25	21	21	17	12	16	23	26	26	27
70%	12	11	19	16	25	22	15	21	17	15	14	12
80%	31	30	33	34	28	22	19	23	22	22	30	35
90%	26	27	27	26	23	29	26	23	28	28	28	27
Long Term												
Full Simulation Period[b]	21	21	21	21	19	18	16	18	21	22	22	22
Water Year Types[c]												
Wet (32%)	14	14	13	12	9	8	7	8	14	13	13	12
Above Normal (16%)	23	23	23	21	19	18	16	18	21	23	24	23
Below Normal (13%)	20	21	21	21	20	20	17	19	20	20	21	21
Dry (24%)	24	24	24	24	25	23	20	23	24	24	25	26
Critical (15%)	33	33	31	32	31	30	28	33	33	35	35	34

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-6. New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	1,029	1,028	1,036	1,041	1,047	1,049	1,043	1,053	1,062	1,053	1,043	1,035
20%	1,011	1,011	1,012	1,015	1,031	1,032	1,028	1,037	1,034	1,026	1,015	1,009
30%	999	998	1,001	1,007	1,015	1,019	1,020	1,022	1,024	1,016	1,005	1,002
40%	973	973	985	996	1,004	1,010	1,003	1,002	1,003	992	979	973
50%	945	948	959	970	996	998	991	987	978	965	953	951
60%	937	940	943	949	957	961	961	972	968	957	944	938
70%	904	911	921	928	932	936	941	937	939	927	915	909
80%	860	860	874	874	874	889	880	894	902	887	873	867
90%	803	807	808	824	834	838	826	839	847	833	818	810
Long Term												
Full Simulation Period[b]	931	933	939	947	957	964	961	962	963	952	941	935
Water Year Types[c]												
Wet (32%)	969	971	980	995	1,007	1,016	1,020	1,031	1,040	1,033	1,022	1,015
Above Normal (16%)	924	930	939	954	968	980	982	988	987	975	963	890
Below Normal (13%)	954	956	959	962	973	977	972	970	968	957	944	938
Dry (24%)	930	930	932	934	939	945	940	936	931	918	905	898
Critical (15%)	837	838	842	845	853	855	834	818	815	804	796	791

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	-4	-2	0	1	0	-5	-10	-10	4	3	3	2
20%	-7	-7	-7	-7	-7	-14	-13	-12	-7	-9	-9	-9
30%	-11	-12	-12	-8	-7	-7	-7	-14	-12	-11	-11	-8
40%	-15	-15	-14	-12	-10	-10	-14	-11	-11	-11	-15	-15
50%	-21	-20	-14	-16	-4	-9	-9	-17	-21	-22	-21	-18
60%	-15	-13	-13	-18	-16	-23	-28	-17	-13	-12	-13	-14
70%	-31	-28	-24	-23	-21	-16	-18	-26	-20	-21	-23	-24
80%	-32	-33	-22	-27	-41	-42	-49	-39	-25	-31	-29	-24
90%	-47	-45	-44	-36	-49	-44	-45	-34	-42	-40	-41	-40
Long Term												
Full Simulation Period[b]	-21	-20	-19	-18	-17	-17	-21	-22	-19	-19	-18	-18
Water Year Types[c]												
Wet (32%)	-20	-19	-17	-15	-14	-15	-15	-16	-10	-10	-10	-9
Above Normal (16%)	-17	-14	-12	-12	-12	-11	-14	-15	-14	-15	-15	-11
Below Normal (13%)	-23	-22	-20	-20	-18	-18	-22	-23	-22	-23	-24	-24
Dry (24%)	-21	-20	-19	-19	-18	-17	-23	-24	-23	-24	-24	-25
Critical (15%)	-29	-28	-29	-27	-25	-24	-37	-38	-35	-31	-27	-27

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

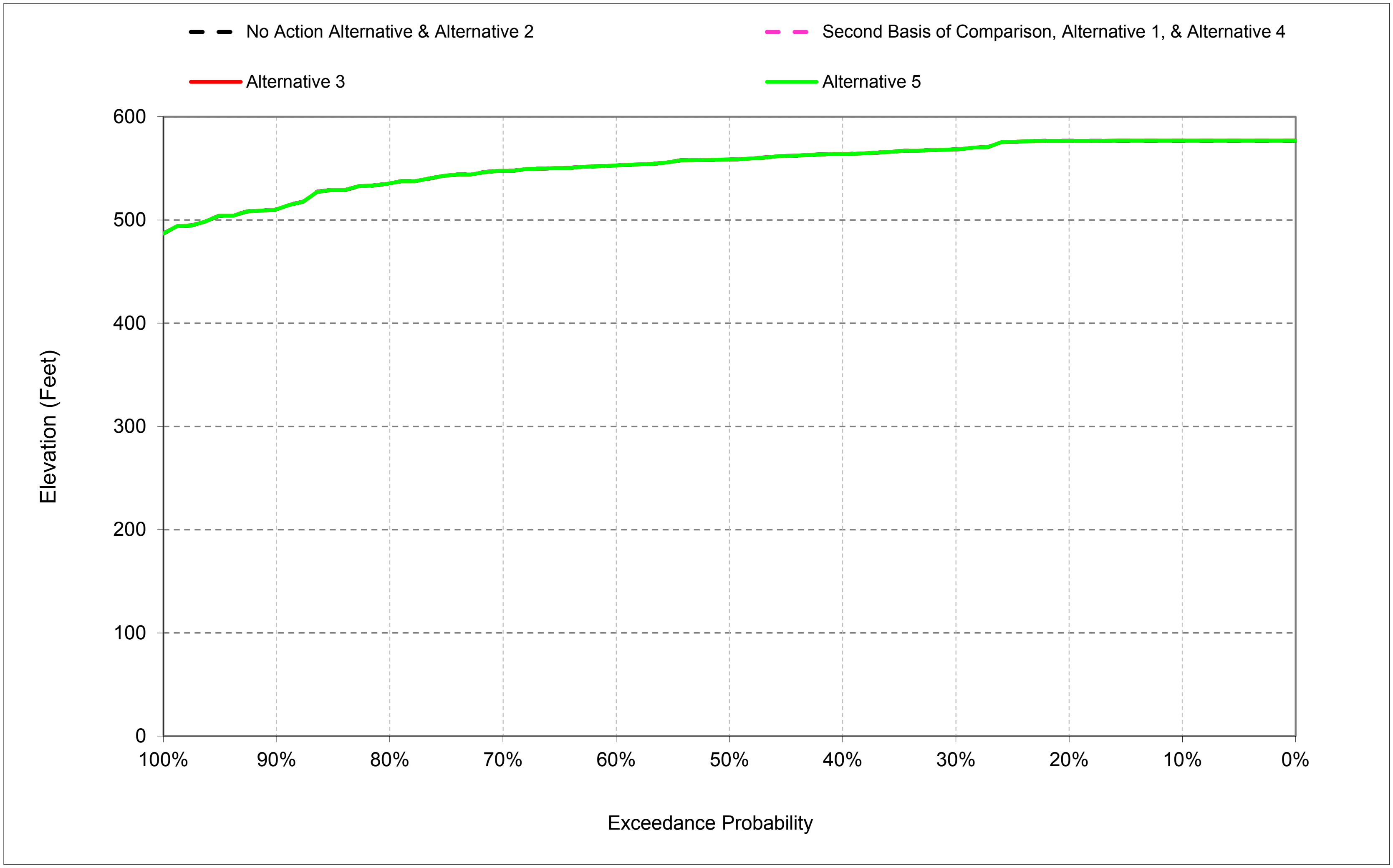
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

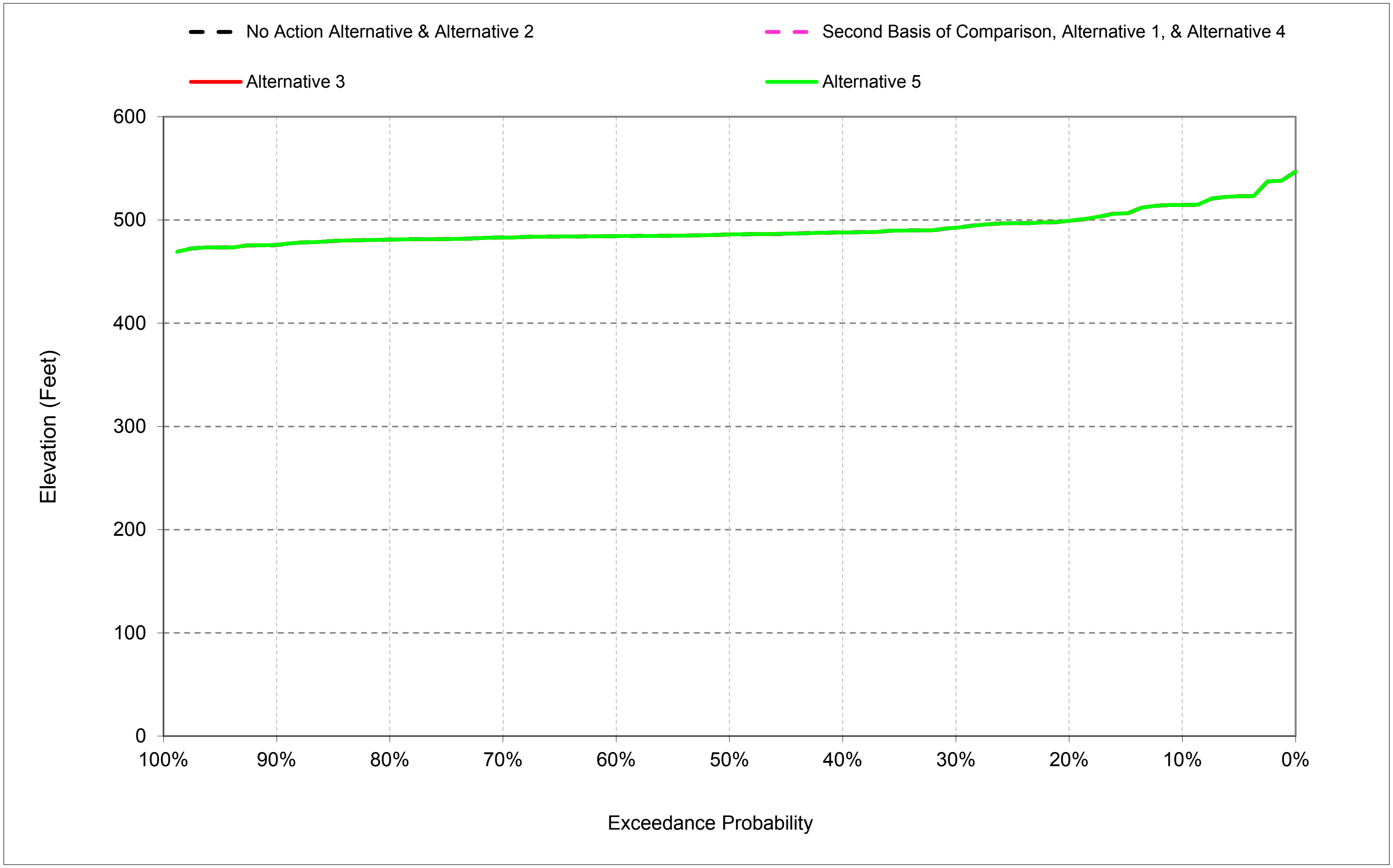
C.14. Millerton Lake Elevation

Figure C-14-1. Millerton Lake, Reservoir Pool Elevation, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-14-2. Millerton Lake, Reservoir Pool Elevation, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-1. Millerton Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 1

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-2. Millerton Lake, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 3

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 3 minus No Action Alternative

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-3. Millerton Lake, End of Month Elevation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (TAF)											
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (TAF)											
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (TAF)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-4. Millerton Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

No Action Alternative

Statistic	End of Month Elevation (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-5. Millerton Lake, End of Month Elevation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (TAF)											
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (TAF)											
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (TAF)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-6. Millerton Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 5

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	515	524	546	561	561	568	570	577	577	571	530	515
20%	503	517	532	555	561	568	562	577	576	559	515	499
30%	498	512	525	540	561	567	557	568	573	543	498	493
40%	493	502	518	536	556	560	551	564	568	533	490	488
50%	491	498	513	528	549	551	546	559	556	522	486	486
60%	486	492	506	523	537	545	538	553	551	514	482	484
70%	483	485	499	514	531	534	529	548	544	504	479	483
80%	479	481	493	506	517	519	517	536	531	493	477	481
90%	475	475	483	490	496	496	503	510	510	479	467	477
Long Term												
Full Simulation Period[b]	493	500	513	527	538	542	539	553	552	524	494	491
Water Year Types[c]												
Wet (23%)	494	502	527	547	558	562	538	556	574	565	528	512
Above Normal (24%)	494	502	516	536	555	562	551	570	572	541	497	487
Below Normal (10%)	490	502	511	524	540	542	539	552	550	521	488	487
Dry (16%)	498	507	516	526	533	535	546	556	545	505	479	487
Critical (27%)	488	490	497	503	508	511	526	533	518	486	472	482

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Elevation (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (23%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (10%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (27%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

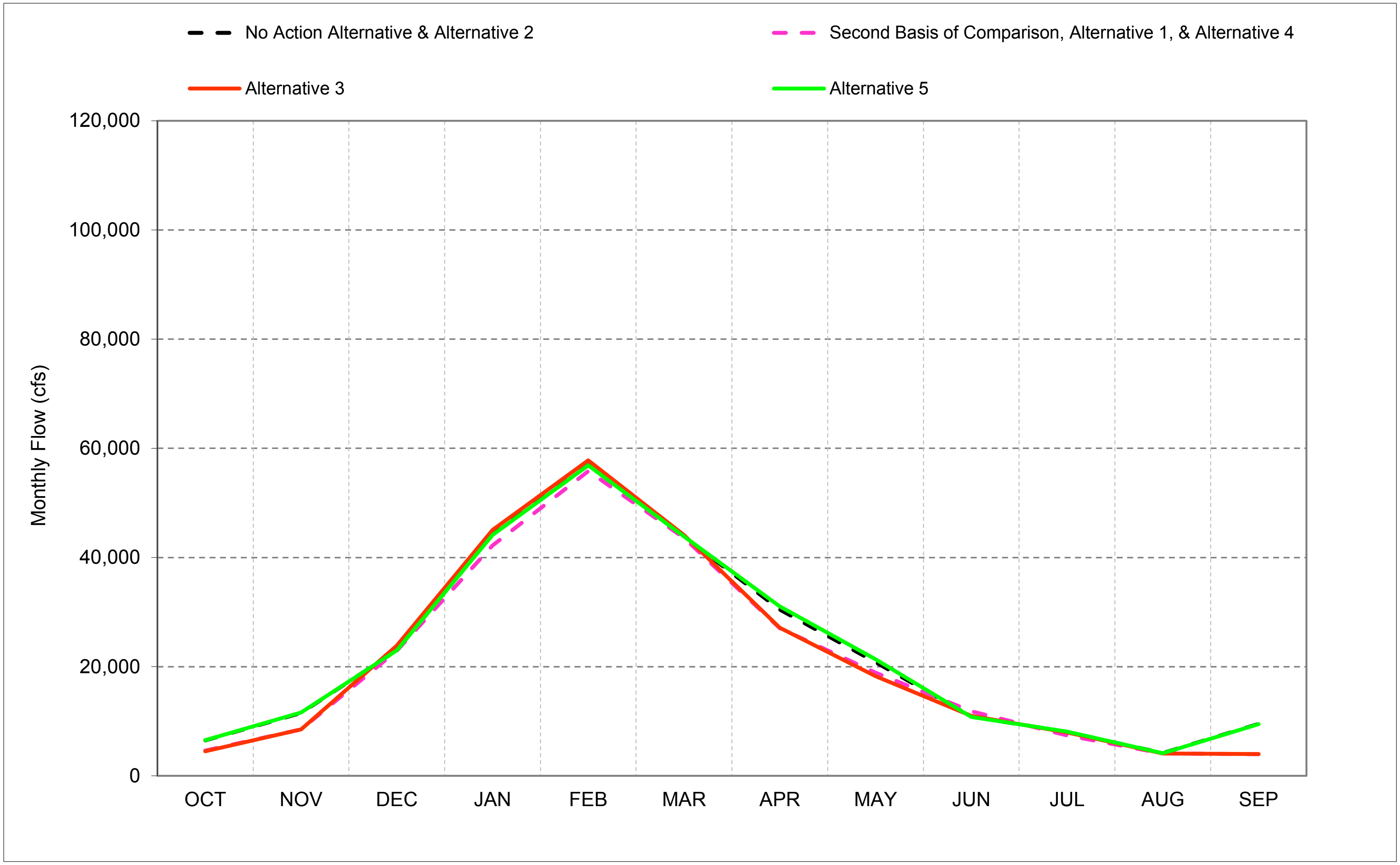
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.15. Delta Outflow

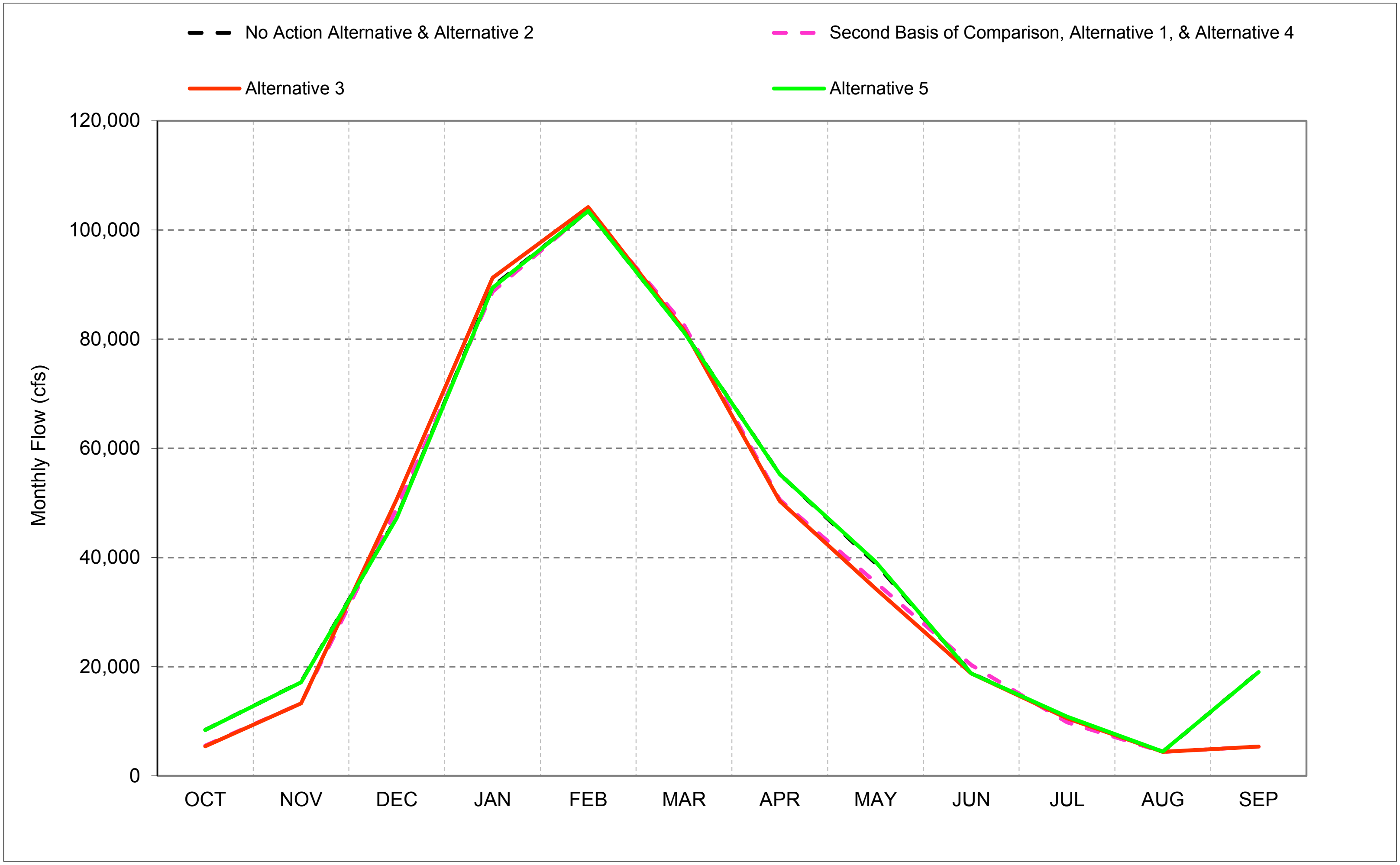
Figure C-15-1-1. Sacramento/San Joaquin River Delta Outflow, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-1-2. Sacramento/San Joaquin River Delta Outflow, Wet Year* Long-Term Average Flow**

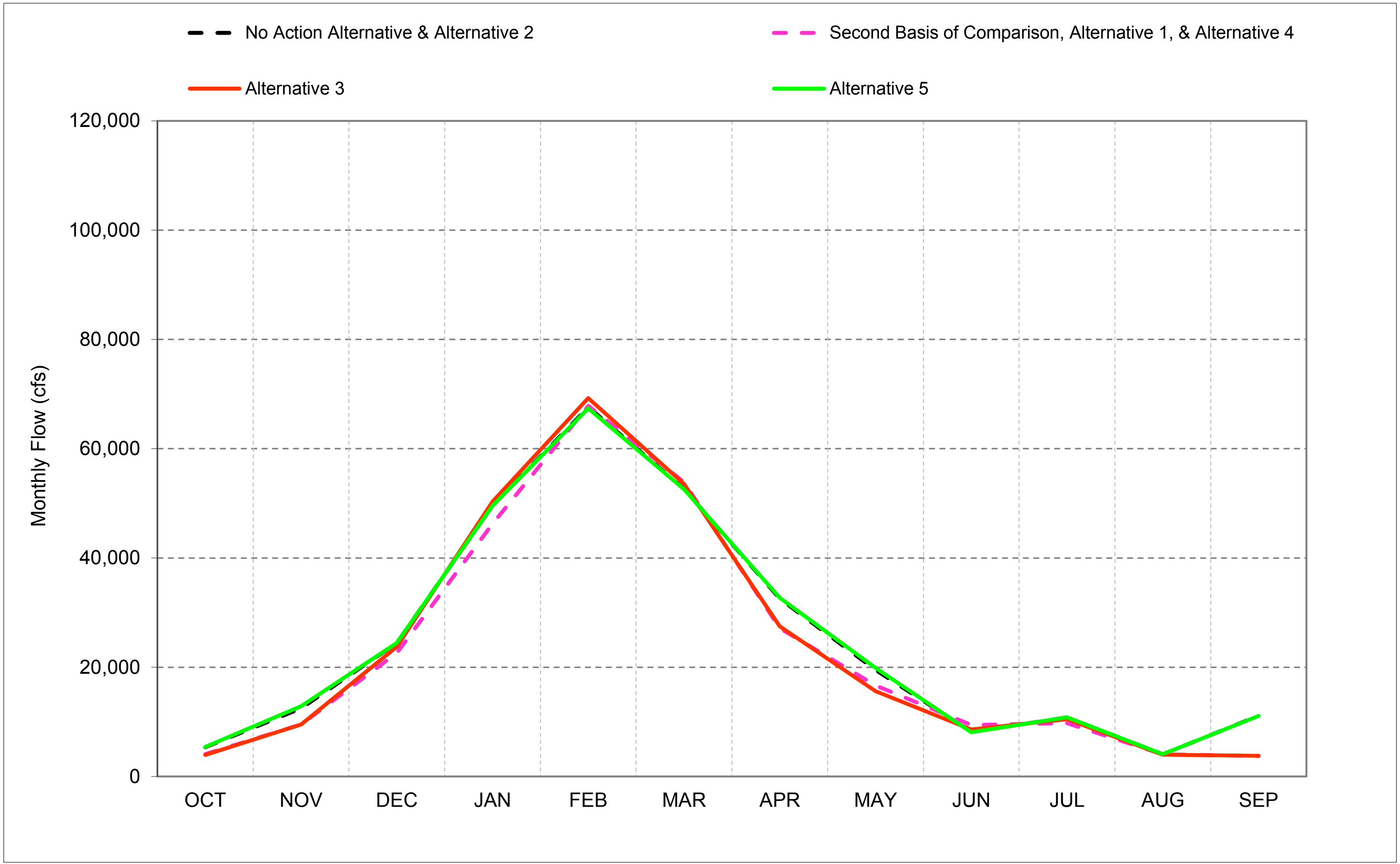


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-1-3. Sacramento/San Joaquin River Delta Outflow, Above Normal Year* Long-Term Average Flow**

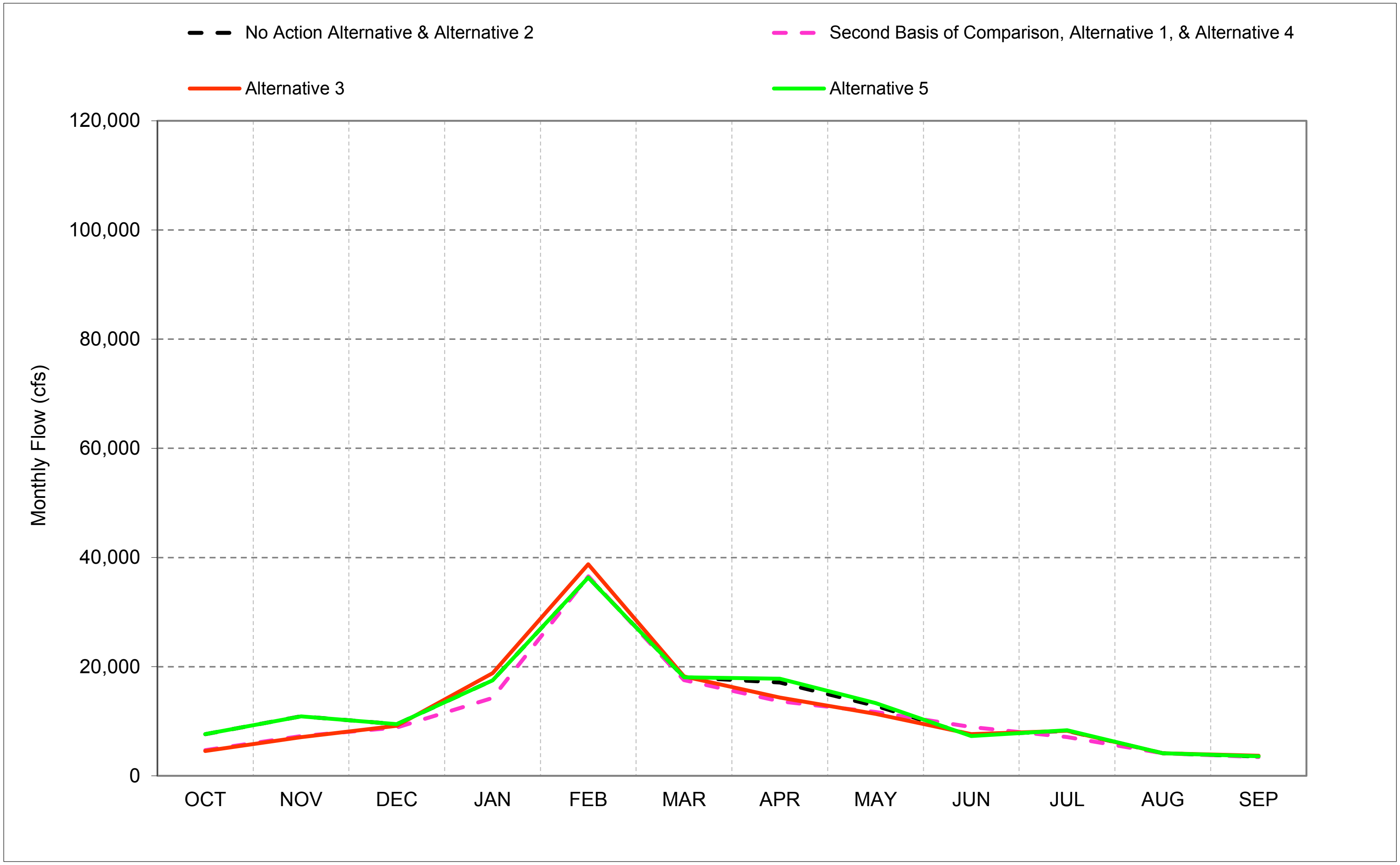


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-1-4. Sacramento/San Joaquin River Delta Outflow, Below Normal Year* Long-Term Average Flow**

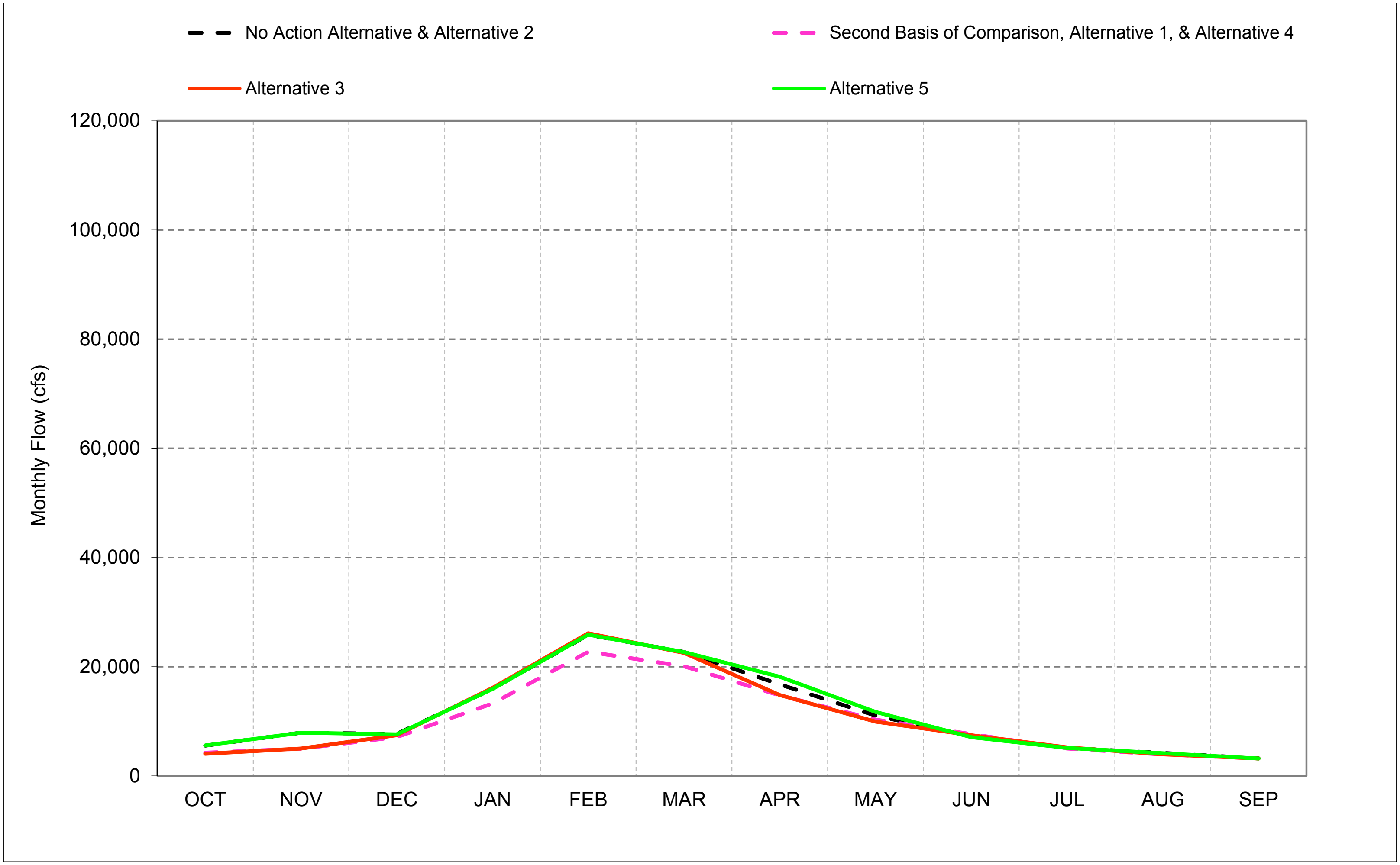


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-1-5. Sacramento/San Joaquin River Delta Outflow, Dry Year* Long-Term Average Flow**

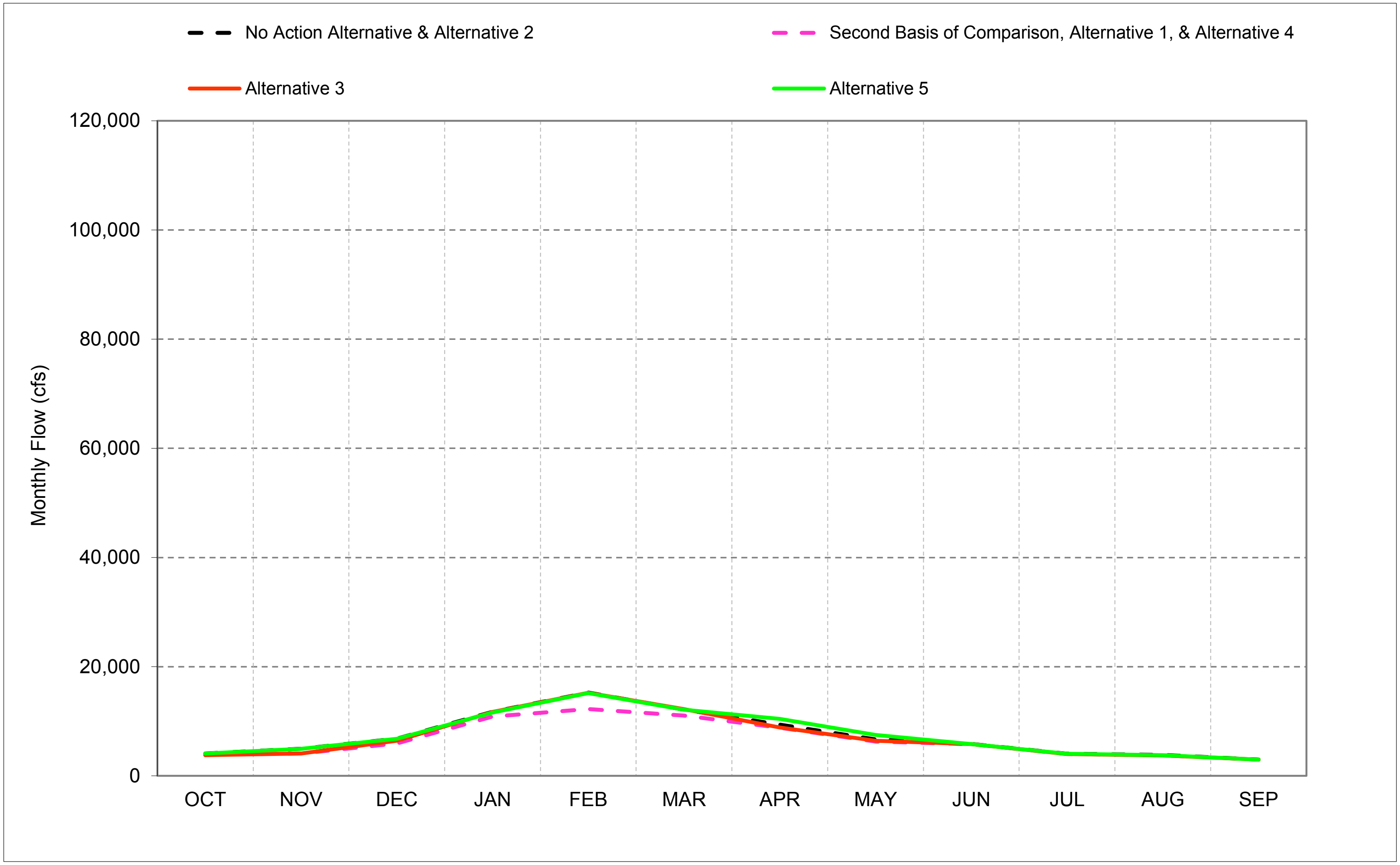


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-1-6. Sacramento/San Joaquin River Delta Outflow, Critical Year* Long-Term Average Flow**

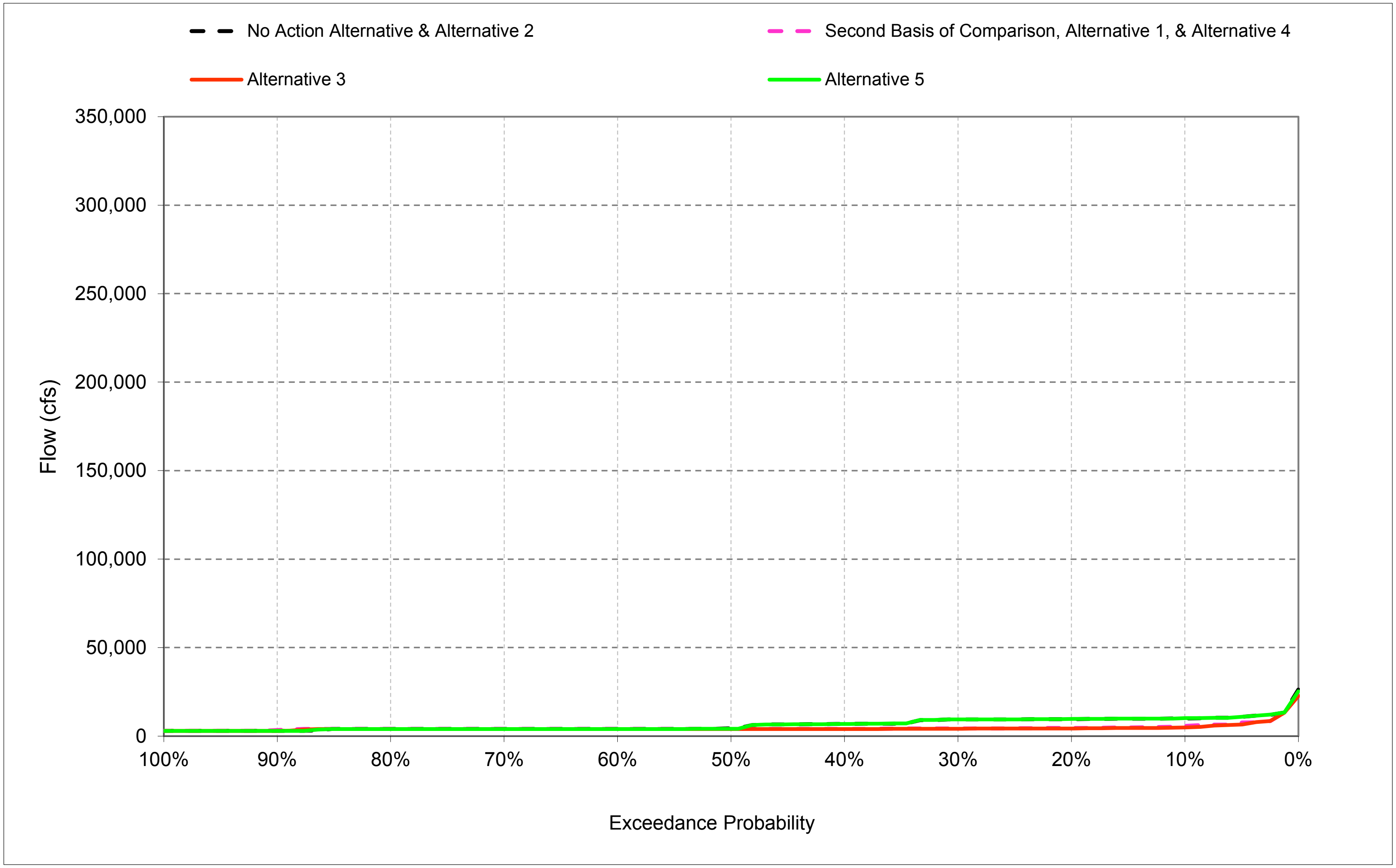


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

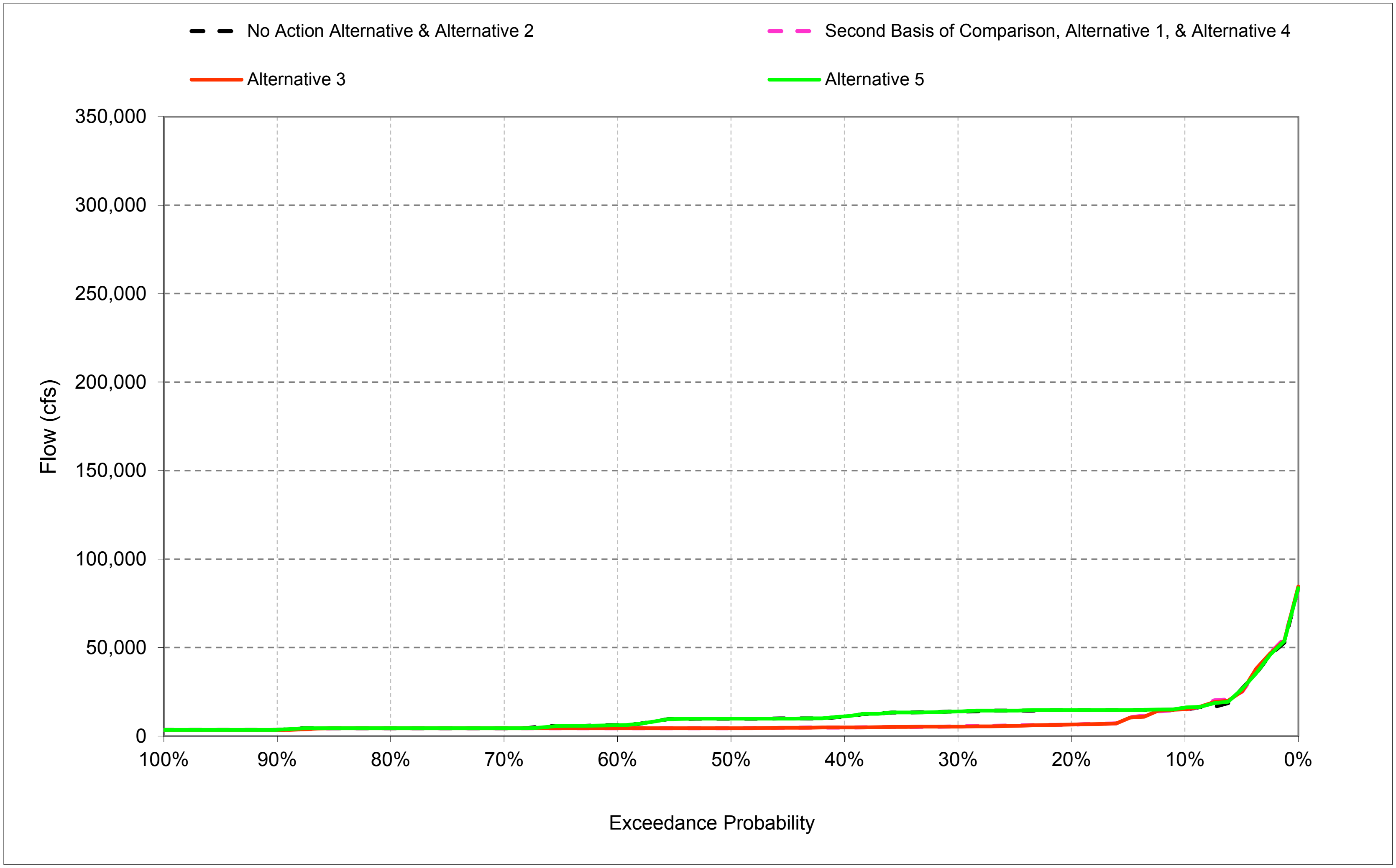
Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-1. Sacramento/San Joaquin River Delta Outflow, October



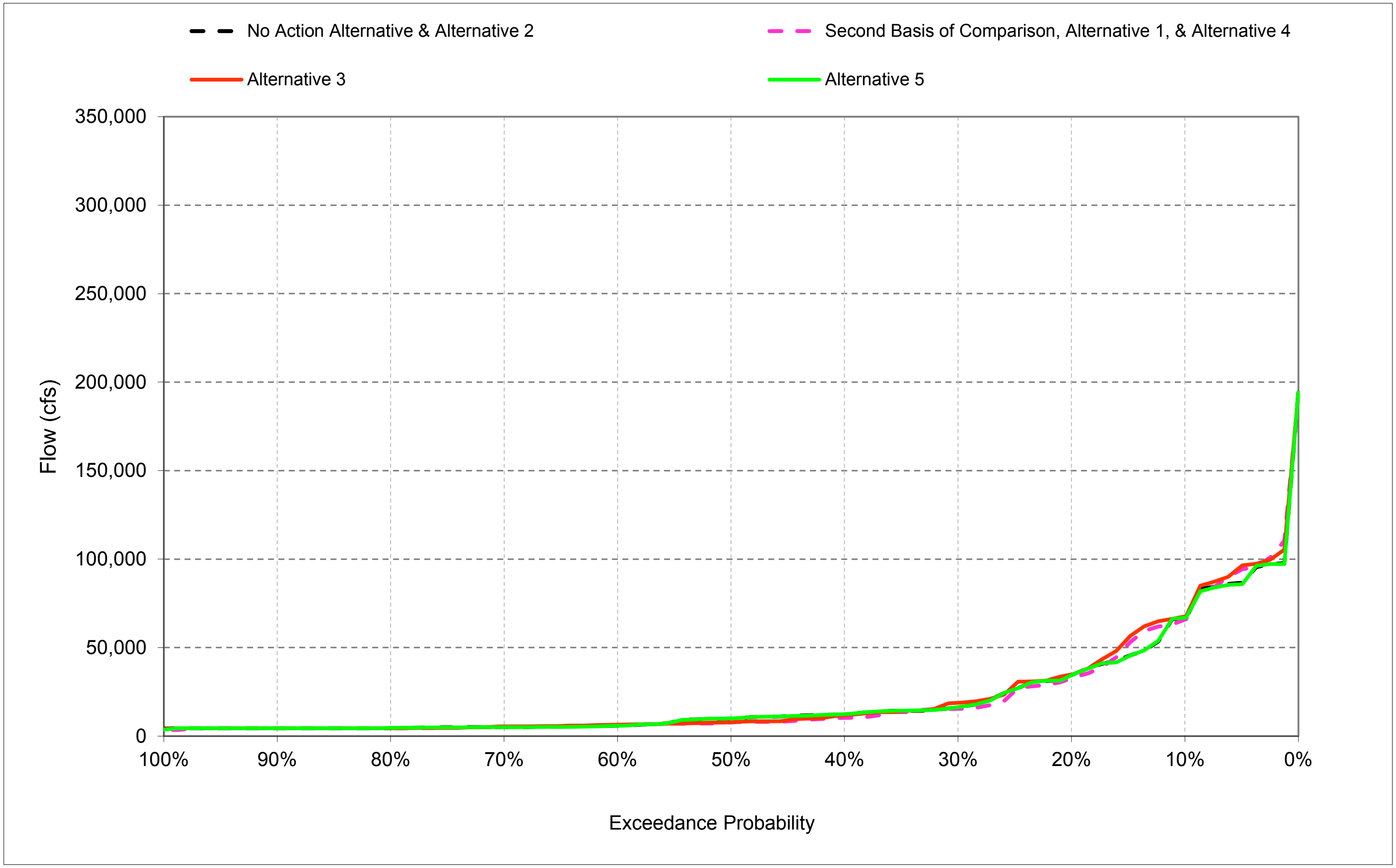
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-2. Sacramento/San Joaquin River Delta Outflow, November



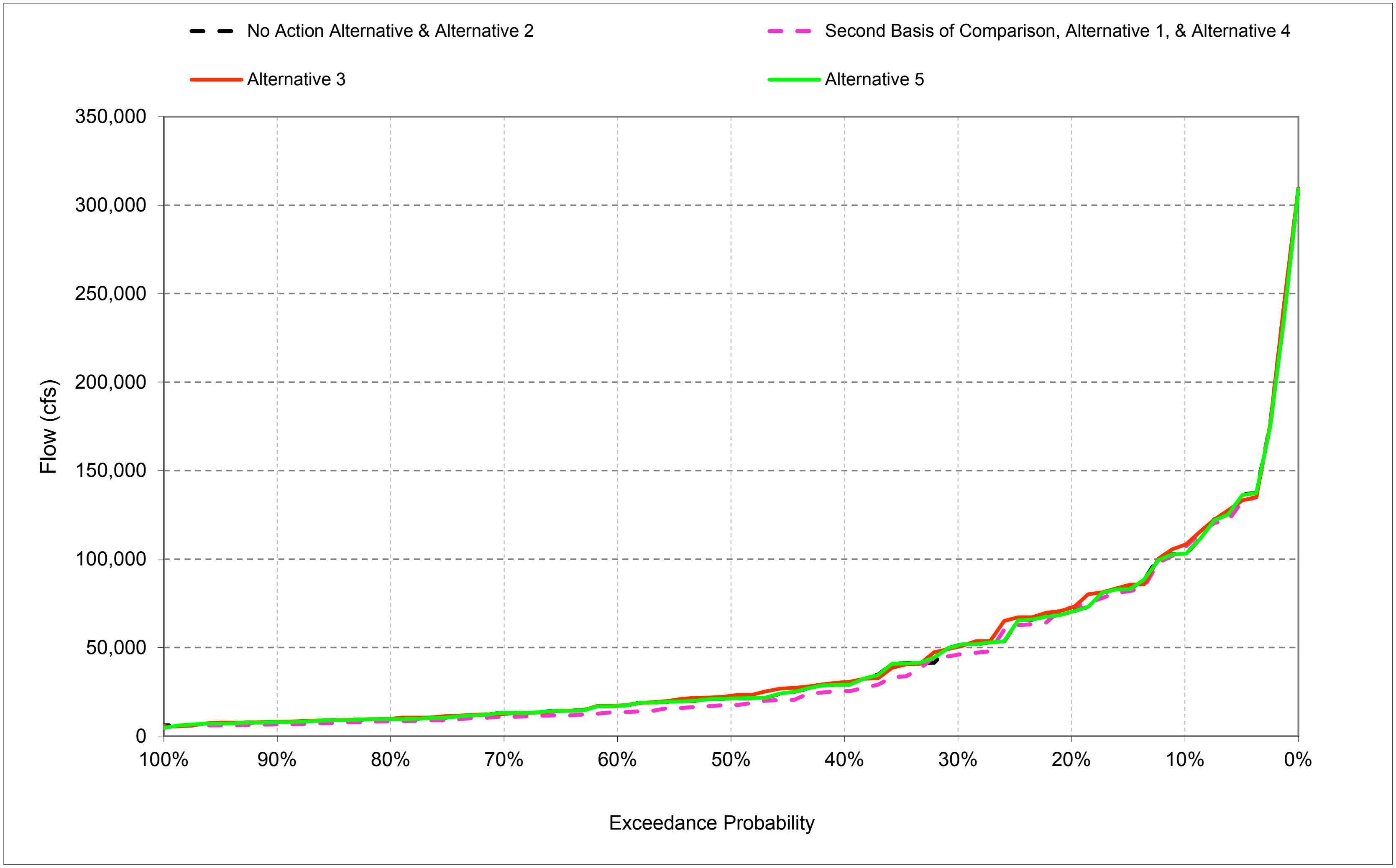
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-3. Sacramento/San Joaquin River Delta Outflow, December



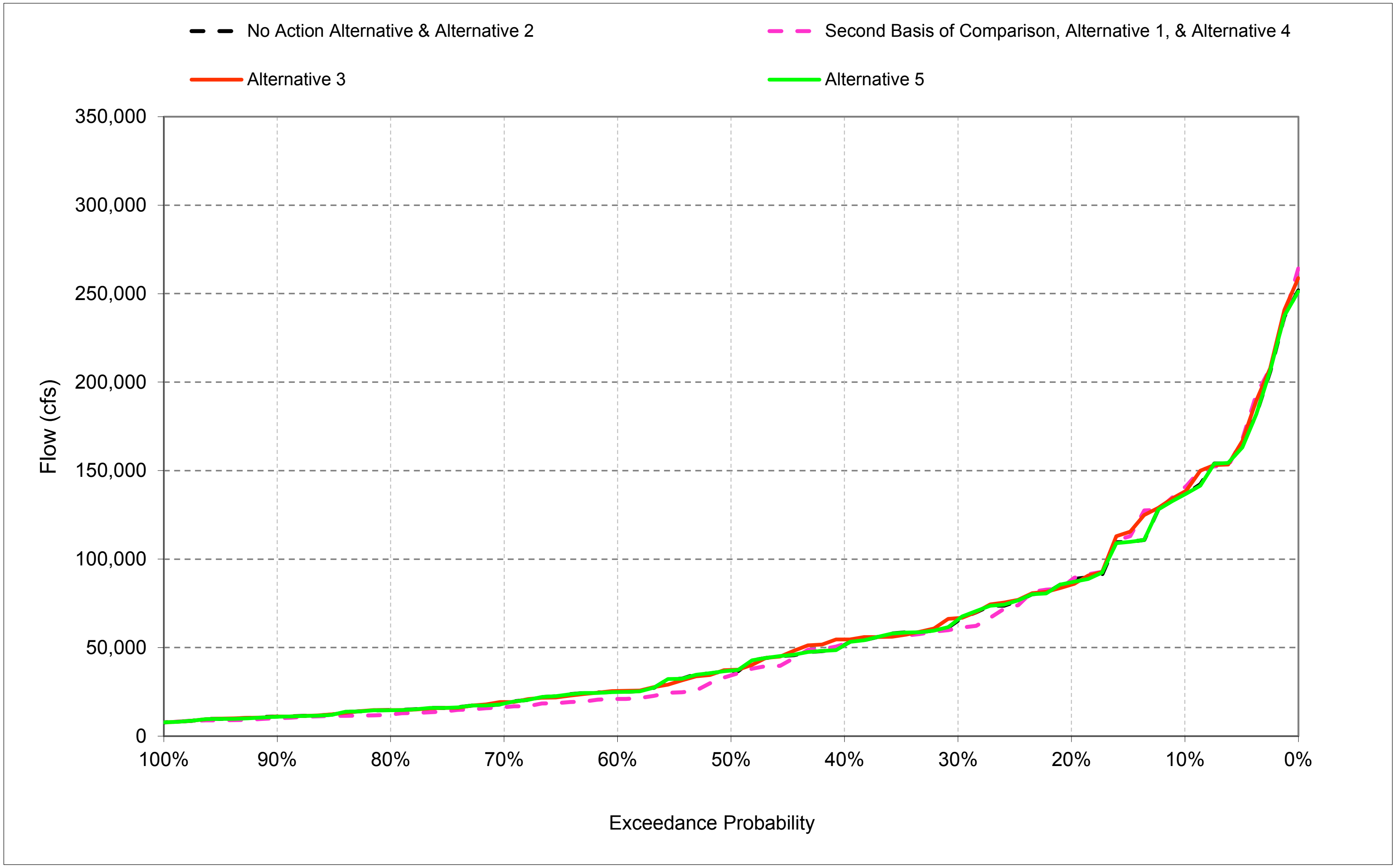
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-4. Sacramento/San Joaquin River Delta Outflow, January



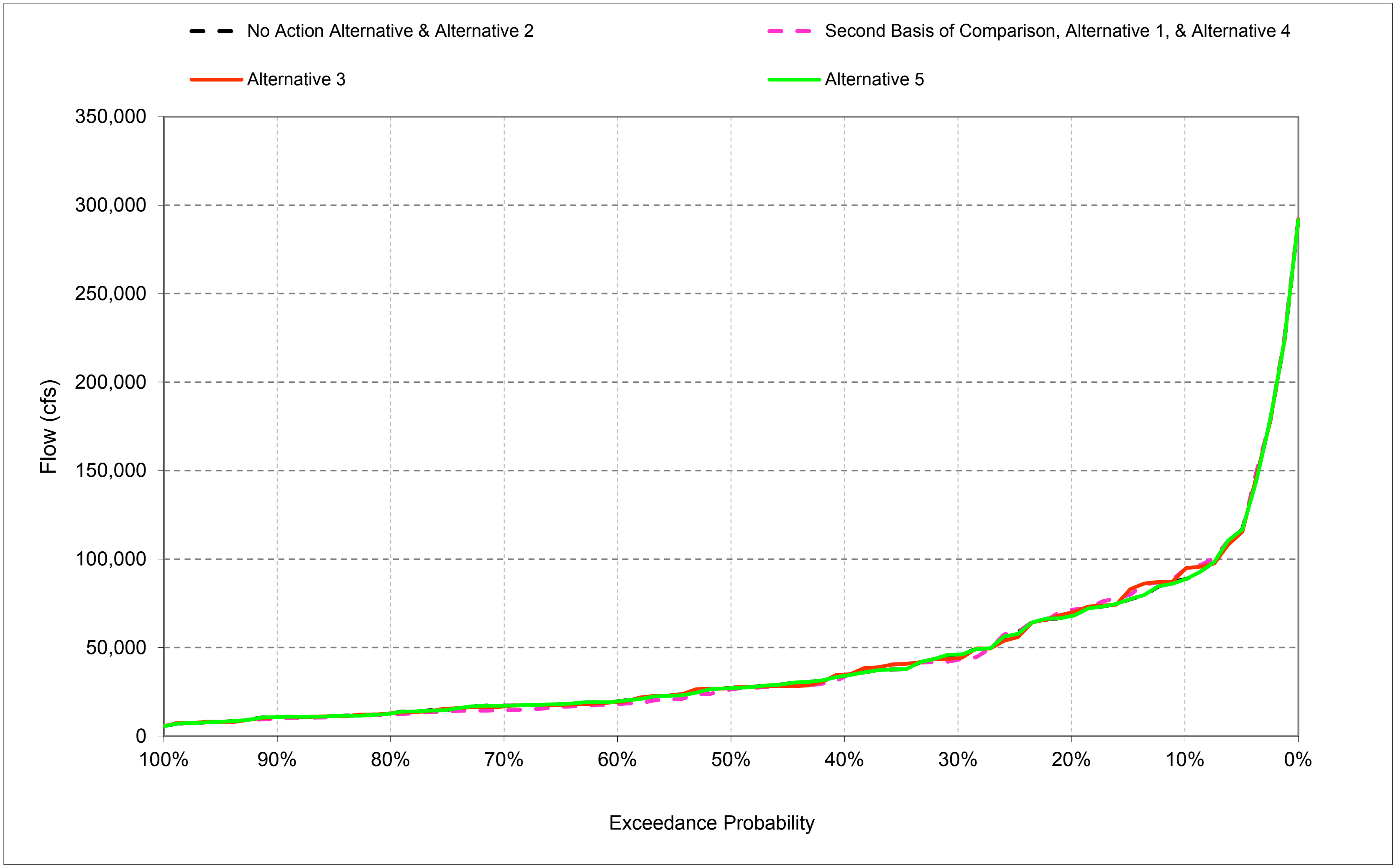
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-5. Sacramento/San Joaquin River Delta Outflow, February



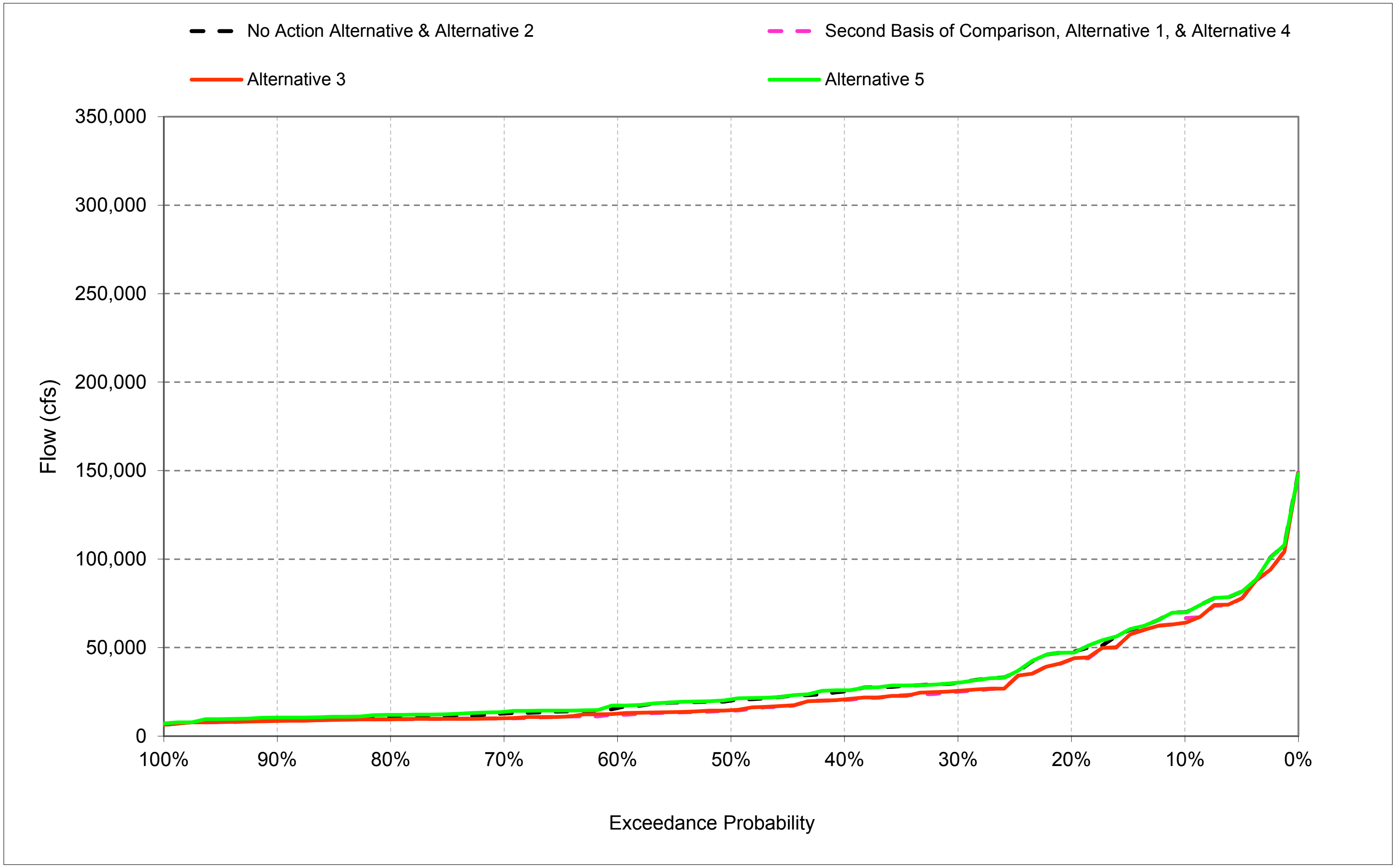
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-6. Sacramento/San Joaquin River Delta Outflow, March



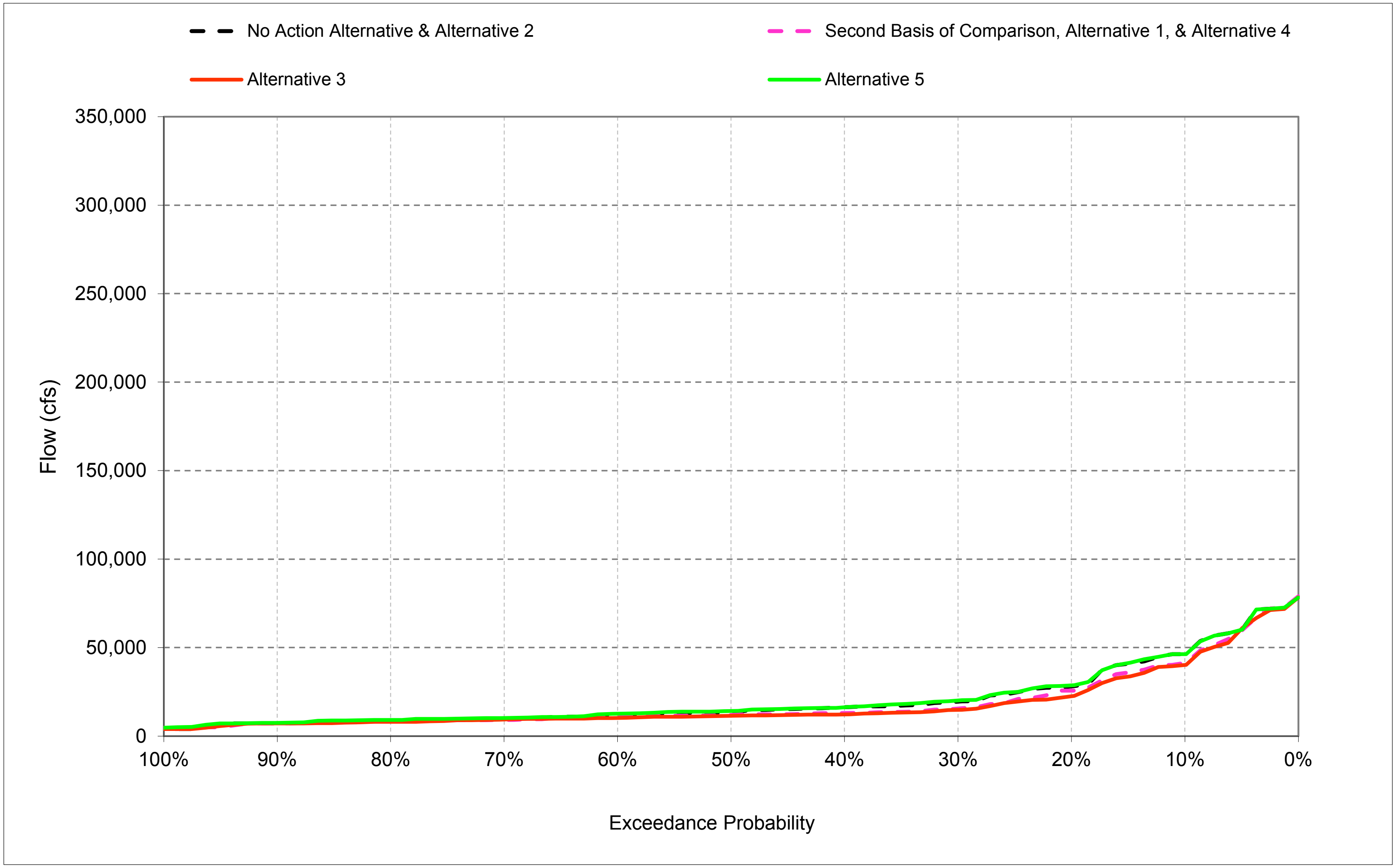
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-7. Sacramento/San Joaquin River Delta Outflow, April



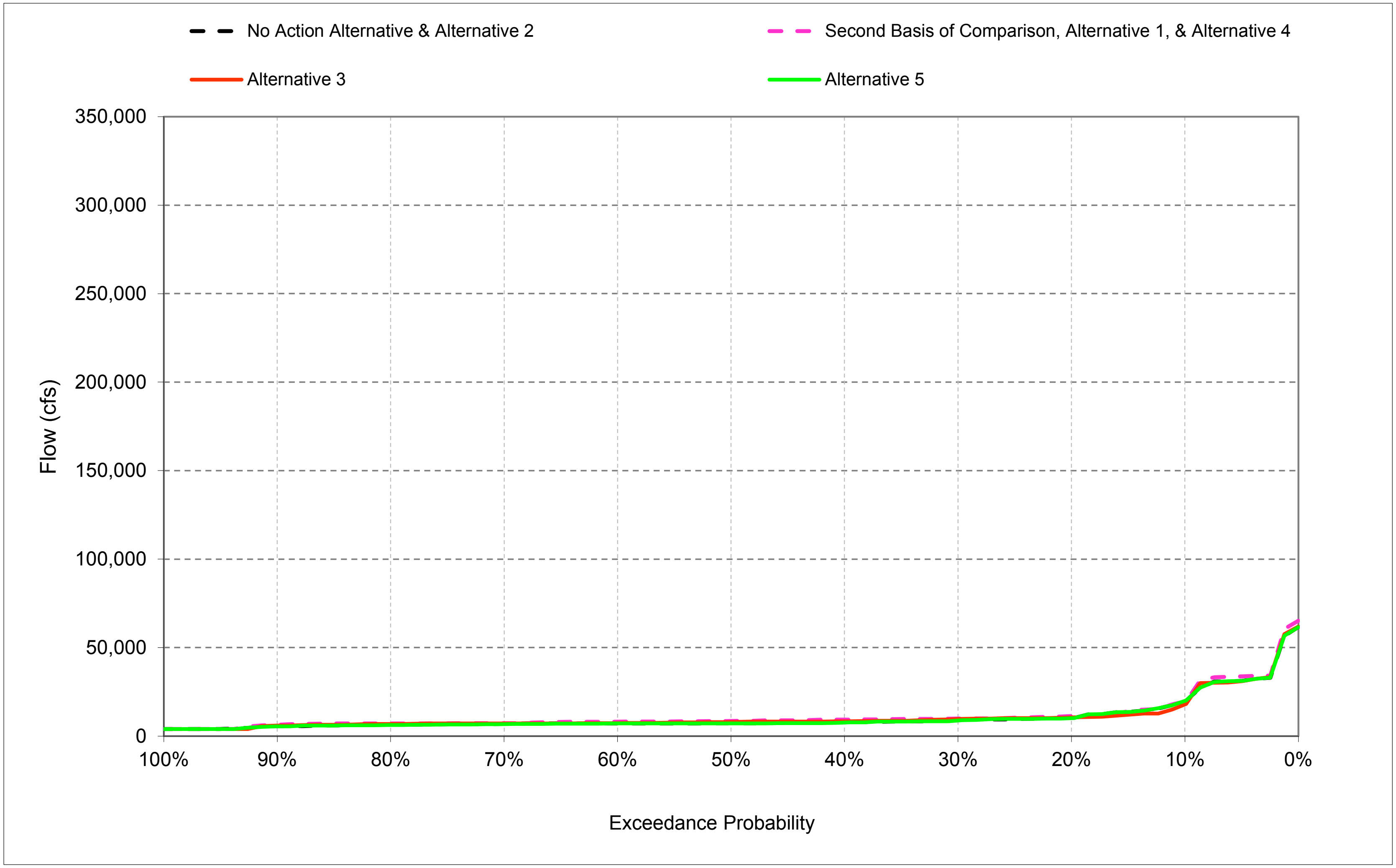
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-8. Sacramento/San Joaquin River Delta Outflow, May



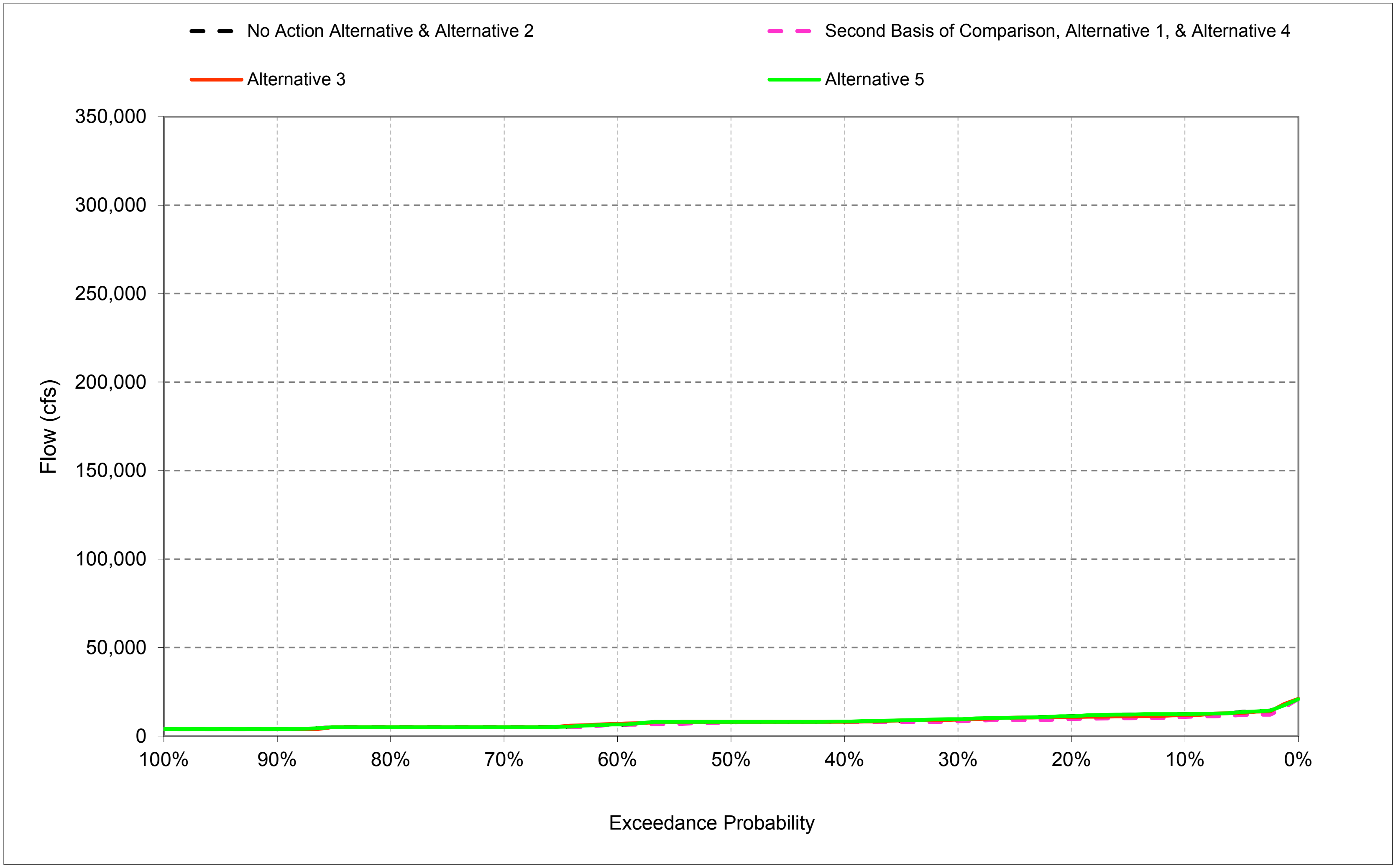
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-9. Sacramento/San Joaquin River Delta Outflow, June



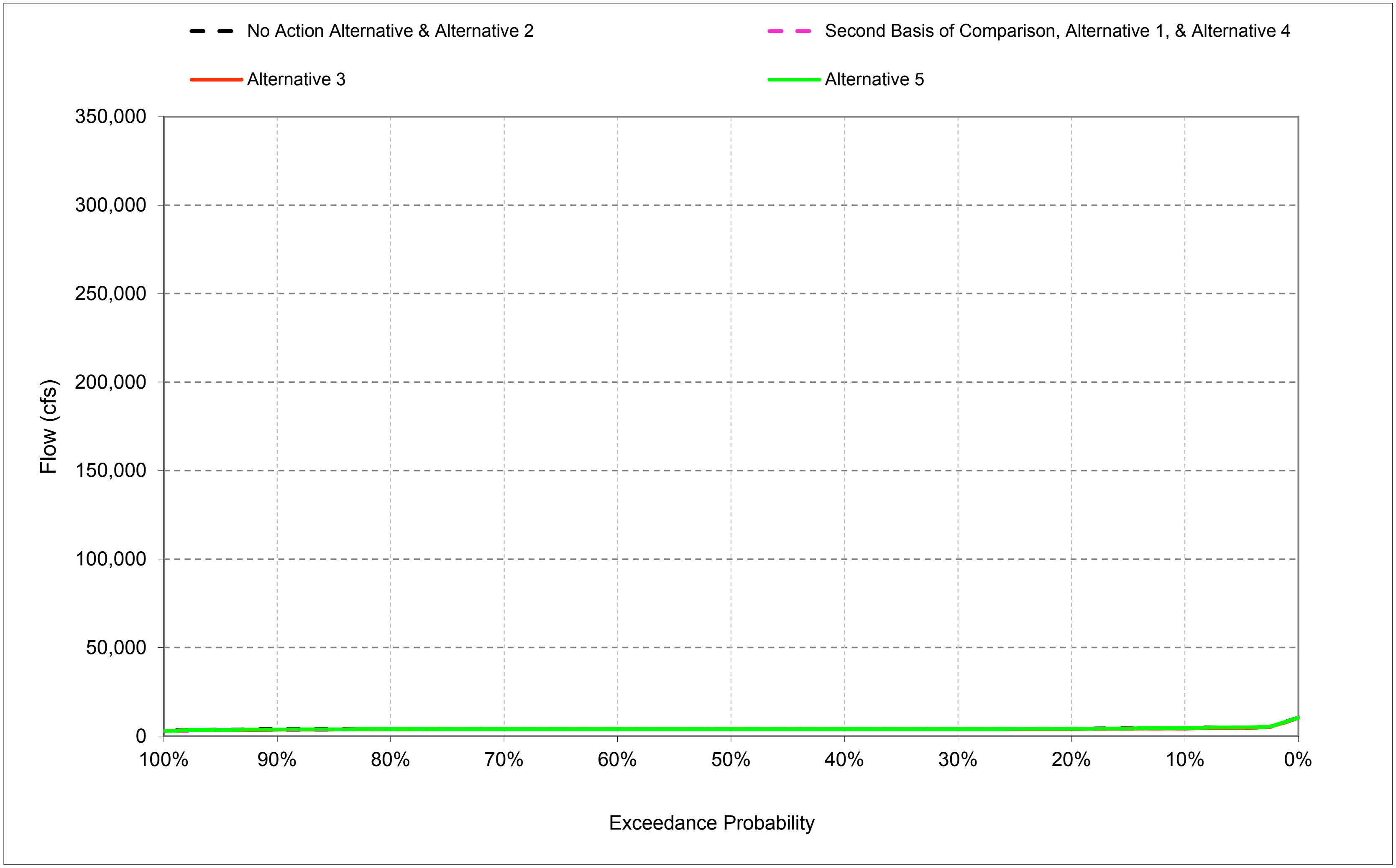
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-10. Sacramento/San Joaquin River Delta Outflow, July



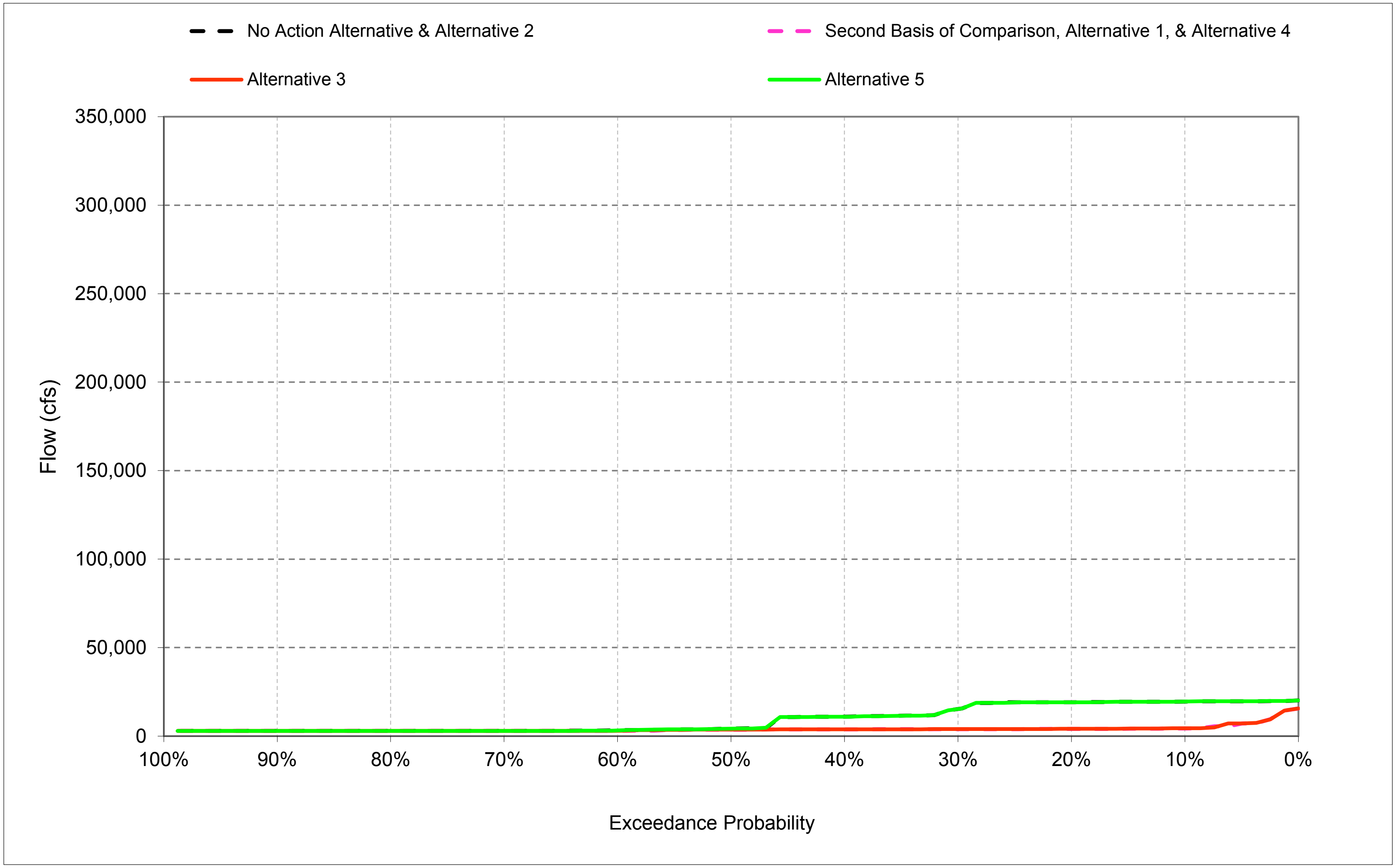
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-11. Sacramento/San Joaquin River Delta Outflow, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-15-2-12. Sacramento/San Joaquin River Delta Outflow, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-1-1. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Rate

No Action Alternative

Statistic	Monthly Outflow Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,992	15,000	66,586	102,991	136,665	88,553	69,913	46,324	19,838	12,406	4,507	19,516
20%	9,531	14,688	34,349	70,303	88,107	67,957	47,628	28,079	10,238	11,185	4,216	19,063
30%	9,375	13,860	16,305	51,208	65,254	46,096	30,159	19,514	9,204	9,315	4,000	15,282
40%	6,875	11,037	12,381	29,158	51,473	34,027	25,272	16,321	7,814	8,085	4,000	11,031
50%	4,392	9,844	9,938	21,131	36,676	27,251	20,111	13,711	7,243	8,000	4,000	4,385
60%	4,000	6,183	5,835	17,085	24,952	19,582	15,896	11,883	7,100	6,500	4,000	3,376
70%	4,000	4,500	5,118	13,018	18,411	17,261	12,735	9,629	6,864	5,000	4,000	3,000
80%	4,000	4,500	4,522	9,524	14,648	12,732	10,054	8,460	6,435	5,000	4,000	3,000
90%	3,000	3,537	4,500	7,899	11,020	10,766	9,479	7,246	5,606	4,002	3,899	3,000
Long Term												
Full Simulation Period[b]	6,518	11,533	23,026	44,232	56,916	43,869	30,448	20,838	10,885	8,050	4,189	9,501
Water Year Types[c]												
Wet (32%)	8,450	17,141	47,372	89,598	103,413	81,313	55,257	38,940	18,827	10,658	4,436	19,044
Above Normal (16%)	5,392	12,471	24,425	49,593	67,594	52,635	32,571	19,525	8,150	10,846	4,084	11,130
Below Normal (13%)	7,664	10,918	9,460	17,510	36,331	18,095	17,124	12,827	7,473	8,256	4,136	3,549
Dry (24%)	5,547	7,902	7,667	15,952	25,846	22,699	16,782	11,064	7,243	5,131	4,182	3,208
Critical (15%)	4,118	4,980	6,796	11,761	15,260	12,156	9,387	6,671	5,840	4,045	3,829	3,000

Alternative 1

Statistic	Monthly Outflow Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5,803	15,044	65,929	106,799	140,602	94,253	66,380	41,321	19,611	10,902	4,356	4,374
20%	4,603	6,436	32,639	72,700	88,242	71,240	43,356	25,729	11,405	9,646	4,087	4,037
30%	4,296	5,501	15,458	45,999	60,904	43,140	25,102	15,512	9,888	8,374	4,000	3,937
40%	4,085	4,892	10,325	25,436	52,110	33,538	20,427	13,024	9,349	8,000	4,000	3,819
50%	4,000	4,500	7,764	17,566	34,276	26,362	14,374	11,939	8,527	7,726	4,000	3,682
60%	4,000	4,500	6,206	13,540	21,001	17,962	12,164	10,966	8,142	6,500	4,000	3,034
70%	4,000	4,500	5,105	10,942	16,348	14,661	10,041	9,151	7,269	5,000	4,000	3,000
80%	4,000	4,500	4,500	8,429	12,229	12,229	9,534	8,708	7,100	5,000	3,773	3,000
90%	3,438	3,500	4,500	6,588	10,088	9,776	8,880	7,114	6,340	4,000	3,502	3,000
Long Term												
Full Simulation Period[b]	4,645	8,510	22,907	42,197	55,831	43,614	27,068	18,884	11,853	7,445	4,102	3,983
Water Year Types[c]												
Wet (32%)	5,533	13,286	48,963	88,678	103,568	82,641	50,579	35,425	20,319	9,843	4,400	5,361
Above Normal (16%)	4,112	9,509	22,621	46,272	67,829	53,845	27,145	16,693	9,448	9,777	4,053	3,770
Below Normal (13%)	4,735	7,275	8,857	14,292	36,552	17,538	13,660	11,701	8,957	7,113	4,145	3,456
Dry (24%)	4,234	4,975	7,135	13,254	22,732	20,102	14,775	10,322	7,628	5,038	3,937	3,209
Critical (15%)	3,904	4,104	5,928	10,890	12,243	11,062	8,824	6,276	5,809	4,038	3,749	3,000

Alternative 1 minus No Action Alternative

Statistic	Monthly Outflow Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4,189	44	-657	3,809	3,937	5,701	-3,533	-5,003	-227	-1,504	-151	-15,141
20%	-4,928	-8,251	-1,710	2,397	135	3,283	-4,273	-2,350	1,167	-1,539	-130	-15,026
30%	-5,079	-8,359	-847	-5,208	-4,350	-2,956	-5,057	-4,002	684	-941	0	-11,345
40%	-2,790	-6,145	-2,056	-3,722	637	-489	-4,845	-3,297	1,535	-85	0	-7,212
50%	-392	-5,344	-2,174	-3,565	-2,400	-889	-5,737	-1,771	1,283	-274	0	-702
60%	0	-1,683	372	-3,544	-3,950	-1,620	-3,732	-917	1,042	0	0	-342
70%	0	0	-12	-2,076	-2,063	-2,600	-2,694	-478	405	0	0	0
80%	0	0	-22	-1,095	-2,419	-503	-521	248	665	0	-227	0
90%	438	-37	0	-1,311	-932	-990	-599	-132	733	-2	-397	0
Long Term												
Full Simulation Period[b]	-1,872	-3,022	-120	-2,035	-1,085	-255	-3,380	-1,953	967	-605	-87	-5,518
Water Year Types[c]												
Wet (32%)	-2,916	-3,855	1,590	-919	155	1,328	-4,679	-3,515	1,492	-815	-36	-13,683
Above Normal (16%)	-1,281	-2,961	-1,804	-3,321	235	1,210	-5,425	-2,832	1,298	-1,069	-31	-7,360
Below Normal (13%)	-2,929	-3,643	-603	-3,218	221	-557	-3,464	-1,126	1,484	-1,143	9	-94
Dry (24%)	-1,313	-2,926	-532	-2,698	-3,114	-2,597	-2,007	-742	385	-93	-245	1
Critical (15%)	-214	-876	-869	-871	-3,016	-1,094	-563	-395	-31	-7	-80	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-1-2. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Rate

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	9,992	15,000	66,586	102,991	136,665	88,553	69,913	46,324	19,838	12,406	4,507	19,516
20%	9,531	14,688	34,349	70,303	88,107	67,957	47,628	28,079	10,238	11,185	4,216	19,063
30%	9,375	13,860	16,305	51,208	65,254	46,096	30,159	19,514	9,204	9,315	4,000	15,282
40%	6,875	11,037	12,381	29,158	51,473	34,027	25,272	16,321	7,814	8,085	4,000	11,031
50%	4,392	9,844	9,938	21,131	36,676	27,251	20,111	13,711	7,243	8,000	4,000	4,385
60%	4,000	6,183	5,835	17,085	24,952	19,582	15,896	11,883	7,100	6,500	4,000	3,376
70%	4,000	4,500	5,118	13,018	18,411	17,261	12,735	9,629	6,864	5,000	4,000	3,000
80%	4,000	4,500	4,522	9,524	14,648	12,732	10,054	8,460	6,435	5,000	4,000	3,000
90%	3,000	3,537	4,500	7,899	11,020	10,766	9,479	7,246	5,606	4,002	3,899	3,000
Long Term												
Full Simulation Period[b]	6,518	11,533	23,026	44,232	56,916	43,869	30,448	20,838	10,885	8,050	4,189	9,501
Water Year Types[c]												
Wet (32%)	8,450	17,141	47,372	89,598	103,413	81,313	55,257	38,940	18,827	10,658	4,436	19,044
Above Normal (16%)	5,392	12,471	24,425	49,593	67,594	52,635	32,571	19,525	8,150	10,846	4,084	11,130
Below Normal (13%)	7,664	10,918	9,460	17,510	36,331	18,095	17,124	12,827	7,473	8,256	4,136	3,549
Dry (24%)	5,547	7,902	7,667	15,952	25,846	22,699	16,782	11,064	7,243	5,131	4,182	3,208
Critical (15%)	4,118	4,980	6,796	11,761	15,260	12,156	9,387	6,671	5,840	4,045	3,829	3,000

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	4,847	15,154	67,577	108,085	138,218	94,128	64,058	40,190	17,907	11,848	4,317	4,383
20%	4,327	6,536	34,797	72,564	85,533	69,817	43,431	22,486	10,580	10,710	4,000	4,124
30%	4,176	5,360	18,763	50,474	66,669	44,146	25,623	14,849	9,614	9,349	4,000	3,952
40%	4,000	4,875	11,747	30,502	54,582	34,751	20,811	12,202	8,431	8,000	4,000	3,846
50%	4,000	4,500	7,809	22,735	37,427	27,283	14,576	11,448	8,008	8,000	4,000	3,723
60%	4,000	4,500	6,476	17,252	25,450	19,269	12,680	10,242	7,327	6,964	4,000	3,203
70%	4,000	4,500	5,469	12,485	19,194	16,786	10,104	9,418	7,100	5,000	4,000	3,000
80%	4,000	4,500	4,503	9,746	14,731	12,839	9,507	8,024	6,875	5,000	3,920	3,000
90%	3,001	3,500	4,500	8,078	11,090	10,632	8,602	7,100	5,892	4,000	3,615	3,000
Long Term												
Full Simulation Period[b]	4,505	8,498	23,825	45,081	57,802	44,096	27,167	18,245	11,031	7,975	4,104	4,026
Water Year Types[c]												
Wet (32%)	5,423	13,295	50,679	91,224	104,154	81,635	50,352	34,298	18,791	10,556	4,409	5,366
Above Normal (16%)	3,934	9,552	23,767	50,344	69,257	53,533	27,491	15,605	8,638	10,485	4,000	3,825
Below Normal (13%)	4,567	7,085	9,173	18,801	38,748	18,208	14,380	11,370	7,675	8,245	4,137	3,713
Dry (24%)	4,068	5,000	7,431	16,141	26,123	22,516	14,820	9,949	7,478	5,225	3,977	3,204
Critical (15%)	3,807	4,091	6,456	11,729	15,231	12,233	8,880	6,454	5,809	4,000	3,740	3,000

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	-5,145	154	991	5,095	1,553	5,575	-5,855	-6,135	-1,931	-558	-189	-15,132
20%	-5,204	-8,152	449	2,261	-2,574	1,860	-4,197	-5,593	342	-475	-216	-14,938
30%	-5,199	-8,500	2,458	-734	1,415	-1,950	-4,536	-4,664	410	34	0	-11,330
40%	-2,875	-6,162	-634	1,344	3,109	723	-4,461	-4,119	617	-85	0	-7,186
50%	-392	-5,344	-2,129	1,604	751	32	-5,534	-2,263	765	0	0	-661
60%	0	-1,683	641	167	498	-313	-3,217	-1,641	227	464	0	-174
70%	0	0	352	-533	783	-475	-2,631	-211	236	0	0	0
80%	0	0	-19	222	84	107	-548	-436	440	0	-80	0
90%	1	-37	0	179	70	-134	-877	-146	286	-2	-283	0
Long Term												
Full Simulation Period[b]	-2,012	-3,034	798	849	886	226	-3,281	-2,593	145	-75	-85	-5,474
Water Year Types[c]												
Wet (32%)	-3,026	-3,846	3,307	1,626	740	322	-4,905	-4,642	-37	-103	-27	-13,678
Above Normal (16%)	-1,458	-2,919	-658	751	1,663	898	-5,080	-3,921	487	-361	-84	-7,305
Below Normal (13%)	-3,097	-3,834	-287	1,291	2,418	113	-2,744	-1,458	202	-11	1	164
Dry (24%)	-1,479	-2,902	-236	189	277	-183	-1,961	-1,115	235	94	-205	-4
Critical (15%)	-311	-889	-340	-32	-29	78	-507	-217	-31	-44	-89	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-1-3. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Rate

No Action Alternative

	Monthly Outflow Rate (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,992	15,000	66,586	102,991	136,665	88,553	69,913	46,324	19,838	12,406	4,507	19,516
20%	9,531	14,688	34,349	70,303	88,107	67,957	47,628	28,079	10,238	11,185	4,216	19,063
30%	9,375	13,860	16,305	51,208	65,254	46,096	30,159	19,514	9,204	9,315	4,000	15,282
40%	6,875	11,037	12,381	29,158	51,473	34,027	25,272	16,321	7,814	8,085	4,000	11,031
50%	4,392	9,844	9,938	21,131	36,676	27,251	20,111	13,711	7,243	8,000	4,000	4,385
60%	4,000	6,183	5,835	17,085	24,952	19,582	15,896	11,883	7,100	6,500	4,000	3,376
70%	4,000	4,500	5,118	13,018	18,411	17,261	12,735	9,629	6,864	5,000	4,000	3,000
80%	4,000	4,500	4,522	9,524	14,648	12,732	10,054	8,460	6,435	5,000	4,000	3,000
90%	3,000	3,537	4,500	7,899	11,020	10,766	9,479	7,246	5,606	4,002	3,899	3,000
Long Term												
Full Simulation Period[b]	6,518	11,533	23,026	44,232	56,916	43,869	30,448	20,838	10,885	8,050	4,189	9,501
Water Year Types[c]												
Wet (32%)	8,450	17,141	47,372	89,598	103,413	81,313	55,257	38,940	18,827	10,658	4,436	19,044
Above Normal (16%)	5,392	12,471	24,425	49,593	67,594	52,635	32,571	19,525	8,150	10,846	4,084	11,130
Below Normal (13%)	7,664	10,918	9,460	17,510	36,331	18,095	17,124	12,827	7,473	8,256	4,136	3,549
Dry (24%)	5,547	7,902	7,667	15,952	25,846	22,699	16,782	11,064	7,243	5,131	4,182	3,208
Critical (15%)	4,118	4,980	6,796	11,761	15,260	12,156	9,387	6,671	5,840	4,045	3,829	3,000

Alternative 5

	Monthly Outflow Rate (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	10,133	16,136	66,931	103,093	136,599	88,457	69,913	46,327	19,833	12,471	4,626	19,516
20%	9,656	14,688	34,352	70,235	86,928	67,878	47,175	28,669	10,186	11,191	4,165	19,063
30%	9,375	13,956	16,399	51,208	65,777	46,107	30,216	20,119	8,813	9,640	4,000	15,287
40%	6,875	11,099	12,398	29,024	51,418	34,026	25,913	16,298	7,617	8,150	4,000	10,938
50%	4,183	9,844	10,026	21,152	36,972	27,098	20,741	14,190	7,113	8,000	4,000	4,292
60%	4,000	6,200	5,833	17,051	24,932	19,564	17,274	12,619	7,100	6,500	4,000	3,425
70%	4,000	4,500	5,046	13,016	18,412	17,193	13,722	10,228	6,742	5,013	4,000	3,000
80%	4,000	4,500	4,650	9,518	14,601	12,730	11,957	9,116	6,225	5,000	4,000	3,000
90%	3,000	3,543	4,500	7,907	11,015	10,768	10,467	7,519	5,545	4,000	3,742	3,000
Long Term												
Full Simulation Period[b]	6,517	11,601	22,977	44,143	56,887	43,828	31,056	21,333	10,797	8,125	4,179	9,499
Water Year Types[c]												
Wet (32%)	8,415	17,140	47,249	89,426	103,463	81,244	55,257	39,213	18,770	10,842	4,436	19,027
Above Normal (16%)	5,427	12,884	24,469	49,565	67,378	52,557	32,721	19,885	8,108	10,860	4,082	11,106
Below Normal (13%)	7,655	10,920	9,460	17,477	36,320	18,058	17,828	13,354	7,294	8,350	4,137	3,594
Dry (24%)	5,567	7,917	7,596	15,936	25,862	22,697	18,159	11,710	7,102	5,143	4,164	3,216
Critical (15%)	4,127	4,974	6,794	11,614	15,167	12,145	10,437	7,514	5,809	4,043	3,792	3,000

Alternative 5 minus No Action Alternative

	Monthly Outflow Rate (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	141	1,136	345	102	-66	-96	0	3	-5	65	119	0
20%	125	0	3	-68	-1,179	-79	-454	590	-52	6	-51	0
30%	0	97	94	0	523	11	57	605	-391	325	0	5
40%	0	62	17	-134	-55	-2	641	-23	-197	65	0	-94
50%	-209	0	88	21	296	-153	630	479	-131	0	0	-93
60%	0	17	-2	-34	-20	-18	1,378	737	0	0	0	48
70%	0	0	-72	-2	1	-68	987	598	-122	13	0	0
80%	0	0	128	-6	-46	-3	1,903	656	-210	0	0	0
90%	0	6	0	8	-5	2	988	273	-62	-2	-156	0
Long Term												
Full Simulation Period[b]	0	68	-50	-89	-29	-41	608	495	-88	76	-10	-1
Water Year Types[c]												
Wet (32%)	-34	-1	-123	-172	50	-68	-1	273	-58	183	0	-18
Above Normal (16%)	35	413	44	-28	-216	-78	151	360	-43	14	-2	-24
Below Normal (13%)	-9	1	0	-33	-11	-37	703	526	-179	94	0	45
Dry (24%)	21	15	-71	-16	16	-2	1,377	646	-141	12	-18	8
Critical (15%)	9	-7	-2	-146	-93	-11	1,049	843	-31	-2	-38	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-1-4. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Rate

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	5,803	15,044	65,929	106,799	140,602	94,253	66,380	41,321	19,611	10,902	4,356	4,374
20%	4,603	6,436	32,639	72,700	88,242	71,240	43,356	25,729	11,405	9,646	4,087	4,037
30%	4,296	5,501	15,458	45,999	60,904	43,140	25,102	15,512	9,888	8,374	4,000	3,937
40%	4,085	4,892	10,325	25,436	52,110	33,538	20,427	13,024	9,349	8,000	4,000	3,819
50%	4,000	4,500	7,764	17,566	34,276	26,362	14,374	11,939	8,527	7,726	4,000	3,682
60%	4,000	4,500	6,206	13,540	21,001	17,962	12,164	10,966	8,142	6,500	4,000	3,034
70%	4,000	4,500	5,105	10,942	16,348	14,661	10,041	9,151	7,269	5,000	4,000	3,000
80%	4,000	4,500	4,500	8,429	12,229	12,229	9,534	8,708	7,100	5,000	3,773	3,000
90%	3,438	3,500	4,500	6,588	10,088	9,776	8,880	7,114	6,340	4,000	3,502	3,000
Long Term												
Full Simulation Period[b]	4,645	8,510	22,907	42,197	55,831	43,614	27,068	18,884	11,853	7,445	4,102	3,983
Water Year Types[c]												
Wet (32%)	5,533	13,286	48,963	88,678	103,568	82,641	50,579	35,425	20,319	9,843	4,400	5,361
Above Normal (16%)	4,112	9,509	22,621	46,272	67,829	53,845	27,145	16,693	9,448	9,777	4,053	3,770
Below Normal (13%)	4,735	7,275	8,857	14,292	36,552	17,538	13,660	11,701	8,957	7,113	4,145	3,456
Dry (24%)	4,234	4,975	7,135	13,254	22,732	20,102	14,775	10,322	7,628	5,038	3,937	3,209
Critical (15%)	3,904	4,104	5,928	10,890	12,243	11,062	8,824	6,276	5,809	4,038	3,749	3,000

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	9,992	15,000	66,586	102,991	136,665	88,553	69,913	46,324	19,838	12,406	4,507	19,516
20%	9,531	14,688	34,349	70,303	88,107	67,957	47,628	28,079	10,238	11,185	4,216	19,063
30%	9,375	13,860	16,305	51,208	65,254	46,096	30,159	19,514	9,204	9,315	4,000	15,282
40%	6,875	11,037	12,381	29,158	51,473	34,027	25,272	16,321	7,814	8,085	4,000	11,031
50%	4,392	9,844	9,938	21,131	36,676	27,251	20,111	13,711	7,243	8,000	4,000	4,385
60%	4,000	6,183	5,835	17,085	24,952	19,582	15,896	11,883	7,100	6,500	4,000	3,376
70%	4,000	4,500	5,118	13,018	18,411	17,261	12,735	9,629	6,864	5,000	4,000	3,000
80%	4,000	4,500	4,522	9,524	14,648	12,732	10,054	8,460	6,435	5,000	4,000	3,000
90%	3,000	3,537	4,500	7,899	11,020	10,766	9,479	7,246	5,606	4,002	3,899	3,000
Long Term												
Full Simulation Period[b]	6,518	11,533	23,026	44,232	56,916	43,869	30,448	20,838	10,885	8,050	4,189	9,501
Water Year Types[c]												
Wet (32%)	8,450	17,141	47,372	89,598	103,413	81,313	55,257	38,940	18,827	10,658	4,436	19,044
Above Normal (16%)	5,392	12,471	24,425	49,593	67,594	52,635	32,571	19,525	8,150	10,846	4,084	11,130
Below Normal (13%)	7,664	10,918	9,460	17,510	36,331	18,095	17,124	12,827	7,473	8,256	4,136	3,549
Dry (24%)	5,547	7,902	7,667	15,952	25,846	22,699	16,782	11,064	7,243	5,131	4,182	3,208
Critical (15%)	4,118	4,980	6,796	11,761	15,260	12,156	9,387	6,671	5,840	4,045	3,829	3,000

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	4,189	-44	657	-3,809	-3,937	-5,701	3,533	5,003	227	1,504	151	15,141
20%	4,928	8,251	1,710	-2,397	-135	-3,283	4,273	2,350	-1,167	1,539	130	15,026
30%	5,079	8,359	847	5,208	4,350	2,956	5,057	4,002	-684	941	0	11,345
40%	2,790	6,145	2,056	3,722	-637	489	4,845	3,297	-1,535	85	0	7,212
50%	392	5,344	2,174	3,565	2,400	889	5,737	1,771	-1,283	274	0	702
60%	0	1,683	-372	3,544	3,950	1,620	3,732	917	-1,042	0	0	342
70%	0	0	12	2,076	2,063	2,600	2,694	478	-405	0	0	0
80%	0	0	22	1,095	2,419	503	521	-248	-665	0	227	0
90%	-438	37	0	1,311	932	990	599	132	-733	2	397	0
Long Term												
Full Simulation Period[b]	1,872	3,022	120	2,035	1,085	255	3,380	1,953	-967	605	87	5,518
Water Year Types[c]												
Wet (32%)	2,916	3,855	-1,590	919	-155	-1,328	4,679	3,515	-1,492	815	36	13,683
Above Normal (16%)	1,281	2,961	1,804	3,321	-235	-1,210	5,425	2,832	-1,298	1,069	31	7,360
Below Normal (13%)	2,929	3,643	603	3,218	-221	557	3,464	1,126	-1,484	1,143	-9	94
Dry (24%)	1,313	2,926	532	2,698	3,114	2,597	2,007	742	-385	93	245	-1
Critical (15%)	214	876	869	871	3,016	1,094	563	395	31	7	80	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-1-5. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Rate

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	5,803	15,044	65,929	106,799	140,602	94,253	66,380	41,321	19,611	10,902	4,356	4,374
20%	4,603	6,436	32,639	72,700	88,242	71,240	43,356	25,729	11,405	9,646	4,087	4,037
30%	4,296	5,501	15,458	45,999	60,904	43,140	25,102	15,512	9,888	8,374	4,000	3,937
40%	4,085	4,892	10,325	25,436	52,110	33,538	20,427	13,024	9,349	8,000	4,000	3,819
50%	4,000	4,500	7,764	17,566	34,276	26,362	14,374	11,939	8,527	7,726	4,000	3,682
60%	4,000	4,500	6,206	13,540	21,001	17,962	12,164	10,966	8,142	6,500	4,000	3,034
70%	4,000	4,500	5,105	10,942	16,348	14,661	10,041	9,151	7,269	5,000	4,000	3,000
80%	4,000	4,500	4,500	8,429	12,229	12,229	9,534	8,708	7,100	5,000	3,773	3,000
90%	3,438	3,500	4,500	6,588	10,088	9,776	8,880	7,114	6,340	4,000	3,502	3,000
Long Term												
Full Simulation Period[b]	4,645	8,510	22,907	42,197	55,831	43,614	27,068	18,884	11,853	7,445	4,102	3,983
Water Year Types[c]												
Wet (32%)	5,533	13,286	48,963	88,678	103,568	82,641	50,579	35,425	20,319	9,843	4,400	5,361
Above Normal (16%)	4,112	9,509	22,621	46,272	67,829	53,845	27,145	16,693	9,448	9,777	4,053	3,770
Below Normal (13%)	4,735	7,275	8,857	14,292	36,552	17,538	13,660	11,701	8,957	7,113	4,145	3,456
Dry (24%)	4,234	4,975	7,135	13,254	22,732	20,102	14,775	10,322	7,628	5,038	3,937	3,209
Critical (15%)	3,904	4,104	5,928	10,890	12,243	11,062	8,824	6,276	5,809	4,038	3,749	3,000

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	4,847	15,154	67,577	108,085	138,218	94,128	64,058	40,190	17,907	11,848	4,317	4,383
20%	4,327	6,536	34,797	72,564	85,533	69,817	43,431	22,486	10,580	10,710	4,000	4,124
30%	4,176	5,360	18,763	50,474	66,669	44,146	25,623	14,849	9,614	9,349	4,000	3,952
40%	4,000	4,875	11,747	30,502	54,582	34,751	20,811	12,202	8,431	8,000	4,000	3,846
50%	4,000	4,500	7,809	22,735	37,427	27,283	14,576	11,448	8,008	8,000	4,000	3,723
60%	4,000	4,500	6,476	17,252	25,450	19,269	12,680	10,242	7,327	6,964	4,000	3,203
70%	4,000	4,500	5,469	12,485	19,194	16,786	10,104	9,418	7,100	5,000	4,000	3,000
80%	4,000	4,500	4,503	9,746	14,731	12,839	9,507	8,024	6,875	5,000	3,920	3,000
90%	3,001	3,500	4,500	8,078	11,090	10,632	8,602	7,100	5,892	4,000	3,615	3,000
Long Term												
Full Simulation Period[b]	4,505	8,498	23,825	45,081	57,802	44,096	27,167	18,245	11,031	7,975	4,104	4,026
Water Year Types[c]												
Wet (32%)	5,423	13,295	50,679	91,224	104,154	81,635	50,352	34,298	18,791	10,556	4,409	5,366
Above Normal (16%)	3,934	9,552	23,767	50,344	69,257	53,533	27,491	15,605	8,638	10,485	4,000	3,825
Below Normal (13%)	4,567	7,085	9,173	18,801	38,748	18,208	14,380	11,370	7,675	8,245	4,137	3,713
Dry (24%)	4,068	5,000	7,431	16,141	26,123	22,516	14,820	9,949	7,478	5,225	3,977	3,204
Critical (15%)	3,807	4,091	6,456	11,729	15,231	12,233	8,880	6,454	5,809	4,000	3,740	3,000

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	-956	110	1,648	1,286	-2,383	-126	-2,322	-1,131	-1,704	946	-39	9
20%	-276	99	2,158	-136	-2,709	-1,423	75	-3,243	-824	1,064	-86	88
30%	-121	-141	3,305	4,475	5,765	1,006	521	-663	-274	975	0	15
40%	-85	-17	1,422	5,066	2,471	1,212	384	-822	-918	0	0	27
50%	0	0	45	5,169	3,152	921	203	-491	-519	274	0	41
60%	0	0	269	3,712	4,449	1,308	515	-724	-815	464	0	169
70%	0	0	364	1,543	2,846	2,125	63	267	-169	0	0	0
80%	0	0	3	1,317	2,503	610	-27	-684	-225	0	148	0
90%	-436	0	0	1,489	1,002	856	-278	-14	-448	0	113	0
Long Term												
Full Simulation Period[b]	-140	-12	918	2,885	1,971	482	99	-639	-822	530	2	44
Water Year Types[c]												
Wet (32%)	-110	9	1,717	2,546	586	-1,006	-226	-1,127	-1,529	713	9	5
Above Normal (16%)	-178	42	1,146	4,072	1,427	-311	345	-1,088	-810	709	-53	55
Below Normal (13%)	-167	-191	316	4,509	2,197	670	720	-331	-1,282	1,132	-8	257
Dry (24%)	-166	24	296	2,887	3,391	2,414	46	-373	-150	187	40	-5
Critical (15%)	-97	-13	529	838	2,987	1,172	56	178	0	-37	-9	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-1-6. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Rate

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	5,803	15,044	65,929	106,799	140,602	94,253	66,380	41,321	19,611	10,902	4,356	4,374
20%	4,603	6,436	32,639	72,700	88,242	71,240	43,356	25,729	11,405	9,646	4,087	4,037
30%	4,296	5,501	15,458	45,999	60,904	43,140	25,102	15,512	9,888	8,374	4,000	3,937
40%	4,085	4,892	10,325	25,436	52,110	33,538	20,427	13,024	9,349	8,000	4,000	3,819
50%	4,000	4,500	7,764	17,566	34,276	26,362	14,374	11,939	8,527	7,726	4,000	3,682
60%	4,000	4,500	6,206	13,540	21,001	17,962	12,164	10,966	8,142	6,500	4,000	3,034
70%	4,000	4,500	5,105	10,942	16,348	14,661	10,041	9,151	7,269	5,000	4,000	3,000
80%	4,000	4,500	4,500	8,429	12,229	12,229	9,534	8,708	7,100	5,000	3,773	3,000
90%	3,438	3,500	4,500	6,588	10,088	9,776	8,880	7,114	6,340	4,000	3,502	3,000
Long Term												
Full Simulation Period[b]	4,645	8,510	22,907	42,197	55,831	43,614	27,068	18,884	11,853	7,445	4,102	3,983
Water Year Types[c]												
Wet (32%)	5,533	13,286	48,963	88,678	103,568	82,641	50,579	35,425	20,319	9,843	4,400	5,361
Above Normal (16%)	4,112	9,509	22,621	46,272	67,829	53,845	27,145	16,693	9,448	9,777	4,053	3,770
Below Normal (13%)	4,735	7,275	8,857	14,292	36,552	17,538	13,660	11,701	8,957	7,113	4,145	3,456
Dry (24%)	4,234	4,975	7,135	13,254	22,732	20,102	14,775	10,322	7,628	5,038	3,937	3,209
Critical (15%)	3,904	4,104	5,928	10,890	12,243	11,062	8,824	6,276	5,809	4,038	3,749	3,000

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	10,133	16,136	66,931	103,093	136,599	88,457	69,913	46,327	19,833	12,471	4,626	19,516
20%	9,656	14,688	34,352	70,235	86,928	67,878	47,175	28,669	10,186	11,191	4,165	19,063
30%	9,375	13,956	16,399	51,208	65,777	46,107	30,216	20,119	8,813	9,640	4,000	15,287
40%	6,875	11,099	12,398	29,024	51,418	34,026	25,913	16,298	7,617	8,150	4,000	10,938
50%	4,183	9,844	10,026	21,152	36,972	27,098	20,741	14,190	7,113	8,000	4,000	4,292
60%	4,000	6,200	5,833	17,051	24,932	19,564	17,274	12,619	7,100	6,500	4,000	3,425
70%	4,000	4,500	5,046	13,016	18,412	17,193	13,722	10,228	6,742	5,013	4,000	3,000
80%	4,000	4,500	4,650	9,518	14,601	12,730	11,957	9,116	6,225	5,000	4,000	3,000
90%	3,000	3,543	4,500	7,907	11,015	10,768	10,467	7,519	5,545	4,000	3,742	3,000
Long Term												
Full Simulation Period[b]	6,517	11,601	22,977	44,143	56,887	43,828	31,056	21,333	10,797	8,125	4,179	9,499
Water Year Types[c]												
Wet (32%)	8,415	17,140	47,249	89,426	103,463	81,244	55,257	39,213	18,770	10,842	4,436	19,027
Above Normal (16%)	5,427	12,884	24,469	49,565	67,378	52,557	32,721	19,885	8,108	10,860	4,082	11,106
Below Normal (13%)	7,655	10,920	9,460	17,477	36,320	18,058	17,828	13,354	7,294	8,350	4,137	3,594
Dry (24%)	5,567	7,917	7,596	15,936	25,862	22,697	18,159	11,710	7,102	5,143	4,164	3,216
Critical (15%)	4,127	4,974	6,794	11,614	15,167	12,145	10,437	7,514	5,809	4,043	3,792	3,000

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Rate (cfs)											
Probability of Exceedance[a]												
10%	4,330	1,092	1,002	-3,706	-4,003	-5,796	3,533	5,006	222	1,569	270	15,141
20%	5,053	8,251	1,713	-2,465	-1,314	-3,362	3,819	2,940	-1,219	1,545	79	15,026
30%	5,079	8,456	941	5,209	4,873	2,967	5,114	4,607	-1,075	1,266	0	11,350
40%	2,790	6,207	2,073	3,588	-692	487	5,487	3,274	-1,732	150	0	7,119
50%	183	5,344	2,262	3,586	2,696	736	6,367	2,251	-1,414	274	0	610
60%	0	1,700	-374	3,511	3,931	1,603	5,110	1,654	-1,042	0	0	391
70%	0	0	-59	2,074	2,064	2,532	3,681	1,076	-526	13	0	0
80%	0	0	150	1,089	2,373	501	2,424	407	-875	0	227	0
90%	-438	43	0	1,319	928	992	1,587	405	-795	0	240	0
Long Term												
Full Simulation Period[b]	1,872	3,091	70	1,946	1,056	214	3,988	2,449	-1,055	681	77	5,516
Water Year Types[c]												
Wet (32%)	2,882	3,854	-1,713	748	-105	-1,396	4,678	3,788	-1,550	999	36	13,666
Above Normal (16%)	1,316	3,374	1,848	3,293	-452	-1,288	5,576	3,192	-1,340	1,084	29	7,336
Below Normal (13%)	2,920	3,644	603	3,185	-231	520	4,168	1,652	-1,663	1,237	-8	139
Dry (24%)	1,333	2,941	460	2,682	3,130	2,595	3,384	1,388	-526	105	227	7
Critical (15%)	223	870	867	724	2,924	1,083	1,613	1,238	0	5	43	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2-1. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (32%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (16%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (13%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (24%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (15%)	253	296	418	723	861	747	559	410	348	249	235	179

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	-258	3	-40	234	226	351	-210	-308	-14	-93	-9	-901
20%	-303	-491	-105	147	0	202	-254	-145	69	-95	-8	-894
30%	-312	-497	-52	-320	-242	-182	-301	-246	41	-58	0	-675
40%	-172	-366	-126	-229	26	-30	-288	-203	91	-5	0	-429
50%	-24	-318	-134	-219	-133	-55	-341	-109	76	-17	0	-42
60%	0	-100	23	-218	-228	-100	-222	-56	62	0	0	-20
70%	0	0	-1	-128	-115	-160	-160	-29	24	0	0	0
80%	0	0	-1	-67	-125	-31	-31	15	40	0	-14	0
90%	27	-2	0	-81	-71	-61	-36	-8	44	0	-24	0
Long Term												
Full Simulation Period[b]	-115	-180	-7	-125	-60	-16	-201	-120	58	-37	-5	-328
Water Year Types[c]												
Wet (32%)	-179	-229	98	-57	9	82	-278	-216	89	-50	-2	-814
Above Normal (16%)	-79	-176	-111	-204	15	74	-323	-174	77	-66	-2	-438
Below Normal (13%)	-180	-217	-37	-198	15	-34	-206	-69	88	-70	1	-6
Dry (24%)	-81	-174	-33	-166	-174	-160	-119	-46	23	-6	-15	0
Critical (15%)	-13	-52	-53	-54	-171	-67	-34	-24	-2	0	-5	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2-2. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

No Action Alternative

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (32%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (16%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (13%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (24%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (15%)	253	296	418	723	861	747	559	410	348	249	235	179

Alternative 3

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	298	902	4,155	6,646	7,924	5,788	3,812	2,471	1,066	729	265	261
20%	266	389	2,140	4,462	4,802	4,293	2,584	1,383	630	659	246	245
30%	257	319	1,154	3,104	3,795	2,714	1,525	913	572	575	246	235
40%	246	290	722	1,875	3,031	2,137	1,238	750	502	492	246	229
50%	246	268	480	1,398	2,079	1,678	867	704	477	492	246	222
60%	246	268	398	1,061	1,416	1,185	754	630	436	428	246	191
70%	246	268	336	768	1,078	1,032	601	579	422	307	246	179
80%	246	268	277	599	821	789	566	493	409	307	241	179
90%	185	208	277	497	634	654	512	437	351	246	222	179
Long Term												
Full Simulation Period[b]	277	506	1,465	2,772	3,236	2,711	1,617	1,122	656	490	252	240
Water Year Types[c]												
Wet (32%)	333	791	3,116	5,609	5,812	5,020	2,996	2,109	1,118	649	271	319
Above Normal (16%)	242	568	1,461	3,096	3,903	3,292	1,636	960	514	645	246	228
Below Normal (13%)	281	422	564	1,156	2,186	1,120	856	699	457	507	254	221
Dry (24%)	250	297	457	992	1,459	1,384	882	612	445	321	245	191
Critical (15%)	234	243	397	721	859	752	528	397	346	246	230	179

Alternative 3 minus No Action Alternative

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-316	9	61	313	89	343	-348	-377	-115	-34	-12	-900
20%	-320	-485	28	139	-125	114	-250	-344	20	-29	-13	-889
30%	-320	-506	151	-45	171	-120	-270	-287	24	2	0	-674
40%	-177	-367	-39	83	163	44	-265	-253	37	-5	0	-428
50%	-24	-318	-131	99	42	2	-329	-139	46	0	0	-39
60%	0	-100	39	10	8	-19	-191	-101	14	29	0	-10
70%	0	0	22	-33	56	-29	-157	-13	14	0	0	0
80%	0	0	-1	14	-3	7	-33	-27	26	0	-5	0
90%	0	-2	0	11	1	-8	-52	-9	17	0	-17	0
Long Term												
Full Simulation Period[b]	-124	-181	49	52	50	14	-195	-159	9	-5	-5	-326
Water Year Types[c]												
Wet (32%)	-186	-229	203	100	41	20	-292	-285	-2	-6	-2	-814
Above Normal (16%)	-90	-174	-40	46	96	55	-302	-241	29	-22	-5	-435
Below Normal (13%)	-190	-228	-18	79	138	7	-163	-90	12	-1	0	10
Dry (24%)	-91	-173	-15	12	15	-11	-117	-69	14	6	-13	0
Critical (15%)	-19	-53	-21	-2	-2	5	-30	-13	-2	-3	-5	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2-3. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (32%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (16%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (13%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (24%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (15%)	253	296	418	723	861	747	559	410	348	249	235	179

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	623	960	4,115	6,339	7,831	5,439	4,160	2,849	1,180	767	284	1,161
20%	594	874	2,112	4,319	4,907	4,174	2,807	1,763	606	688	256	1,134
30%	576	830	1,008	3,149	3,653	2,835	1,798	1,237	524	593	246	910
40%	423	660	762	1,785	2,869	2,092	1,542	1,002	453	501	246	651
50%	257	586	616	1,301	2,053	1,666	1,234	873	423	492	246	255
60%	246	369	359	1,048	1,406	1,203	1,028	776	422	400	246	204
70%	246	268	310	800	1,025	1,057	817	629	401	308	246	179
80%	246	268	286	585	823	783	712	561	370	307	246	179
90%	184	211	277	486	633	662	623	462	330	246	230	179
Long Term												
Full Simulation Period[b]	401	690	1,413	2,714	3,184	2,695	1,848	1,312	642	500	257	565
Water Year Types[c]												
Wet (32%)	517	1,020	2,905	5,499	5,773	4,996	3,288	2,411	1,117	667	273	1,132
Above Normal (16%)	334	767	1,505	3,048	3,795	3,232	1,947	1,223	482	668	251	661
Below Normal (13%)	471	650	582	1,075	2,047	1,110	1,061	821	434	513	254	214
Dry (24%)	342	471	467	980	1,444	1,396	1,081	720	423	316	256	191
Critical (15%)	254	296	418	714	856	747	621	462	346	249	233	179

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	9	68	21	6	-4	-6	0	0	0	4	7	0
20%	8	0	0	-4	-20	-5	-27	36	-3	0	-3	0
30%	0	6	6	0	29	1	3	37	-23	20	0	0
40%	0	4	1	-8	0	0	38	-1	-12	4	0	-6
50%	-13	0	5	1	16	-9	37	29	-8	0	0	-6
60%	0	1	0	-2	-2	-1	82	45	0	0	0	3
70%	0	0	-4	0	2	-4	59	37	-7	1	0	0
80%	0	0	8	0	0	0	113	40	-12	0	0	0
90%	0	0	0	0	0	0	59	17	-4	0	-10	0
Long Term												
Full Simulation Period[b]	0	4	-3	-5	-2	-3	36	30	-5	5	-1	0
Water Year Types[c]												
Wet (32%)	-2	0	-8	-11	3	-4	0	17	-3	11	0	-1
Above Normal (16%)	2	25	3	-2	-12	-5	9	22	-3	1	0	-1
Below Normal (13%)	-1	0	0	-2	-1	-2	42	32	-11	6	0	3
Dry (24%)	1	1	-4	-1	1	0	82	40	-8	1	-1	0
Critical (15%)	1	0	0	-9	-5	-1	62	52	-2	0	-2	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2-4. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (32%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (16%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (13%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (24%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (15%)	253	296	418	723	861	747	559	410	348	249	235	179

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	258	-3	40	-234	-226	-351	210	308	14	93	9	901
20%	303	491	105	-147	0	-202	254	145	-69	95	8	894
30%	312	497	52	320	242	182	301	246	-41	58	0	675
40%	172	366	126	229	-26	30	288	203	-91	5	0	429
50%	24	318	134	219	133	55	341	109	-76	17	0	42
60%	0	100	-23	218	228	100	222	56	-62	0	0	20
70%	0	0	1	128	115	160	160	29	-24	0	0	0
80%	0	0	1	67	125	31	31	-15	-40	0	14	0
90%	-27	2	0	81	71	61	36	8	-44	0	24	0
Long Term												
Full Simulation Period[b]	115	180	7	125	60	16	201	120	-58	37	5	328
Water Year Types[c]												
Wet (32%)	179	229	-98	57	-9	-82	278	216	-89	50	2	814
Above Normal (16%)	79	176	111	204	-15	-74	323	174	-77	66	2	438
Below Normal (13%)	180	217	37	198	-15	34	206	69	-88	70	-1	6
Dry (24%)	81	174	33	166	174	160	119	46	-23	6	15	0
Critical (15%)	13	52	53	54	171	67	34	24	2	0	5	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2-5. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

Alternative 3

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	298	902	4,155	6,646	7,924	5,788	3,812	2,471	1,066	729	265	261
20%	266	389	2,140	4,462	4,802	4,293	2,584	1,383	630	659	246	245
30%	257	319	1,154	3,104	3,795	2,714	1,525	913	572	575	246	235
40%	246	290	722	1,875	3,031	2,137	1,238	750	502	492	246	229
50%	246	268	480	1,398	2,079	1,678	867	704	477	492	246	222
60%	246	268	398	1,061	1,416	1,185	754	630	436	428	246	191
70%	246	268	336	768	1,078	1,032	601	579	422	307	246	179
80%	246	268	277	599	821	789	566	493	409	307	241	179
90%	185	208	277	497	634	654	512	437	351	246	222	179
Long Term												
Full Simulation Period[b]	277	506	1,465	2,772	3,236	2,711	1,617	1,122	656	490	252	240
Water Year Types[c]												
Wet (32%)	333	791	3,116	5,609	5,812	5,020	2,996	2,109	1,118	649	271	319
Above Normal (16%)	242	568	1,461	3,096	3,903	3,292	1,636	960	514	645	246	228
Below Normal (13%)	281	422	564	1,156	2,186	1,120	856	699	457	507	254	221
Dry (24%)	250	297	457	992	1,459	1,384	882	612	445	321	245	191
Critical (15%)	234	243	397	721	859	752	528	397	346	246	230	179

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-59	7	101	79	-137	-8	-138	-70	-101	58	-2	1
20%	-17	6	133	-8	-125	-88	4	-199	-49	65	-5	5
30%	-7	-8	203	275	413	62	31	-41	-16	60	0	1
40%	-5	-1	87	311	137	75	23	-51	-55	0	0	2
50%	0	0	3	318	175	57	12	-30	-31	17	0	2
60%	0	0	17	228	236	80	31	-44	-48	29	0	10
70%	0	0	22	95	171	131	4	16	-10	0	0	0
80%	0	0	0	81	122	37	-2	-42	-13	0	9	0
90%	-27	0	0	92	72	53	-17	-1	-27	0	7	0
Long Term												
Full Simulation Period[b]	-9	-1	56	177	111	30	6	-39	-49	33	0	3
Water Year Types[c]												
Wet (32%)	-7	1	106	157	32	-62	-13	-69	-91	44	1	0
Above Normal (16%)	-11	3	70	250	81	-19	21	-67	-48	44	-3	3
Below Normal (13%)	-10	-11	19	277	123	41	43	-20	-76	70	0	15
Dry (24%)	-10	1	18	178	190	148	3	-23	-9	11	2	0
Critical (15%)	-6	-1	33	52	169	72	3	11	0	-2	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2-6. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	623	960	4,115	6,339	7,831	5,439	4,160	2,849	1,180	767	284	1,161
20%	594	874	2,112	4,319	4,907	4,174	2,807	1,763	606	688	256	1,134
30%	576	830	1,008	3,149	3,653	2,835	1,798	1,237	524	593	246	910
40%	423	660	762	1,785	2,869	2,092	1,542	1,002	453	501	246	651
50%	257	586	616	1,301	2,053	1,666	1,234	873	423	492	246	255
60%	246	369	359	1,048	1,406	1,203	1,028	776	422	400	246	204
70%	246	268	310	800	1,025	1,057	817	629	401	308	246	179
80%	246	268	286	585	823	783	712	561	370	307	246	179
90%	184	211	277	486	633	662	623	462	330	246	230	179
Long Term												
Full Simulation Period[b]	401	690	1,413	2,714	3,184	2,695	1,848	1,312	642	500	257	565
Water Year Types[c]												
Wet (32%)	517	1,020	2,905	5,499	5,773	4,996	3,288	2,411	1,117	667	273	1,132
Above Normal (16%)	334	767	1,505	3,048	3,795	3,232	1,947	1,223	482	668	251	661
Below Normal (13%)	471	650	582	1,075	2,047	1,110	1,061	821	434	513	254	214
Dry (24%)	342	471	467	980	1,444	1,396	1,081	720	423	316	256	191
Critical (15%)	254	296	418	714	856	747	621	462	346	249	233	179

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	266	65	62	-228	-230	-356	210	308	13	96	17	901
20%	311	491	105	-152	-20	-207	227	181	-73	95	5	894
30%	312	503	58	320	271	182	304	283	-64	78	0	675
40%	172	369	127	221	-25	30	326	201	-103	9	0	424
50%	11	318	139	220	150	45	379	138	-84	17	0	36
60%	0	101	-23	216	226	99	304	102	-62	0	0	23
70%	0	0	-4	128	117	156	219	66	-31	1	0	0
80%	0	0	9	67	125	31	144	25	-52	0	14	0
90%	-27	3	0	81	71	61	94	25	-47	0	15	0
Long Term												
Full Simulation Period[b]	115	184	4	120	59	13	237	151	-63	42	5	328
Water Year Types[c]												
Wet (32%)	177	229	-105	46	-6	-86	278	233	-92	61	2	813
Above Normal (16%)	81	201	114	202	-27	-79	332	196	-80	67	2	437
Below Normal (13%)	180	217	37	196	-16	32	248	102	-99	76	-1	8
Dry (24%)	82	175	28	165	175	160	201	85	-31	6	14	0
Critical (15%)	14	52	53	45	166	67	96	76	0	0	3	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

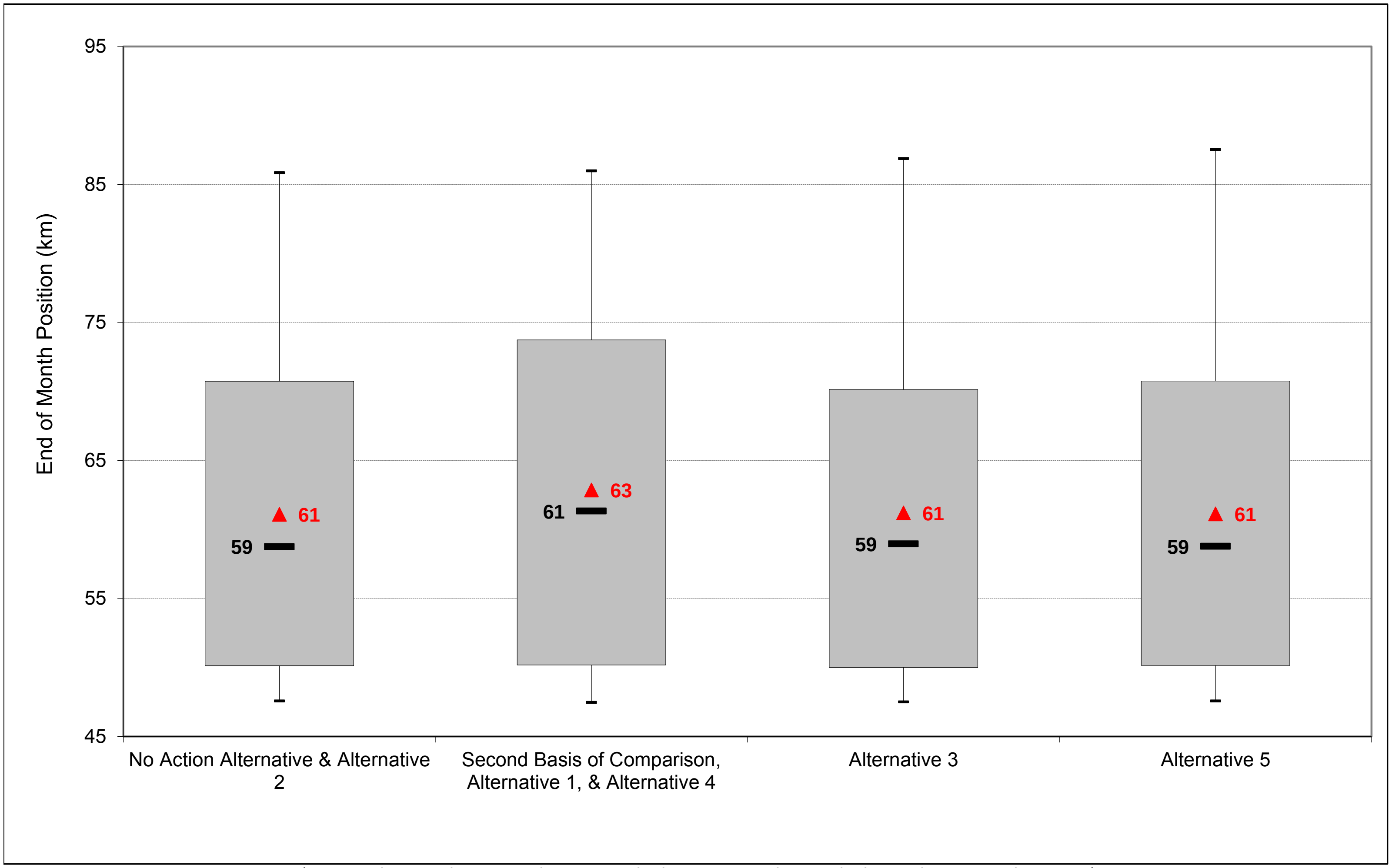
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.16. X2 Position

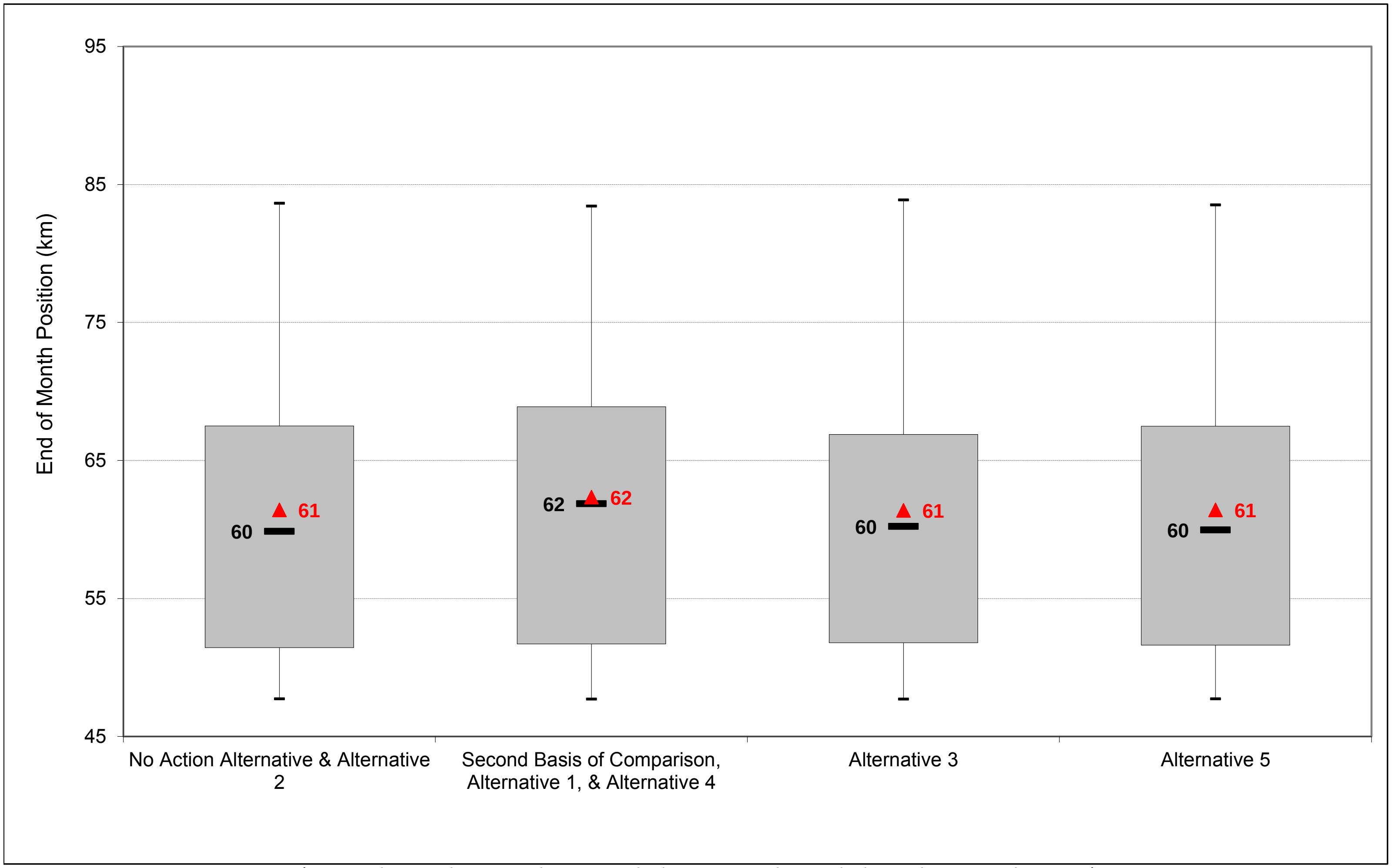
Figure C-16-1-1. X2, February Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

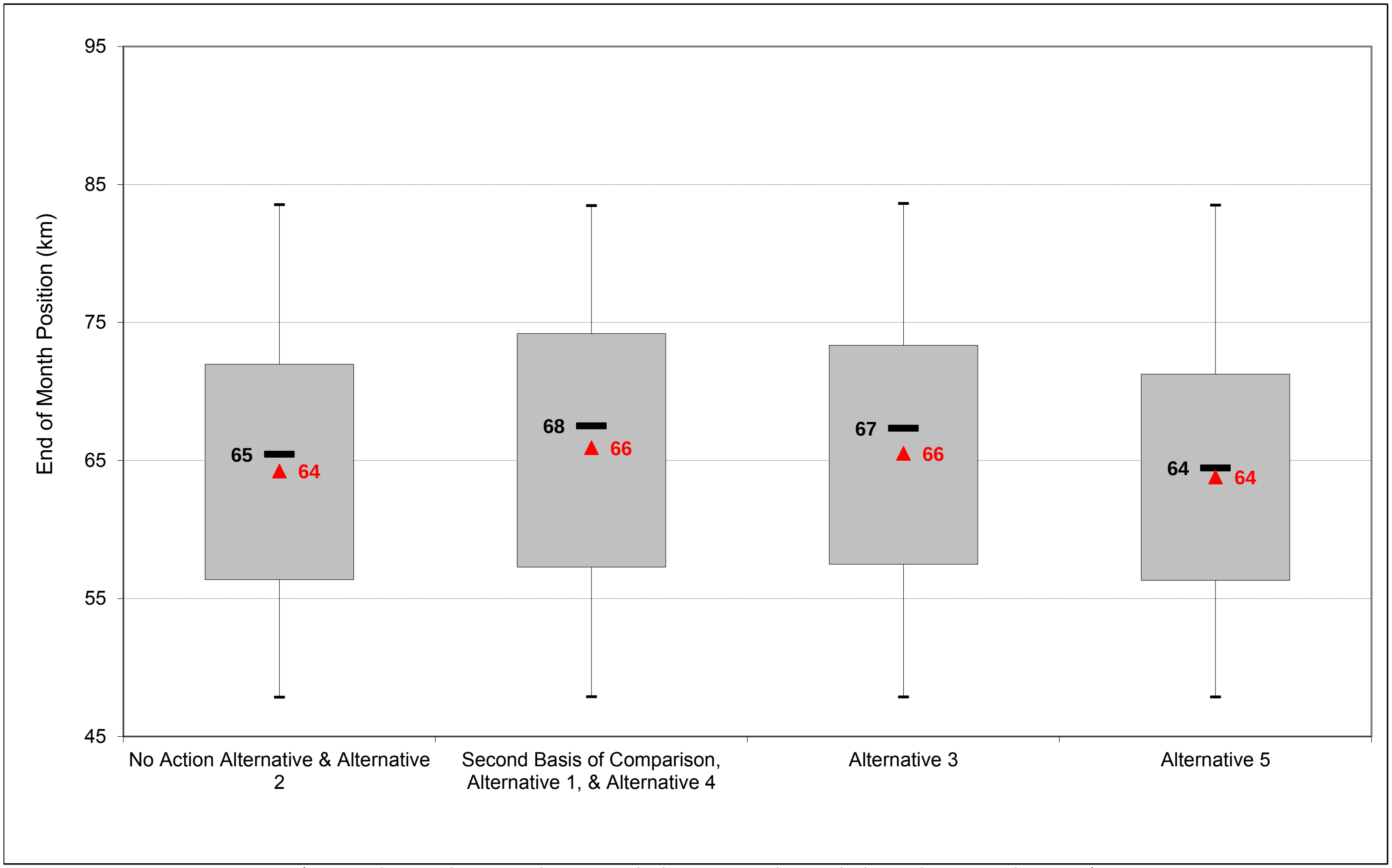
Figure C-16-1-2. X2, March Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

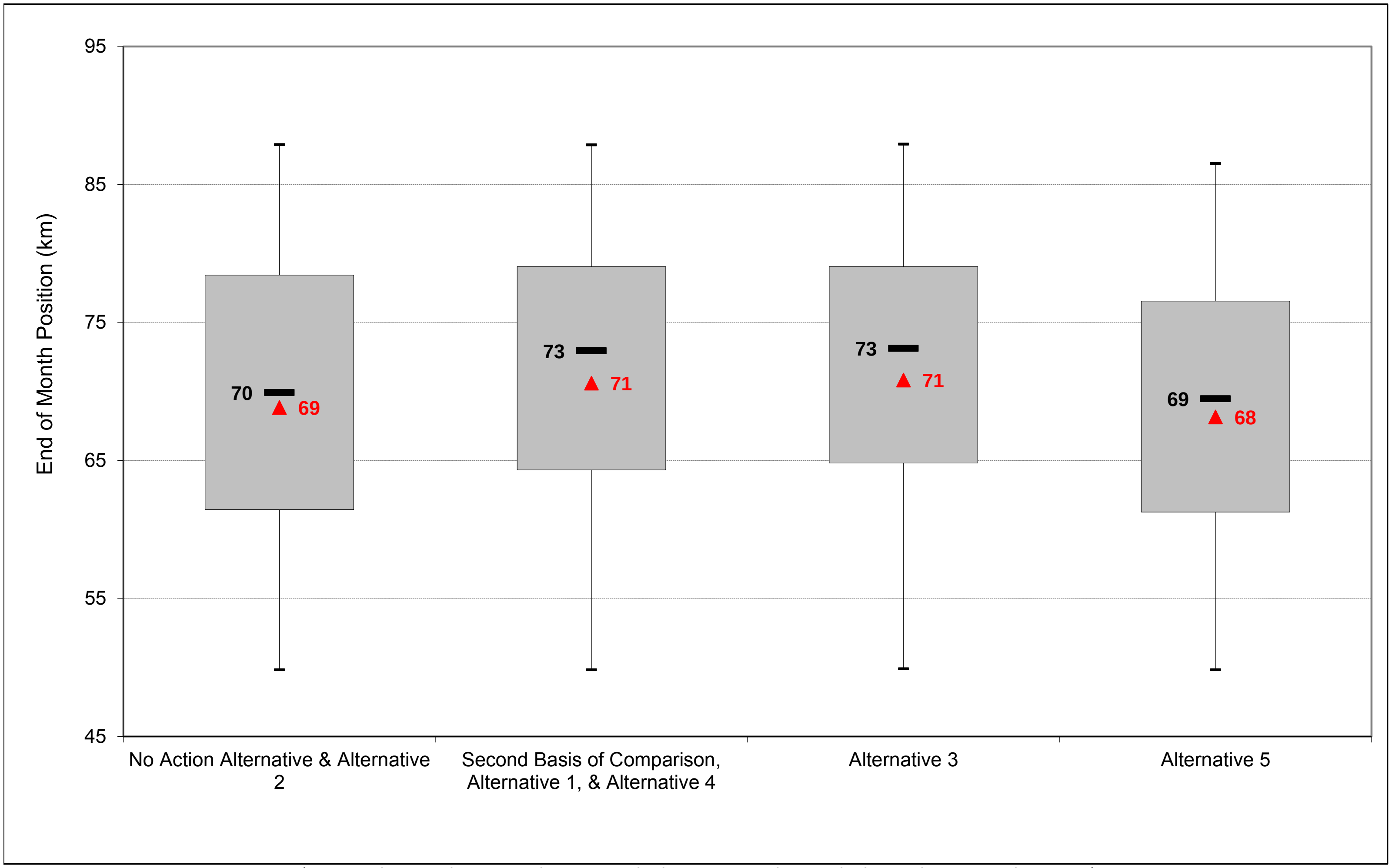
Figure C-16-1-3. X2, April Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

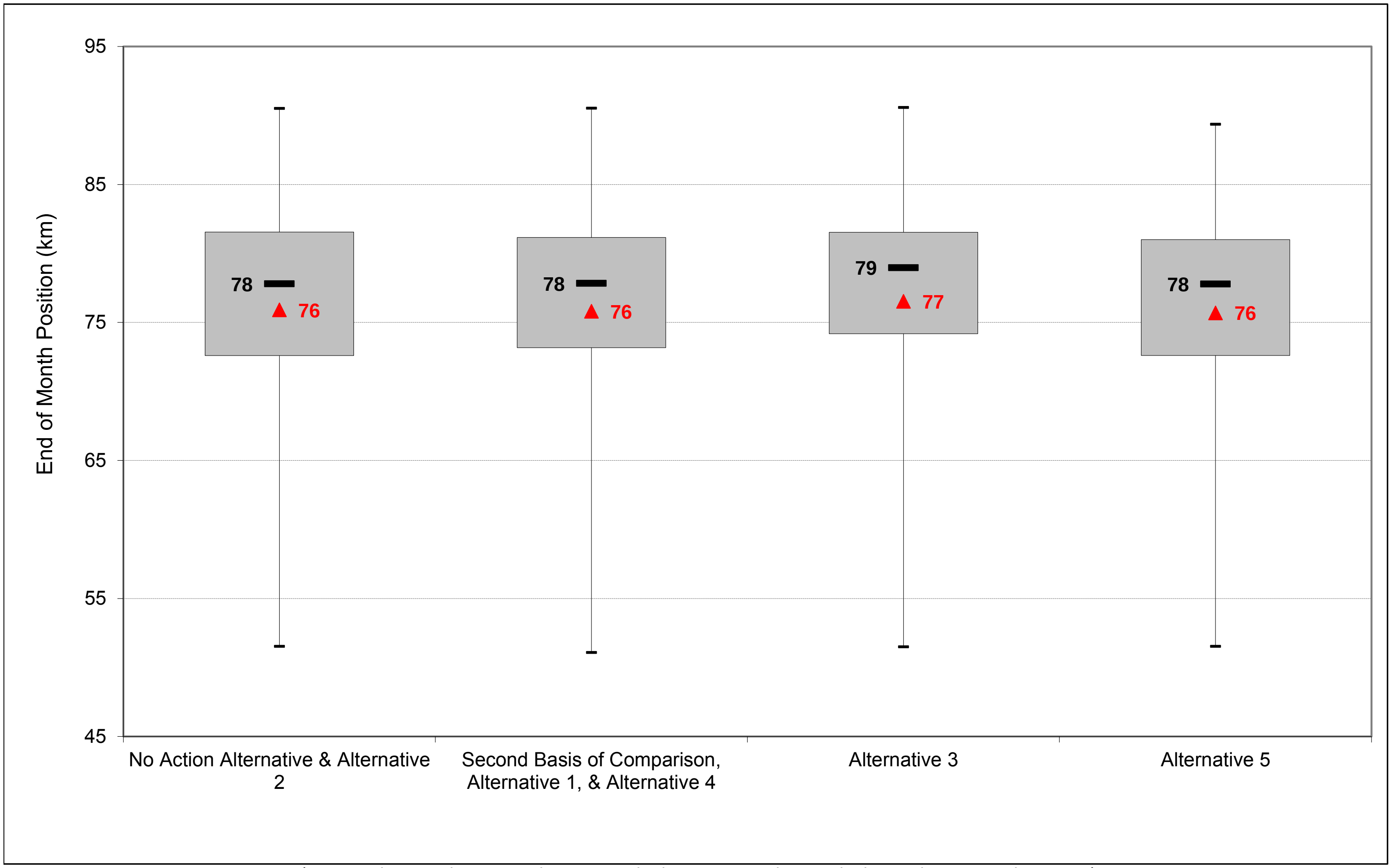
Figure C-16-1-4. X2, May Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

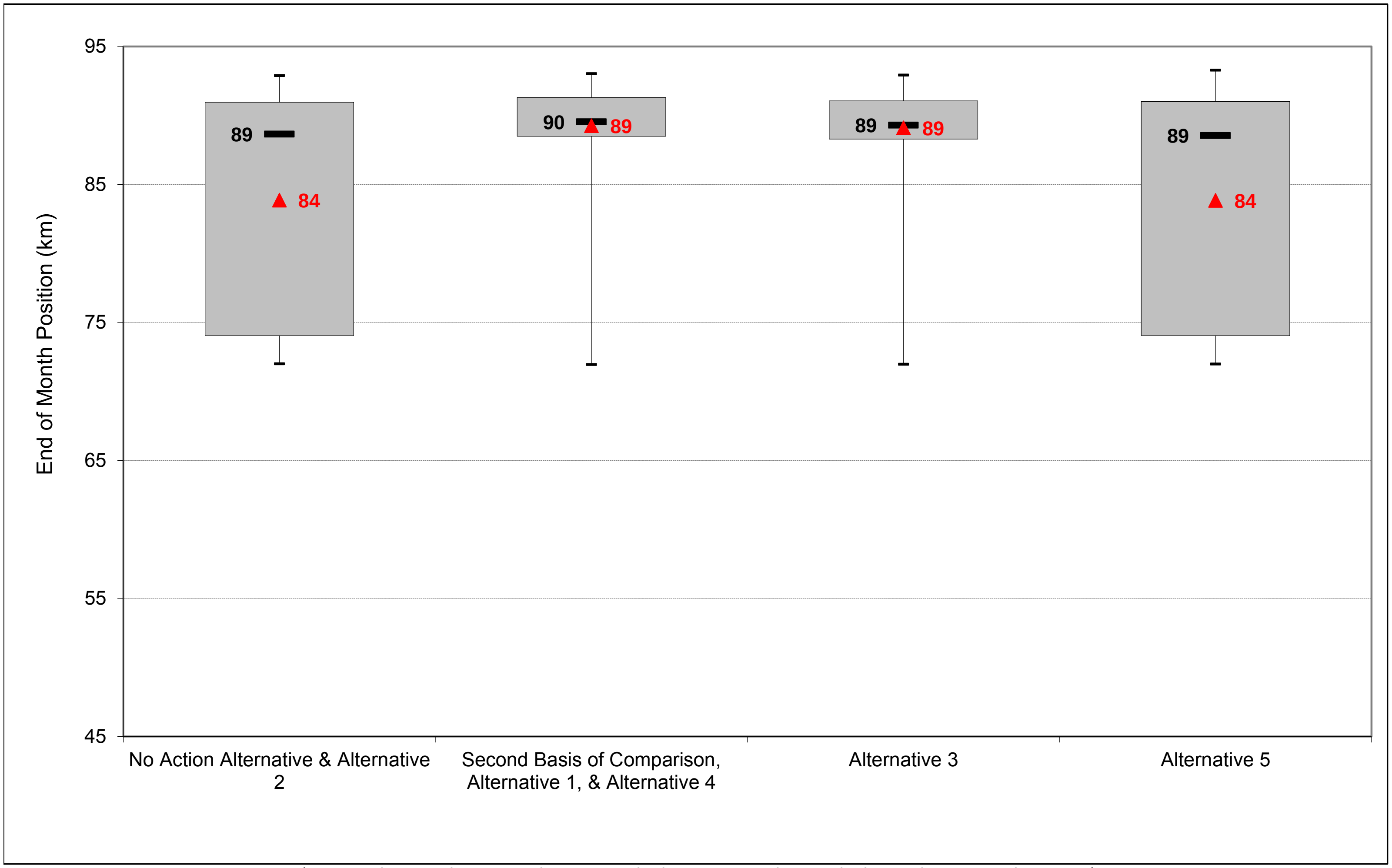
Figure C-16-1-5. X2, June Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

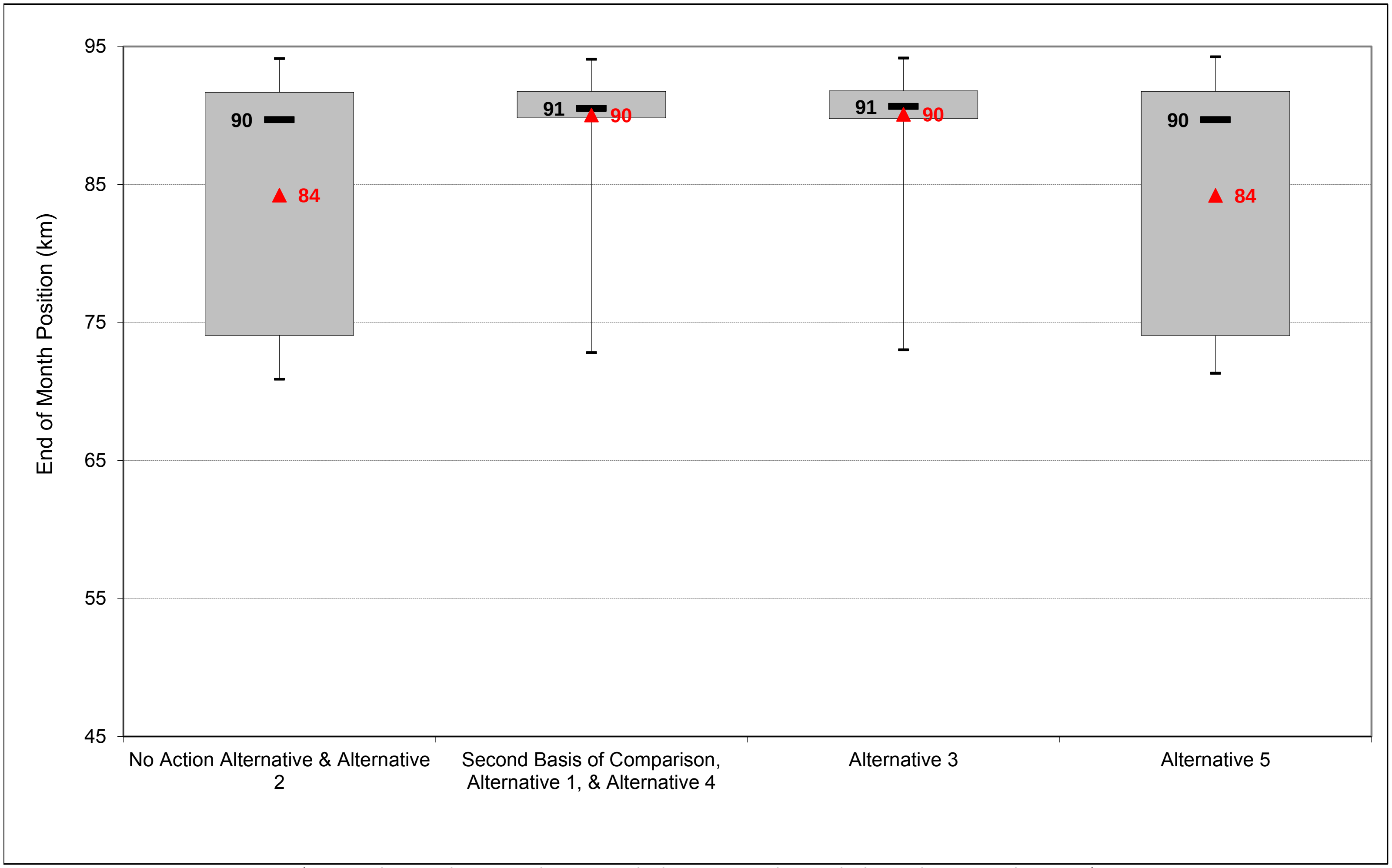
Figure C-16-1-6. X2, September Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

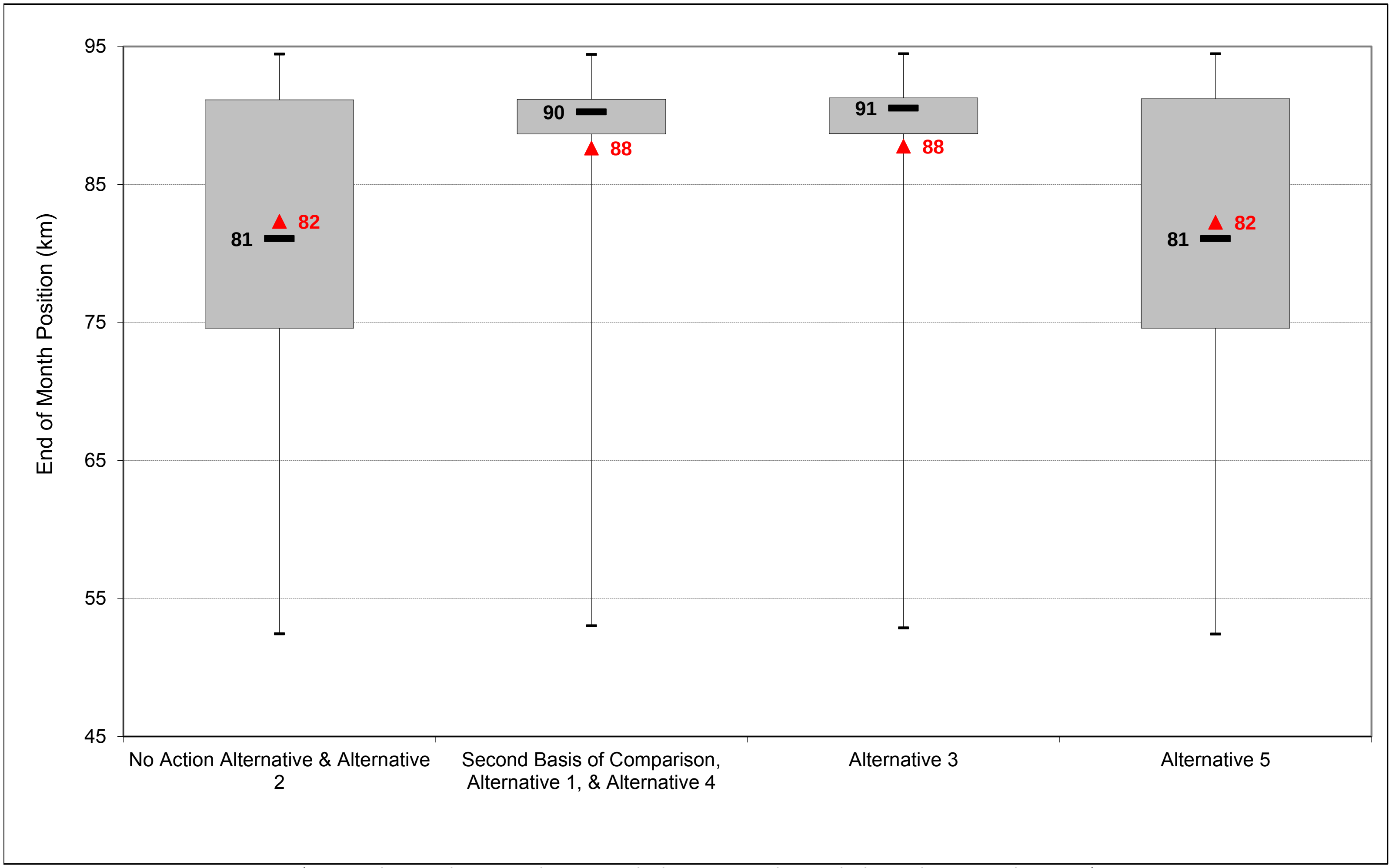
Figure C-16-1-7. X2, October Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

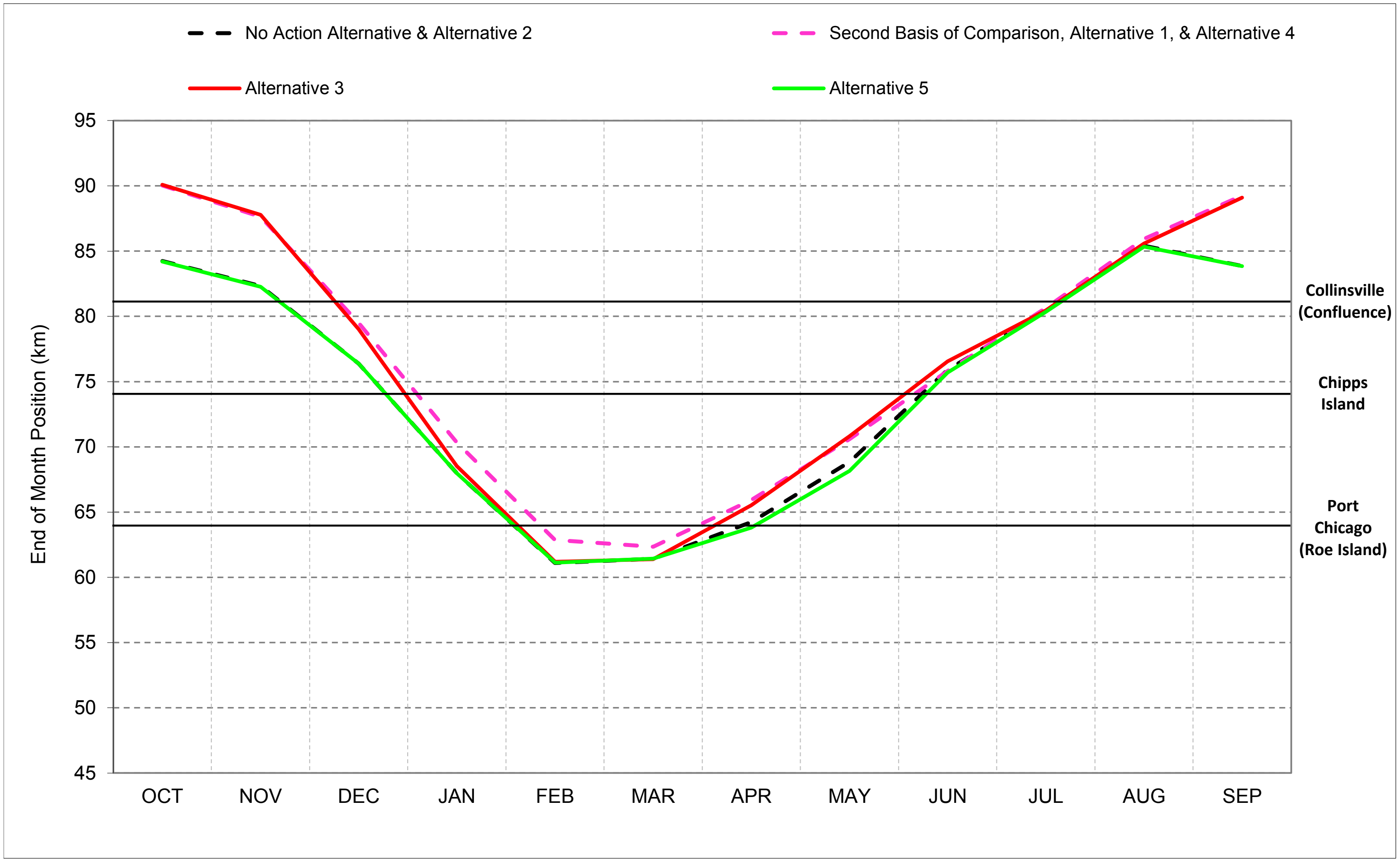
Figure C-16-1-8. X2, November Average Position



(Box=25th to 75th percentile range, whiskers=min and max, dash=median, triangle=mean)

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

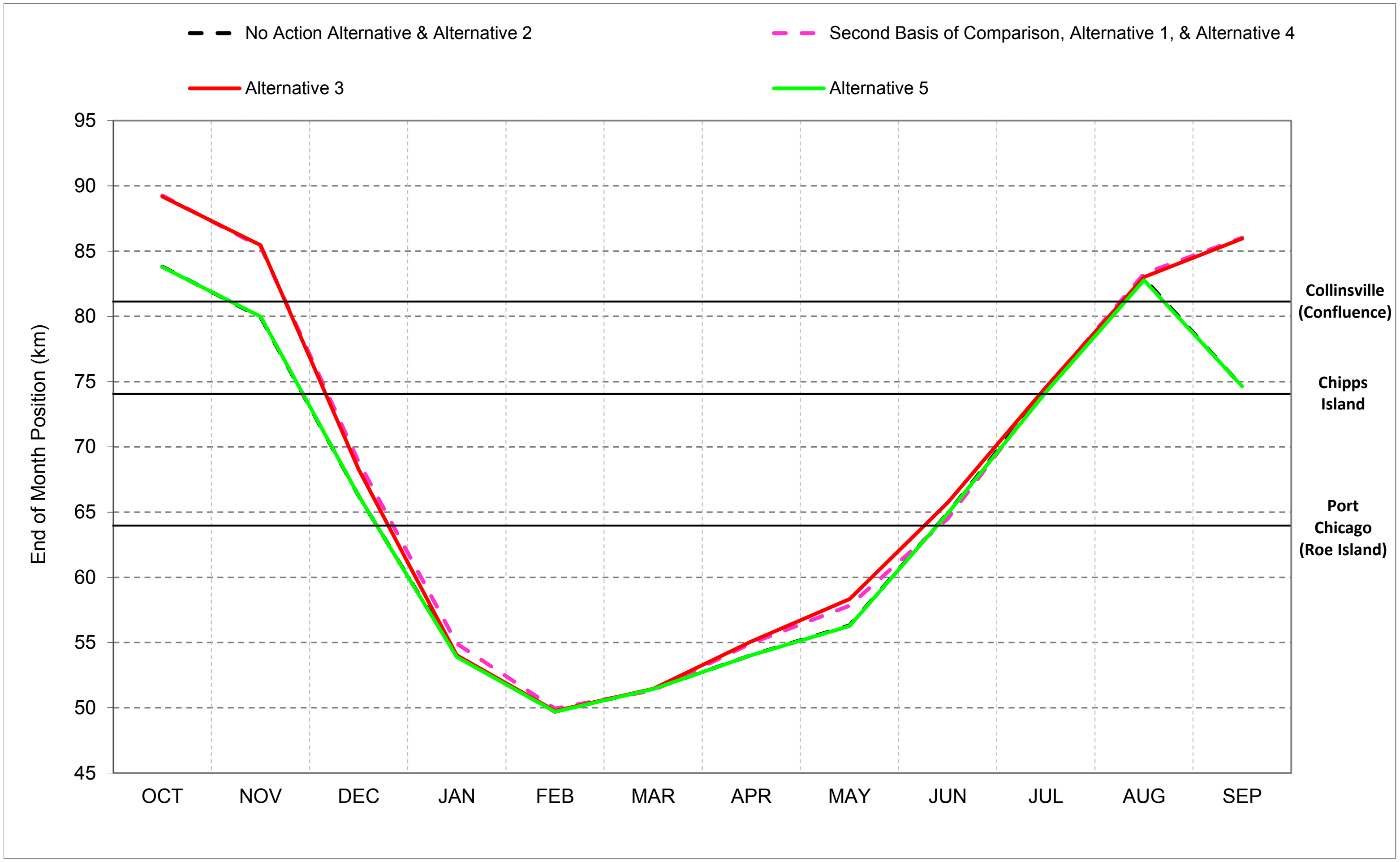
Figure C-16-2-1. X2, Long-Term* Average Position



*Based on the 82-year simulation period.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-16-2-2. X2, Wet Year* Long-Term Average Position**

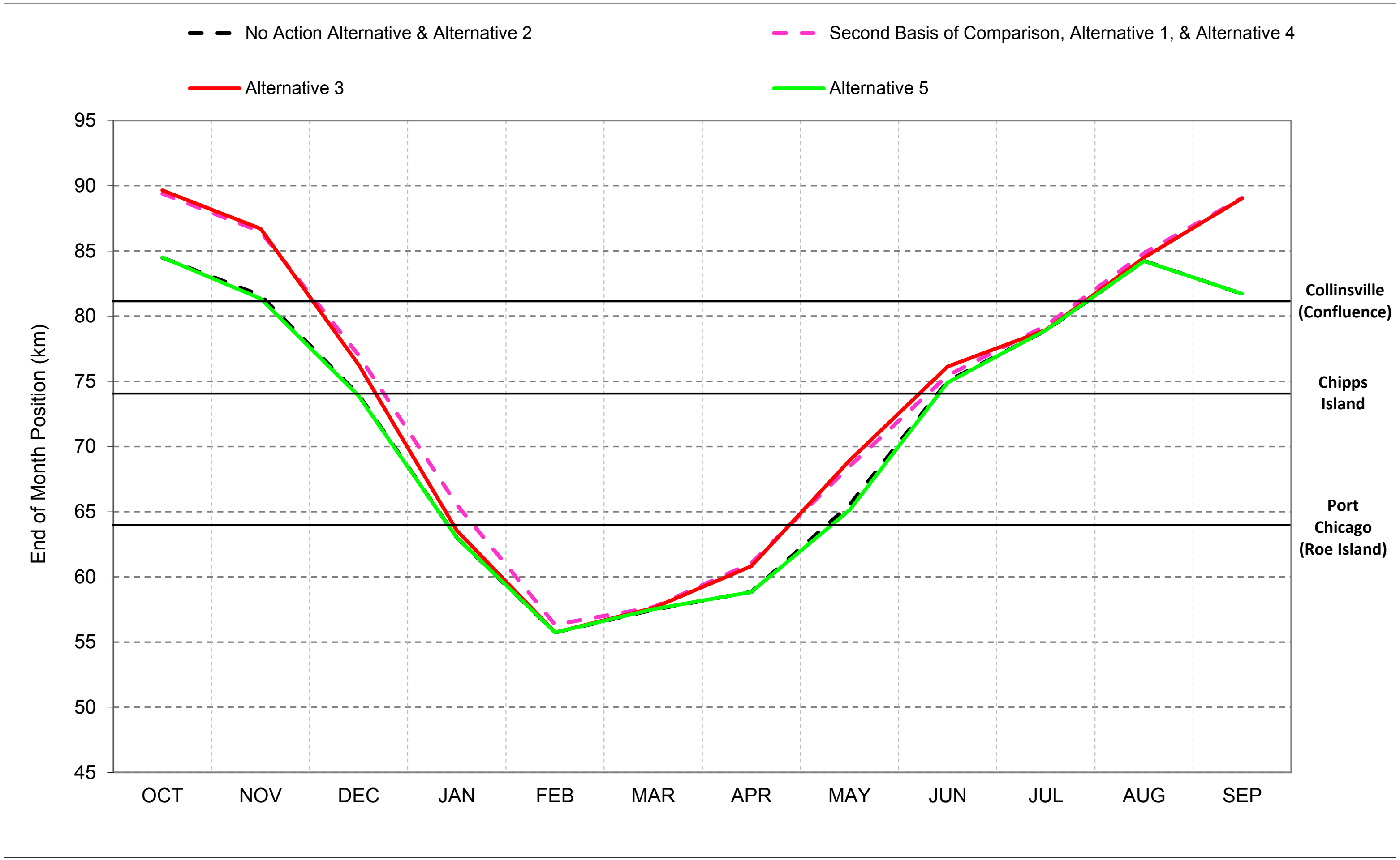


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-16-2-3. X2, Above Normal Year* Long-Term Average Position**

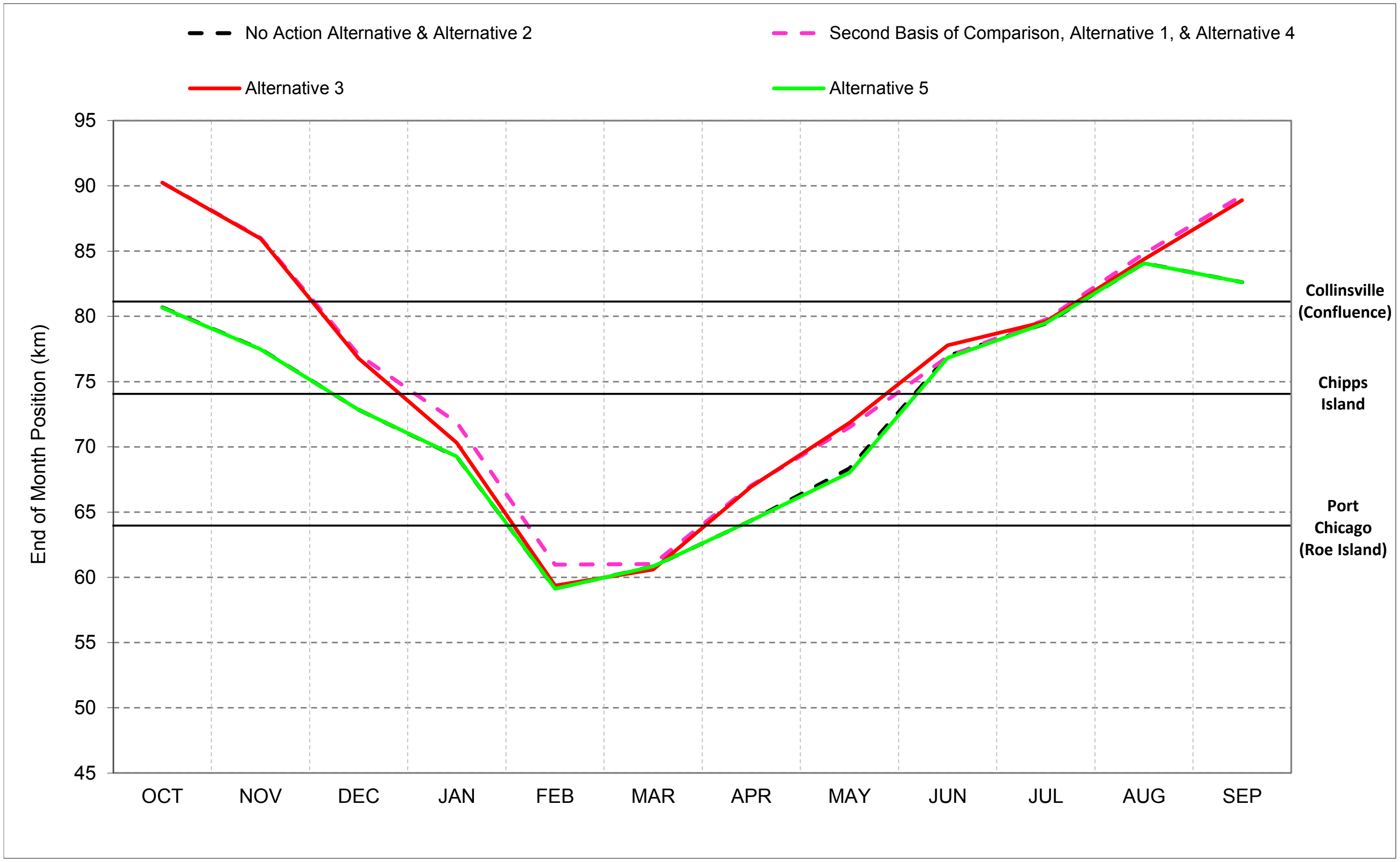


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-16-2-4. X2, Below Normal Year* Long-Term Average Position**

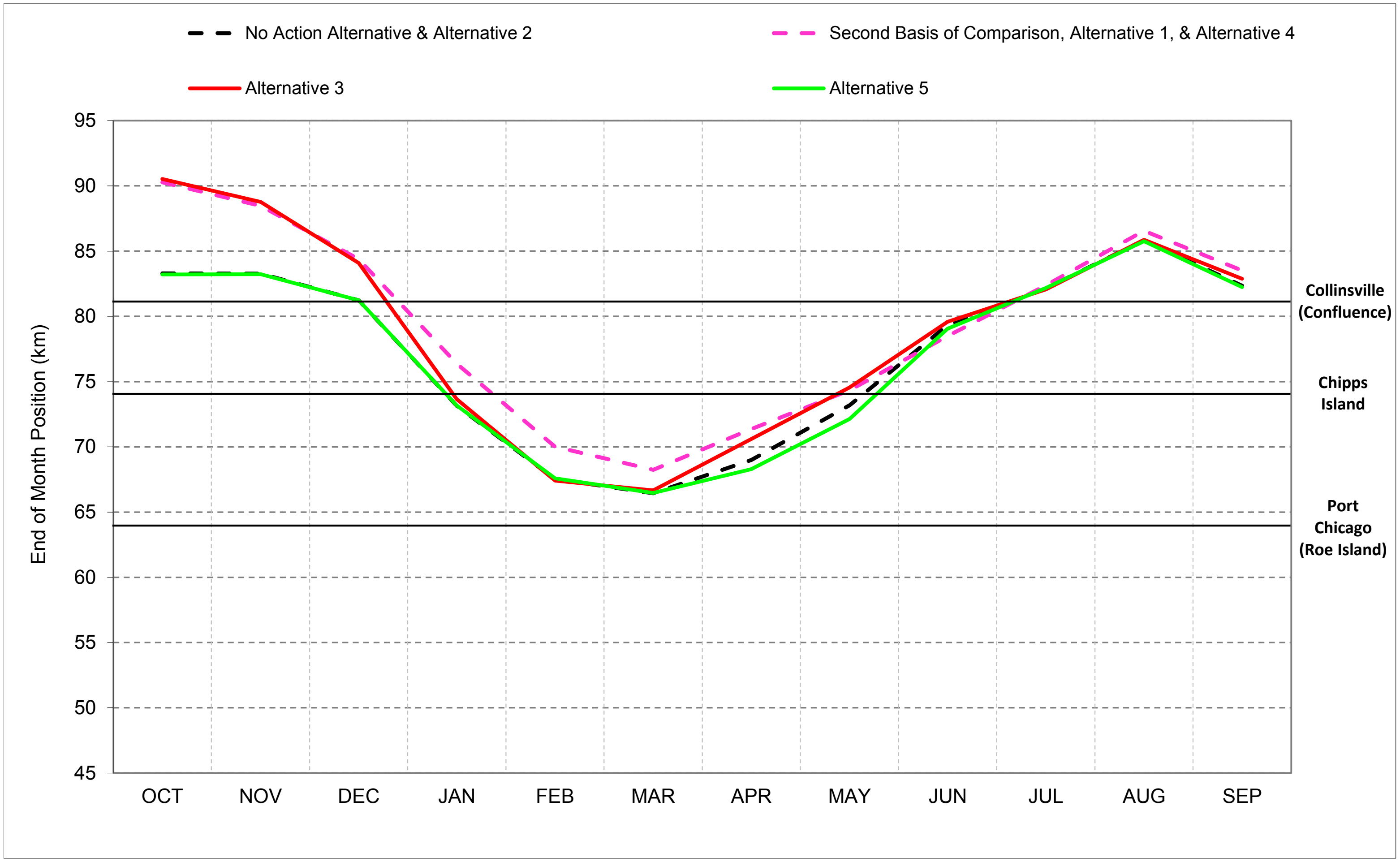


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-16-2-5. X2, Dry Year* Long-Term Average Position**

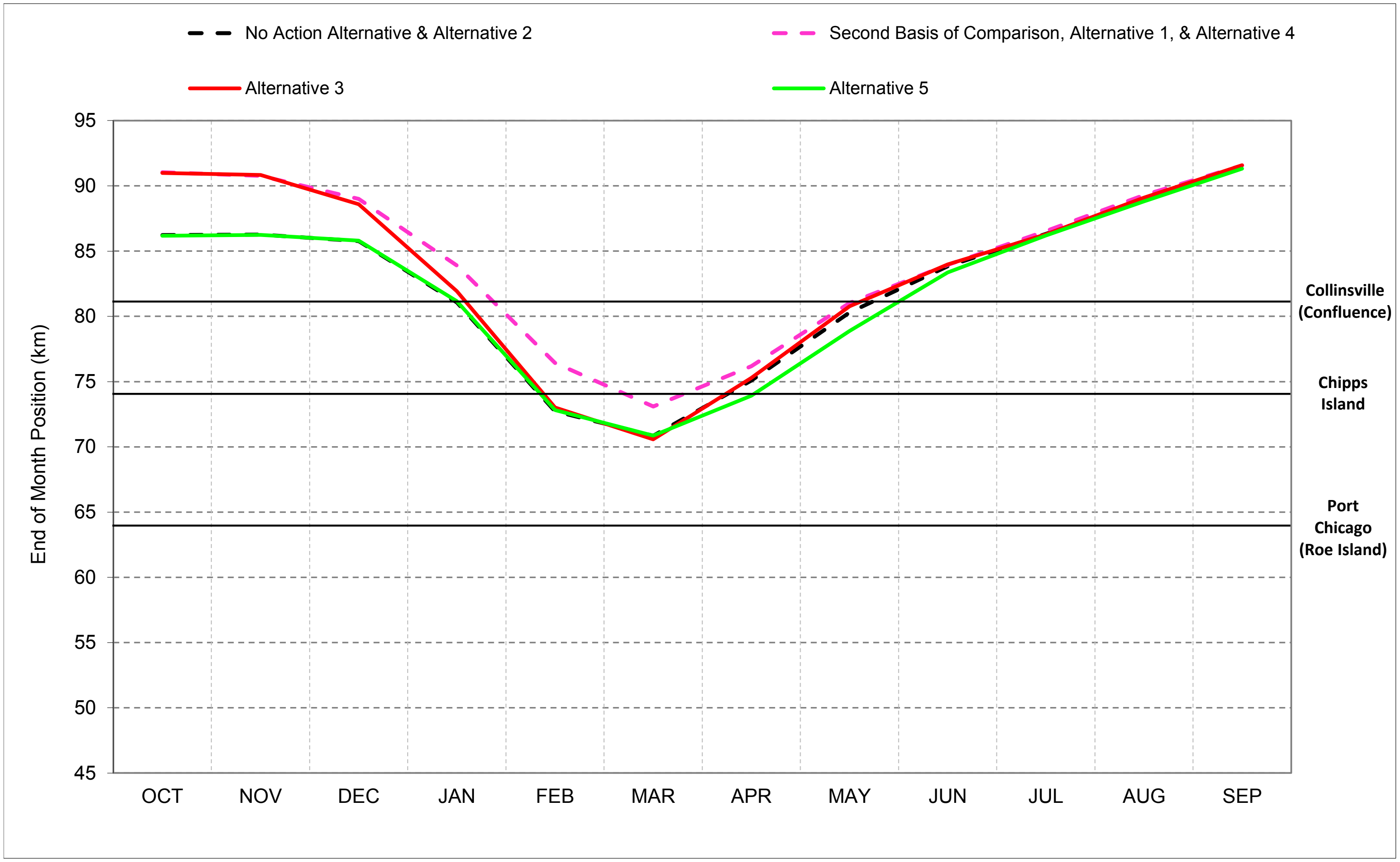


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-16-2-6. X2, Critical Year* Long-Term Average Position**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-1. X2, End of Month Position

No Action Alternative

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (16%)	81.0	79.3	75.9	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (13%)	89.1	87.6	78.8	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (24%)	91.5	86.9	75.4	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (15%)	93.6	93.6	87.8	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

Alternative 1

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

Alternative 1 minus No Action Alternative

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.7	-0.5	**0.1**	**3.3**	**3.5**	**2.6**	**0.5**	**0.5**	**0.3**	**0.2**	**0.2**	**0.1**
20%	**0.1**	-0.1	**3.0**	**3.6**	**3.9**	**0.8**	**1.6**	**0.3**	-0.2	-0.1	**0.5**	**0.4**
30%	-0.2	**0.1**	**5.6**	**3.5**	**4.8**	**2.5**	**3.1**	**1.3**	-0.4	**0.0**	**0.6**	**0.4**
40%	-0.1	**2.7**	**6.1**	**5.3**	**2.2**	**2.0**	**3.0**	**3.0**	-1.5	-0.4	**0.3**	**0.0**
50%	**0.8**	**9.2**	**5.6**	**4.4**	**3.0**	**1.7**	**2.7**	**3.0**	**0.0**	**0.3**	**0.5**	**1.1**
60%	**9.3**	**8.6**	**2.7**	**3.4**	**0.5**	-0.2	**3.3**	**2.9**	-0.4	**1.0**	**0.1**	**8.0**
70%	**15.9**	**14.0**	**5.0**	**1.1**	**0.5**	**0.2**	**1.7**	**2.2**	**1.0**	**0.9**	**0.4**	**14.6**
80%	**15.6**	**13.9**	**3.6**	**0.7**	-0.1	-0.2	**0.9**	**1.0**	**1.6**	**0.4**	**1.3**	**14.4**
90%	**14.2**	**5.6**	**0.5**	**0.1**	**0.1**	-0.2	**0.5**	**1.2**	**0.4**	**0.1**	**0.8**	**13.8**
Long Term												
Full Simulation Period[b]	**5.8**	**5.3**	**3.1**	**2.4**	**1.8**	**0.9**	**1.7**	**1.8**	-0.1	**0.2**	**0.5**	**5.4**
Water Year Types[c]												
Wet	**13.9**	**11.9**	**4.7**	**0.9**	**0.4**	0.0	**1.3**	**1.9**	-0.1	**0.4**	**0.5**	**12.7**
Above Normal	**9.3**	**8.6**	**4.5**	**2.6**	**1.1**	0.0	**2.1**	**2.7**	-0.2	**0.3**	**0.7**	**7.2**
Below Normal	**0.3**	**1.0**	**1.8**	**4.2**	**2.1**	**0.8**	**2.3**	**2.0**	-0.9	**0.2**	**0.8**	**0.4**
Dry	-0.2	**0.3**	**1.5**	**3.5**	**3.2**	**2.2**	**1.9**	**1.4**	**0.1**	-0.1	**0.4**	**0.3**
Critical	-0.5	-0.2	**2.0**	**1.6**	**2.9**	**2.2**	**1.2**	**0.9**	**0.5**	**0.3**	**0.3**	**0.2**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and And Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-2. X2, End of Month Position

No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (16%)	81.0	79.3	75.9	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (13%)	89.1	87.6	78.8	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (24%)	91.5	86.9	75.4	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (15%)	93.6	93.6	87.8	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

Alternative 3

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.6	90.8	86.1	77.8	75.8	78.2	81.5	83.2	86.4	90.0	92.2
20%	91.9	91.5	90.5	83.7	71.7	72.5	74.6	79.6	82.0	84.8	88.4	91.3
30%	91.6	91.1	89.4	81.5	67.6	66.1	71.3	78.4	81.0	84.3	87.7	90.8
40%	91.2	90.8	88.5	74.8	64.1	64.5	69.7	75.6	80.3	81.7	86.0	89.8
50%	90.7	90.6	86.7	71.8	58.8	60.0	67.3	73.1	78.8	80.7	84.9	89.3
60%	90.2	89.8	82.6	64.6	54.4	58.0	63.6	70.4	77.1	78.4	84.6	88.7
70%	89.9	89.0	74.2	55.1	52.2	54.4	59.9	66.8	75.1	77.8	84.2	88.4
80%	89.6	87.9	65.1	51.2	49.3	50.4	54.8	61.7	71.8	77.1	83.2	88.2
90%	88.2	79.6	53.0	49.5	48.1	48.8	50.4	54.8	64.9	75.0	82.4	87.6
Long Term												
Full Simulation Period[b]	90.1	87.8	79.0	68.5	61.2	61.4	65.5	70.8	76.5	80.5	85.6	89.1
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.3	54.8	51.3	53.1	56.5	60.8	68.3	75.1	82.9	86.6
Above Normal (16%)	90.3	88.0	80.0	61.5	54.9	55.0	60.9	68.4	76.2	78.0	83.4	81.8
Below Normal (13%)	89.2	88.8	80.2	75.4	64.0	66.6	70.5	74.9	79.6	81.0	85.1	89.2
Dry (24%)	91.4	87.4	76.4	78.8	67.9	65.5	69.9	76.0	80.4	84.3	87.8	90.8
Critical (15%)	93.4	93.7	89.3	82.7	75.6	74.6	78.1	82.8	85.4	88.0	90.5	92.3

Alternative 3 minus No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.2	-0.1	**0.0**	**2.1**	**0.5**	-0.1	**0.0**	**0.4**	**0.0**	-0.1	**0.3**	**0.3**
20%	**0.1**	**0.0**	**2.8**	**1.4**	0.0	-0.2	**1.1**	**0.3**	**0.2**	-0.1	**0.3**	**0.3**
30%	**0.0**	**0.2**	**5.5**	**1.7**	**0.4**	**0.4**	**1.2**	**1.2**	0.0	**0.0**	**0.2**	**0.2**
40%	**0.1**	**2.7**	**5.9**	**1.3**	**0.1**	0.0	**3.0**	**3.3**	**0.2**	-0.6	-0.2	-0.3
50%	**1.0**	**9.5**	**5.6**	**0.6**	**0.4**	**0.2**	**2.5**	**3.3**	**1.1**	**0.1**	**0.1**	**0.8**
60%	**9.2**	**8.8**	**2.9**	**0.2**	-0.8	**0.1**	**2.7**	**4.1**	**0.5**	**0.3**	0.0	**7.7**
70%	**15.8**	**13.9**	**2.2**	**0.0**	**0.3**	**0.4**	**1.8**	**2.9**	**1.7**	**0.3**	**0.1**	**14.4**
80%	**15.5**	**13.9**	**2.9**	-0.1	0.0	-0.2	**1.0**	**2.6**	**1.9**	**0.3**	**0.5**	**14.1**
90%	**14.2**	**5.7**	**0.2**	**0.1**	-0.1	-0.2	**0.5**	**1.5**	**1.4**	**0.4**	**0.1**	**13.6**
Long Term												
Full Simulation Period[b]	**5.9**	**5.5**	**2.6**	**0.6**	**0.1**	0.0	**1.3**	**2.0**	**0.6**	**0.0**	**0.2**	**5.2**
Water Year Types[c]												
Wet	**13.9**	**11.9**	**4.3**	**0.0**	**0.1**	**0.1**	**1.4**	**2.4**	**1.0**	**0.2**	**0.1**	**12.6**
Above Normal	**9.3**	**8.7**	**4.0**	**0.5**	0.0	-0.2	**1.9**	**3.2**	**0.9**	**0.1**	**0.3**	**7.0**
Below Normal	**0.1**	**1.2**	**1.4**	**0.8**	-0.3	-0.3	**1.6**	**2.1**	**0.5**	-0.1	**0.0**	-0.1
Dry	-0.1	**0.5**	**1.0**	**1.1**	**0.2**	**0.1**	**1.2**	**1.5**	**0.3**	-0.2	**0.2**	**0.2**
Critical	-0.1	**0.1**	**1.4**	**0.7**	**0.3**	**0.0**	**0.4**	**0.5**	**0.2**	**0.1**	**0.2**	**0.1**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-3. X2, End of Month Position

No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (16%)	81.0	79.3	75.9	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (13%)	89.1	87.6	78.8	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (24%)	91.5	86.9	75.4	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (15%)	93.6	93.6	87.8	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

Alternative 5

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.3	90.8	84.0	77.3	75.9	77.2	79.1	83.1	86.5	89.6	91.9
20%	91.9	91.5	87.6	82.3	71.7	72.8	72.5	77.9	81.4	84.9	88.1	91.1
30%	91.6	91.0	83.9	79.8	67.2	65.8	69.5	75.8	81.0	84.2	87.4	90.5
40%	91.0	88.0	82.4	73.5	63.9	64.5	66.4	71.5	79.6	82.3	86.1	90.0
50%	89.5	81.1	81.2	71.2	58.5	59.9	64.2	69.3	77.8	80.7	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.1	57.9	60.8	66.4	76.6	78.2	84.6	81.0
70%	74.1	75.1	71.9	55.1	51.9	53.9	58.0	63.7	73.4	77.5	84.1	74.1
80%	74.0	74.1	62.2	51.3	49.4	50.6	53.5	58.9	69.8	76.8	82.6	74.0
90%	74.0	73.9	53.0	49.4	48.2	49.1	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	63.8	68.2	75.7	80.4	85.3	83.8
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.7	51.2	53.1	55.1	58.2	67.3	74.7	82.6	73.9
Above Normal (16%)	81.0	79.2	75.9	60.9	54.9	55.3	59.0	65.0	75.2	77.9	83.1	74.8
Below Normal (13%)	89.1	87.2	78.6	74.6	64.3	66.9	68.4	72.1	79.0	81.1	85.0	89.3
Dry (24%)	91.4	87.0	75.4	77.7	67.7	65.4	67.9	73.4	79.8	84.5	87.6	90.5
Critical (15%)	93.5	93.5	87.9	82.1	75.5	74.6	76.7	80.8	84.5	87.7	90.2	92.1

Alternative 5 minus No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.2	-0.3	**0.0**	**0.0**	**0.0**	0.0	-1.0	-1.9	-0.1	0.0	-0.1	**0.0**
20%	**0.1**	**0.0**	0.0	**0.0**	**0.0**	**0.0**	-1.1	-1.3	-0.3	0.0	**0.0**	0.0
30%	**0.0**	**0.1**	**0.0**	0.0	0.0	**0.0**	-0.5	-1.4	-0.1	-0.1	-0.1	-0.1
40%	-0.1	-0.1	-0.2	0.0	0.0	**0.0**	-0.3	-0.8	-0.6	-0.1	-0.1	-0.1
50%	-0.1	0.0	**0.0**	0.0	**0.0**	**0.1**	-0.5	-0.5	0.0	**0.1**	**0.0**	**0.0**
60%	0.0	0.0	**0.0**	**0.1**	-0.1	0.0	-0.1	**0.1**	0.0	**0.0**	0.0	**0.0**
70%	0.0	**0.0**	-0.1	0.0	0.0	0.0	**0.0**	-0.1	0.0	**0.0**	0.0	0.0
80%	0.0	**0.0**	0.0	-0.1	**0.0**	**0.0**	-0.2	-0.2	0.0	0.0	-0.1	0.0
90%	0.0	0.0	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	0.0	**0.0**	**0.0**	-0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	-0.1	0.0	**0.0**	**0.0**	**0.0**	-0.4	-0.7	-0.2	-0.1	-0.1	0.0
Water Year Types[c]												
Wet	0.0	0.0	**0.0**	0.0	0.0	0.0	0.0	-0.2	0.0	-0.1	-0.1	0.0
Above Normal	0.0	0.0	**0.0**	0.0	0.0	**0.0**	0.0	-0.2	-0.1	**0.0**	0.0	**0.0**
Below Normal	0.0	-0.4	-0.2	**0.0**	0.0	**0.0**	-0.5	-0.8	-0.1	0.0	-0.1	-0.1
Dry	0.0	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	-0.9	-1.1	-0.3	**0.0**	0.0	0.0
Critical	-0.1	-0.1	**0.0**	**0.2**	**0.2**	**0.1**	-0.9	-1.6	-0.7	-0.2	-0.1	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-4. X2, End of Month Position

Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

No Action Alternative

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (16%)	81.0	79.3	75.9	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (13%)	89.1	87.6	78.8	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (24%)	91.5	86.9	75.4	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (15%)	93.6	93.6	87.8	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.7	0.5	-0.1	-3.3	-3.5	-2.6	-0.5	-0.5	-0.3	-0.2	-0.2	-0.1
20%	-0.1	0.1	-3.0	-3.6	-3.9	-0.8	-1.6	-0.3	0.2	0.1	-0.5	-0.4
30%	0.2	-0.1	-5.6	-3.5	-4.8	-2.5	-3.1	-1.3	0.4	0.0	-0.6	-0.4
40%	0.1	-2.7	-6.1	-5.3	-2.2	-2.0	-3.0	-3.0	1.5	0.4	-0.3	0.0
50%	-0.8	-9.2	-5.6	-4.4	-3.0	-1.7	-2.7	-3.0	0.0	-0.3	-0.5	-1.1
60%	-9.3	-8.6	-2.7	-3.4	-0.5	0.2	-3.3	-2.9	0.4	-1.0	-0.1	-8.0
70%	-15.9	-14.0	-5.0	-1.1	-0.5	-0.2	-1.7	-2.2	-1.0	-0.9	-0.4	-14.6
80%	-15.6	-13.9	-3.6	-0.7	0.1	0.2	-0.9	-1.0	-1.6	-0.4	-1.3	-14.4
90%	-14.2	-5.6	-0.5	-0.1	-0.1	0.2	-0.5	-1.2	-0.4	-0.1	-0.8	-13.8
Long Term												
Full Simulation Period[b]	-5.8	-5.3	-3.1	-2.4	-1.8	-0.9	-1.7	-1.8	0.1	-0.2	-0.5	-5.4
Water Year Types[c]												
Wet	-13.9	-11.9	-4.7	-0.9	-0.4	0.0	-1.3	-1.9	0.1	-0.4	-0.5	-12.7
Above Normal	-9.3	-8.6	-4.5	-2.6	-1.1	0.0	-2.1	-2.7	0.2	-0.3	-0.7	-7.2
Below Normal	-0.3	-1.0	-1.8	-4.2	-2.1	-0.8	-2.3	-2.0	0.9	-0.2	-0.8	-0.4
Dry	0.2	-0.3	-1.5	-3.5	-3.2	-2.2	-1.9	-1.4	-0.1	0.1	-0.4	-0.3
Critical	0.5	0.2	-2.0	-1.6	-2.9	-2.2	-1.2	-0.9	-0.5	-0.3	-0.3	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-5. X2, End of Month Position

Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

Alternative 3

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.6	90.8	86.1	77.8	75.8	78.2	81.5	83.2	86.4	90.0	92.2
20%	91.9	91.5	90.5	83.7	71.7	72.5	74.6	79.6	82.0	84.8	88.4	91.3
30%	91.6	91.1	89.4	81.5	67.6	66.1	71.3	78.4	81.0	84.3	87.7	90.8
40%	91.2	90.8	88.5	74.8	64.1	64.5	69.7	75.6	80.3	81.7	86.0	89.8
50%	90.7	90.6	86.7	71.8	58.8	60.0	67.3	73.1	78.8	80.7	84.9	89.3
60%	90.2	89.8	82.6	64.6	54.4	58.0	63.6	70.4	77.1	78.4	84.6	88.7
70%	89.9	89.0	74.2	55.1	52.2	54.4	59.9	66.8	75.1	77.8	84.2	88.4
80%	89.6	87.9	65.1	51.2	49.3	50.4	54.8	61.7	71.8	77.1	83.2	88.2
90%	88.2	79.6	53.0	49.5	48.1	48.8	50.4	54.8	64.9	75.0	82.4	87.6
Long Term												
Full Simulation Period[b]	90.1	87.8	79.0	68.5	61.2	61.4	65.5	70.8	76.5	80.5	85.6	89.1
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.3	54.8	51.3	53.1	56.5	60.8	68.3	75.1	82.9	86.6
Above Normal (16%)	90.3	88.0	80.0	61.5	54.9	55.0	60.9	68.4	76.2	78.0	83.4	81.8
Below Normal (13%)	89.2	88.8	80.2	75.4	64.0	66.6	70.5	74.9	79.6	81.0	85.1	89.2
Dry (24%)	91.4	87.4	76.4	78.8	67.9	65.5	69.9	76.0	80.4	84.3	87.8	90.8
Critical (15%)	93.4	93.7	89.3	82.7	75.6	74.6	78.1	82.8	85.4	88.0	90.5	92.3

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.5	0.5	-0.1	-1.2	-3.0	-2.7	-0.5	-0.1	-0.3	-0.3	0.1	0.2
20%	0.1	0.1	-0.1	-2.2	-3.9	-1.1	-0.6	0.1	0.4	0.0	-0.2	-0.2
30%	0.2	0.1	-0.1	-1.8	-4.4	-2.1	-1.8	-0.1	0.4	0.0	-0.4	-0.2
40%	0.2	0.0	-0.2	-4.0	-2.0	-2.1	0.0	0.3	1.6	-0.3	-0.5	-0.3
50%	0.2	0.3	0.0	-3.9	-2.6	-1.6	-0.2	0.3	1.0	-0.3	-0.4	-0.2
60%	-0.1	0.1	0.2	-3.1	-1.3	0.2	-0.5	1.2	0.9	-0.7	-0.1	-0.3
70%	-0.1	-0.1	-2.7	-1.1	-0.2	0.2	0.2	0.8	0.7	-0.5	-0.2	-0.2
80%	0.0	-0.1	-0.8	-0.8	0.0	0.1	0.1	1.5	0.3	-0.2	-0.8	-0.2
90%	0.0	0.0	-0.3	0.0	-0.2	0.0	0.0	0.2	1.0	0.2	-0.6	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.1	-0.5	-1.8	-1.7	-1.0	-0.4	0.2	0.7	-0.2	-0.3	-0.2
Water Year Types[c]												
Wet	0.0	0.0	-0.4	-0.9	-0.3	0.1	0.1	0.5	1.1	-0.1	-0.4	-0.1
Above Normal	0.0	0.1	-0.5	-2.1	-1.1	-0.2	-0.2	0.5	1.1	-0.2	-0.4	-0.1
Below Normal	-0.2	0.2	-0.5	-3.4	-2.4	-1.1	-0.8	0.1	1.4	-0.3	-0.7	-0.5
Dry	0.2	0.2	-0.5	-2.4	-2.9	-2.1	-0.8	0.1	0.3	-0.2	-0.2	-0.1
Critical	0.4	0.3	-0.6	-0.9	-2.5	-2.1	-0.7	-0.4	-0.3	-0.2	-0.1	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-6. X2, End of Month Position

Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

Alternative 5

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.3	90.8	84.0	77.3	75.9	77.2	79.1	83.1	86.5	89.6	91.9
20%	91.9	91.5	87.6	82.3	71.7	72.8	72.5	77.9	81.4	84.9	88.1	91.1
30%	91.6	91.0	83.9	79.8	67.2	65.8	69.5	75.8	81.0	84.2	87.4	90.5
40%	91.0	88.0	82.4	73.5	63.9	64.5	66.4	71.5	79.6	82.3	86.1	90.0
50%	89.5	81.1	81.2	71.2	58.5	59.9	64.2	69.3	77.8	80.7	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.1	57.9	60.8	66.4	76.6	78.2	84.6	81.0
70%	74.1	75.1	71.9	55.1	51.9	53.9	58.0	63.7	73.4	77.5	84.1	74.1
80%	74.0	74.1	62.2	51.3	49.4	50.6	53.5	58.9	69.8	76.8	82.6	74.0
90%	74.0	73.9	53.0	49.4	48.2	49.1	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	63.8	68.2	75.7	80.4	85.3	83.8
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.7	51.2	53.1	55.1	58.2	67.3	74.7	82.6	73.9
Above Normal (16%)	81.0	79.2	75.9	60.9	54.9	55.3	59.0	65.0	75.2	77.9	83.1	74.8
Below Normal (13%)	89.1	87.2	78.6	74.6	64.3	66.9	68.4	72.1	79.0	81.1	85.0	89.3
Dry (24%)	91.4	87.0	75.4	77.7	67.7	65.4	67.9	73.4	79.8	84.5	87.6	90.5
Critical (15%)	93.5	93.5	87.9	82.1	75.5	74.6	76.7	80.8	84.5	87.7	90.2	92.1

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.6	0.2	-0.1	-3.2	-3.5	-2.6	-1.5	-2.4	-0.4	-0.2	-0.3	-0.1
20%	0.0	0.1	-3.0	-3.6	-3.9	-0.8	-2.7	-1.6	-0.2	0.1	-0.4	-0.4
30%	0.2	0.0	-5.6	-3.5	-4.8	-2.5	-3.6	-2.7	0.4	-0.1	-0.6	-0.5
40%	0.0	-2.8	-6.3	-5.3	-2.2	-2.0	-3.2	-3.8	0.9	0.3	-0.5	-0.1
50%	-1.0	-9.2	-5.6	-4.4	-3.0	-1.7	-3.2	-3.5	0.0	-0.2	-0.5	-1.1
60%	-9.3	-8.7	-2.7	-3.3	-0.6	0.1	-3.4	-2.8	0.3	-0.9	-0.1	-8.0
70%	-16.0	-14.0	-5.1	-1.1	-0.5	-0.2	-1.7	-2.3	-1.0	-0.8	-0.4	-14.6
80%	-15.6	-13.9	-3.6	-0.8	0.1	0.2	-1.2	-1.3	-1.6	-0.5	-1.4	-14.4
90%	-14.2	-5.6	-0.3	-0.1	-0.1	0.3	-0.5	-1.2	-0.4	-0.1	-0.8	-13.8
Long Term												
Full Simulation Period[b]	-5.8	-5.4	-3.1	-2.3	-1.7	-0.9	-2.1	-2.4	-0.1	-0.3	-0.6	-5.4
Water Year Types[c]												
Wet	-13.9	-11.9	-4.7	-1.0	-0.4	0.0	-1.3	-2.0	0.1	-0.5	-0.6	-12.7
Above Normal	-9.3	-8.6	-4.5	-2.6	-1.1	0.0	-2.1	-2.9	0.1	-0.3	-0.7	-7.1
Below Normal	-0.3	-1.4	-2.0	-4.2	-2.1	-0.7	-2.9	-2.8	0.8	-0.2	-0.9	-0.4
Dry	0.2	-0.2	-1.5	-3.4	-3.1	-2.1	-2.8	-2.5	-0.3	0.1	-0.5	-0.4
Critical	0.4	0.1	-2.0	-1.5	-2.7	-2.1	-2.1	-2.5	-1.2	-0.5	-0.4	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

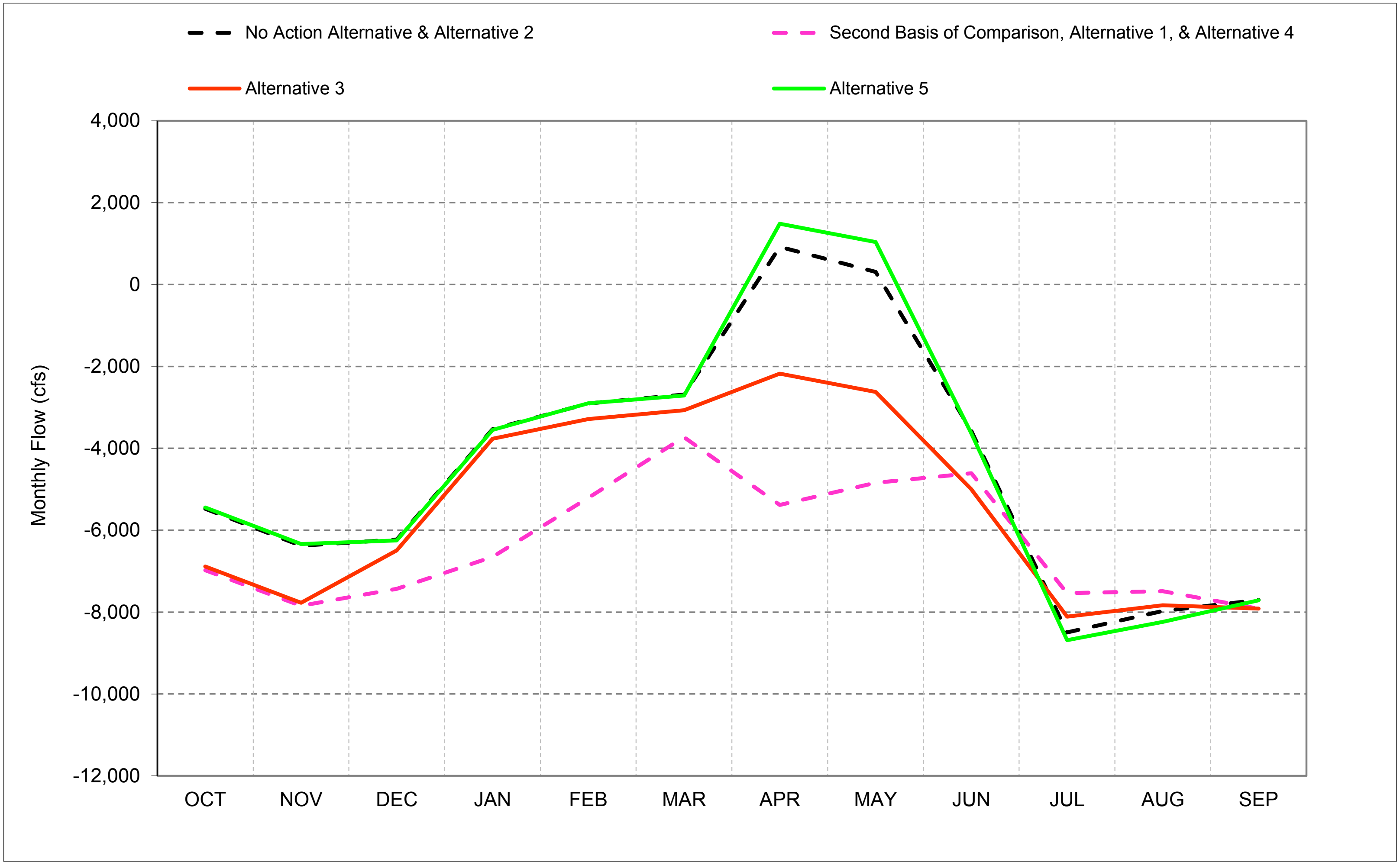
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.17. Old and Middle River Flow

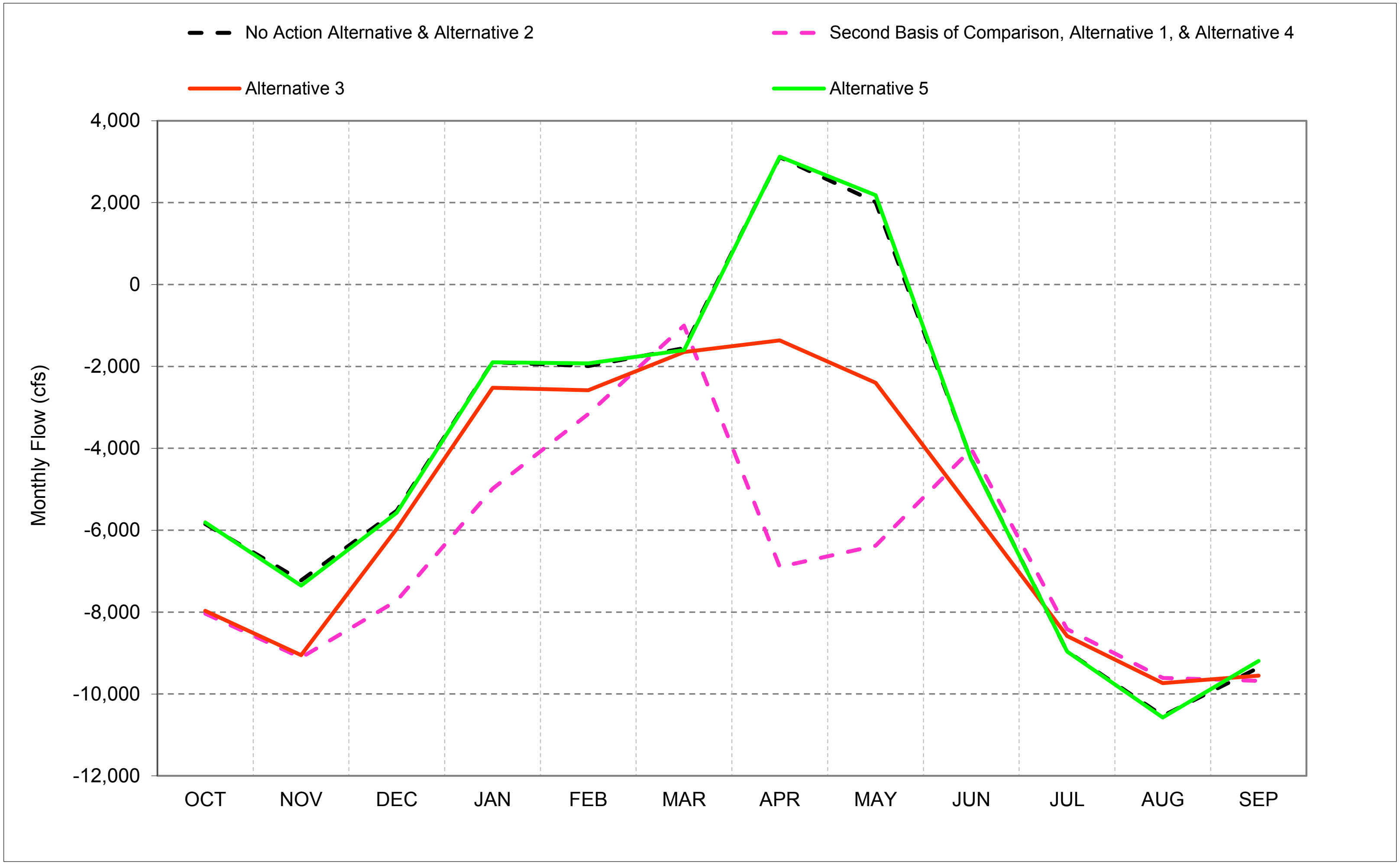
Figure C-17-1. Old and Middle River, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-17-2. Old and Middle River, Wet Year* Long-Term Average Flow**

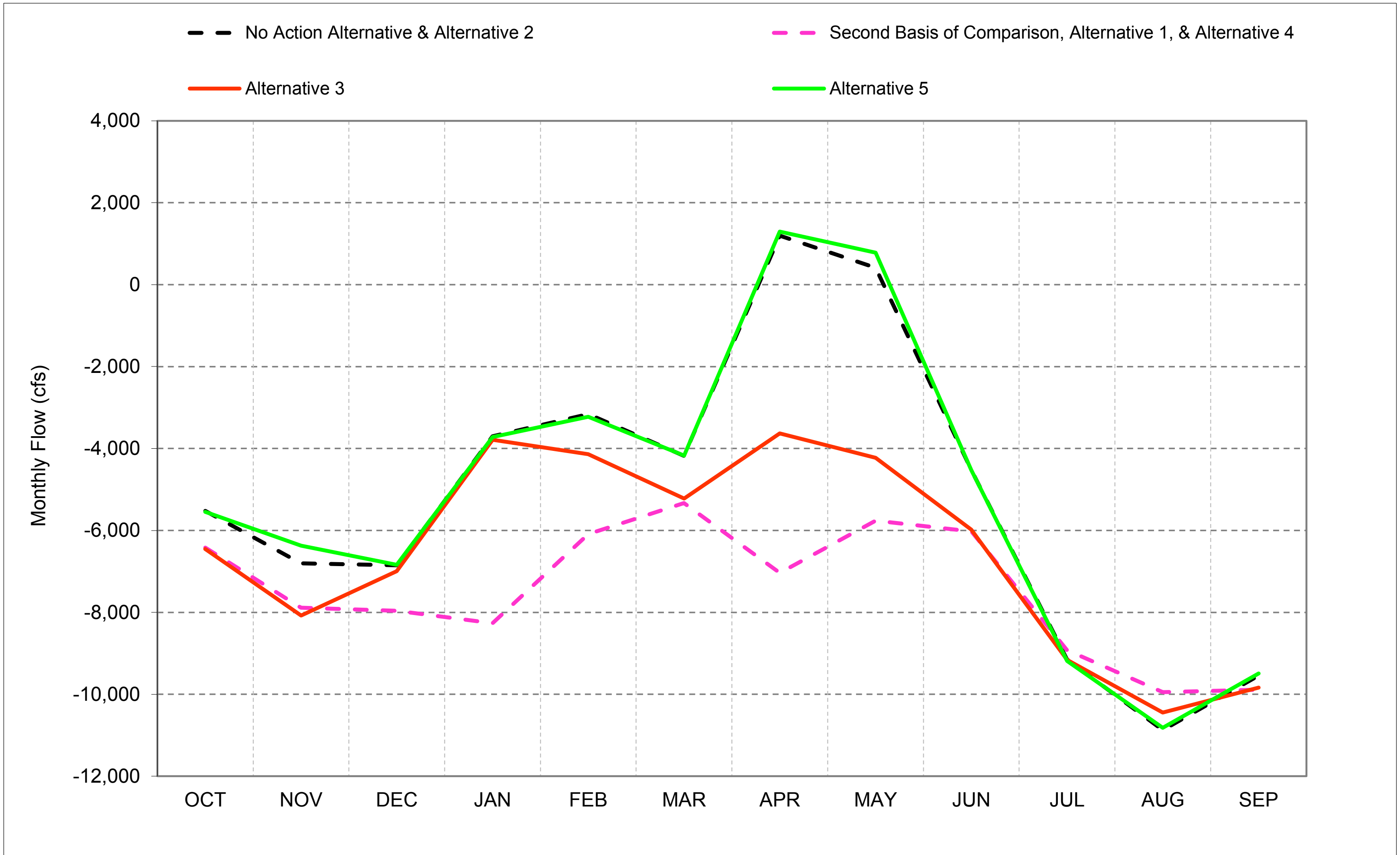


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-17-3. Old and Middle River, Above Normal Year* Long-Term Average Flow**

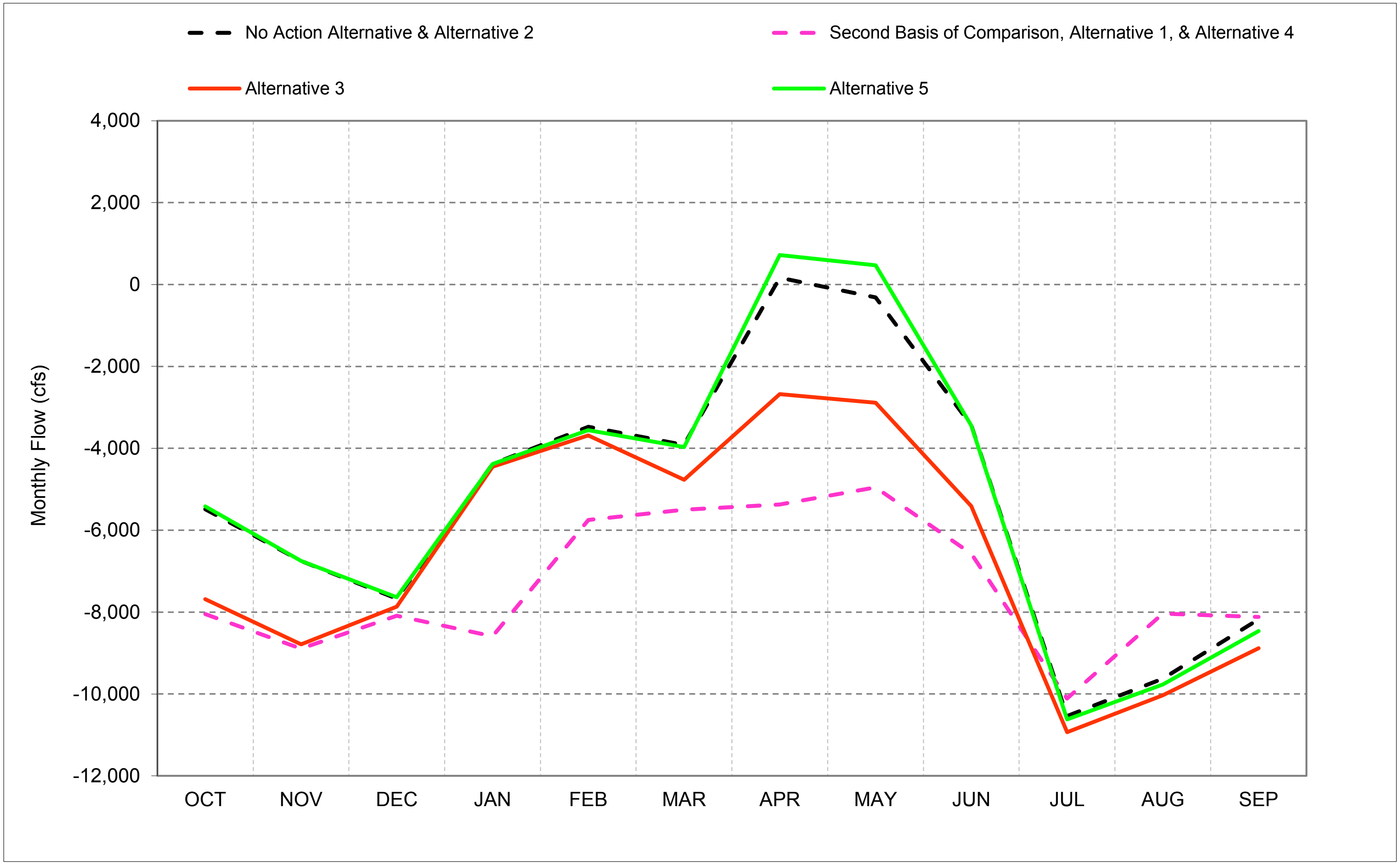


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-17-4. Old and Middle River, Below Normal Year* Long-Term Average Flow**

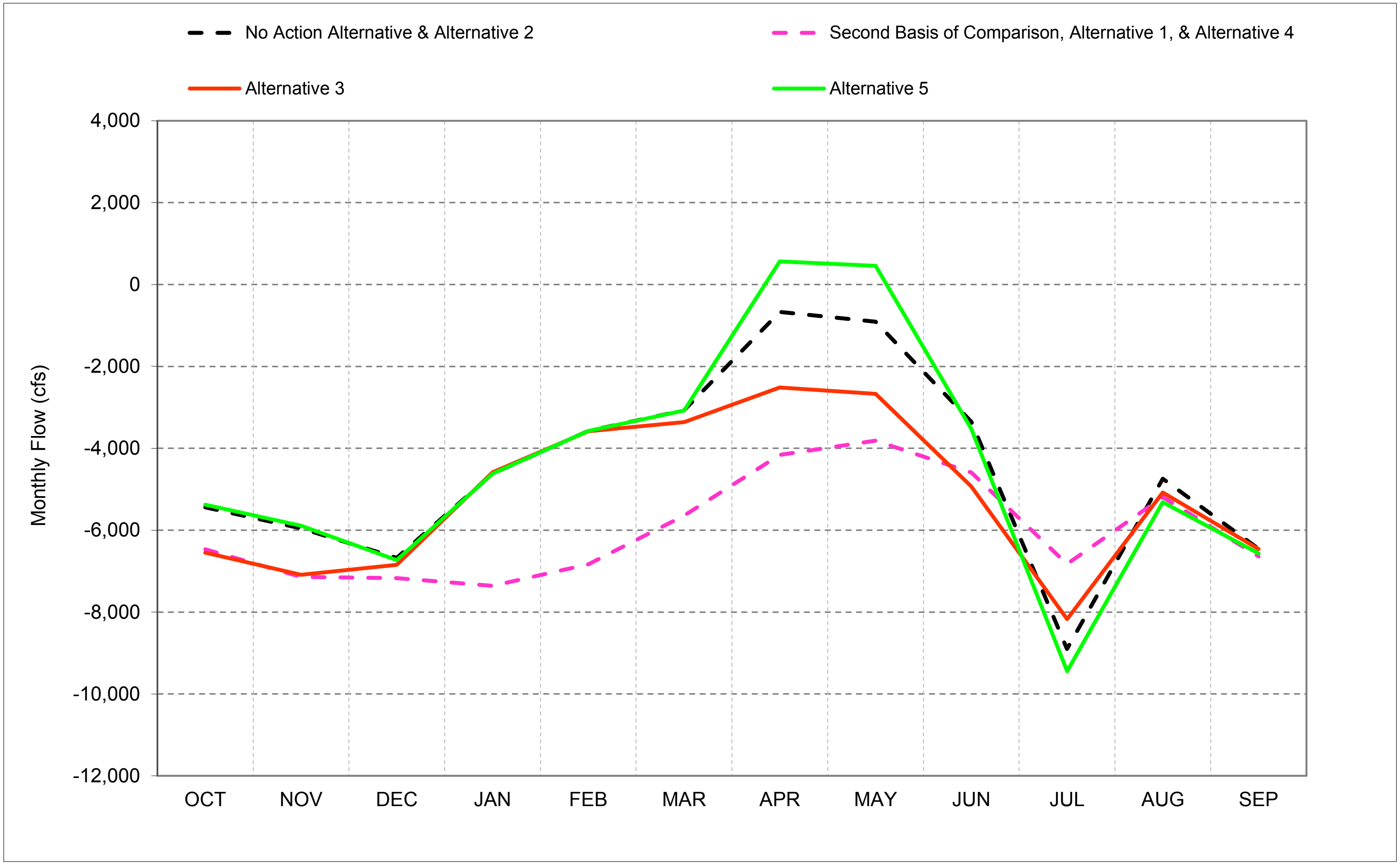


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-17-5. Old and Middle River, Dry Year* Long-Term Average Flow**

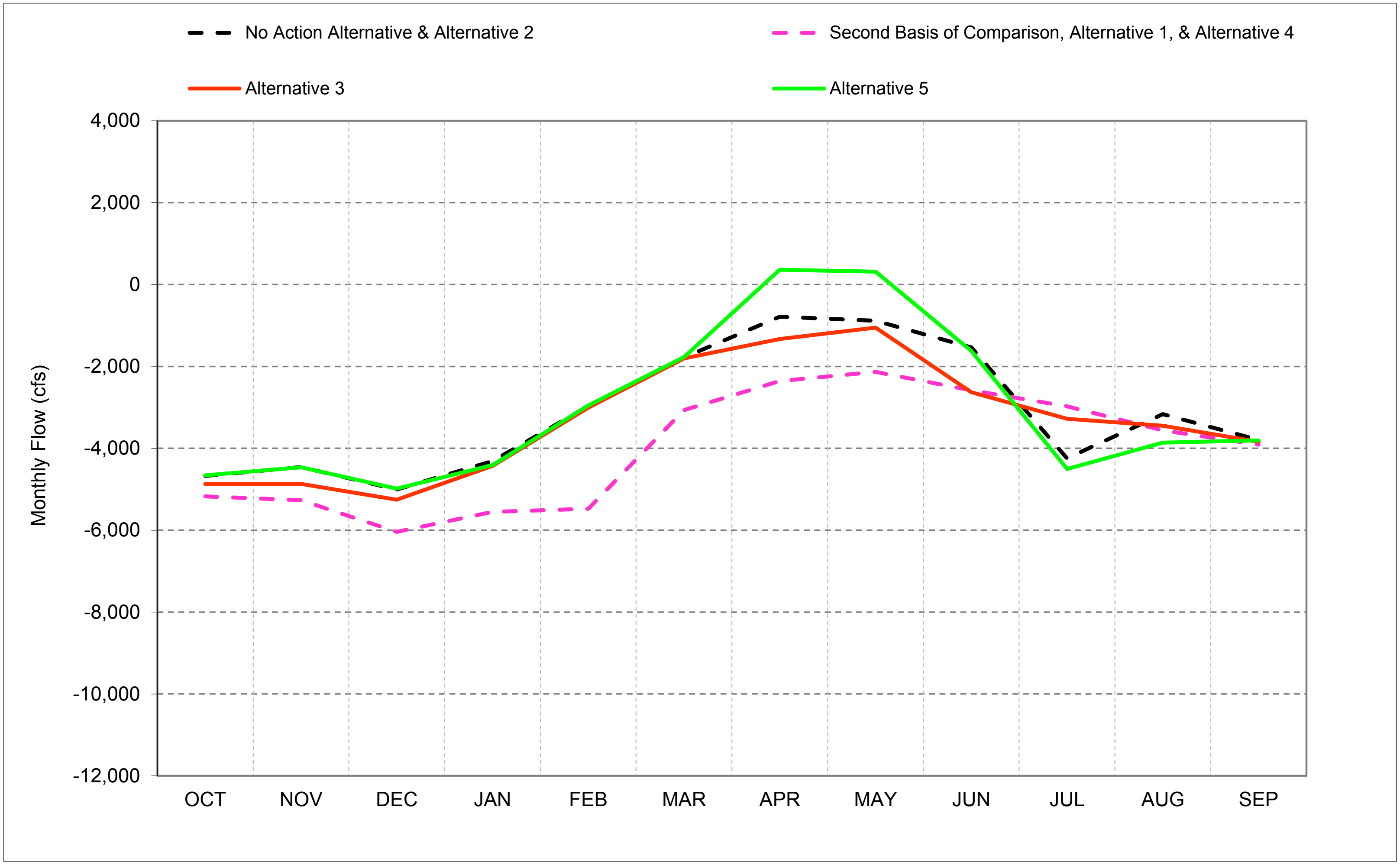


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-17-6. Old and Middle River, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-1. Old and Middle River, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (32%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (16%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (13%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (24%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (15%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	-569	-298	241	-575	850	-5,257	-4,408	-1,033	675	-426	109
20%	-3	-873	-1,370	-2,015	-1,094	107	-5,338	-4,202	-1,264	1,697	-599	39
30%	-156	-1,838	-1,673	-2,924	-1,545	-554	-5,589	-4,738	192	1,159	-67	-387
40%	-1,588	-1,993	-1,683	-3,042	-2,492	-512	-6,090	-4,781	-758	1,733	1,120	-644
50%	-1,975	-2,366	-2,302	-3,548	-2,641	-1,458	-6,475	-5,018	-1,490	1,362	2,016	-257
60%	-2,487	-2,692	-3,098	-3,848	-2,467	-806	-6,447	-5,034	-1,173	831	1,394	-433
70%	-2,822	-2,497	-1,913	-4,269	-3,323	-1,205	-6,682	-5,376	-1,016	809	656	-325
80%	-3,345	-1,773	29	-4,585	-3,873	-1,616	-6,640	-5,322	-1,534	550	489	-205
90%	-2,742	-28	16	-4,803	-4,509	-2,592	-6,744	-5,887	-1,936	471	400	-132
Long Term												
Full Simulation Period[b]	-1,504	-1,464	-1,201	-3,115	-2,301	-1,037	-6,300	-5,152	-1,034	958	486	-211
Water Year Types[c]												
Wet (32%)	-2,191	-1,882	-2,198	-3,084	-1,169	549	-10,005	-8,387	250	543	923	-320
Above Normal (16%)	-895	-1,086	-1,110	-4,566	-2,928	-1,155	-8,229	-6,173	-1,499	230	926	-344
Below Normal (13%)	-2,563	-2,142	-419	-4,210	-2,273	-1,582	-5,535	-4,638	-3,133	429	1,589	59
Dry (24%)	-1,026	-1,187	-495	-2,737	-3,259	-2,574	-3,489	-2,907	-1,241	2,073	-446	-186
Critical (15%)	-500	-809	-1,034	-1,237	-2,505	-1,287	-1,572	-1,247	-1,044	1,268	-394	-118

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-2. Old and Middle River, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (32%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (16%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (13%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (24%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (15%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

Alternative 3

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,471	-4,154	-3,935	-2,361	-447	-819	405	-673	-2,098	-3,660	-3,007	-3,495
20%	-4,101	-5,233	-5,184	-3,500	-1,896	-1,347	-946	-1,150	-4,287	-5,775	-4,278	-5,225
30%	-4,803	-6,947	-6,403	-3,500	-2,838	-2,283	-1,200	-1,150	-4,625	-7,093	-6,258	-6,437
40%	-5,638	-7,541	-6,403	-3,500	-3,500	-3,500	-2,086	-2,560	-5,017	-8,012	-7,669	-8,402
50%	-7,049	-8,326	-6,403	-5,000	-3,500	-3,500	-2,787	-3,326	-5,526	-8,990	-9,396	-9,192
60%	-8,252	-9,400	-6,811	-5,000	-4,273	-3,616	-3,368	-3,500	-5,750	-9,549	-9,845	-9,680
70%	-8,982	-9,810	-7,677	-5,000	-5,000	-5,061	-3,526	-3,500	-5,750	-10,046	-10,212	-9,842
80%	-9,734	-9,990	-8,823	-5,000	-5,621	-6,252	-4,031	-4,451	-6,160	-10,767	-10,624	-10,044
90%	-10,085	-10,084	-9,552	-6,976	-7,500	-7,499	-4,474	-5,149	-7,011	-11,148	-10,797	-10,177
Long Term												
Full Simulation Period[b]	-6,888	-7,771	-6,494	-3,764	-3,283	-3,072	-2,176	-2,623	-4,997	-8,112	-7,831	-7,917
Water Year Types[c]												
Wet (32%)	-7,965	-9,052	-5,964	-2,522	-2,581	-1,646	-1,367	-2,399	-5,476	-8,581	-9,731	-9,555
Above Normal (16%)	-6,452	-8,078	-6,997	-3,789	-4,137	-5,220	-3,630	-4,226	-5,981	-9,160	-10,444	-9,839
Below Normal (13%)	-7,685	-8,790	-7,868	-4,451	-3,689	-4,765	-2,676	-2,885	-5,409	-10,929	-10,032	-8,880
Dry (24%)	-6,546	-7,086	-6,848	-4,588	-3,582	-3,358	-2,517	-2,670	-4,927	-8,172	-5,079	-6,457
Critical (15%)	-4,869	-4,871	-5,252	-4,429	-3,011	-1,804	-1,328	-1,054	-2,628	-3,280	-3,450	-3,839

Alternative 3 minus No Action Alternative

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	293	-431	-123	462	219	149	-2,801	-3,470	-948	470	-554	280
20%	-24	-673	-512	-677	-125	46	-3,153	-2,455	-2,717	1,074	-246	-79
30%	-190	-1,791	-1,159	-145	-16	455	-2,832	-1,711	-1,125	554	-488	-431
40%	-817	-1,914	-532	892	-186	0	-3,354	-2,668	-1,517	876	326	-781
50%	-1,721	-2,006	-532	-290	281	0	-3,399	-3,144	-2,026	386	560	-193
60%	-2,663	-2,836	-940	0	605	951	-3,266	-3,017	-1,263	196	785	-423
70%	-2,729	-2,709	-265	0	0	-61	-3,078	-2,868	-750	256	525	-189
80%	-3,174	-1,805	713	0	-621	-1,252	-3,036	-3,323	-1,160	-165	230	-160
90%	-2,681	-89	129	-1,976	-2,500	-2,499	-3,227	-3,735	-2,011	-39	286	-146
Long Term												
Full Simulation Period[b]	-1,412	-1,391	-267	-230	-379	-382	-3,095	-2,933	-1,420	384	144	-211
Water Year Types[c]												
Wet (32%)	-2,119	-1,823	-438	-622	-590	-93	-4,477	-4,410	-1,202	376	800	-197
Above Normal (16%)	-927	-1,277	-147	-89	-975	-1,044	-4,826	-4,637	-1,456	-10	429	-297
Below Normal (13%)	-2,197	-2,041	-199	-71	-212	-846	-2,841	-2,569	-1,964	-389	-408	-703
Dry (24%)	-1,106	-1,133	-172	33	-9	-286	-1,847	-1,764	-1,577	728	-334	-4
Critical (15%)	-198	-414	-246	-115	-43	-24	-541	-167	-1,089	962	-282	-46

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-3. Old and Middle River, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (32%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (16%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (13%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (24%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (15%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,722	-3,722	-3,826	-2,823	-641	-965	3,206	2,797	-1,150	-4,455	-3,295	-3,913
20%	-4,102	-4,558	-4,737	-2,823	-1,771	-1,394	2,134	1,335	-2,319	-6,620	-4,451	-5,247
30%	-4,583	-5,162	-5,150	-3,355	-2,820	-2,738	1,566	712	-3,500	-8,001	-6,361	-6,304
40%	-4,858	-5,603	-5,871	-4,378	-3,267	-3,500	1,270	568	-3,500	-9,172	-8,612	-7,552
50%	-5,145	-6,098	-5,871	-4,710	-3,513	-3,500	623	381	-3,500	-9,522	-10,244	-8,864
60%	-5,368	-6,494	-5,871	-5,000	-4,878	-4,568	381	381	-4,467	-9,822	-10,615	-9,232
70%	-6,237	-7,087	-7,453	-5,000	-5,000	-5,000	381	381	-5,000	-10,430	-10,756	-9,654
80%	-6,583	-8,086	-9,466	-5,000	-5,000	-5,000	381	381	-5,000	-10,694	-10,844	-9,915
90%	-7,355	-9,871	-9,681	-5,000	-5,000	-5,000	381	381	-5,000	-11,168	-11,076	-10,031
Long Term												
Full Simulation Period[b]	-5,443	-6,337	-6,246	-3,551	-2,904	-2,710	1,482	1,034	-3,631	-8,687	-8,239	-7,714
Water Year Types[c]												
Wet (32%)	-5,812	-7,354	-5,572	-1,900	-1,926	-1,598	3,122	2,182	-4,275	-8,965	-10,573	-9,193
Above Normal (16%)	-5,543	-6,368	-6,838	-3,716	-3,222	-4,174	1,292	780	-4,521	-9,187	-10,817	-9,491
Below Normal (13%)	-5,418	-6,748	-7,637	-4,380	-3,554	-3,971	718	468	-3,444	-10,623	-9,770	-8,460
Dry (24%)	-5,380	-5,893	-6,731	-4,620	-3,578	-3,074	565	453	-3,523	-9,446	-5,313	-6,571
Critical (15%)	-4,661	-4,461	-4,983	-4,409	-2,957	-1,770	363	310	-1,623	-4,501	-3,860	-3,805

Alternative 5 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	42	2	-14	0	25	4	0	0	0	-325	-841	-138
20%	-26	2	-64	0	0	0	-73	31	-748	229	-419	-101
30%	29	-6	94	0	3	0	-67	152	0	-355	-591	-299
40%	-37	23	0	14	46	0	2	460	0	-284	-617	68
50%	183	222	0	0	268	0	11	563	0	-145	-287	136
60%	221	70	0	0	0	0	483	864	19	-76	15	25
70%	16	14	-40	0	0	0	830	1,014	0	-128	-19	-1
80%	-23	99	71	0	0	0	1,376	1,510	0	-92	10	-31
90%	49	124	0	0	0	0	1,629	1,796	0	-60	7	1
Long Term												
Full Simulation Period[b]	34	43	-19	-16	1	-20	563	725	-54	-191	-263	-8
Water Year Types[c]												
Wet (32%)	35	-124	-46	0	65	-46	12	171	-1	-9	-41	165
Above Normal (16%)	-19	433	12	-16	-61	2	96	368	4	-36	56	51
Below Normal (13%)	70	1	32	0	-77	-53	552	785	1	-84	-145	-283
Dry (24%)	60	60	-56	1	-5	-1	1,235	1,359	-173	-546	-568	-118
Critical (15%)	10	-4	23	-95	11	10	1,150	1,197	-84	-260	-692	-11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-4. Old and Middle River, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (32%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (16%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (13%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (24%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (15%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-373	569	298	-241	575	-850	5,257	4,408	1,033	-675	426	-109
20%	3	873	1,370	2,015	1,094	-107	5,338	4,202	1,264	-1,697	599	-39
30%	156	1,838	1,673	2,924	1,545	554	5,589	4,738	-192	-1,159	67	387
40%	1,588	1,993	1,683	3,042	2,492	512	6,090	4,781	758	-1,733	-1,120	644
50%	1,975	2,366	2,302	3,548	2,641	1,458	6,475	5,018	1,490	-1,362	-2,016	257
60%	2,487	2,692	3,098	3,848	2,467	806	6,447	5,034	1,173	-831	-1,394	433
70%	2,822	2,497	1,913	4,269	3,323	1,205	6,682	5,376	1,016	-809	-656	325
80%	3,345	1,773	-29	4,585	3,873	1,616	6,640	5,322	1,534	-550	-489	205
90%	2,742	28	-16	4,803	4,509	2,592	6,744	5,887	1,936	-471	-400	132
Long Term												
Full Simulation Period[b]	1,504	1,464	1,201	3,115	2,301	1,037	6,300	5,152	1,034	-958	-486	211
Water Year Types[c]												
Wet (32%)	2,191	1,882	2,198	3,084	1,169	-549	10,005	8,387	-250	-543	-923	320
Above Normal (16%)	895	1,086	1,110	4,566	2,928	1,155	8,229	6,173	1,499	-230	-926	344
Below Normal (13%)	2,563	2,142	419	4,210	2,273	1,582	5,535	4,638	3,133	-429	-1,589	-59
Dry (24%)	1,026	1,187	495	2,737	3,259	2,574	3,489	2,907	1,241	-2,073	446	186
Critical (15%)	500	809	1,034	1,237	2,505	1,287	1,572	1,247	1,044	-1,268	394	118

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-5. Old and Middle River, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,471	-4,154	-3,935	-2,361	-447	-819	405	-673	-2,098	-3,660	-3,007	-3,495
20%	-4,101	-5,233	-5,184	-3,500	-1,896	-1,347	-946	-1,150	-4,287	-5,775	-4,278	-5,225
30%	-4,803	-6,947	-6,403	-3,500	-2,838	-2,283	-1,200	-1,150	-4,625	-7,093	-6,258	-6,437
40%	-5,638	-7,541	-6,403	-3,500	-3,500	-3,500	-2,086	-2,560	-5,017	-8,012	-7,669	-8,402
50%	-7,049	-8,326	-6,403	-5,000	-3,500	-3,500	-2,787	-3,326	-5,526	-8,990	-9,396	-9,192
60%	-8,252	-9,400	-6,811	-5,000	-4,273	-3,616	-3,368	-3,500	-5,750	-9,549	-9,845	-9,680
70%	-8,982	-9,810	-7,677	-5,000	-5,000	-5,061	-3,526	-3,500	-5,750	-10,046	-10,212	-9,842
80%	-9,734	-9,990	-8,823	-5,000	-5,621	-6,252	-4,031	-4,451	-6,160	-10,767	-10,624	-10,044
90%	-10,085	-10,084	-9,552	-6,976	-7,500	-7,499	-4,474	-5,149	-7,011	-11,148	-10,797	-10,177
Long Term												
Full Simulation Period[b]	-6,888	-7,771	-6,494	-3,764	-3,283	-3,072	-2,176	-2,623	-4,997	-8,112	-7,831	-7,917
Water Year Types[c]												
Wet (32%)	-7,965	-9,052	-5,964	-2,522	-2,581	-1,646	-1,367	-2,399	-5,476	-8,581	-9,731	-9,555
Above Normal (16%)	-6,452	-8,078	-6,997	-3,789	-4,137	-5,220	-3,630	-4,226	-5,981	-9,160	-10,444	-9,839
Below Normal (13%)	-7,685	-8,790	-7,868	-4,451	-3,689	-4,765	-2,676	-2,885	-5,409	-10,929	-10,032	-8,880
Dry (24%)	-6,546	-7,086	-6,848	-4,588	-3,582	-3,358	-2,517	-2,670	-4,927	-8,172	-5,079	-6,457
Critical (15%)	-4,869	-4,871	-5,252	-4,429	-3,011	-1,804	-1,328	-1,054	-2,628	-3,280	-3,450	-3,839

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-79	139	175	220	794	-701	2,456	938	85	-205	-127	172
20%	-22	200	858	1,338	969	-61	2,185	1,747	-1,453	-623	353	-118
30%	-34	47	514	2,779	1,529	1,009	2,757	3,027	-1,317	-605	-421	-43
40%	771	79	1,151	3,934	2,306	512	2,735	2,112	-759	-857	-793	-137
50%	254	360	1,769	3,257	2,922	1,458	3,077	1,874	-536	-976	-1,455	64
60%	-177	-144	2,158	3,848	3,072	1,757	3,181	2,017	-90	-635	-609	10
70%	93	-213	1,648	4,269	3,323	1,144	3,605	2,508	266	-553	-131	136
80%	171	-31	685	4,585	3,252	365	3,604	1,999	375	-715	-259	45
90%	61	-61	112	2,827	2,009	93	3,517	2,153	-75	-511	-114	-14
Long Term												
Full Simulation Period[b]	92	73	934	2,886	1,923	656	3,205	2,219	-386	-574	-342	0
Water Year Types[c]												
Wet (32%)	73	60	1,759	2,463	579	-642	5,528	3,977	-1,453	-167	-123	124
Above Normal (16%)	-32	-191	963	4,477	1,952	111	3,403	1,535	43	-240	-497	48
Below Normal (13%)	366	101	220	4,139	2,061	736	2,695	2,069	1,169	-818	-1,997	-762
Dry (24%)	-80	54	323	2,770	3,249	2,288	1,642	1,144	-336	-1,345	112	182
Critical (15%)	302	395	789	1,123	2,462	1,263	1,030	1,081	-45	-307	112	73

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-6. Old and Middle River, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,722	-3,722	-3,826	-2,823	-641	-965	3,206	2,797	-1,150	-4,455	-3,295	-3,913
20%	-4,102	-4,558	-4,737	-2,823	-1,771	-1,394	2,134	1,335	-2,319	-6,620	-4,451	-5,247
30%	-4,583	-5,162	-5,150	-3,355	-2,820	-2,738	1,566	712	-3,500	-8,001	-6,361	-6,304
40%	-4,858	-5,603	-5,871	-4,378	-3,267	-3,500	1,270	568	-3,500	-9,172	-8,612	-7,552
50%	-5,145	-6,098	-5,871	-4,710	-3,513	-3,500	623	381	-3,500	-9,522	-10,244	-8,864
60%	-5,368	-6,494	-5,871	-5,000	-4,878	-4,568	381	381	-4,467	-9,822	-10,615	-9,232
70%	-6,237	-7,087	-7,453	-5,000	-5,000	-5,000	381	381	-5,000	-10,430	-10,756	-9,654
80%	-6,583	-8,086	-9,466	-5,000	-5,000	-5,000	381	381	-5,000	-10,694	-10,844	-9,915
90%	-7,355	-9,871	-9,681	-5,000	-5,000	-5,000	381	381	-5,000	-11,168	-11,076	-10,031
Long Term												
Full Simulation Period[b]	-5,443	-6,337	-6,246	-3,551	-2,904	-2,710	1,482	1,034	-3,631	-8,687	-8,239	-7,714
Water Year Types[c]												
Wet (32%)	-5,812	-7,354	-5,572	-1,900	-1,926	-1,598	3,122	2,182	-4,275	-8,965	-10,573	-9,193
Above Normal (16%)	-5,543	-6,368	-6,838	-3,716	-3,222	-4,174	1,292	780	-4,521	-9,187	-10,817	-9,491
Below Normal (13%)	-5,418	-6,748	-7,637	-4,380	-3,554	-3,971	718	468	-3,444	-10,623	-9,770	-8,460
Dry (24%)	-5,380	-5,893	-6,731	-4,620	-3,578	-3,074	565	453	-3,523	-9,446	-5,313	-6,571
Critical (15%)	-4,661	-4,461	-4,983	-4,409	-2,957	-1,770	363	310	-1,623	-4,501	-3,860	-3,805

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-331	571	284	-241	600	-846	5,257	4,408	1,033	-1,001	-415	-247
20%	-23	875	1,306	2,015	1,094	-107	5,265	4,233	516	-1,468	180	-140
30%	186	1,832	1,767	2,924	1,548	554	5,522	4,889	-192	-1,514	-524	89
40%	1,551	2,016	1,683	3,056	2,539	512	6,091	5,240	758	-2,017	-1,736	712
50%	2,158	2,588	2,302	3,548	2,909	1,458	6,487	5,582	1,490	-1,507	-2,303	393
60%	2,707	2,762	3,098	3,848	2,467	806	6,930	5,899	1,193	-907	-1,378	458
70%	2,838	2,511	1,873	4,269	3,323	1,205	7,512	6,390	1,016	-937	-675	323
80%	3,322	1,872	42	4,585	3,873	1,616	8,016	6,832	1,534	-642	-479	174
90%	2,791	152	-16	4,803	4,509	2,592	8,372	7,683	1,936	-531	-393	132
Long Term												
Full Simulation Period[b]	1,537	1,508	1,182	3,099	2,302	1,017	6,863	5,876	980	-1,149	-750	203
Water Year Types[c]												
Wet (32%)	2,226	1,758	2,151	3,084	1,234	-595	10,017	8,558	-251	-552	-964	485
Above Normal (16%)	876	1,519	1,122	4,550	2,867	1,158	8,325	6,541	1,503	-266	-871	395
Below Normal (13%)	2,633	2,144	450	4,210	2,196	1,530	6,088	5,422	3,134	-512	-1,735	-342
Dry (24%)	1,086	1,247	439	2,738	3,254	2,573	4,724	4,266	1,068	-2,620	-122	68
Critical (15%)	510	805	1,058	1,142	2,516	1,296	2,721	2,445	961	-1,528	-298	107

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

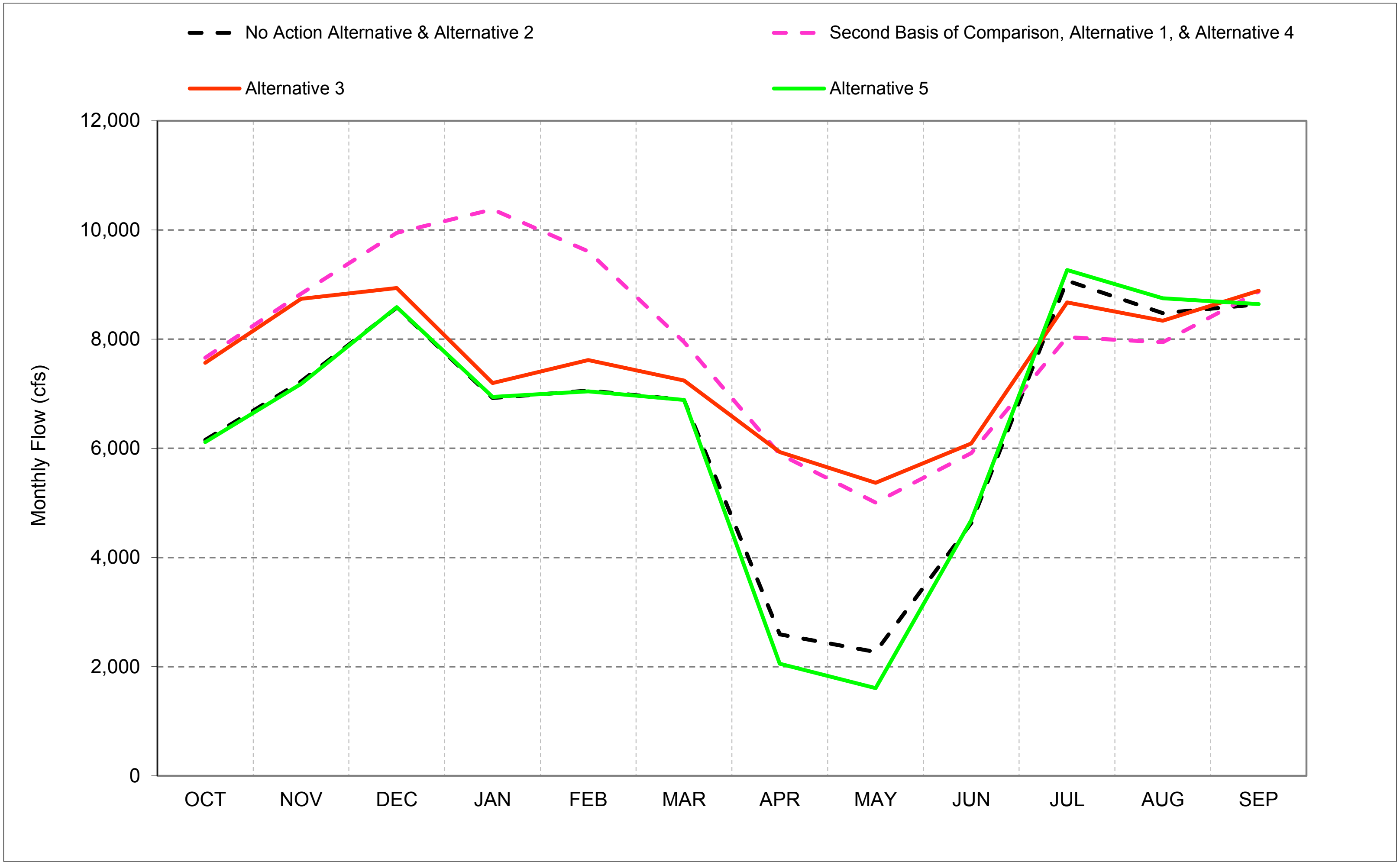
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.18. Exports through Jones and Banks Pumping Plants

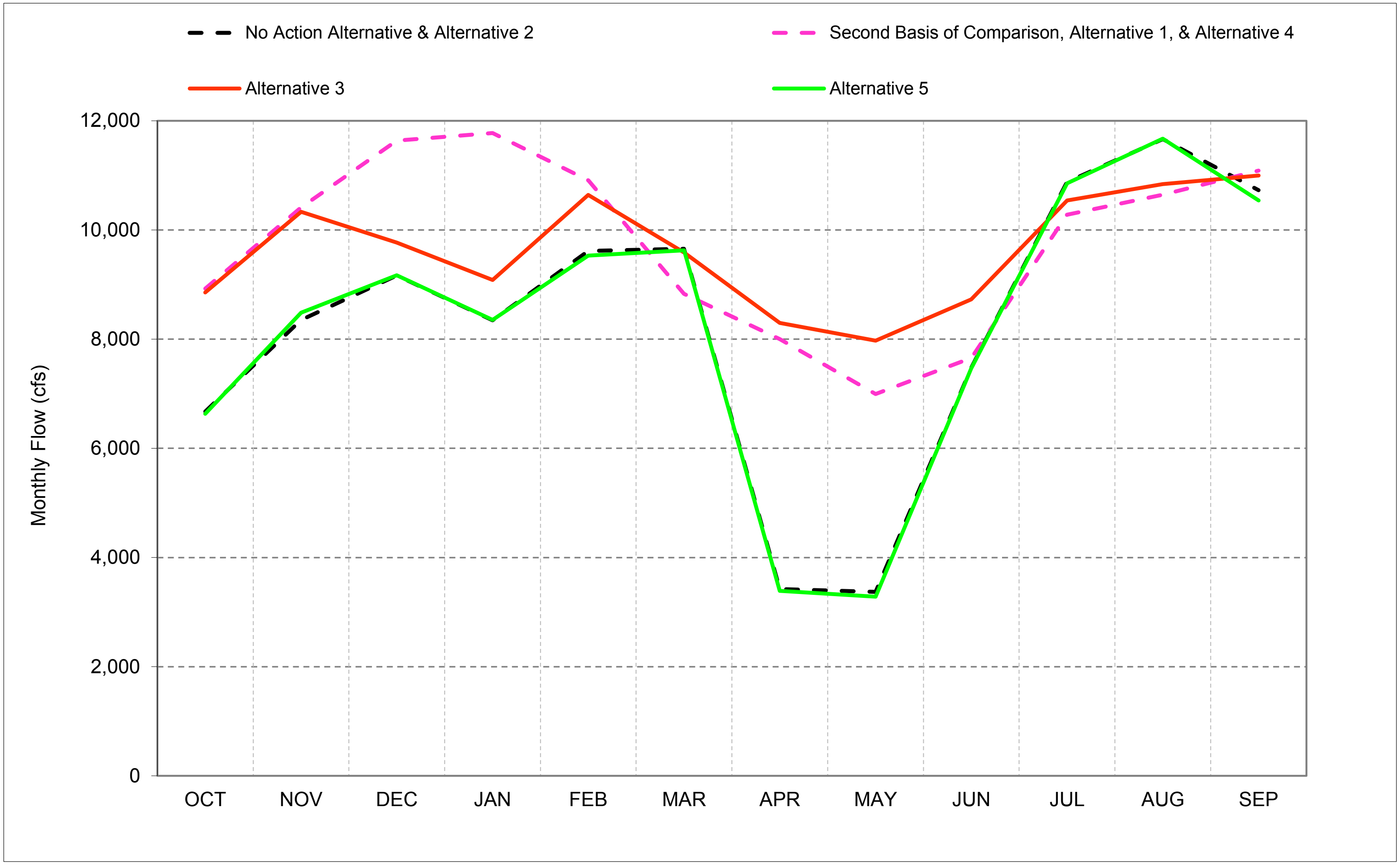
Figure C-18-1-1. Exports Through Jones and Banks Pumping Plants, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-1-2. Exports Through Jones and Banks Pumping Plants, Wet Year* Long-Term Average Flow**

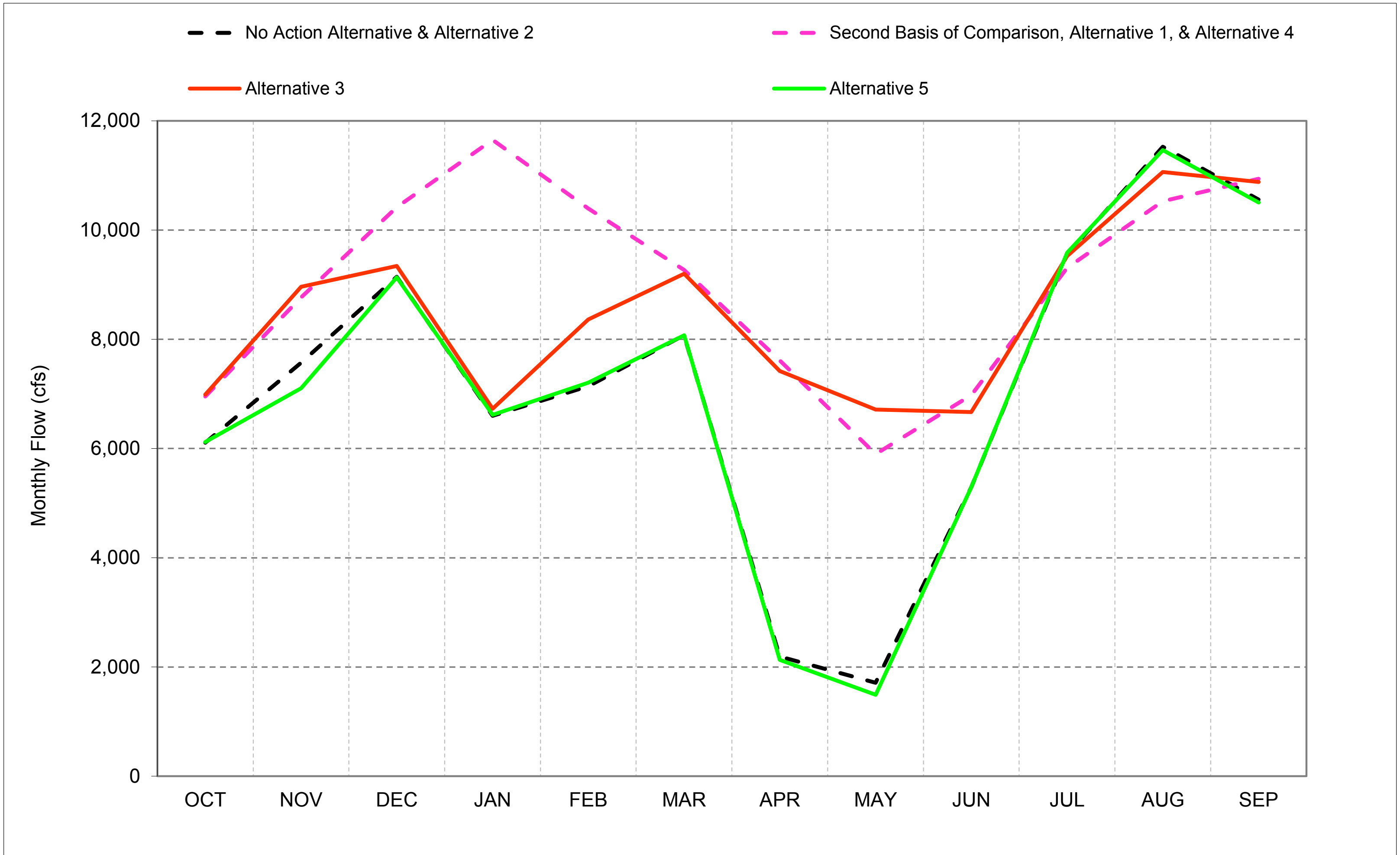


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-1-3. Exports Through Jones and Banks Pumping Plants, Above Normal Year* Long-Term Average Flow**

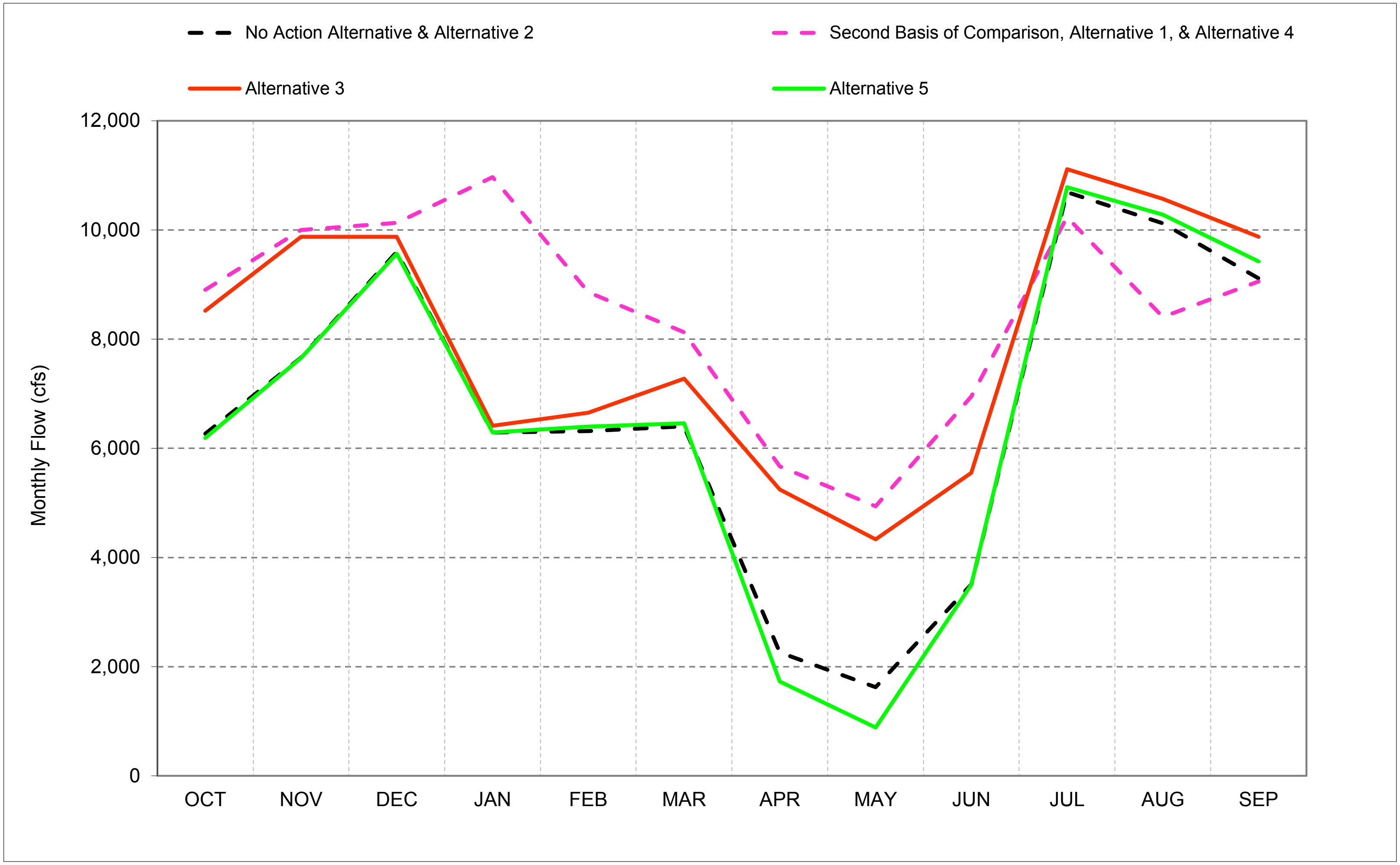


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-1-4. Exports Through Jones and Banks Pumping Plants, Below Normal Year* Long-Term Average Flow**

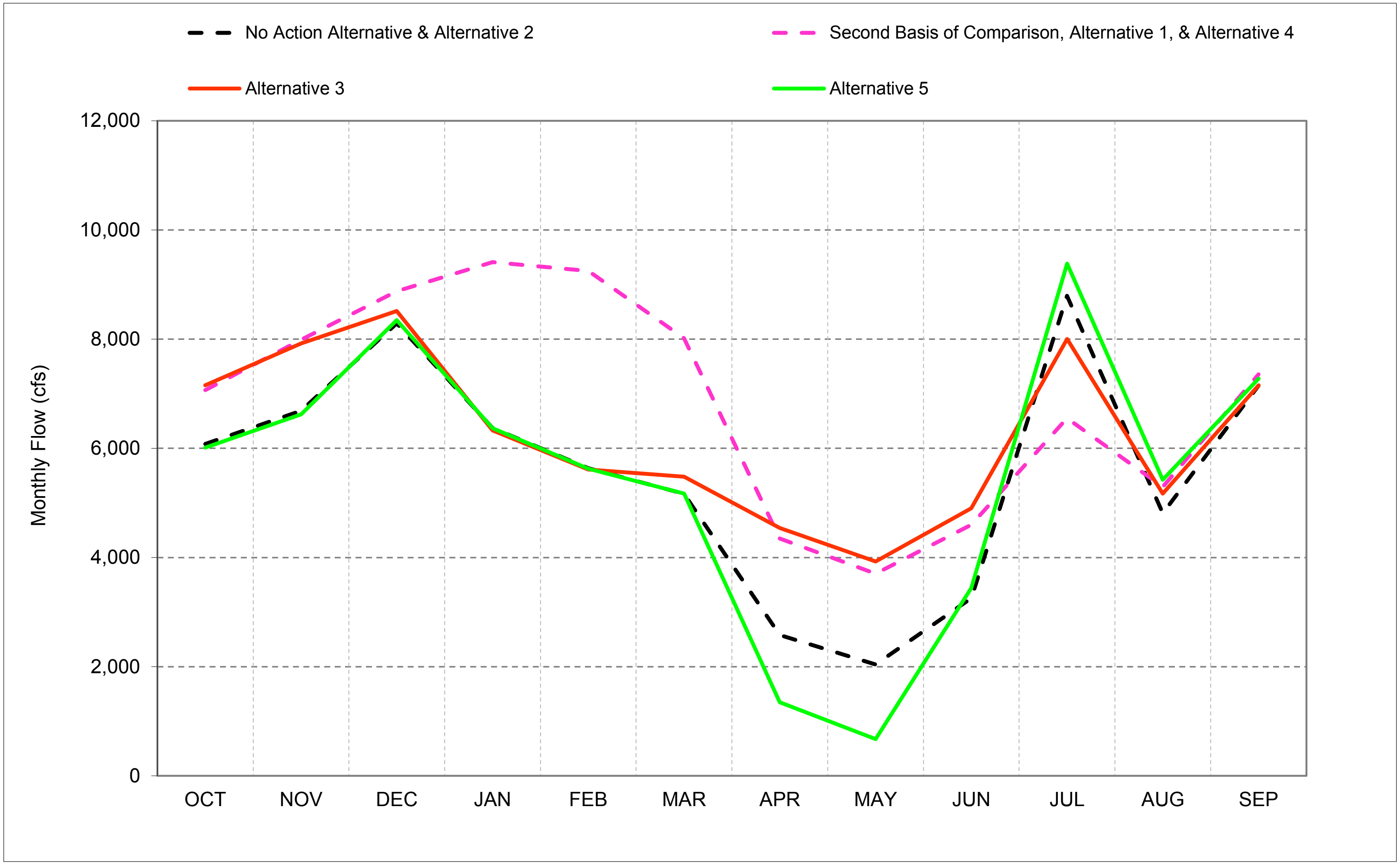


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-1-5. Exports Through Jones and Banks Pumping Plants, Dry Year* Long-Term Average Flow**

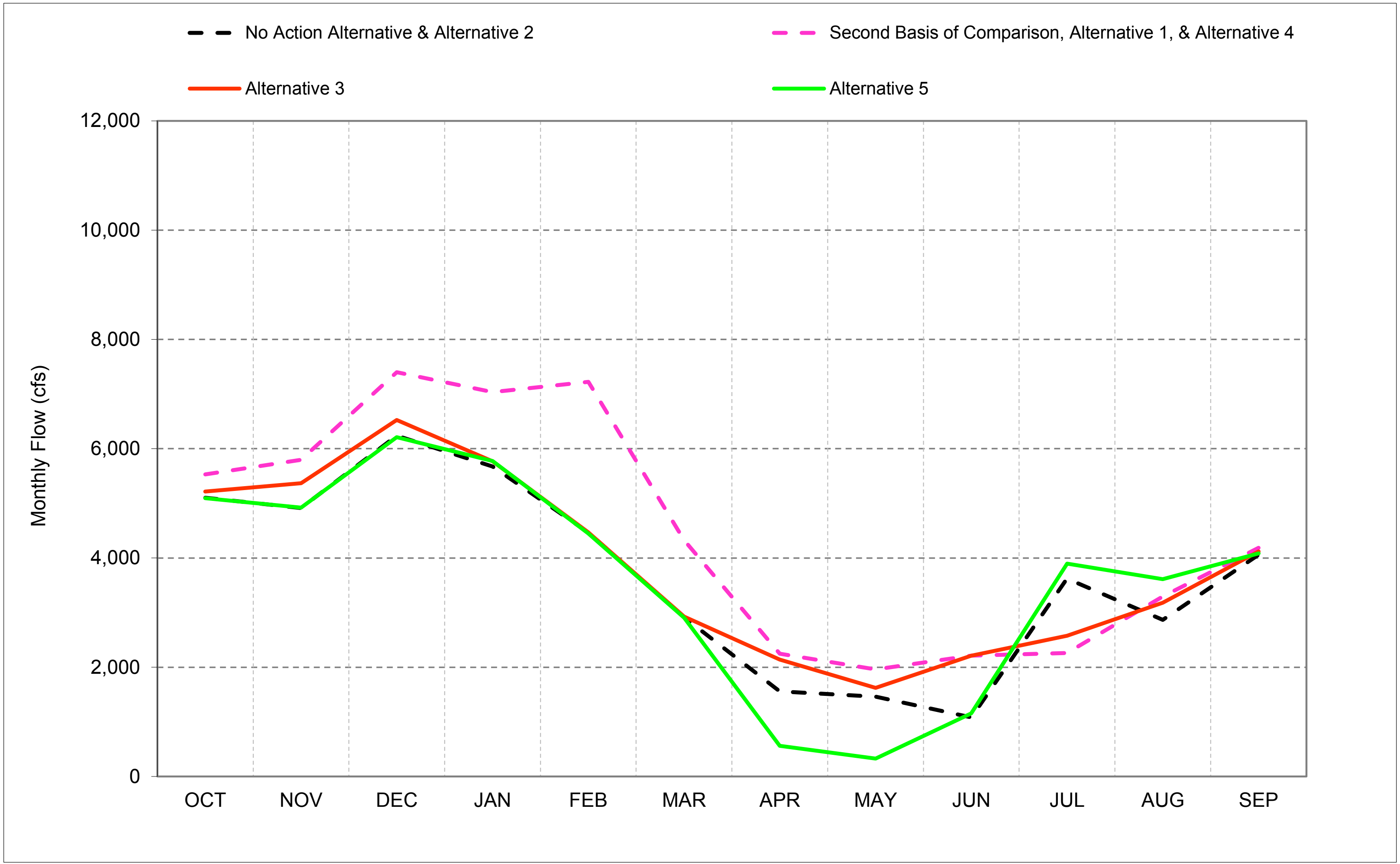


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-1-6. Exports Through Jones and Banks Pumping Plants, Critical Year* Long-Term Average Flow**

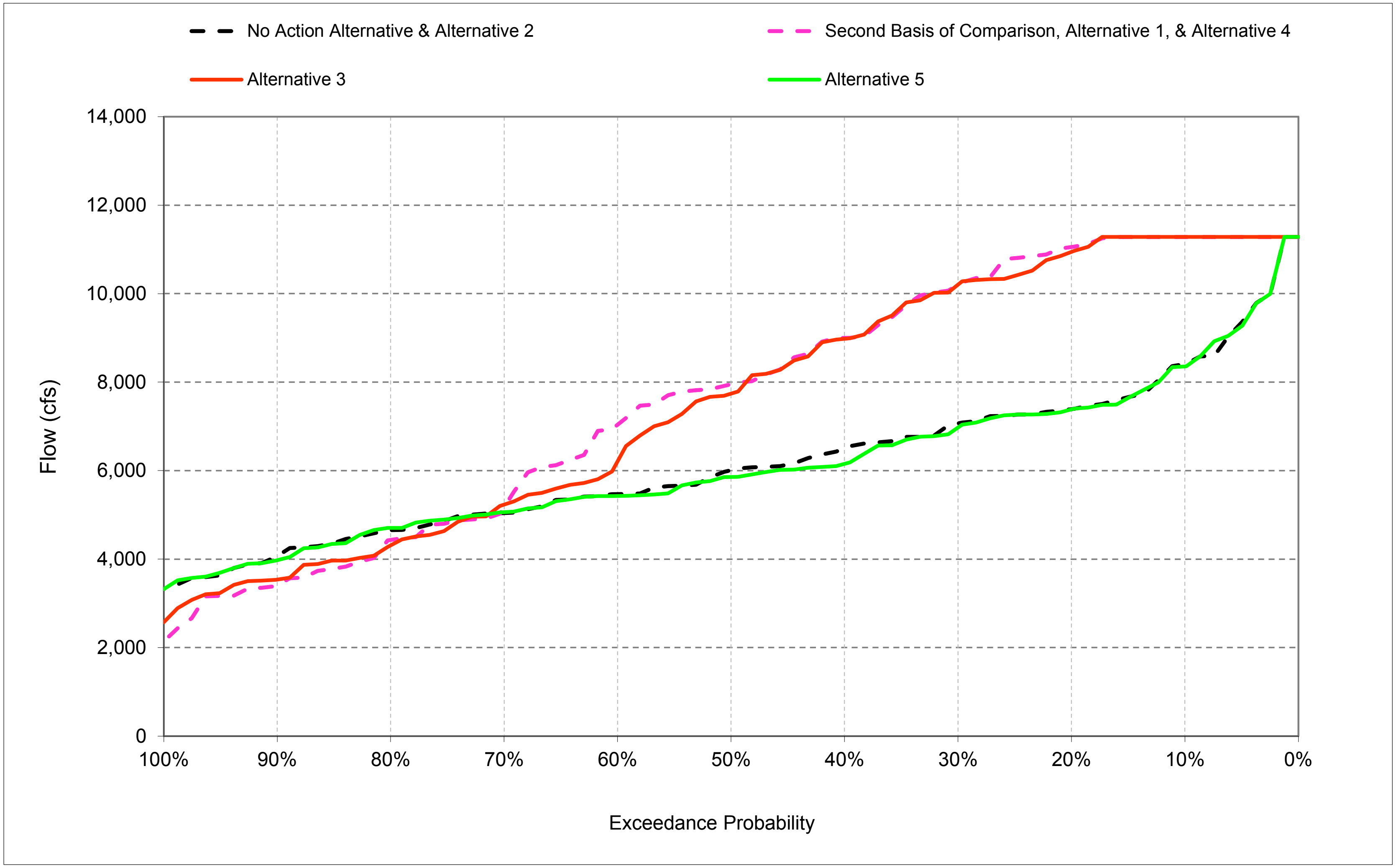


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

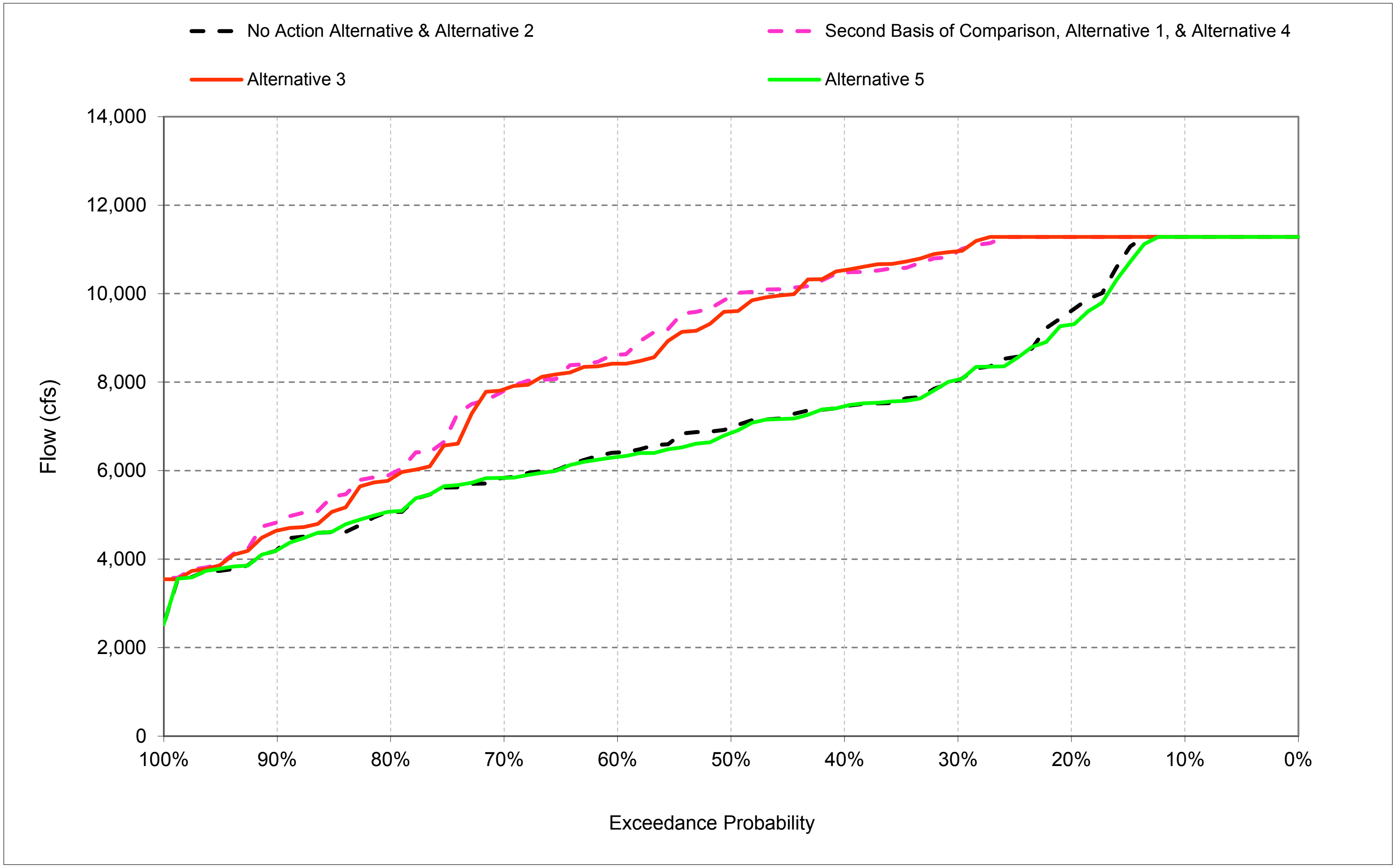
Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-1. Exports Through Jones and Banks Pumping Plants, October



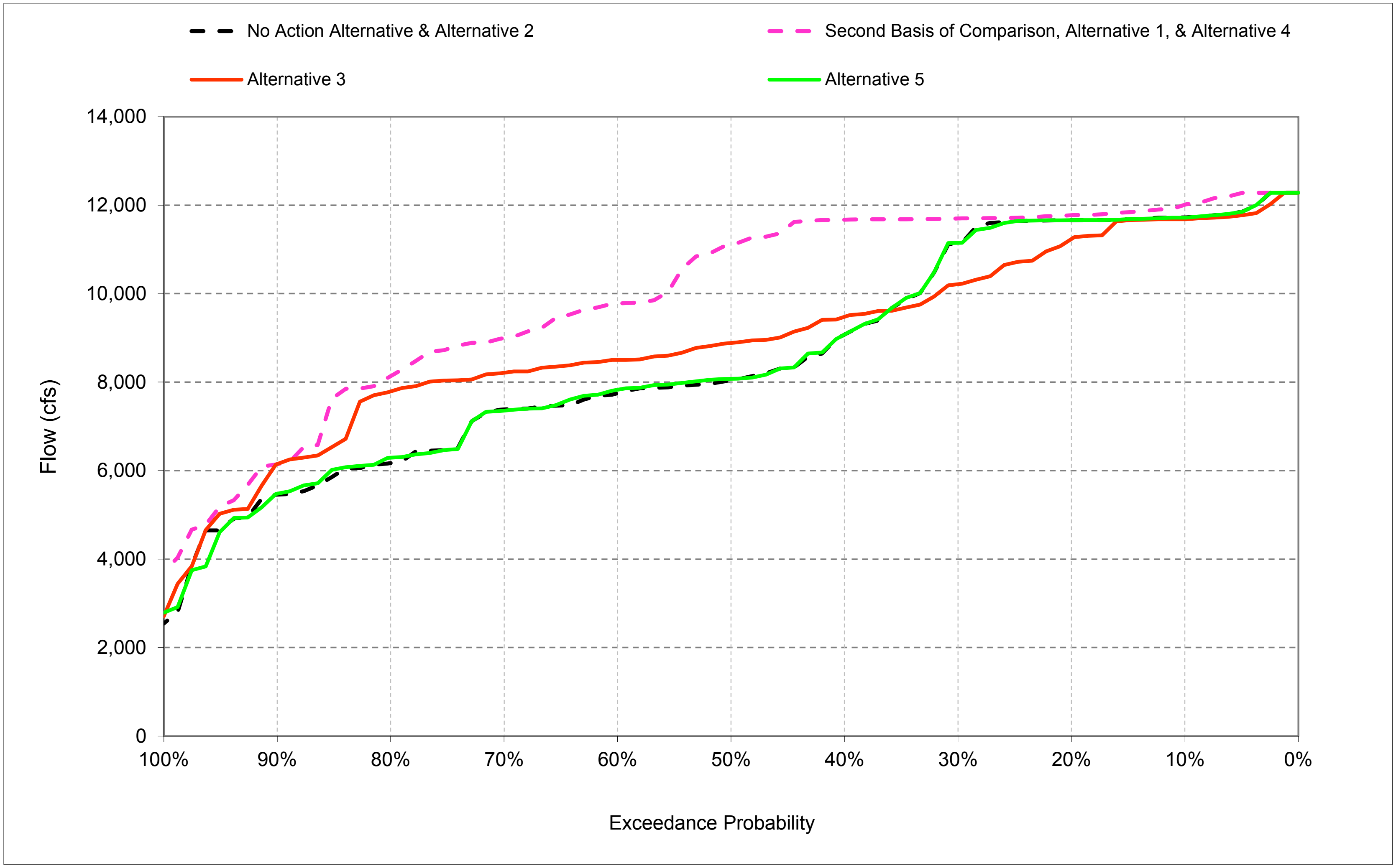
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-2. Exports Through Jones and Banks Pumping Plants, November



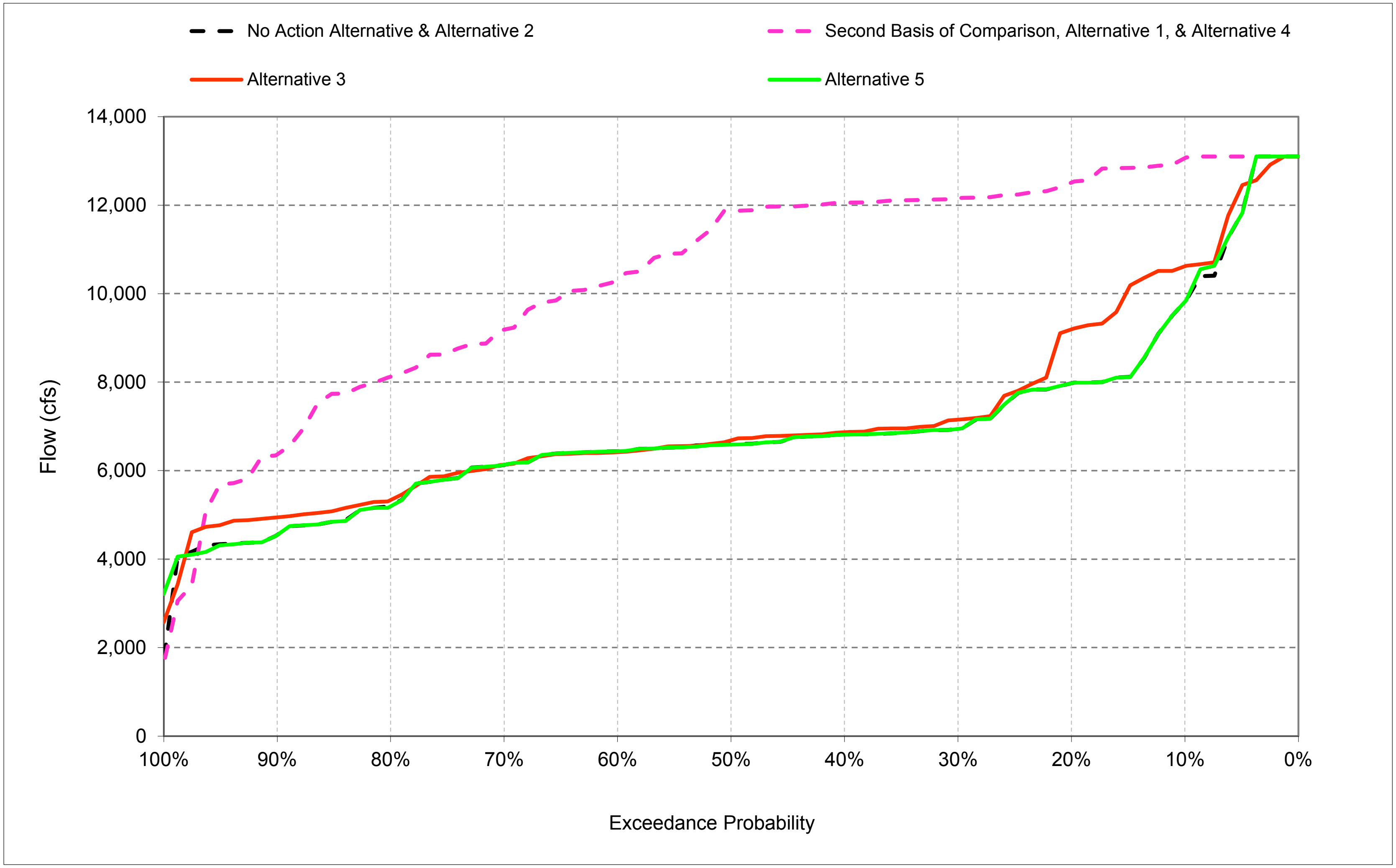
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-3. Exports Through Jones and Banks Pumping Plants, December



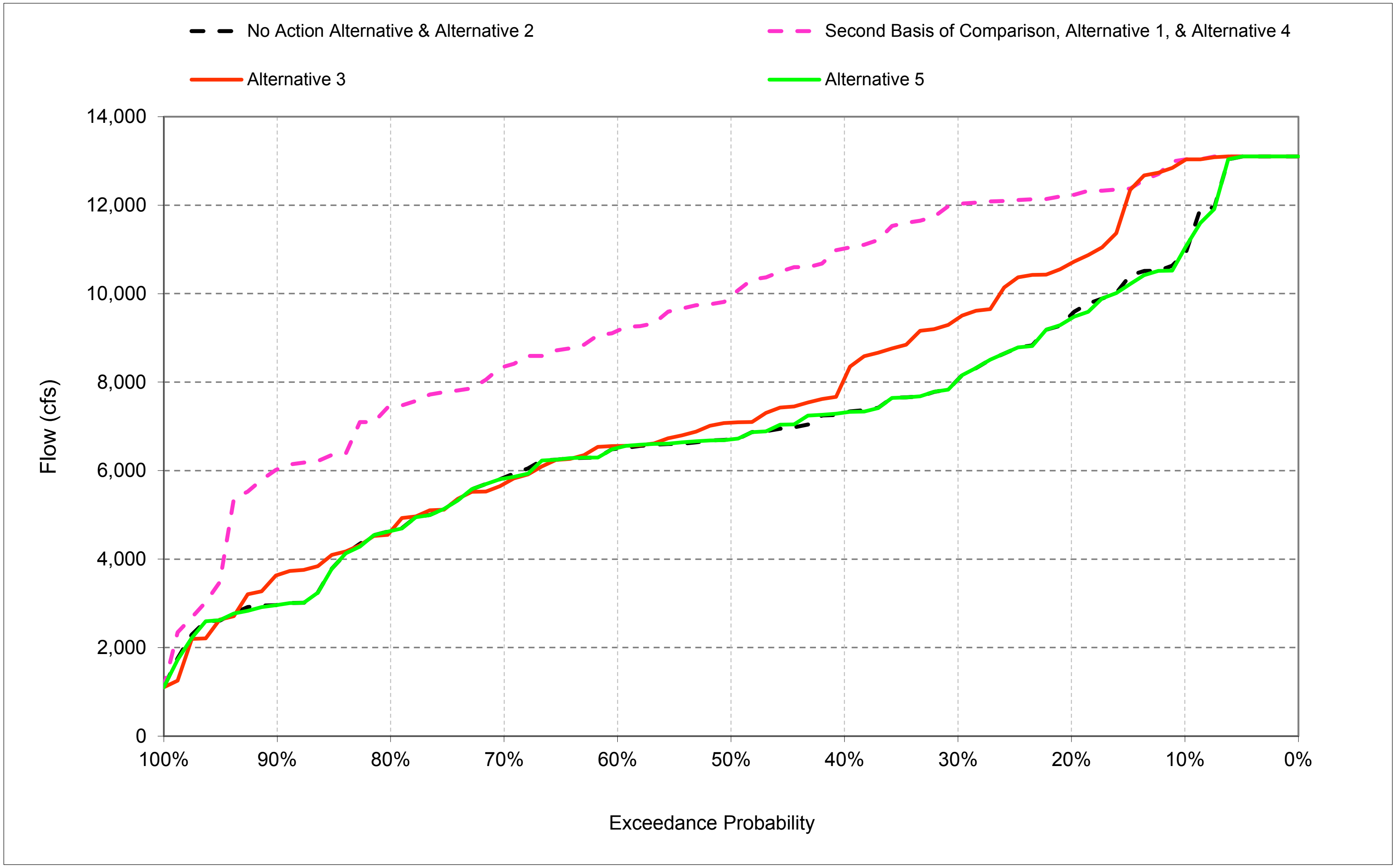
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-4. Exports Through Jones and Banks Pumping Plants, January



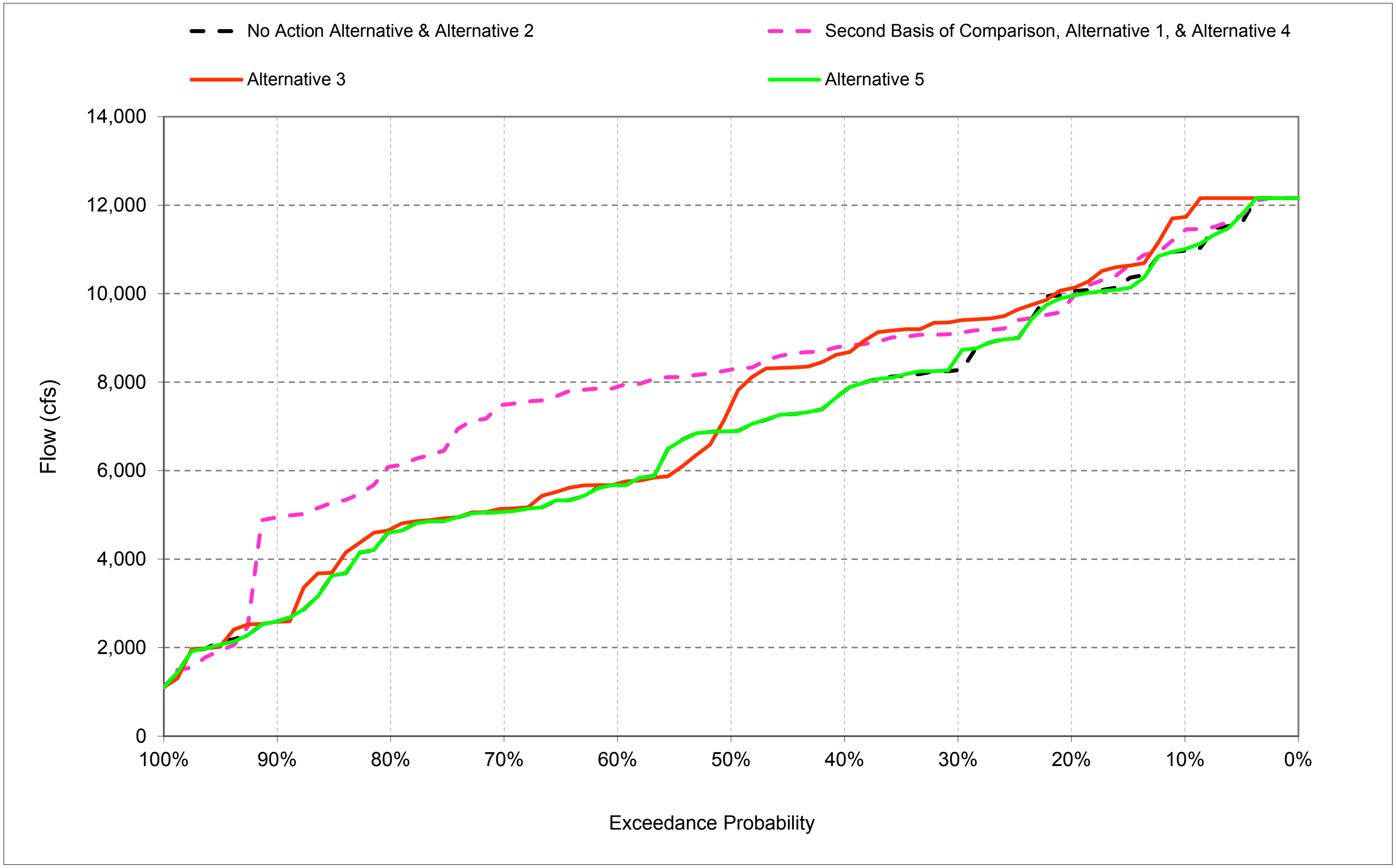
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-5. Exports Through Jones and Banks Pumping Plants, February



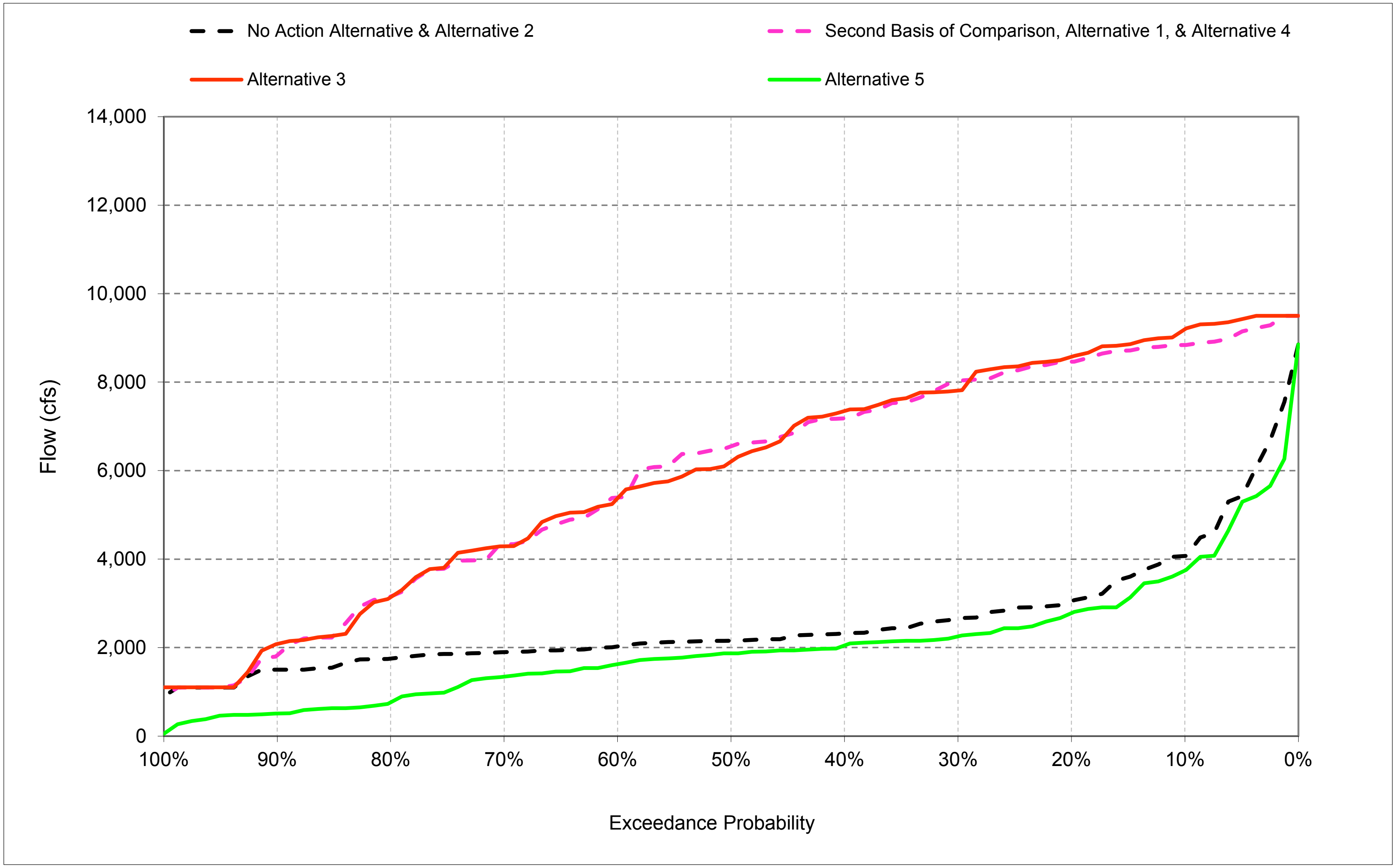
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-6. Exports Through Jones and Banks Pumping Plants, March



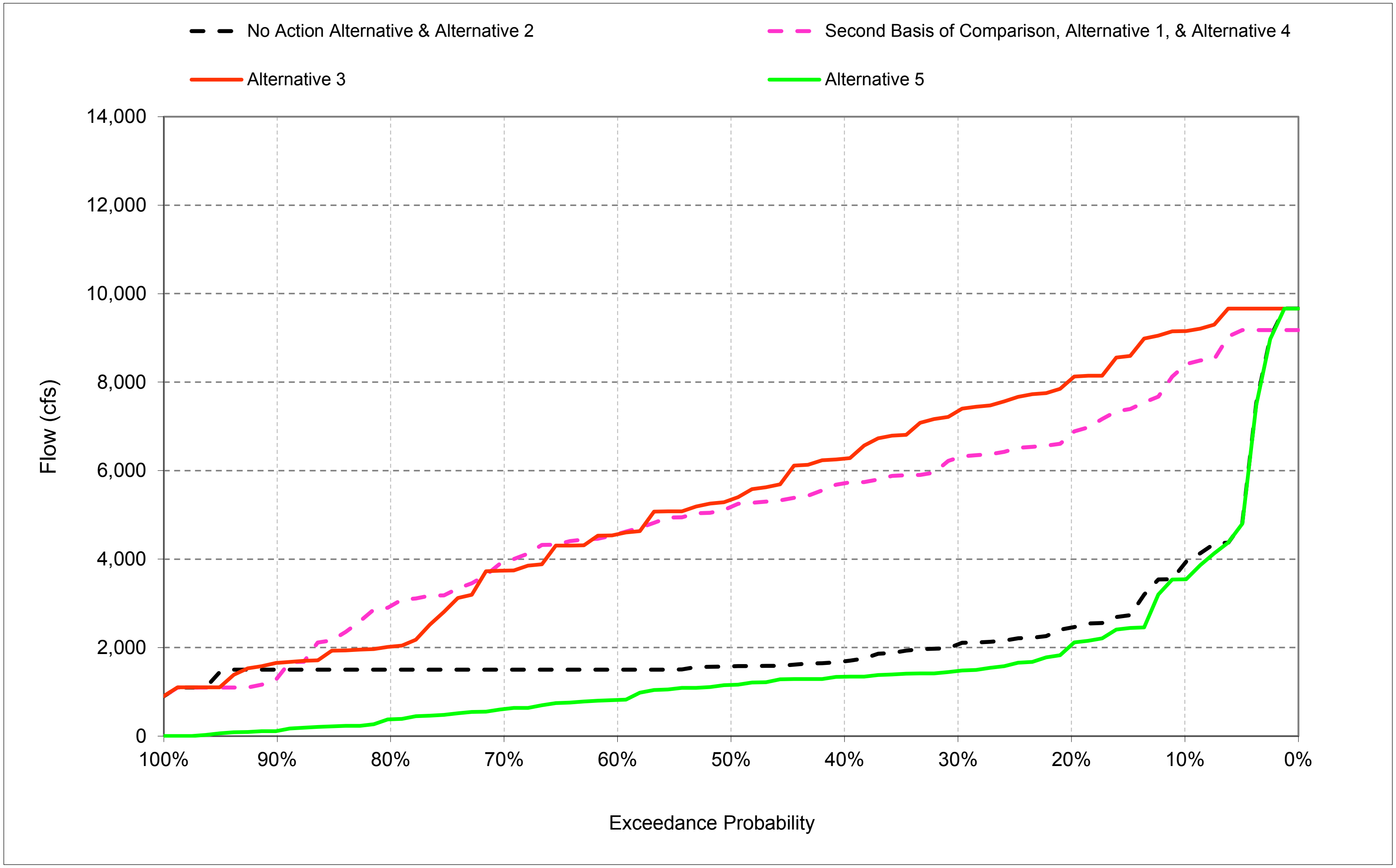
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-7. Exports Through Jones and Banks Pumping Plants, April



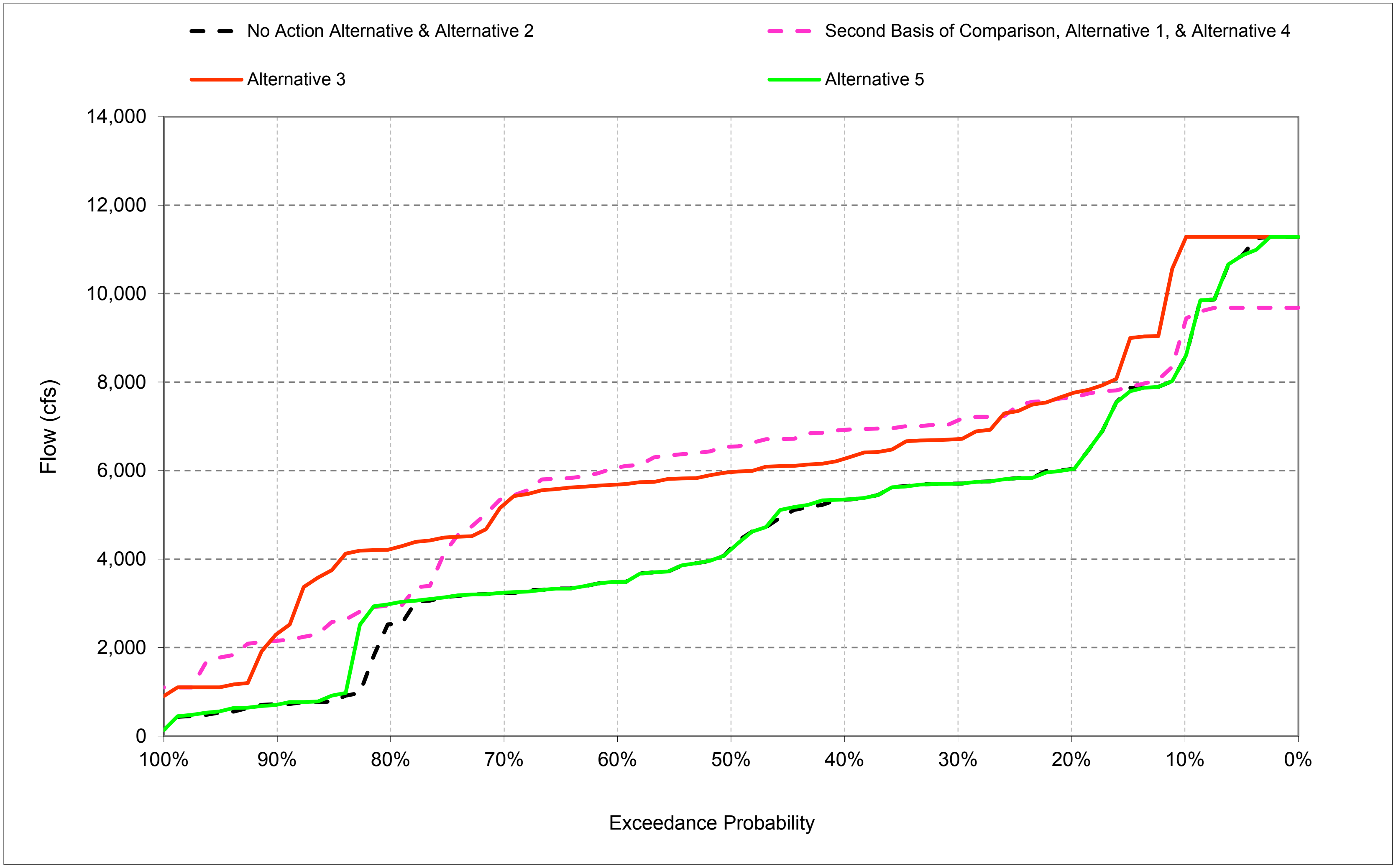
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-8. Exports Through Jones and Banks Pumping Plants, May



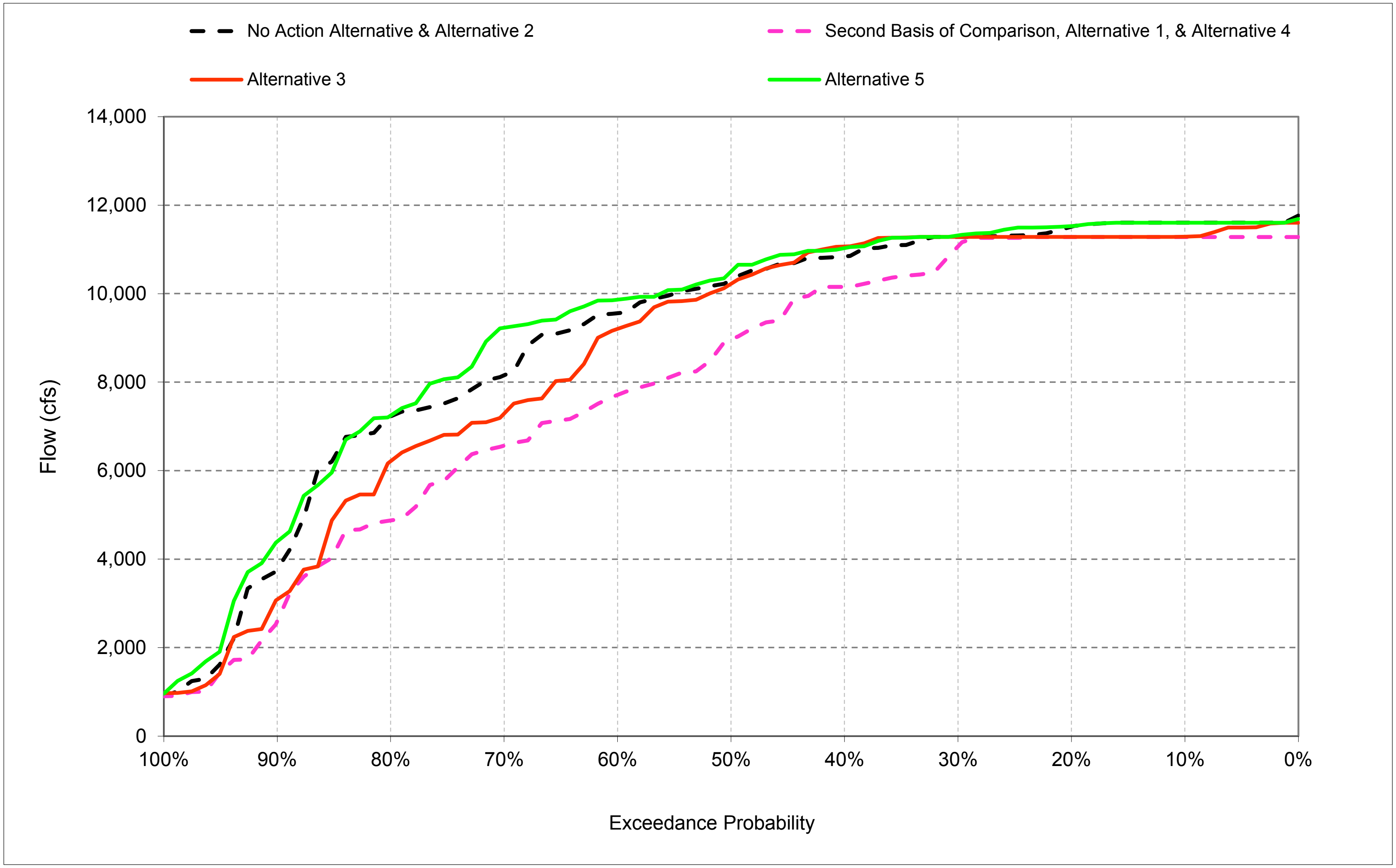
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-9. Exports Through Jones and Banks Pumping Plants, June



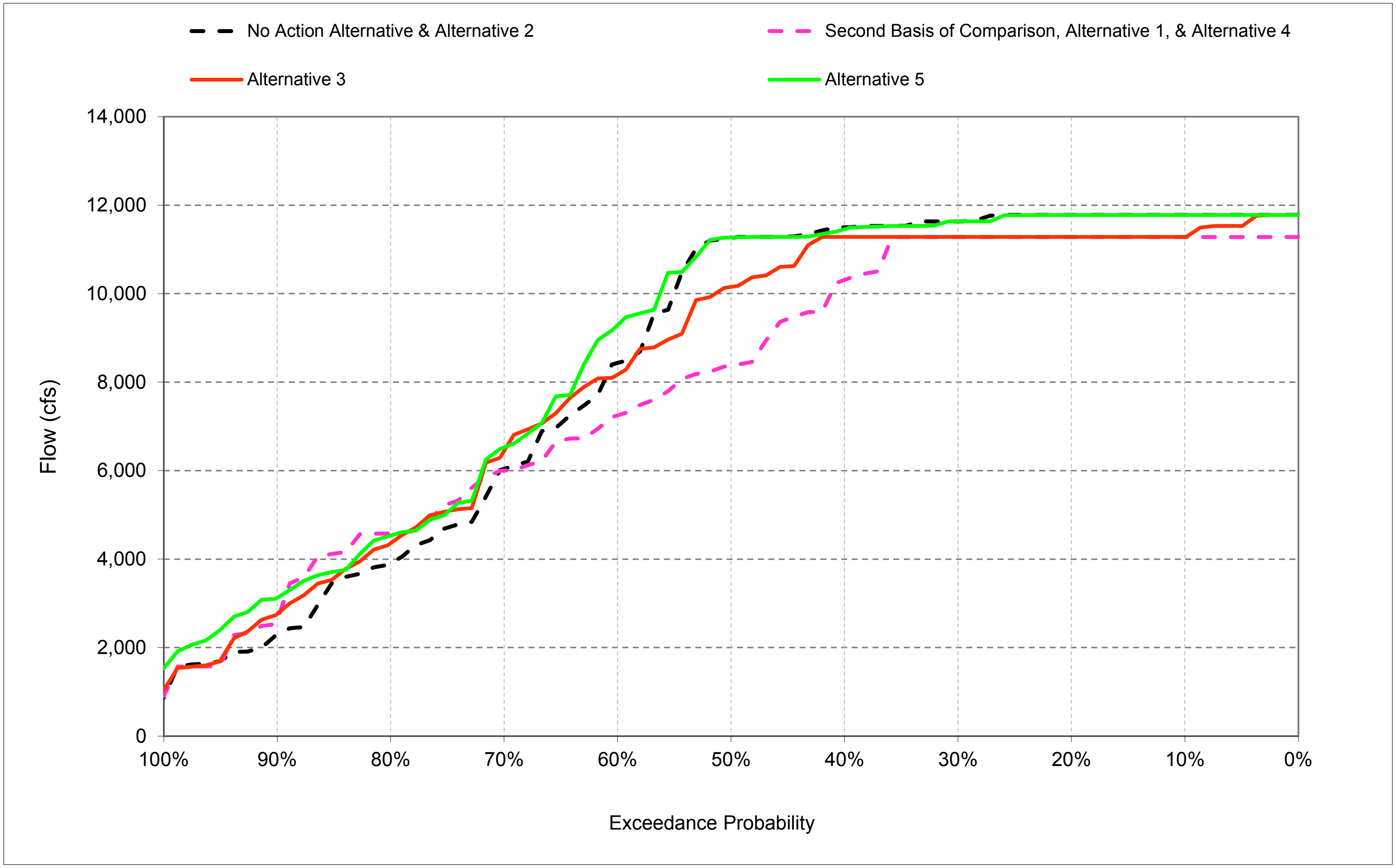
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-10. Exports Through Jones and Banks Pumping Plants, July



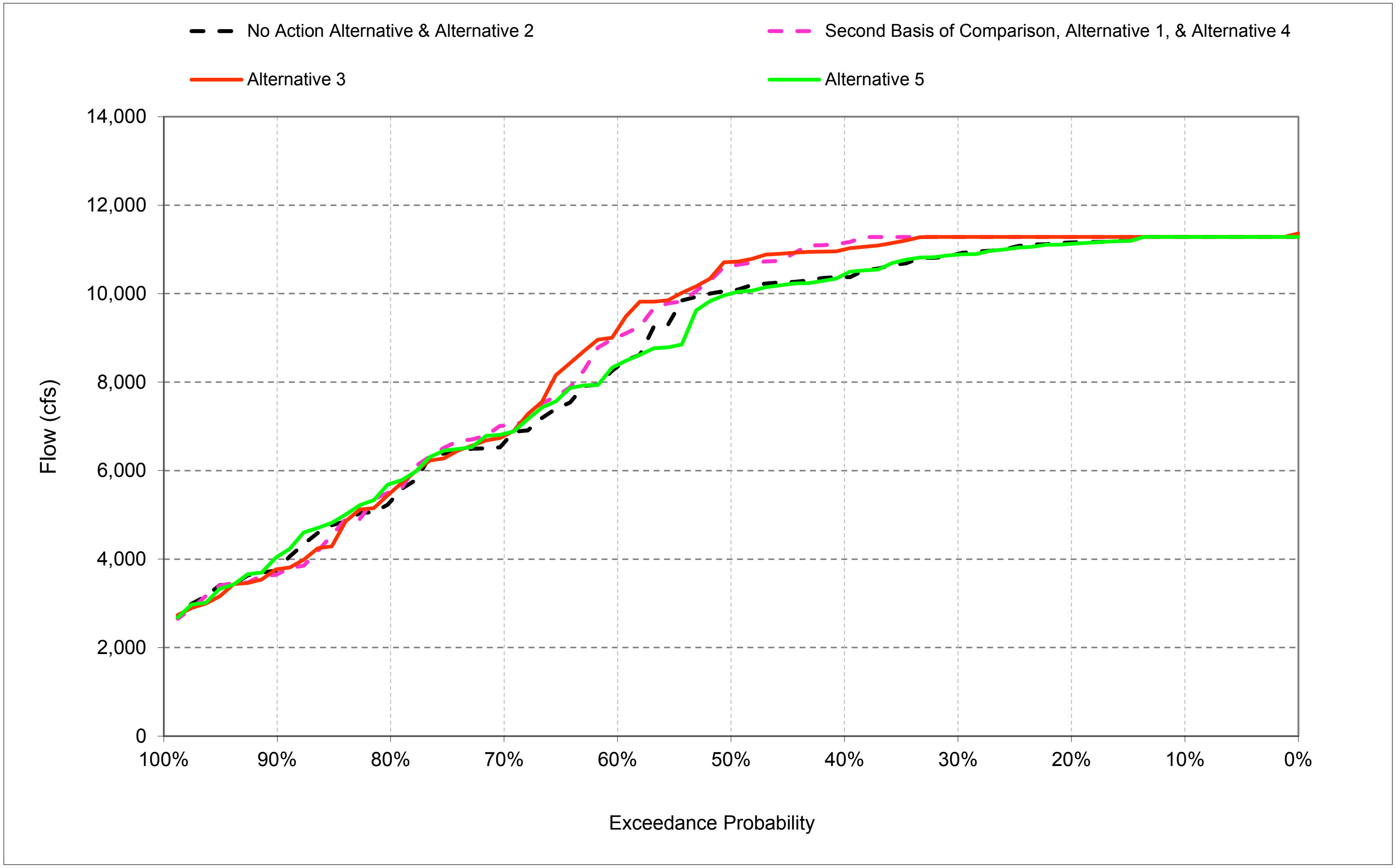
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-11. Exports Through Jones and Banks Pumping Plants, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-18-2-12. Exports Through Jones and Banks Pumping Plants, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-1-1. Exports Through Jones and Banks Pumping Plants, Monthly Export Rate

No Action Alternative

	Monthly Export Rate (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	8,412	11,280	11,725	9,816	10,924	10,973	4,073	3,906	8,550	11,605	11,780	11,280
20%	7,390	9,616	11,661	7,974	9,529	10,037	3,049	2,454	6,033	11,512	11,780	11,158
30%	7,065	8,047	11,142	6,944	8,059	8,270	2,653	2,073	5,707	11,280	11,630	10,941
40%	6,502	7,448	9,074	6,813	7,307	7,796	2,320	1,690	5,343	10,841	11,500	10,468
50%	6,011	6,980	8,042	6,597	6,707	6,893	2,157	1,575	4,248	10,312	11,257	10,146
60%	5,469	6,409	7,751	6,440	6,495	5,672	2,027	1,500	3,484	9,557	8,434	8,546
70%	5,041	5,834	7,383	6,130	5,846	5,073	1,898	1,500	3,232	8,156	6,039	6,891
80%	4,653	5,070	6,170	5,217	4,636	4,607	1,752	1,500	2,529	7,224	3,907	5,631
90%	4,068	4,215	5,455	4,546	2,963	2,592	1,500	1,500	720	3,768	2,291	4,090
Long Term												
Full Simulation Period[b]	6,155	7,225	8,578	6,921	7,056	6,887	2,593	2,270	4,634	9,071	8,476	8,636
Water Year Types[c]												
Wet (32%)	6,674	8,350	9,168	8,346	9,616	9,656	3,424	3,371	7,479	10,876	11,663	10,727
Above Normal (16%)	6,108	7,568	9,145	6,598	7,142	8,074	2,193	1,712	5,297	9,549	11,524	10,558
Below Normal (13%)	6,270	7,660	9,597	6,291	6,316	6,402	2,260	1,625	3,509	10,692	10,123	9,114
Dry (24%)	6,080	6,687	8,287	6,372	5,633	5,167	2,578	2,041	3,255	8,793	4,808	7,151
Critical (15%)	5,104	4,916	6,238	5,672	4,467	2,915	1,558	1,465	1,083	3,621	2,869	4,060

Alternative 1

	Monthly Export Rate (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	11,280	11,280	12,011	13,065	13,032	11,429	8,841	8,382	9,334	11,280	11,280	11,280
20%	11,055	11,280	11,772	12,511	12,226	9,882	8,461	6,831	7,652	11,280	11,280	11,280
30%	10,198	10,956	11,699	12,155	12,020	9,114	8,015	6,289	7,137	11,065	11,280	11,280
40%	9,001	10,469	11,672	12,056	11,020	8,815	7,182	5,713	6,920	10,154	10,308	11,235
50%	7,952	9,934	11,110	11,874	9,946	8,283	6,552	5,183	6,543	8,966	8,374	10,679
60%	7,037	8,619	9,776	10,334	9,164	7,898	5,392	4,566	6,067	7,712	7,250	9,166
70%	5,177	7,803	8,992	9,187	8,353	7,489	4,337	3,930	5,372	6,565	6,000	7,066
80%	4,433	5,919	8,133	8,123	7,442	6,091	3,152	2,936	2,951	4,873	4,578	5,708
90%	3,405	4,838	6,145	6,367	6,030	4,944	1,825	1,309	2,153	2,596	2,623	3,805
Long Term												
Full Simulation Period[b]	7,660	8,828	9,949	10,376	9,608	7,948	5,893	5,006	5,913	8,036	7,945	8,870
Water Year Types[c]												
Wet (32%)	8,927	10,409	11,637	11,774	10,908	8,829	7,999	6,994	7,657	10,279	10,645	11,087
Above Normal (16%)	6,953	8,763	10,418	11,650	10,392	9,269	7,610	5,897	6,980	9,306	10,525	10,937
Below Normal (13%)	8,905	9,999	10,129	10,967	8,862	8,126	5,670	4,939	6,952	10,234	8,407	9,055
Dry (24%)	7,067	7,987	8,879	9,410	9,250	8,016	4,349	3,704	4,602	6,552	5,293	7,354
Critical (15%)	5,530	5,798	7,399	7,037	7,223	4,330	2,248	1,961	2,213	2,260	3,297	4,187

Alternative 1 minus No Action Alternative

	Monthly Export Rate (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	2,868	0	286	3,249	2,108	456	4,767	4,476	784	-325	-500	0
20%	3,665	1,664	111	4,538	2,696	-155	5,412	4,377	1,619	-232	-500	122
30%	3,133	2,909	557	5,211	3,961	844	5,362	4,216	1,430	-215	-350	339
40%	2,499	3,022	2,598	5,242	3,713	1,019	4,862	4,023	1,577	-687	-1,192	767
50%	1,941	2,954	3,069	5,277	3,239	1,390	4,395	3,608	2,296	-1,346	-2,884	533
60%	1,569	2,209	2,025	3,894	2,669	2,226	3,365	3,066	2,583	-1,845	-1,184	620
70%	136	1,969	1,609	3,057	2,508	2,416	2,439	2,430	2,141	-1,591	-39	175
80%	-220	849	1,963	2,906	2,806	1,484	1,400	1,436	422	-2,351	671	77
90%	-663	623	690	1,821	3,067	2,352	325	-191	1,433	-1,172	332	-285
Long Term												
Full Simulation Period[b]	1,505	1,603	1,370	3,456	2,552	1,060	3,300	2,735	1,279	-1,035	-531	234
Water Year Types[c]												
Wet (32%)	2,253	2,060	2,469	3,428	1,292	-827	4,575	3,624	178	-597	-1,018	360
Above Normal (16%)	845	1,195	1,273	5,052	3,249	1,195	5,417	4,185	1,682	-243	-999	379
Below Normal (13%)	2,636	2,339	532	4,676	2,546	1,724	3,410	3,313	3,443	-457	-1,716	-59
Dry (24%)	987	1,300	592	3,038	3,616	2,848	1,771	1,663	1,347	-2,241	485	203
Critical (15%)	427	882	1,161	1,364	2,756	1,415	690	497	1,131	-1,361	427	127

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-1-2. Exports Through Jones and Banks Pumping Plants, Monthly Export Rate

No Action Alternative

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,412	11,280	11,725	9,816	10,924	10,973	4,073	3,906	8,550	11,605	11,780	11,280
20%	7,390	9,616	11,661	7,974	9,529	10,037	3,049	2,454	6,033	11,512	11,780	11,158
30%	7,065	8,047	11,142	6,944	8,059	8,270	2,653	2,073	5,707	11,280	11,630	10,941
40%	6,502	7,448	9,074	6,813	7,307	7,796	2,320	1,690	5,343	10,841	11,500	10,468
50%	6,011	6,980	8,042	6,597	6,707	6,893	2,157	1,575	4,248	10,312	11,257	10,146
60%	5,469	6,409	7,751	6,440	6,495	5,672	2,027	1,500	3,484	9,557	8,434	8,546
70%	5,041	5,834	7,383	6,130	5,846	5,073	1,898	1,500	3,232	8,156	6,039	6,891
80%	4,653	5,070	6,170	5,217	4,636	4,607	1,752	1,500	2,529	7,224	3,907	5,631
90%	4,068	4,215	5,455	4,546	2,963	2,592	1,500	1,500	720	3,768	2,291	4,090
Long Term												
Full Simulation Period[b]	6,155	7,225	8,578	6,921	7,056	6,887	2,593	2,270	4,634	9,071	8,476	8,636
Water Year Types[c]												
Wet (32%)	6,674	8,350	9,168	8,346	9,616	9,656	3,424	3,371	7,479	10,876	11,663	10,727
Above Normal (16%)	6,108	7,568	9,145	6,598	7,142	8,074	2,193	1,712	5,297	9,549	11,524	10,558
Below Normal (13%)	6,270	7,660	9,597	6,291	6,316	6,402	2,260	1,625	3,509	10,692	10,123	9,114
Dry (24%)	6,080	6,687	8,287	6,372	5,633	5,167	2,578	2,041	3,255	8,793	4,808	7,151
Critical (15%)	5,104	4,916	6,238	5,672	4,467	2,915	1,558	1,465	1,083	3,621	2,869	4,060

Alternative 3

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,280	11,280	11,683	10,617	13,018	11,734	9,192	9,155	11,208	11,289	11,280	11,280
20%	10,943	11,280	11,237	9,194	10,692	10,122	8,575	8,070	7,741	11,280	11,280	11,280
30%	10,200	10,959	10,215	7,153	9,440	9,388	7,808	7,344	6,712	11,280	11,280	11,280
40%	8,979	10,530	9,478	6,871	8,078	8,658	7,349	6,270	6,269	11,065	11,280	11,044
50%	7,738	9,599	8,885	6,684	7,085	7,475	6,203	5,343	5,964	10,221	10,153	10,755
60%	6,211	8,419	8,500	6,416	6,557	5,707	5,374	4,562	5,684	9,204	8,172	9,621
70%	5,232	7,840	8,213	6,136	5,700	5,140	4,288	3,738	5,232	7,285	6,446	7,012
80%	4,310	5,809	7,790	5,334	4,623	4,679	3,138	2,021	4,227	6,212	4,356	5,780
90%	3,539	4,644	6,148	4,944	3,641	2,584	2,083	1,654	2,317	3,087	2,763	3,830
Long Term												
Full Simulation Period[b]	7,566	8,739	8,934	7,195	7,616	7,239	5,932	5,370	6,087	8,671	8,335	8,884
Water Year Types[c]												
Wet (32%)	8,853	10,333	9,769	9,084	10,641	9,584	8,298	7,973	8,726	10,540	10,840	10,996
Above Normal (16%)	6,987	8,959	9,342	6,729	8,362	9,199	7,419	6,714	6,667	9,523	11,061	10,878
Below Normal (13%)	8,517	9,873	9,875	6,415	6,652	7,278	5,247	4,331	5,550	11,113	10,568	9,877
Dry (24%)	7,156	7,923	8,512	6,325	5,613	5,481	4,543	3,929	4,900	8,000	5,172	7,156
Critical (15%)	5,214	5,369	6,525	5,770	4,472	2,927	2,139	1,626	2,210	2,576	3,183	4,118

Alternative 3 minus No Action Alternative

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,868	0	-42	801	2,094	762	5,119	5,249	2,658	-316	-500	0
20%	3,553	1,664	-424	1,221	1,163	84	5,526	5,616	1,709	-232	-500	122
30%	3,135	2,911	-927	209	1,381	1,118	5,154	5,271	1,005	0	-350	339
40%	2,476	3,082	405	57	772	862	5,029	4,580	926	224	-220	576
50%	1,727	2,619	843	87	378	581	4,046	3,768	1,717	-92	-1,105	608
60%	742	2,009	749	-25	61	35	3,347	3,062	2,200	-353	-262	1,074
70%	191	2,006	830	6	-145	66	2,389	2,238	2,001	-871	407	121
80%	-343	739	1,620	117	-12	72	1,387	521	1,699	-1,013	449	149
90%	-529	429	693	399	678	-8	583	154	1,597	-681	472	-260
Long Term												
Full Simulation Period[b]	1,410	1,514	356	274	559	352	3,339	3,099	1,452	-400	-140	248
Water Year Types[c]												
Wet (32%)	2,179	1,983	602	738	1,025	-72	4,874	4,602	1,246	-335	-824	269
Above Normal (16%)	879	1,391	197	131	1,220	1,126	5,226	5,002	1,370	-26	-463	320
Below Normal (13%)	2,248	2,213	277	123	336	876	2,987	2,706	2,042	422	445	763
Dry (24%)	1,076	1,236	225	-47	-20	314	1,965	1,888	1,645	-792	363	5
Critical (15%)	110	453	287	98	5	12	581	161	1,127	-1,045	313	58

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-1-3. Exports Through Jones and Banks Pumping Plants, Monthly Export Rate

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Rate (cfs)											
Probability of Exceedance[a]												
10%	8,412	11,280	11,725	9,816	10,924	10,973	4,073	3,906	8,550	11,605	11,780	11,280
20%	7,390	9,616	11,661	7,974	9,529	10,037	3,049	2,454	6,033	11,512	11,780	11,158
30%	7,065	8,047	11,142	6,944	8,059	8,270	2,653	2,073	5,707	11,280	11,630	10,941
40%	6,502	7,448	9,074	6,813	7,307	7,796	2,320	1,690	5,343	10,841	11,500	10,468
50%	6,011	6,980	8,042	6,597	6,707	6,893	2,157	1,575	4,248	10,312	11,257	10,146
60%	5,469	6,409	7,751	6,440	6,495	5,672	2,027	1,500	3,484	9,557	8,434	8,546
70%	5,041	5,834	7,383	6,130	5,846	5,073	1,898	1,500	3,232	8,156	6,039	6,891
80%	4,653	5,070	6,170	5,217	4,636	4,607	1,752	1,500	2,529	7,224	3,907	5,631
90%	4,068	4,215	5,455	4,546	2,963	2,592	1,500	1,500	720	3,768	2,291	4,090
Long Term												
Full Simulation Period[b]	6,155	7,225	8,578	6,921	7,056	6,887	2,593	2,270	4,634	9,071	8,476	8,636
Water Year Types[c]												
Wet (32%)	6,674	8,350	9,168	8,346	9,616	9,656	3,424	3,371	7,479	10,876	11,663	10,727
Above Normal (16%)	6,108	7,568	9,145	6,598	7,142	8,074	2,193	1,712	5,297	9,549	11,524	10,558
Below Normal (13%)	6,270	7,660	9,597	6,291	6,316	6,402	2,260	1,625	3,509	10,692	10,123	9,114
Dry (24%)	6,080	6,687	8,287	6,372	5,633	5,167	2,578	2,041	3,255	8,793	4,808	7,151
Critical (15%)	5,104	4,916	6,238	5,672	4,467	2,915	1,558	1,465	1,083	3,621	2,869	4,060

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Rate (cfs)											
Probability of Exceedance[a]												
10%	8,356	11,280	11,719	9,816	11,019	11,008	3,744	3,544	8,550	11,605	11,780	11,280
20%	7,383	9,301	11,661	7,974	9,441	9,947	2,778	2,058	6,031	11,526	11,780	11,128
30%	6,974	8,056	11,147	6,944	8,059	8,592	2,254	1,472	5,707	11,315	11,630	10,883
40%	6,151	7,452	9,074	6,813	7,314	7,796	2,048	1,342	5,347	11,030	11,458	10,513
50%	5,859	6,850	8,073	6,590	6,707	6,893	1,871	1,158	4,221	10,499	11,271	10,056
60%	5,426	6,310	7,828	6,438	6,513	5,672	1,624	817	3,484	9,864	9,291	8,537
70%	5,061	5,838	7,355	6,130	5,822	5,069	1,346	612	3,242	9,231	6,523	6,972
80%	4,703	5,072	6,294	5,196	4,635	4,607	762	378	2,989	7,243	4,528	5,828
90%	3,977	4,203	5,478	4,546	2,963	2,592	510	120	710	4,400	3,124	4,271
Long Term												
Full Simulation Period[b]	6,116	7,178	8,583	6,939	7,045	6,883	2,057	1,609	4,684	9,266	8,748	8,643
Water Year Types[c]												
Wet (32%)	6,634	8,483	9,172	8,352	9,528	9,624	3,389	3,282	7,464	10,853	11,670	10,537
Above Normal (16%)	6,122	7,102	9,132	6,616	7,206	8,071	2,130	1,490	5,293	9,588	11,463	10,502
Below Normal (13%)	6,190	7,658	9,563	6,291	6,399	6,459	1,731	887	3,499	10,782	10,280	9,421
Dry (24%)	6,012	6,621	8,345	6,367	5,626	5,169	1,351	674	3,440	9,384	5,422	7,278
Critical (15%)	5,093	4,920	6,213	5,776	4,448	2,905	564	330	1,157	3,894	3,612	4,085

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Rate (cfs)											
Probability of Exceedance[a]												
10%	-56	0	-6	0	95	36	-329	-362	0	0	0	0
20%	-7	-315	0	0	-88	-91	-271	-396	-2	14	0	-30
30%	-91	9	5	0	0	322	-400	-601	0	35	0	-58
40%	-351	5	0	0	7	0	-272	-349	4	188	-43	44
50%	-152	-130	31	-7	0	0	-286	-417	-27	187	14	-91
60%	-42	-100	77	-2	18	0	-404	-683	0	307	857	-9
70%	21	4	-28	0	-23	-4	-553	-888	11	1,075	484	81
80%	50	2	124	-21	-1	0	-990	-1,122	460	19	622	197
90%	-91	-11	23	0	0	0	-990	-1,380	-9	632	832	181
Long Term												
Full Simulation Period[b]	-39	-47	5	18	-11	-4	-537	-662	49	195	272	7
Water Year Types[c]												
Wet (32%)	-40	133	4	5	-89	-31	-35	-88	-15	-22	6	-190
Above Normal (16%)	14	-465	-13	17	64	-3	-63	-222	-4	39	-61	-56
Below Normal (13%)	-79	-2	-35	-1	84	58	-528	-738	-10	90	157	307
Dry (24%)	-68	-66	58	-5	-7	1	-1,226	-1,367	185	591	614	127
Critical (15%)	-10	4	-26	104	-18	-11	-994	-1,135	74	273	743	25

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-1-4. Exports Through Jones and Banks Pumping Plants, Monthly Export Rate

Second Basis of Comparison

	Monthly Export Rate (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,280	11,280	12,011	13,065	13,032	11,429	8,841	8,382	9,334	11,280	11,280	11,280
20%	11,055	11,280	11,772	12,511	12,226	9,882	8,461	6,831	7,652	11,280	11,280	11,280
30%	10,198	10,956	11,699	12,155	12,020	9,114	8,015	6,289	7,137	11,065	11,280	11,280
40%	9,001	10,469	11,672	12,056	11,020	8,815	7,182	5,713	6,920	10,154	10,308	11,235
50%	7,952	9,934	11,110	11,874	9,946	8,283	6,552	5,183	6,543	8,966	8,374	10,679
60%	7,037	8,619	9,776	10,334	9,164	7,898	5,392	4,566	6,067	7,712	7,250	9,166
70%	5,177	7,803	8,992	9,187	8,353	7,489	4,337	3,930	5,372	6,565	6,000	7,066
80%	4,433	5,919	8,133	8,123	7,442	6,091	3,152	2,936	2,951	4,873	4,578	5,708
90%	3,405	4,838	6,145	6,367	6,030	4,944	1,825	1,309	2,153	2,596	2,623	3,805
Long Term												
Full Simulation Period[b]	7,660	8,828	9,949	10,376	9,608	7,948	5,893	5,006	5,913	8,036	7,945	8,870
Water Year Types[c]												
Wet (32%)	8,927	10,409	11,637	11,774	10,908	8,829	7,999	6,994	7,657	10,279	10,645	11,087
Above Normal (16%)	6,953	8,763	10,418	11,650	10,392	9,269	7,610	5,897	6,980	9,306	10,525	10,937
Below Normal (13%)	8,905	9,999	10,129	10,967	8,862	8,126	5,670	4,939	6,952	10,234	8,407	9,055
Dry (24%)	7,067	7,987	8,879	9,410	9,250	8,016	4,349	3,704	4,602	6,552	5,293	7,354
Critical (15%)	5,530	5,798	7,399	7,037	7,223	4,330	2,248	1,961	2,213	2,260	3,297	4,187

No Action Alternative

	Monthly Export Rate (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,412	11,280	11,725	9,816	10,924	10,973	4,073	3,906	8,550	11,605	11,780	11,280
20%	7,390	9,616	11,661	7,974	9,529	10,037	3,049	2,454	6,033	11,512	11,780	11,158
30%	7,065	8,047	11,142	6,944	8,059	8,270	2,653	2,073	5,707	11,280	11,630	10,941
40%	6,502	7,448	9,074	6,813	7,307	7,796	2,320	1,690	5,343	10,841	11,500	10,468
50%	6,011	6,980	8,042	6,597	6,707	6,893	2,157	1,575	4,248	10,312	11,257	10,146
60%	5,469	6,409	7,751	6,440	6,495	5,672	2,027	1,500	3,484	9,557	8,434	8,546
70%	5,041	5,834	7,383	6,130	5,846	5,073	1,898	1,500	3,232	8,156	6,039	6,891
80%	4,653	5,070	6,170	5,217	4,636	4,607	1,752	1,500	2,529	7,224	3,907	5,631
90%	4,068	4,215	5,455	4,546	2,963	2,592	1,500	1,500	720	3,768	2,291	4,090
Long Term												
Full Simulation Period[b]	6,155	7,225	8,578	6,921	7,056	6,887	2,593	2,270	4,634	9,071	8,476	8,636
Water Year Types[c]												
Wet (32%)	6,674	8,350	9,168	8,346	9,616	9,656	3,424	3,371	7,479	10,876	11,663	10,727
Above Normal (16%)	6,108	7,568	9,145	6,598	7,142	8,074	2,193	1,712	5,297	9,549	11,524	10,558
Below Normal (13%)	6,270	7,660	9,597	6,291	6,316	6,402	2,260	1,625	3,509	10,692	10,123	9,114
Dry (24%)	6,080	6,687	8,287	6,372	5,633	5,167	2,578	2,041	3,255	8,793	4,808	7,151
Critical (15%)	5,104	4,916	6,238	5,672	4,467	2,915	1,558	1,465	1,083	3,621	2,869	4,060

No Action Alternative minus Second Basis of Comparison

	Monthly Export Rate (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2,868	0	-286	-3,249	-2,108	-456	-4,767	-4,476	-784	325	500	0
20%	-3,665	-1,664	-111	-4,538	-2,696	155	-5,412	-4,377	-1,619	232	500	-122
30%	-3,133	-2,909	-557	-5,211	-3,961	-844	-5,362	-4,216	-1,430	215	350	-339
40%	-2,499	-3,022	-2,598	-5,242	-3,713	-1,019	-4,862	-4,023	-1,577	687	1,192	-767
50%	-1,941	-2,954	-3,069	-5,277	-3,239	-1,390	-4,395	-3,608	-2,296	1,346	2,884	-533
60%	-1,569	-2,209	-2,025	-3,894	-2,669	-2,226	-3,365	-3,066	-2,583	1,845	1,184	-620
70%	-136	-1,969	-1,609	-3,057	-2,508	-2,416	-2,439	-2,430	-2,141	1,591	39	-175
80%	220	-849	-1,963	-2,906	-2,806	-1,484	-1,400	-1,436	-422	2,351	-671	-77
90%	663	-623	-690	-1,821	-3,067	-2,352	-325	191	-1,433	1,172	-332	285
Long Term												
Full Simulation Period[b]	-1,505	-1,603	-1,370	-3,456	-2,552	-1,060	-3,300	-2,735	-1,279	1,035	531	-234
Water Year Types[c]												
Wet (32%)	-2,253	-2,060	-2,469	-3,428	-1,292	827	-4,575	-3,624	-178	597	1,018	-360
Above Normal (16%)	-845	-1,195	-1,273	-5,052	-3,249	-1,195	-5,417	-4,185	-1,682	243	999	-379
Below Normal (13%)	-2,636	-2,339	-532	-4,676	-2,546	-1,724	-3,410	-3,313	-3,443	457	1,716	59
Dry (24%)	-987	-1,300	-592	-3,038	-3,616	-2,848	-1,771	-1,663	-1,347	2,241	-485	-203
Critical (15%)	-427	-882	-1,161	-1,364	-2,756	-1,415	-690	-497	-1,131	1,361	-427	-127

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-1-5. Exports Through Jones and Banks Pumping Plants, Monthly Export Rate

Second Basis of Comparison

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,280	11,280	12,011	13,065	13,032	11,429	8,841	8,382	9,334	11,280	11,280	11,280
20%	11,055	11,280	11,772	12,511	12,226	9,882	8,461	6,831	7,652	11,280	11,280	11,280
30%	10,198	10,956	11,699	12,155	12,020	9,114	8,015	6,289	7,137	11,065	11,280	11,280
40%	9,001	10,469	11,672	12,056	11,020	8,815	7,182	5,713	6,920	10,154	10,308	11,235
50%	7,952	9,934	11,110	11,874	9,946	8,283	6,552	5,183	6,543	8,966	8,374	10,679
60%	7,037	8,619	9,776	10,334	9,164	7,898	5,392	4,566	6,067	7,712	7,250	9,166
70%	5,177	7,803	8,992	9,187	8,353	7,489	4,337	3,930	5,372	6,565	6,000	7,066
80%	4,433	5,919	8,133	8,123	7,442	6,091	3,152	2,936	2,951	4,873	4,578	5,708
90%	3,405	4,838	6,145	6,367	6,030	4,944	1,825	1,309	2,153	2,596	2,623	3,805
Long Term												
Full Simulation Period[b]	7,660	8,828	9,949	10,376	9,608	7,948	5,893	5,006	5,913	8,036	7,945	8,870
Water Year Types[c]												
Wet (32%)	8,927	10,409	11,637	11,774	10,908	8,829	7,999	6,994	7,657	10,279	10,645	11,087
Above Normal (16%)	6,953	8,763	10,418	11,650	10,392	9,269	7,610	5,897	6,980	9,306	10,525	10,937
Below Normal (13%)	8,905	9,999	10,129	10,967	8,862	8,126	5,670	4,939	6,952	10,234	8,407	9,055
Dry (24%)	7,067	7,987	8,879	9,410	9,250	8,016	4,349	3,704	4,602	6,552	5,293	7,354
Critical (15%)	5,530	5,798	7,399	7,037	7,223	4,330	2,248	1,961	2,213	2,260	3,297	4,187

Alternative 3

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,280	11,280	11,683	10,617	13,018	11,734	9,192	9,155	11,208	11,289	11,280	11,280
20%	10,943	11,280	11,237	9,194	10,692	10,122	8,575	8,070	7,741	11,280	11,280	11,280
30%	10,200	10,959	10,215	7,153	9,440	9,388	7,808	7,344	6,712	11,280	11,280	11,280
40%	8,979	10,530	9,478	6,871	8,078	8,658	7,349	6,270	6,269	11,065	11,280	11,044
50%	7,738	9,599	8,885	6,684	7,085	7,475	6,203	5,343	5,964	10,221	10,153	10,755
60%	6,211	8,419	8,500	6,416	6,557	5,707	5,374	4,562	5,684	9,204	8,172	9,621
70%	5,232	7,840	8,213	6,136	5,700	5,140	4,288	3,738	5,232	7,285	6,446	7,012
80%	4,310	5,809	7,790	5,334	4,623	4,679	3,138	2,021	4,227	6,212	4,356	5,780
90%	3,539	4,644	6,148	4,944	3,641	2,584	2,083	1,654	2,317	3,087	2,763	3,830
Long Term												
Full Simulation Period[b]	7,566	8,739	8,934	7,195	7,616	7,239	5,932	5,370	6,087	8,671	8,335	8,884
Water Year Types[c]												
Wet (32%)	8,853	10,333	9,769	9,084	10,641	9,584	8,298	7,973	8,726	10,540	10,840	10,996
Above Normal (16%)	6,987	8,959	9,342	6,729	8,362	9,199	7,419	6,714	6,667	9,523	11,061	10,878
Below Normal (13%)	8,517	9,873	9,875	6,415	6,652	7,278	5,247	4,331	5,550	11,113	10,568	9,877
Dry (24%)	7,156	7,923	8,512	6,325	5,613	5,481	4,543	3,929	4,900	8,000	5,172	7,156
Critical (15%)	5,214	5,369	6,525	5,770	4,472	2,927	2,139	1,626	2,210	2,576	3,183	4,118

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	-328	-2,448	-15	306	351	772	1,874	9	0	0
20%	-112	0	-535	-3,317	-1,534	239	114	1,239	90	0	0	0
30%	2	2	-1,484	-5,001	-2,579	274	-208	1,055	-425	215	0	0
40%	-22	60	-2,193	-5,185	-2,941	-158	167	557	-652	911	972	-191
50%	-214	-335	-2,225	-5,190	-2,861	-809	-349	160	-579	1,255	1,779	76
60%	-826	-200	-1,276	-3,918	-2,607	-2,191	-18	-4	-383	1,492	922	454
70%	55	37	-779	-3,051	-2,653	-2,350	-49	-191	-140	720	447	-54
80%	-123	-110	-343	-2,789	-2,818	-1,412	-13	-915	1,277	1,339	-222	71
90%	134	-194	3	-1,422	-2,389	-2,361	257	346	164	490	140	25
Long Term												
Full Simulation Period[b]	-95	-89	-1,014	-3,181	-1,992	-709	39	364	173	635	390	14
Water Year Types[c]												
Wet (32%)	-74	-77	-1,867	-2,690	-266	755	300	978	1,069	262	195	-91
Above Normal (16%)	34	196	-1,076	-4,921	-2,029	-69	-191	817	-313	217	536	-59
Below Normal (13%)	-388	-126	-254	-4,552	-2,210	-848	-423	-608	-1,402	879	2,160	822
Dry (24%)	89	-64	-367	-3,084	-3,637	-2,535	194	225	298	1,449	-121	-198
Critical (15%)	-316	-429	-874	-1,266	-2,751	-1,403	-109	-336	-4	316	-114	-70

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-1-6. Exports Through Jones and Banks Pumping Plants, Monthly Export Rate

Second Basis of Comparison

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,280	11,280	12,011	13,065	13,032	11,429	8,841	8,382	9,334	11,280	11,280	11,280
20%	11,055	11,280	11,772	12,511	12,226	9,882	8,461	6,831	7,652	11,280	11,280	11,280
30%	10,198	10,956	11,699	12,155	12,020	9,114	8,015	6,289	7,137	11,065	11,280	11,280
40%	9,001	10,469	11,672	12,056	11,020	8,815	7,182	5,713	6,920	10,154	10,308	11,235
50%	7,952	9,934	11,110	11,874	9,946	8,283	6,552	5,183	6,543	8,966	8,374	10,679
60%	7,037	8,619	9,776	10,334	9,164	7,898	5,392	4,566	6,067	7,712	7,250	9,166
70%	5,177	7,803	8,992	9,187	8,353	7,489	4,337	3,930	5,372	6,565	6,000	7,066
80%	4,433	5,919	8,133	8,123	7,442	6,091	3,152	2,936	2,951	4,873	4,578	5,708
90%	3,405	4,838	6,145	6,367	6,030	4,944	1,825	1,309	2,153	2,596	2,623	3,805
Long Term												
Full Simulation Period[b]	7,660	8,828	9,949	10,376	9,608	7,948	5,893	5,006	5,913	8,036	7,945	8,870
Water Year Types[c]												
Wet (32%)	8,927	10,409	11,637	11,774	10,908	8,829	7,999	6,994	7,657	10,279	10,645	11,087
Above Normal (16%)	6,953	8,763	10,418	11,650	10,392	9,269	7,610	5,897	6,980	9,306	10,525	10,937
Below Normal (13%)	8,905	9,999	10,129	10,967	8,862	8,126	5,670	4,939	6,952	10,234	8,407	9,055
Dry (24%)	7,067	7,987	8,879	9,410	9,250	8,016	4,349	3,704	4,602	6,552	5,293	7,354
Critical (15%)	5,530	5,798	7,399	7,037	7,223	4,330	2,248	1,961	2,213	2,260	3,297	4,187

Alternative 5

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,356	11,280	11,719	9,816	11,019	11,008	3,744	3,544	8,550	11,605	11,780	11,280
20%	7,383	9,301	11,661	7,974	9,441	9,947	2,778	2,058	6,031	11,526	11,780	11,128
30%	6,974	8,056	11,147	6,944	8,059	8,592	2,254	1,472	5,707	11,315	11,630	10,883
40%	6,151	7,452	9,074	6,813	7,314	7,796	2,048	1,342	5,347	11,030	11,458	10,513
50%	5,859	6,850	8,073	6,590	6,707	6,893	1,871	1,158	4,221	10,499	11,271	10,056
60%	5,426	6,310	7,828	6,438	6,513	5,672	1,624	817	3,484	9,864	9,291	8,537
70%	5,061	5,838	7,355	6,130	5,822	5,069	1,346	612	3,242	9,231	6,523	6,972
80%	4,703	5,072	6,294	5,196	4,635	4,607	762	378	2,989	7,243	4,528	5,828
90%	3,977	4,203	5,478	4,546	2,963	2,592	510	120	710	4,400	3,124	4,271
Long Term												
Full Simulation Period[b]	6,116	7,178	8,583	6,939	7,045	6,883	2,057	1,609	4,684	9,266	8,748	8,643
Water Year Types[c]												
Wet (32%)	6,634	8,483	9,172	8,352	9,528	9,624	3,389	3,282	7,464	10,853	11,670	10,537
Above Normal (16%)	6,122	7,102	9,132	6,616	7,206	8,071	2,130	1,490	5,293	9,588	11,463	10,502
Below Normal (13%)	6,190	7,658	9,563	6,291	6,399	6,459	1,731	887	3,499	10,782	10,280	9,421
Dry (24%)	6,012	6,621	8,345	6,367	5,626	5,169	1,351	674	3,440	9,384	5,422	7,278
Critical (15%)	5,093	4,920	6,213	5,776	4,448	2,905	564	330	1,157	3,894	3,612	4,085

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Export Rate (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2,924	0	-292	-3,249	-2,013	-420	-5,097	-4,838	-784	325	500	0
20%	-3,672	-1,979	-111	-4,538	-2,784	64	-5,683	-4,773	-1,621	246	500	-152
30%	-3,224	-2,900	-553	-5,211	-3,961	-522	-5,762	-4,817	-1,430	251	350	-397
40%	-2,850	-3,017	-2,598	-5,242	-3,706	-1,019	-5,134	-4,371	-1,574	876	1,149	-722
50%	-2,093	-3,084	-3,037	-5,284	-3,239	-1,390	-4,681	-4,025	-2,322	1,533	2,898	-623
60%	-1,611	-2,309	-1,948	-3,896	-2,651	-2,227	-3,768	-3,749	-2,583	2,152	2,041	-629
70%	-115	-1,965	-1,637	-3,057	-2,531	-2,420	-2,992	-3,318	-2,130	2,666	523	-94
80%	270	-848	-1,839	-2,927	-2,807	-1,483	-2,390	-2,558	39	2,371	-49	120
90%	572	-634	-667	-1,821	-3,067	-2,352	-1,315	-1,189	-1,443	1,804	500	466
Long Term												
Full Simulation Period[b]	-1,544	-1,650	-1,365	-3,437	-2,563	-1,064	-3,836	-3,397	-1,230	1,230	803	-228
Water Year Types[c]												
Wet (32%)	-2,293	-1,927	-2,465	-3,423	-1,380	796	-4,610	-3,712	-193	574	1,025	-550
Above Normal (16%)	-832	-1,661	-1,286	-5,035	-3,185	-1,198	-5,481	-4,407	-1,687	282	938	-435
Below Normal (13%)	-2,715	-2,341	-567	-4,676	-2,463	-1,667	-3,939	-4,052	-3,453	548	1,873	366
Dry (24%)	-1,055	-1,366	-534	-3,042	-3,623	-2,847	-2,998	-3,030	-1,162	2,832	129	-76
Critical (15%)	-437	-878	-1,187	-1,260	-2,775	-1,425	-1,684	-1,631	-1,056	1,635	316	-103

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2-1. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

No Action Alternative

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (32%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (16%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (13%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (24%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (15%)	314	293	384	349	250	179	93	90	64	223	176	242

Alternative 1

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

Alternative 1 minus No Action Alternative

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	0	18	200	116	28	284	275	47	-20	-31	0
20%	225	99	7	279	154	-10	322	269	96	-14	-31	7
30%	193	173	34	320	220	52	319	259	85	-13	-22	20
40%	154	180	160	322	205	63	289	247	94	-42	-73	46
50%	119	176	189	324	172	85	262	222	137	-83	-177	32
60%	96	131	125	239	156	137	200	189	154	-113	-73	37
70%	8	117	99	188	140	149	145	149	127	-98	-2	10
80%	-14	51	121	179	150	91	83	88	25	-145	41	5
90%	-41	37	42	112	170	145	19	-12	85	-72	20	-17
Long Term												
Full Simulation Period[b]	93	95	84	212	143	65	196	168	76	-64	-33	14
Water Year Types[c]												
Wet (32%)	139	123	152	211	72	-51	272	223	11	-37	-63	21
Above Normal (16%)	52	71	78	311	183	73	322	257	100	-15	-61	23
Below Normal (13%)	162	139	33	287	143	106	203	204	205	-28	-105	-4
Dry (24%)	61	77	36	187	202	175	105	102	80	-138	30	12
Critical (15%)	26	52	71	84	156	87	41	31	67	-84	26	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2-2. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (32%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (16%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (13%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (24%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (15%)	314	293	384	349	250	179	93	90	64	223	176	242

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	694	671	718	653	725	722	547	563	667	694	694	671
20%	673	671	691	565	603	622	510	496	461	694	694	671
30%	627	652	628	440	524	577	465	452	399	694	694	671
40%	552	627	583	422	449	532	437	386	373	680	694	657
50%	476	571	546	411	393	460	369	329	355	628	624	640
60%	382	501	523	395	365	351	320	281	338	566	502	572
70%	322	467	505	377	320	316	255	230	311	448	396	417
80%	265	346	479	328	264	288	187	124	252	382	268	344
90%	218	276	378	304	202	159	124	102	138	190	170	228
Long Term												
Full Simulation Period[b]	465	520	549	442	426	445	353	330	362	533	513	529
Water Year Types[c]												
Wet (32%)	544	615	601	559	594	589	494	490	519	648	667	654
Above Normal (16%)	430	533	574	414	469	566	441	413	397	586	680	647
Below Normal (13%)	524	587	607	394	373	448	312	266	330	683	650	588
Dry (24%)	440	471	523	389	314	337	270	242	292	492	318	426
Critical (15%)	321	319	401	355	251	180	127	100	131	158	196	245

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	176	0	-3	49	114	47	305	323	158	-19	-31	0
20%	218	99	-26	75	71	5	329	345	102	-14	-31	7
30%	193	173	-57	13	77	69	307	324	60	0	-22	20
40%	152	183	25	4	41	53	299	282	55	14	-14	34
50%	106	156	52	5	13	36	241	232	102	-6	-68	36
60%	46	120	46	-2	2	2	199	188	131	-22	-16	64
70%	12	119	51	0	-5	4	142	138	119	-54	25	7
80%	-21	44	100	7	-3	4	83	32	101	-62	28	9
90%	-33	26	43	25	38	-1	35	9	95	-42	29	-15
Long Term												
Full Simulation Period[b]	87	90	22	17	31	22	199	191	86	-25	-9	15
Water Year Types[c]												
Wet (32%)	134	118	37	45	57	-4	290	283	74	-21	-51	16
Above Normal (16%)	54	83	12	8	68	69	311	308	81	-2	-28	19
Below Normal (13%)	138	132	17	8	19	54	178	166	121	26	27	45
Dry (24%)	66	74	14	-3	-1	19	117	116	98	-49	22	0
Critical (15%)	7	27	18	6	0	1	35	10	67	-64	19	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2-3. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (32%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (16%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (13%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (24%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (15%)	314	293	384	349	250	179	93	90	64	223	176	242

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	514	671	721	604	613	677	223	218	509	714	724	671
20%	454	553	717	490	528	612	165	127	359	709	724	662
30%	429	479	685	427	448	528	134	91	340	696	715	648
40%	378	443	558	419	416	479	122	83	318	678	705	626
50%	360	408	496	405	380	424	111	71	251	646	693	598
60%	334	375	481	396	363	349	97	50	207	606	571	508
70%	311	347	452	377	323	312	80	38	193	568	401	415
80%	289	302	387	319	267	283	45	23	178	445	278	347
90%	245	250	337	280	165	159	30	7	42	271	192	254
Long Term												
Full Simulation Period[b]	376	427	528	427	394	423	122	99	279	570	538	514
Water Year Types[c]												
Wet (32%)	408	505	564	514	532	592	202	202	444	667	718	627
Above Normal (16%)	376	423	561	407	405	496	127	92	315	590	705	625
Below Normal (13%)	381	456	588	387	359	397	103	55	208	663	632	561
Dry (24%)	370	394	513	392	315	318	80	41	205	577	333	433
Critical (15%)	313	293	382	355	249	179	34	20	69	239	222	243

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	-3	0	0	0	2	2	-20	-22	0	0	0	0
20%	0	-19	0	0	-4	-6	-16	-24	0	1	0	-2
30%	-6	1	0	0	0	20	-24	-37	0	2	0	-3
40%	-22	0	0	0	8	0	-16	-21	0	12	-3	3
50%	-9	-8	2	0	0	0	-17	-26	-2	11	1	-5
60%	-3	-6	5	0	0	0	-24	-42	0	19	53	-1
70%	1	0	-2	0	-1	0	-33	-55	1	66	30	5
80%	3	0	8	-1	0	0	-59	-69	27	1	38	12
90%	-6	-1	1	0	0	0	-59	-85	-1	39	51	11
Long Term												
Full Simulation Period[b]	-2	-3	0	1	-1	0	-32	-41	3	12	17	0
Water Year Types[c]												
Wet (32%)	-2	8	0	0	-5	-2	-2	-5	-1	-1	0	-11
Above Normal (16%)	1	-28	-1	1	4	0	-4	-14	0	2	-4	-3
Below Normal (13%)	-5	0	-2	0	5	4	-31	-45	-1	6	10	18
Dry (24%)	-4	-4	4	0	0	0	-73	-84	11	36	38	8
Critical (15%)	-1	0	-2	6	-1	-1	-59	-70	4	17	46	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2-4. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (32%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (16%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (13%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (24%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (15%)	314	293	384	349	250	179	93	90	64	223	176	242

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	-176	0	-18	-200	-116	-28	-284	-275	-47	20	31	0
20%	-225	-99	-7	-279	-154	10	-322	-269	-96	14	31	-7
30%	-193	-173	-34	-320	-220	-52	-319	-259	-85	13	22	-20
40%	-154	-180	-160	-322	-205	-63	-289	-247	-94	42	73	-46
50%	-119	-176	-189	-324	-172	-85	-262	-222	-137	83	177	-32
60%	-96	-131	-125	-239	-156	-137	-200	-189	-154	113	73	-37
70%	-8	-117	-99	-188	-140	-149	-145	-149	-127	98	2	-10
80%	14	-51	-121	-179	-150	-91	-83	-88	-25	145	-41	-5
90%	41	-37	-42	-112	-170	-145	-19	12	-85	72	-20	17
Long Term												
Full Simulation Period[b]	-93	-95	-84	-212	-143	-65	-196	-168	-76	64	33	-14
Water Year Types[c]												
Wet (32%)	-139	-123	-152	-211	-72	51	-272	-223	-11	37	63	-21
Above Normal (16%)	-52	-71	-78	-311	-183	-73	-322	-257	-100	15	61	-23
Below Normal (13%)	-162	-139	-33	-287	-143	-106	-203	-204	-205	28	105	4
Dry (24%)	-61	-77	-36	-187	-202	-175	-105	-102	-80	138	-30	-12
Critical (15%)	-26	-52	-71	-84	-156	-87	-41	-31	-67	84	-26	-8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2-5. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Monthly Export Volume (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

Alternative 3

Statistic	Monthly Export Volume (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	718	653	725	722	547	563	667	694	694	671
20%	673	671	691	565	603	622	510	496	461	694	694	671
30%	627	652	628	440	524	577	465	452	399	694	694	671
40%	552	627	583	422	449	532	437	386	373	680	694	657
50%	476	571	546	411	393	460	369	329	355	628	624	640
60%	382	501	523	395	365	351	320	281	338	566	502	572
70%	322	467	505	377	320	316	255	230	311	448	396	417
80%	265	346	479	328	264	288	187	124	252	382	268	344
90%	218	276	378	304	202	159	124	102	138	190	170	228
Long Term												
Full Simulation Period[b]	465	520	549	442	426	445	353	330	362	533	513	529
Water Year Types[c]												
Wet (32%)	544	615	601	559	594	589	494	490	519	648	667	654
Above Normal (16%)	430	533	574	414	469	566	441	413	397	586	680	647
Below Normal (13%)	524	587	607	394	373	448	312	266	330	683	650	588
Dry (24%)	440	471	523	389	314	337	270	242	292	492	318	426
Critical (15%)	321	319	401	355	251	180	127	100	131	158	196	245

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Export Volume (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	-20	-151	-2	19	21	47	112	1	0	0
20%	-7	0	-33	-204	-83	15	7	76	5	0	0	0
30%	0	0	-91	-308	-143	17	-12	65	-25	13	0	0
40%	-1	4	-135	-319	-165	-10	10	34	-39	56	60	-11
50%	-13	-20	-137	-319	-159	-50	-21	10	-34	77	109	5
60%	-51	-12	-78	-241	-154	-135	-1	0	-23	92	57	27
70%	3	2	-48	-188	-145	-144	-3	-12	-8	44	27	-3
80%	-8	-7	-21	-172	-152	-87	-1	-56	76	82	-14	4
90%	8	-12	0	-87	-133	-145	15	21	10	30	9	1
Long Term												
Full Simulation Period[b]	-6	-5	-62	-196	-112	-44	2	22	10	39	24	1
Water Year Types[c]												
Wet (32%)	-5	-5	-115	-165	-15	46	18	60	64	16	12	-5
Above Normal (16%)	2	12	-66	-303	-115	-4	-11	50	-19	13	33	-3
Below Normal (13%)	-24	-7	-16	-280	-124	-52	-25	-37	-83	54	133	49
Dry (24%)	5	-4	-23	-190	-203	-156	12	14	18	89	-7	-12
Critical (15%)	-19	-26	-54	-78	-156	-86	-6	-21	0	19	-7	-4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2-6. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	514	671	721	604	613	677	223	218	509	714	724	671
20%	454	553	717	490	528	612	165	127	359	709	724	662
30%	429	479	685	427	448	528	134	91	340	696	715	648
40%	378	443	558	419	416	479	122	83	318	678	705	626
50%	360	408	496	405	380	424	111	71	251	646	693	598
60%	334	375	481	396	363	349	97	50	207	606	571	508
70%	311	347	452	377	323	312	80	38	193	568	401	415
80%	289	302	387	319	267	283	45	23	178	445	278	347
90%	245	250	337	280	165	159	30	7	42	271	192	254
Long Term												
Full Simulation Period[b]	376	427	528	427	394	423	122	99	279	570	538	514
Water Year Types[c]												
Wet (32%)	408	505	564	514	532	592	202	202	444	667	718	627
Above Normal (16%)	376	423	561	407	405	496	127	92	315	590	705	625
Below Normal (13%)	381	456	588	387	359	397	103	55	208	663	632	561
Dry (24%)	370	394	513	392	315	318	80	41	205	577	333	433
Critical (15%)	313	293	382	355	249	179	34	20	69	239	222	243

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	-180	0	-18	-200	-114	-26	-303	-298	-47	20	31	0
20%	-226	-118	-7	-279	-158	4	-338	-294	-96	15	31	-9
30%	-198	-173	-34	-320	-220	-32	-343	-296	-85	15	22	-24
40%	-175	-180	-160	-322	-198	-63	-306	-269	-94	54	71	-43
50%	-129	-184	-187	-325	-172	-85	-279	-247	-138	94	178	-37
60%	-99	-137	-120	-240	-156	-137	-224	-230	-154	132	125	-37
70%	-7	-117	-101	-188	-141	-149	-178	-204	-127	164	32	-6
80%	17	-50	-113	-180	-150	-91	-142	-157	2	146	-3	7
90%	35	-38	-41	-112	-170	-145	-78	-73	-86	111	31	28
Long Term												
Full Simulation Period[b]	-95	-98	-84	-211	-144	-65	-228	-209	-73	76	49	-14
Water Year Types[c]												
Wet (32%)	-141	-115	-152	-210	-77	49	-274	-228	-11	35	63	-33
Above Normal (16%)	-51	-99	-79	-310	-179	-74	-326	-271	-100	17	58	-26
Below Normal (13%)	-167	-139	-35	-288	-138	-102	-234	-249	-205	34	115	22
Dry (24%)	-65	-81	-33	-187	-203	-175	-178	-186	-69	174	8	-5
Critical (15%)	-27	-52	-73	-77	-157	-88	-100	-100	-63	101	19	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

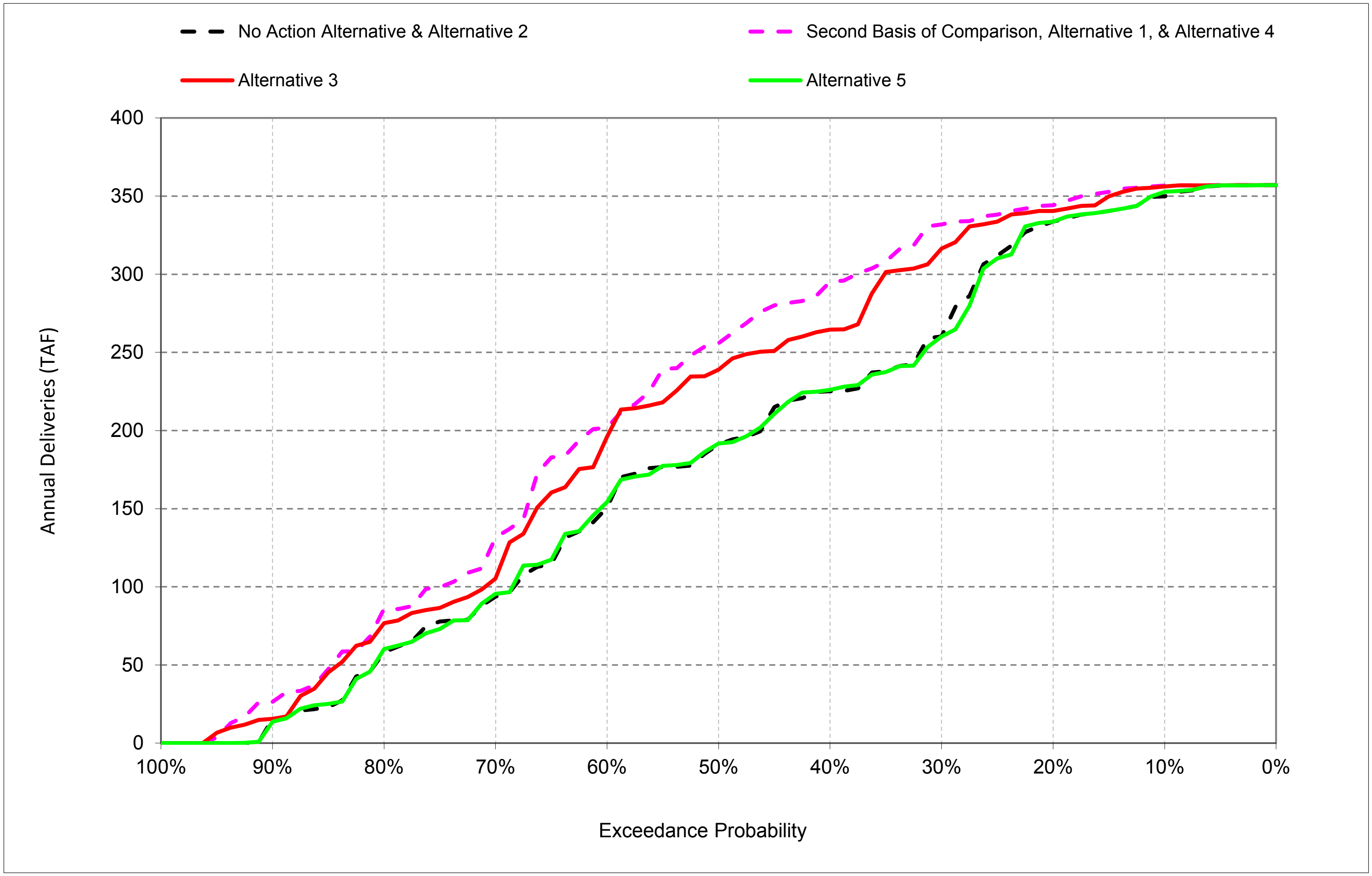
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

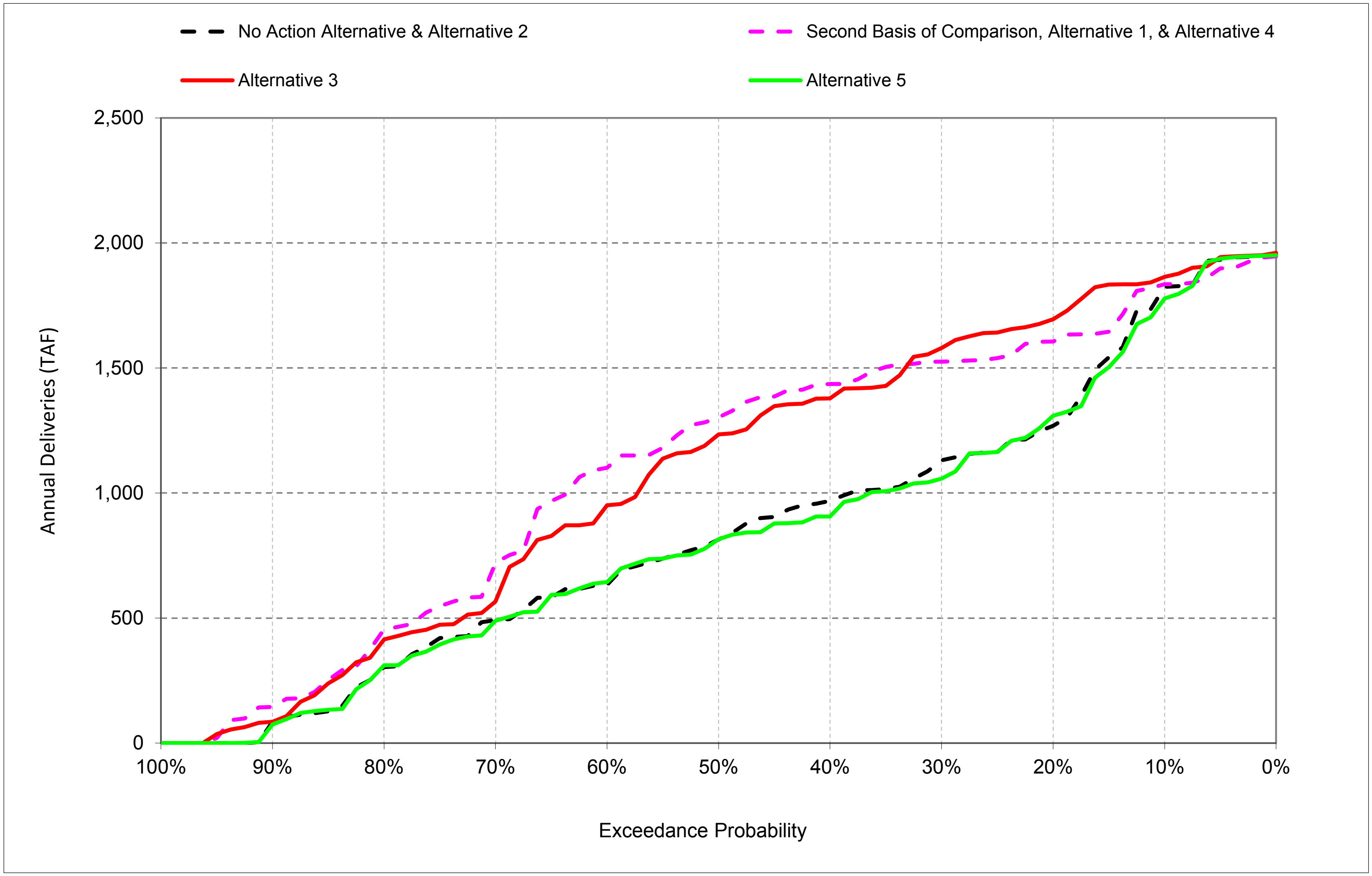
C.19. CVP Deliveries

Figure C-19-1-1. Annual CVP North of Delta Agricultural Water Service Contract Deliveries



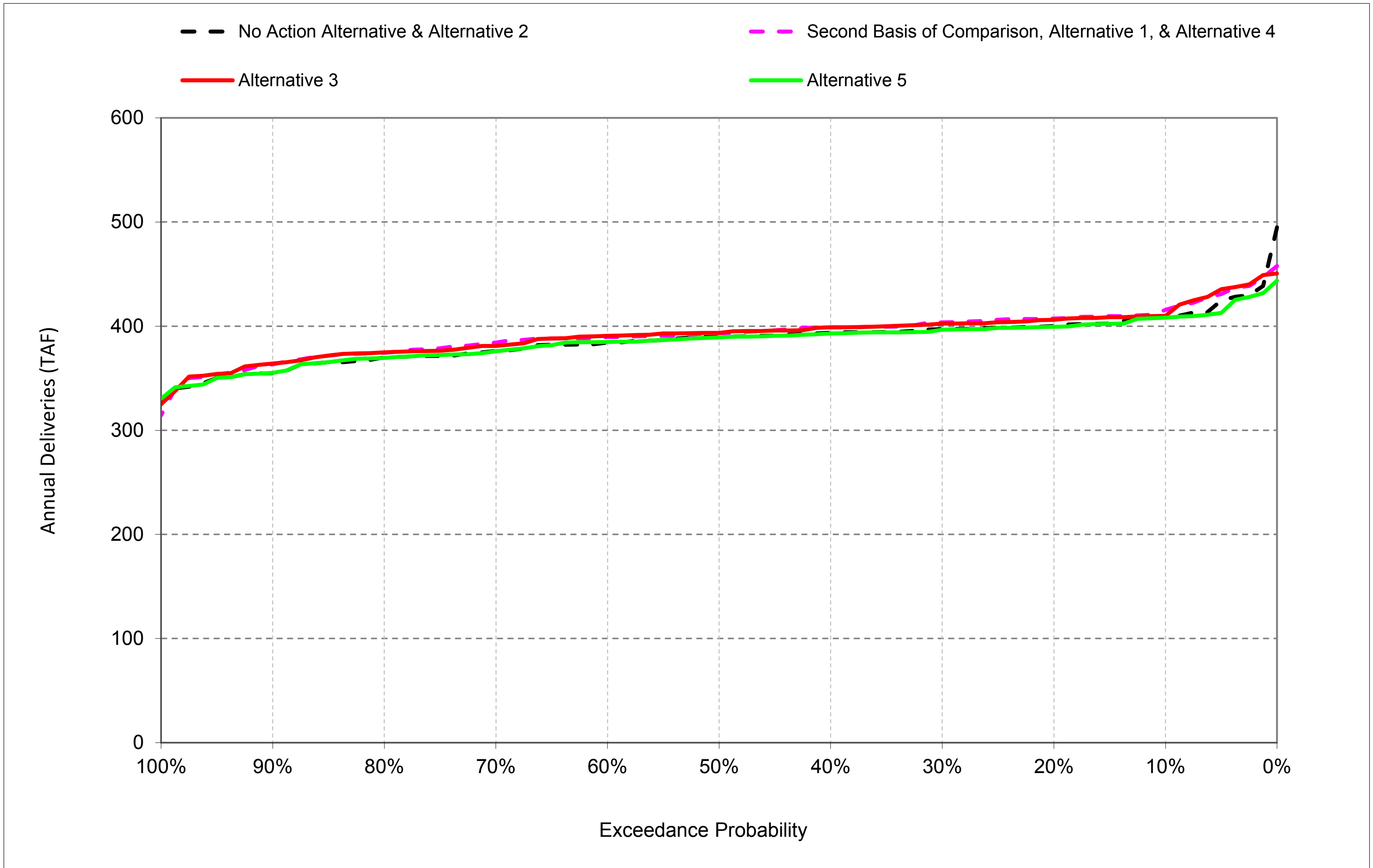
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Annual deliveries are based on March to February Average.

Figure C-19-1-2. Annual CVP South of Delta Agricultural Water Service Contract Deliveries



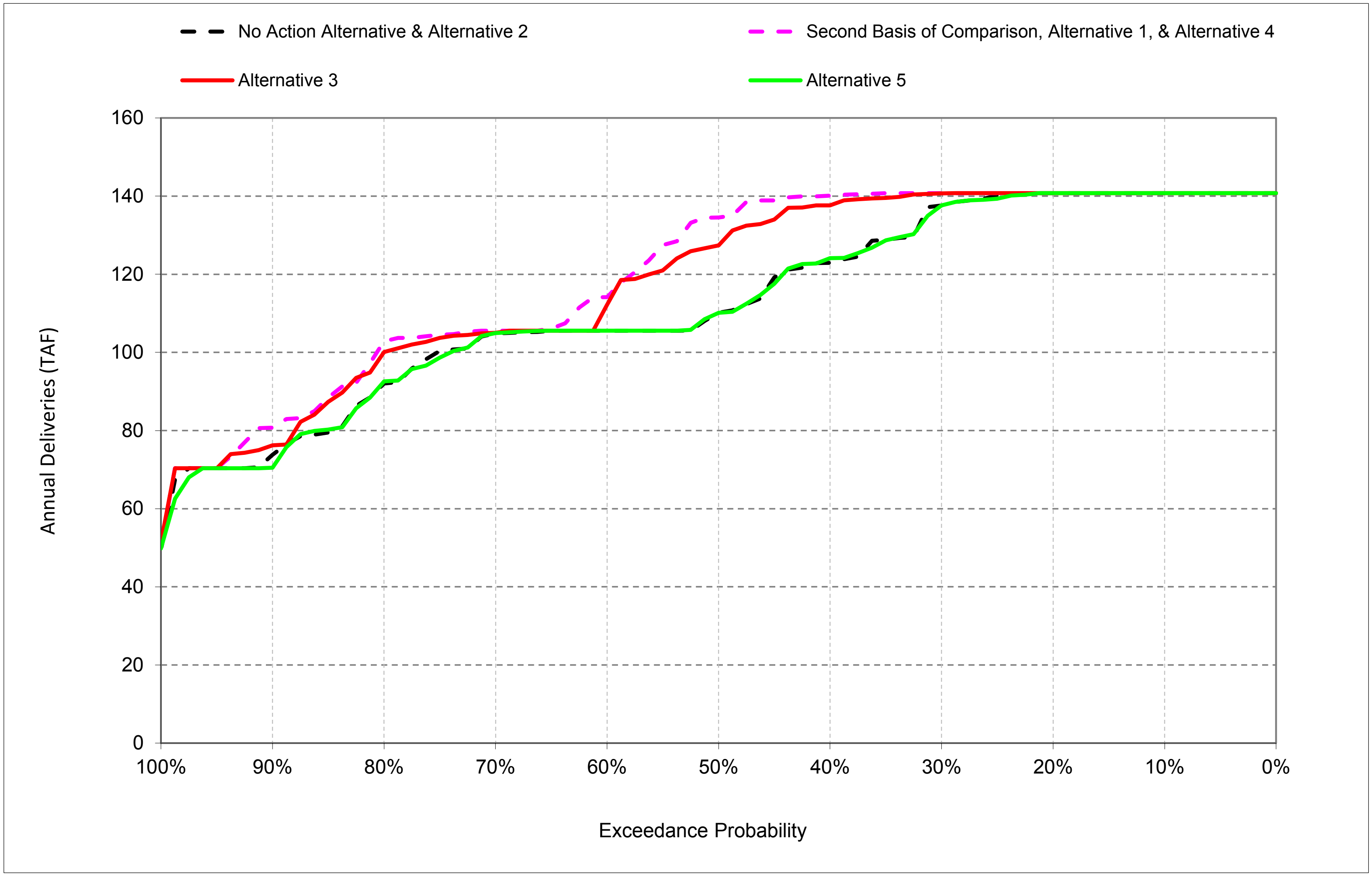
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Does not include Eastside Contractors deliveries. 6) Annual deliveries are based on March to February Average.

Figure C-19-1-3. Annual CVP North of Delta M&I Water Service Contract Deliveries



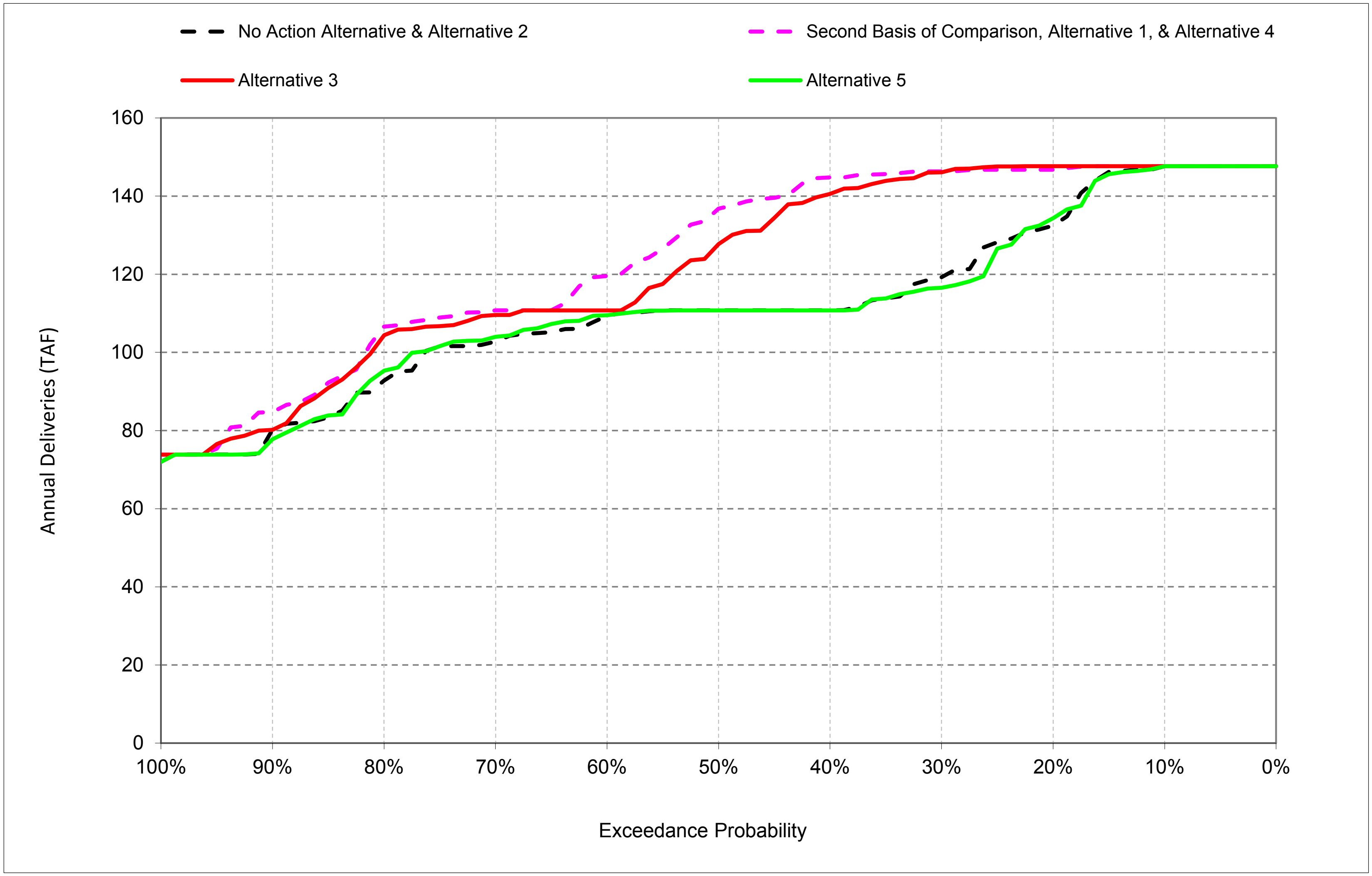
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on March to February Average.

Figure C-19-1-4. Annual CVP American River M&I Water Service Contract Deliveries



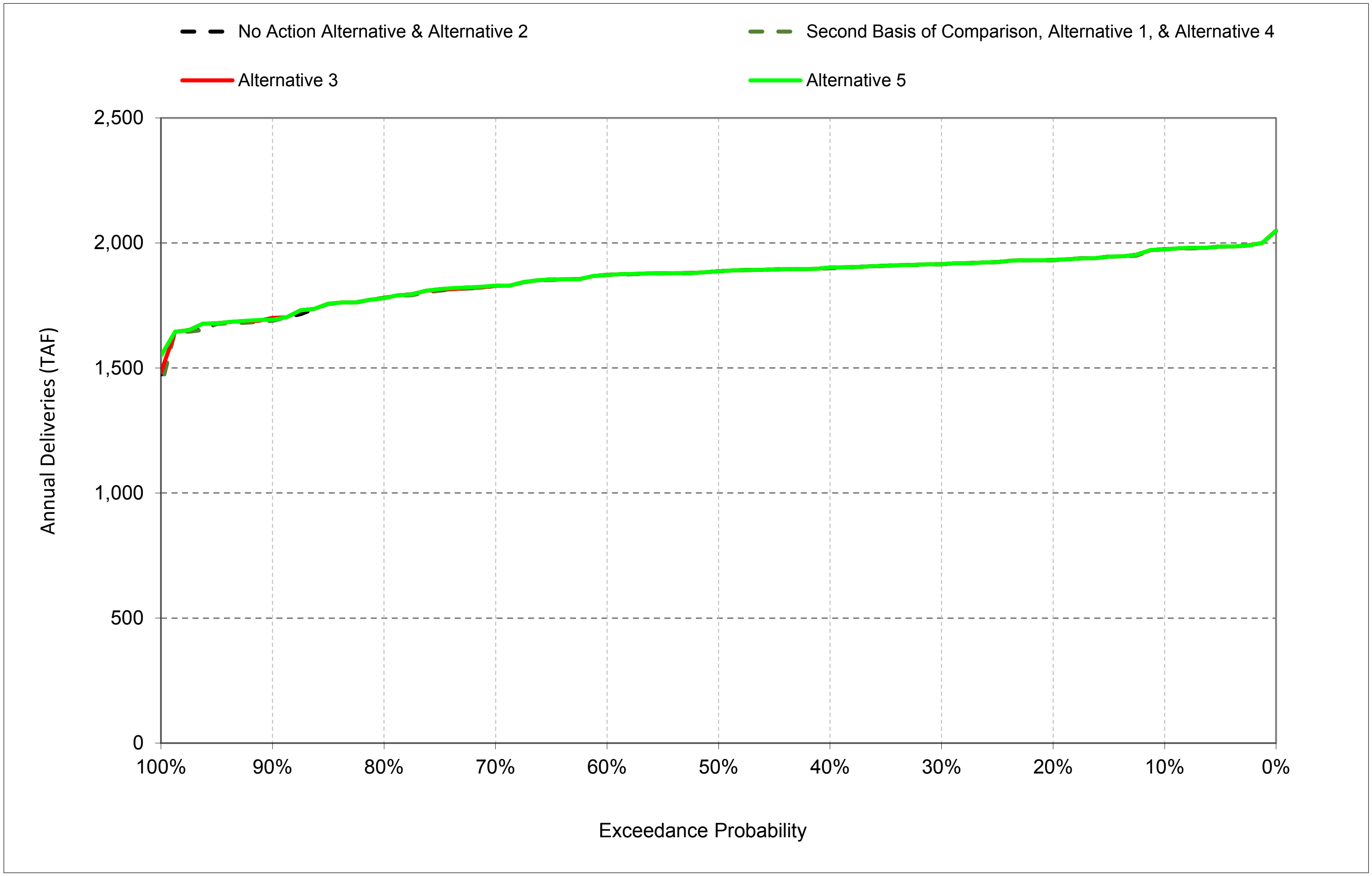
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Annual deliveries are based on March to February Average.

Figure C-19-1-5. Annual CVP South of Delta M&I Water Service Contract Deliveries



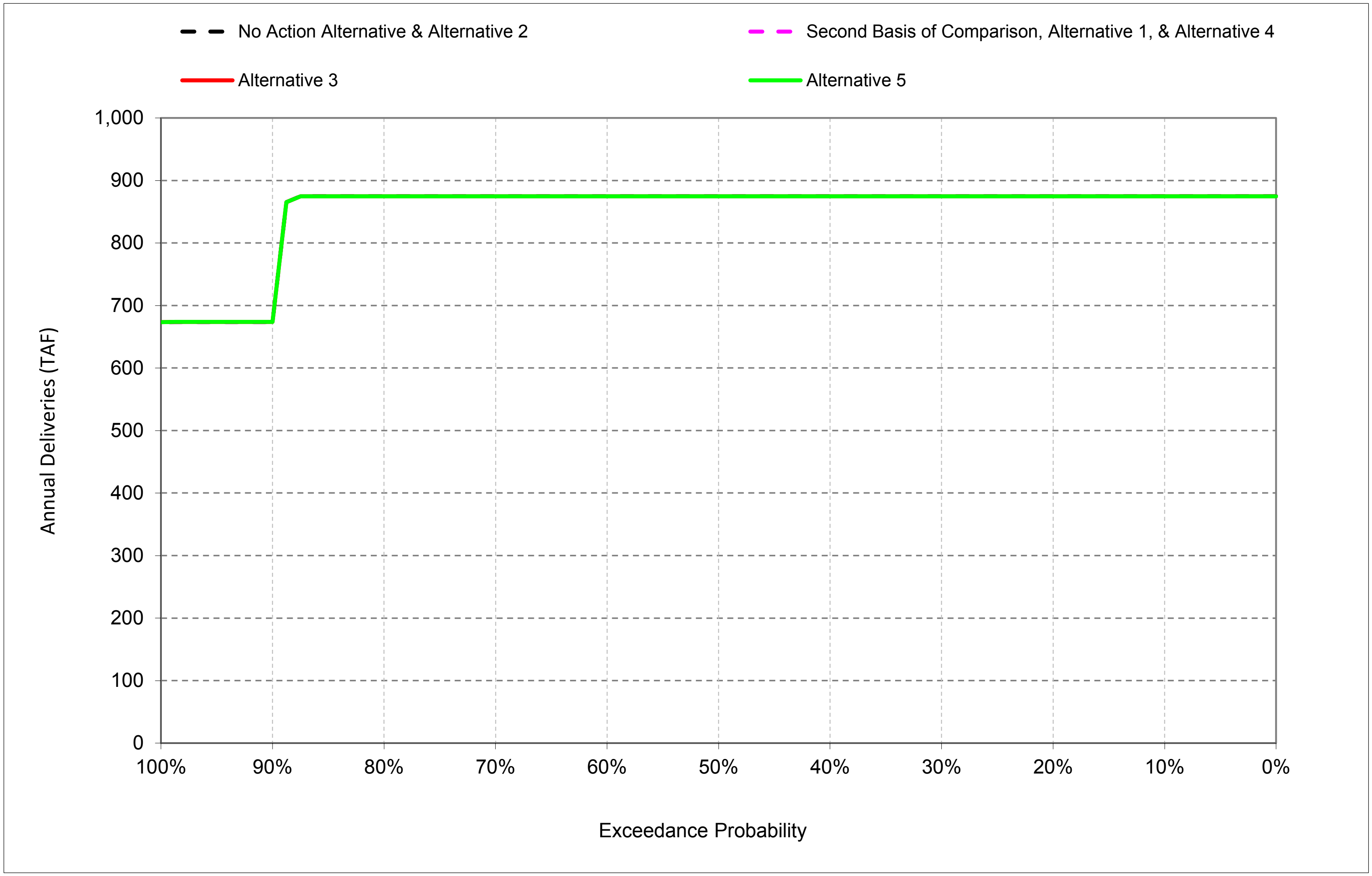
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Does not include Eastside Contractors deliveries. 6) Annual deliveries are based on March to February Average.

Figure C-19-1-6. Annual CVP Settlement Contractors Deliveries



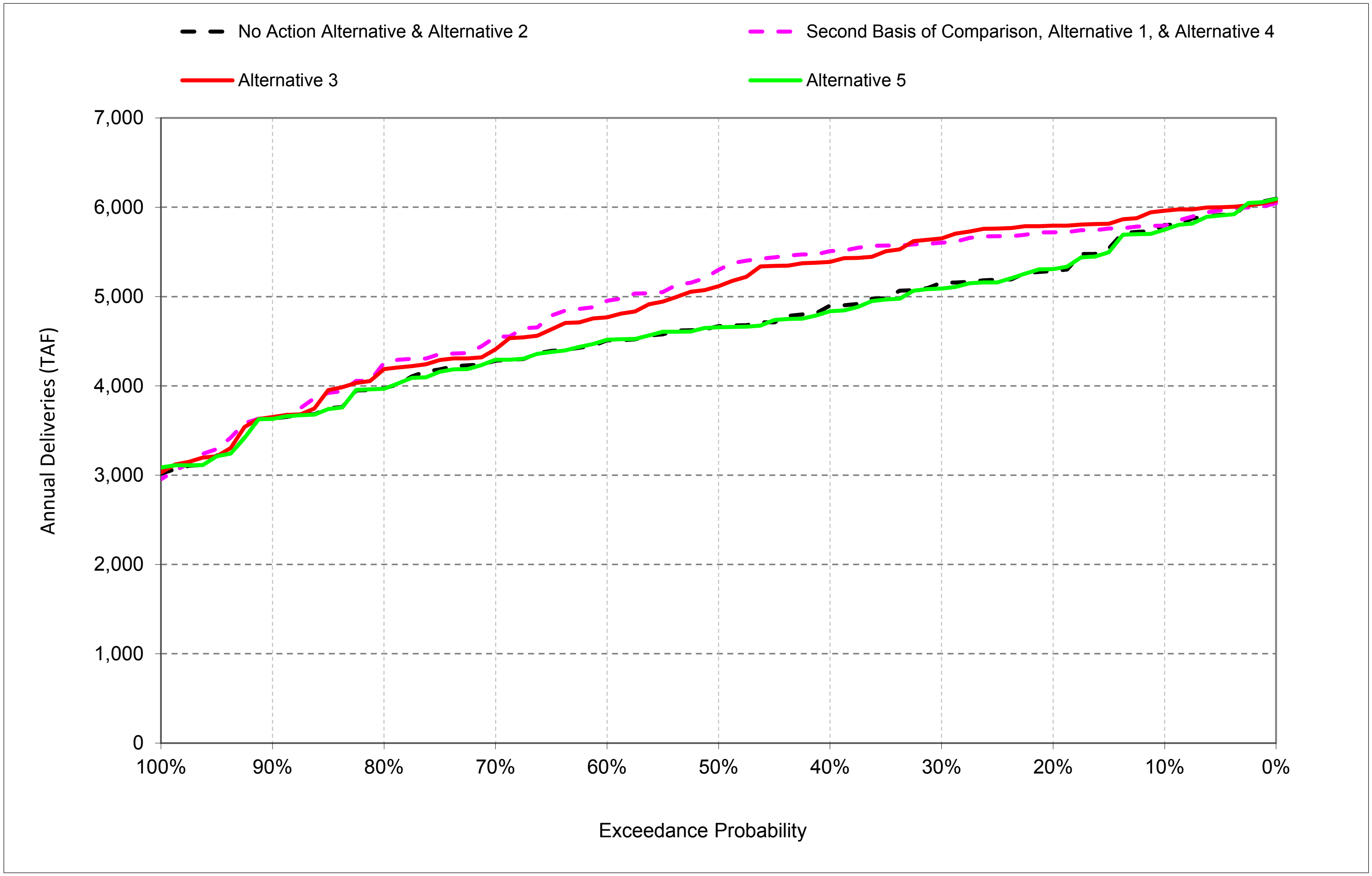
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Annual deliveries are based on March to February Average.

Figure C-19-1-7. Annual CVP Exchange Contractors Deliveries



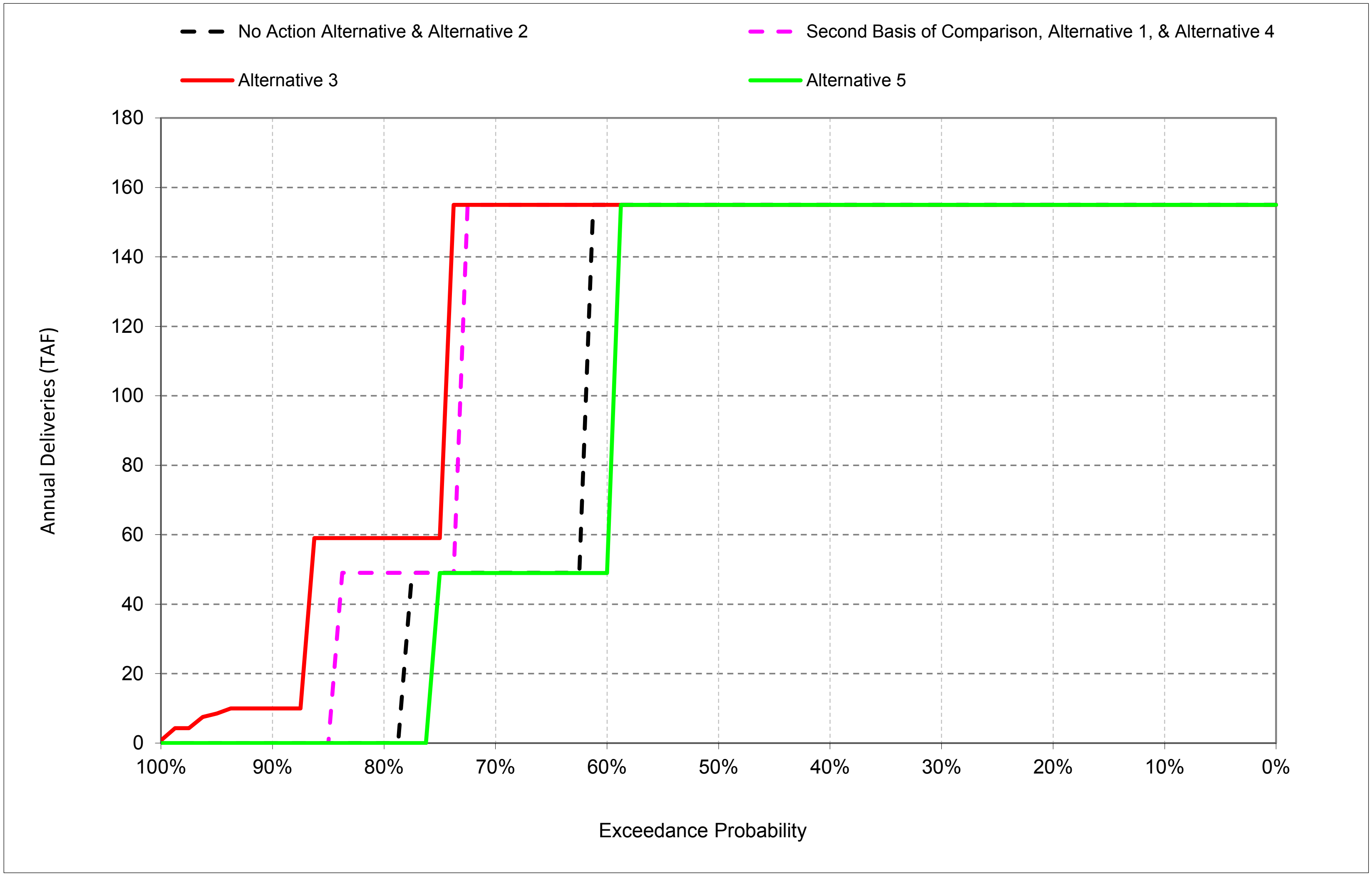
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Annual deliveries are based on March to February Average.

Figure C-19-1-8. Annual CVP Total Deliveries



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Does not include Eastside Contractors deliveries. 6) Annual deliveries are based on March to February Average.

Figure C-19-1-9. Annual CVP Eastside Contractors Deliveries



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Annual deliveries are based on March to February Average.

Table C-19-1-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Alternative 1	No Action Alternative	Alternative 1 minus No Action Alternative
Water Supply Reliability							
Sacramento River Hydrologic Region							
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,859	-1
				Dry	1,905	1,906	-1
				Critical	1,732	1,737	-5
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	146	8
				Dry	151	146	5
				Critical	105	102	3
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	207	7
				Dry	192	186	5
				Critical	151	152	-1
	CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	219	185	34
				Dry	122	86	37
				Critical	35	24	12
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	260	261	0
				Dry	268	269	-1
				Critical	221	224	-3
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	15	2
				Dry	15	14	1
				Critical	12	11	1
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	348	269	79
				Dry	203	140	63
				Critical	61	41	20
San Francisco Bay Hydrologic Region							
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	286	275	11
				Dry	292	284	9
				Critical	305	301	4
	CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	43	33	11
				Dry	25	17	8
				Critical	7	5	2
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
				Dry	12	12	0
				Critical	10	10	0
	CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	709	545	164
				Dry	422	288	134
				Critical	127	85	41
Total For All Regions							
	Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,973	4,660	313
				Dry	4,483	4,221	261
				Critical	3,508	3,433	75

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.
7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table C-19-1-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

					Alternative 1	No Action Alternative	Alternative 1 minus No Action Alternative
Water Supply Reliability							
North of Delta							
	CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term	219	185	34
				Dry	122	86	37
				Critical	35	24	12
	CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	392	386	7
				Dry	390	385	5
				Critical	383	383	-1
	CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	120	113	7
				Dry	105	97	8
				Critical	79	75	5
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,859	-1
				Dry	1,905	1,906	-1
				Critical	1,732	1,737	-5
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	146	8
				Dry	151	146	5
				Critical	105	102	3
Total CVP North of Delta Ag and M&I Deliveries							
	Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	612	571	41
				Dry	512	470	42
				Critical	418	407	11
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,100	847	253
				Dry	650	445	206
				Critical	195	131	64
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	125	112	13
				Dry	109	99	10
				Critical	85	80	4
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	272	273	-1
				Dry	280	281	-1
				Critical	232	234	-3
Total CVP South of Delta Ag and M&I Deliveries							
	Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,225	958	266
				Dry	759	544	216
				Critical	280	212	68
Eastside Contractors deliveries							
	Water Rights	Delivery (annual average)	(TAF/year)	Long Term	514	508	6
				Dry	524	524	0
				Critical	486	445	42
	CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	118	104	15
				Dry	98	84	13
				Critical	25	4	21
Total Eastside Contractors Deliveries							
	Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	632	611	21
				Dry	621	608	13
				Critical	511	449	63

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

Table C-19-2-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Alternative 3	No Action Alternative	Alternative 3 minus No Action Alternative
Water Supply Reliability							
Sacramento River Hydrologic Region							
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,859	1
				Dry	1,906	1,906	0
				Critical	1,742	1,737	5
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	146	7
				Dry	149	146	4
				Critical	103	102	1
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	207	6
				Dry	192	186	6
				Critical	152	152	1
	CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	209	185	24
				Dry	111	86	25
				Critical	31	24	7
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
				Dry	269	269	0
				Critical	224	224	0
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	15	1
				Dry	15	14	1
				Critical	11	11	0
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	342	269	73
				Dry	185	140	45
				Critical	53	41	12
San Francisco Bay Hydrologic Region							
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	284	275	9
				Dry	291	284	7
				Critical	304	301	2
	CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	42	33	9
				Dry	23	17	6
				Critical	6	5	1
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
				Dry	12	12	0
				Critical	10	10	0
	CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	696	545	150
				Dry	387	288	99
				Critical	108	85	23
Total For All Regions							
	Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,942	4,660	282
				Dry	4,415	4,221	194
				Critical	3,486	3,433	53

Notes:

1) Long-term Average is the average quantity for the 82-year simulation period.

2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.

5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

6) Annual deliveries are based on March to February Average.

7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table C-19-2-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 3	No Action Alternative	Alternative 3 minus No Action Alternative
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term	209	185	24
			Dry	111	86	25
			Critical	31	24	7
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	392	386	6
			Dry	390	385	6
			Critical	384	383	1
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	118	113	6
			Dry	104	97	7
			Critical	78	75	3
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,859	1
			Dry	1,906	1,906	0
			Critical	1,742	1,737	5
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	146	7
			Dry	149	146	4
			Critical	103	102	1
Total CVP North of Delta Ag and M&I Deliveries						
Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	602	571	30
			Dry	501	470	31
			Critical	415	407	8
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,079	847	233
			Dry	596	445	151
			Critical	168	131	36
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	122	112	11
			Dry	108	99	8
			Critical	83	80	2
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	273	273	0
			Dry	281	281	0
			Critical	234	234	0
Total CVP South of Delta Ag and M&I Deliveries						
Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,202	958	243
			Dry	703	544	159
			Critical	250	212	38
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	513	508	5
			Dry	524	524	0
			Critical	478	445	33
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	123	104	20
			Dry	109	84	25
			Critical	36	4	32
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	636	611	25
			Dry	633	608	25
			Critical	514	449	66

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

Table C-19-3-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Alternative 5	No Action Alternative	Alternative 5 minus No Action Alternative
Water Supply Reliability							
Sacramento River Hydrologic Region							
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term		1,861	1,859	2
			Dry		1,906	1,906	0
			Critical		1,747	1,737	10
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		146	146	0
			Dry		145	146	0
			Critical		103	102	1
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		207	207	0
			Dry		186	186	0
			Critical		152	152	0
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term		185	185	0
			Dry		85	86	0
			Critical		24	24	0
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term		852	852	0
			Dry		875	875	0
			Critical		741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		261	261	0
			Dry		269	269	0
			Critical		222	224	-2
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		15	15	0
			Dry		14	14	0
			Critical		11	11	0
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term		264	269	-5
			Dry		135	140	-5
			Critical		40	41	-1
San Francisco Bay Hydrologic Region							
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		275	275	0
			Dry		284	284	1
			Critical		301	301	0
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term		32	33	0
			Dry		17	17	0
			Critical		5	5	0
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		12	12	0
			Dry		12	12	0
			Critical		10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term		538	545	-7
			Dry		281	288	-7
			Critical		85	85	0
Total For All Regions							
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term		4,649	4,660	-11
			Dry		4,210	4,221	-12
			Critical		3,441	3,433	8

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.
7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table C-19-3-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 5	No Action Alternative	Alternative 5 minus No Action Alternative
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term	185	185	0
			Dry	85	86	0
			Critical	24	24	0
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	386	386	0
			Dry	384	385	0
			Critical	384	383	1
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	112	113	0
			Dry	96	97	0
			Critical	74	75	-1
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,859	2
			Dry	1,906	1,906	0
			Critical	1,747	1,737	10
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	146	0
			Dry	145	146	0
			Critical	103	102	1
Total CVP North of Delta Ag and M&I Deliveries						
Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	571	571	0
			Dry	470	470	0
			Critical	408	407	1
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	834	847	-13
			Dry	433	445	-12
			Critical	130	131	-1
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	112	112	0
			Dry	100	99	1
			Critical	80	80	0
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	273	273	0
			Dry	281	281	0
			Critical	232	234	-2
Total CVP South of Delta Ag and M&I Deliveries						
Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	946	958	-13
			Dry	533	544	-11
			Critical	210	212	-2
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	502	508	-6
			Dry	524	524	0
			Critical	406	445	-39
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	100	104	-4
			Dry	69	84	-16
			Critical	8	4	4
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	602	611	-10
			Dry	593	608	-16
			Critical	414	449	-35

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

Table C-19-4-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

				No Action Alternative	Second Basis of Comparison	No Action Alternative minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,859	1,858	1
			Dry	1,906	1,905	1
			Critical	1,737	1,732	5
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
			Dry	146	151	-5
			Critical	102	105	-3
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	207	214	-7
			Dry	186	192	-5
			Critical	152	151	1
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	185	219	-34
			Dry	86	122	-37
			Critical	24	35	-12
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	0
			Dry	269	268	1
			Critical	224	221	3
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	15	17	-2
			Dry	14	15	-1
			Critical	11	12	-1
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	269	348	-79
			Dry	140	203	-63
			Critical	41	61	-20
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	275	286	-11
			Dry	284	292	-9
			Critical	301	305	-4
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	33	43	-11
			Dry	17	25	-8
			Critical	5	7	-2
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	545	709	-164
			Dry	288	422	-134
			Critical	85	127	-41
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,660	4,973	-313
			Dry	4,221	4,483	-261
			Critical	3,433	3,508	-75

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.
7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table C-19-4-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				No Action Alternative	Second Basis of Comparison	No Action Alternative minus Second Basis of Comparison
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term	185	219	-34
			Dry	86	122	-37
			Critical	24	35	-12
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	386	392	-7
			Dry	385	390	-5
			Critical	383	383	1
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	113	120	-7
			Dry	97	105	-8
			Critical	75	79	-5
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,859	1,858	1
			Dry	1,906	1,905	1
			Critical	1,737	1,732	5
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
			Dry	146	151	-5
			Critical	102	105	-3
Total CVP North of Delta Ag and M&I Deliveries						
Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	571	612	-41
			Dry	470	512	-42
			Critical	407	418	-11
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	847	1,100	-253
			Dry	445	650	-206
			Critical	131	195	-64
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	112	125	-13
			Dry	99	109	-10
			Critical	80	85	-4
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	273	272	1
			Dry	281	280	1
			Critical	234	232	3
Total CVP South of Delta Ag and M&I Deliveries						
Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	958	1,225	-266
			Dry	544	759	-216
			Critical	212	280	-68
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	508	514	-6
			Dry	524	524	0
			Critical	445	486	-42
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	104	118	-15
			Dry	84	98	-13
			Critical	4	25	-21
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	611	632	-21
			Dry	608	621	-13
			Critical	449	511	-63

Notes:

1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

Table C-19-5-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

				Alternative 3	Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,858	2
			Dry	1,906	1,905	1
			Critical	1,742	1,732	10
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	155	-1
			Dry	149	151	-2
			Critical	103	105	-2
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	214	0
			Dry	192	192	0
			Critical	152	151	2
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	209	219	-10
			Dry	111	122	-11
			Critical	31	35	-4
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	1
			Dry	269	268	1
			Critical	224	221	3
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	17	0
			Dry	15	15	0
			Critical	11	12	0
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	342	348	-6
			Dry	185	203	-17
			Critical	53	61	-8
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	284	286	-2
			Dry	291	292	-1
			Critical	304	305	-2
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	42	43	-1
			Dry	23	25	-2
			Critical	6	7	-1
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	696	709	-13
			Dry	387	422	-35
			Critical	108	127	-18
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,942	4,973	-32
			Dry	4,415	4,483	-67
			Critical	3,486	3,508	-22

Notes:

1) Long-term Average is the average quantity for the 82-year simulation period.

2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.

5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

6) Annual deliveries are based on March to February Average.

7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table C-19-5-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

					Alternative 3	Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison
Water Supply Reliability							
North of Delta							
CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term		209	219	-10
			Dry		111	122	-11
			Critical		31	35	-4
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term		392	392	0
			Dry		390	390	0
			Critical		384	383	2
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term		118	120	-2
			Dry		104	105	-1
			Critical		78	79	-2
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term		1,860	1,858	2
			Dry		1,906	1,905	1
			Critical		1,742	1,732	10
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		153	155	-1
			Dry		149	151	-2
			Critical		103	105	-2
Total CVP North of Delta Ag and M&I Deliveries							
Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term		602	612	-10
			Dry		501	512	-11
			Critical		415	418	-3
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)							
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term		1,079	1,100	-20
			Dry		596	650	-55
			Critical		168	195	-28
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		122	125	-2
			Dry		108	109	-1
			Critical		83	85	-2
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term		852	852	0
			Dry		875	875	0
			Critical		741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		273	272	1
			Dry		281	280	1
			Critical		234	232	3
Total CVP South of Delta Ag and M&I Deliveries							
Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term		1,202	1,225	-23
			Dry		703	759	-56
			Critical		250	280	-30
Eastside Contractors deliveries							
Water Rights	Delivery (annual average)	(TAF/year)	Long Term		513	514	-1
			Dry		524	524	0
			Critical		478	486	-8
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term		123	118	5
			Dry		109	98	12
			Critical		36	25	11
Total Eastside Contractors Deliveries							
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term		636	632	4
			Dry		633	621	12
			Critical		514	511	3

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

Table C-19-6-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

				Alternative 5	Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,858	3
			Dry	1,906	1,905	1
			Critical	1,747	1,732	15
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
			Dry	145	151	-6
			Critical	103	105	-2
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	207	214	-6
			Dry	186	192	-6
			Critical	152	151	1
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	185	219	-34
			Dry	85	122	-37
			Critical	24	35	-11
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	0
			Dry	269	268	1
			Critical	222	221	0
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	15	17	-2
			Dry	14	15	-1
			Critical	11	12	-1
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	264	348	-84
			Dry	135	203	-68
			Critical	40	61	-21
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	275	286	-11
			Dry	284	292	-8
			Critical	301	305	-4
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	32	43	-11
			Dry	17	25	-8
			Critical	5	7	-2
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	538	709	-171
			Dry	281	422	-141
			Critical	85	127	-42
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,649	4,973	-324
			Dry	4,210	4,483	-273
			Critical	3,441	3,508	-67

Notes:

1) Long-term Average is the average quantity for the 82-year simulation period.

2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.

5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

6) Annual deliveries are based on March to February Average.

7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table C-19-6-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

					Alternative 5	Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Water Supply Reliability							
North of Delta							
	CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term	185	219	-34
				Dry	85	122	-37
				Critical	24	35	-11
	CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	386	392	-6
				Dry	384	390	-6
				Critical	384	383	1
	CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	112	120	-7
				Dry	96	105	-9
				Critical	74	79	-6
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,858	3
				Dry	1,906	1,905	1
				Critical	1,747	1,732	15
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
				Dry	145	151	-6
				Critical	103	105	-2
Total CVP North of Delta Ag and M&I Deliveries							
	Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	571	612	-41
				Dry	470	512	-42
				Critical	408	418	-10
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	834	1,100	-266
				Dry	433	650	-217
				Critical	130	195	-65
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	112	125	-13
				Dry	100	109	-9
				Critical	80	85	-5
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	273	272	0
				Dry	281	280	1
				Critical	232	232	0
Total CVP South of Delta Ag and M&I Deliveries							
	Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	946	1,225	-279
				Dry	533	759	-226
				Critical	210	280	-70
Eastside Contractors deliveries							
	Water Rights	Delivery (annual average)	(TAF/year)	Long Term	502	514	-12
				Dry	524	524	0
				Critical	406	486	-80
	CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	100	118	-19
				Dry	69	98	-29
				Critical	8	25	-17
Total Eastside Contractors Deliveries							
	Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	602	632	-31
				Dry	593	621	-29
				Critical	414	511	-97

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

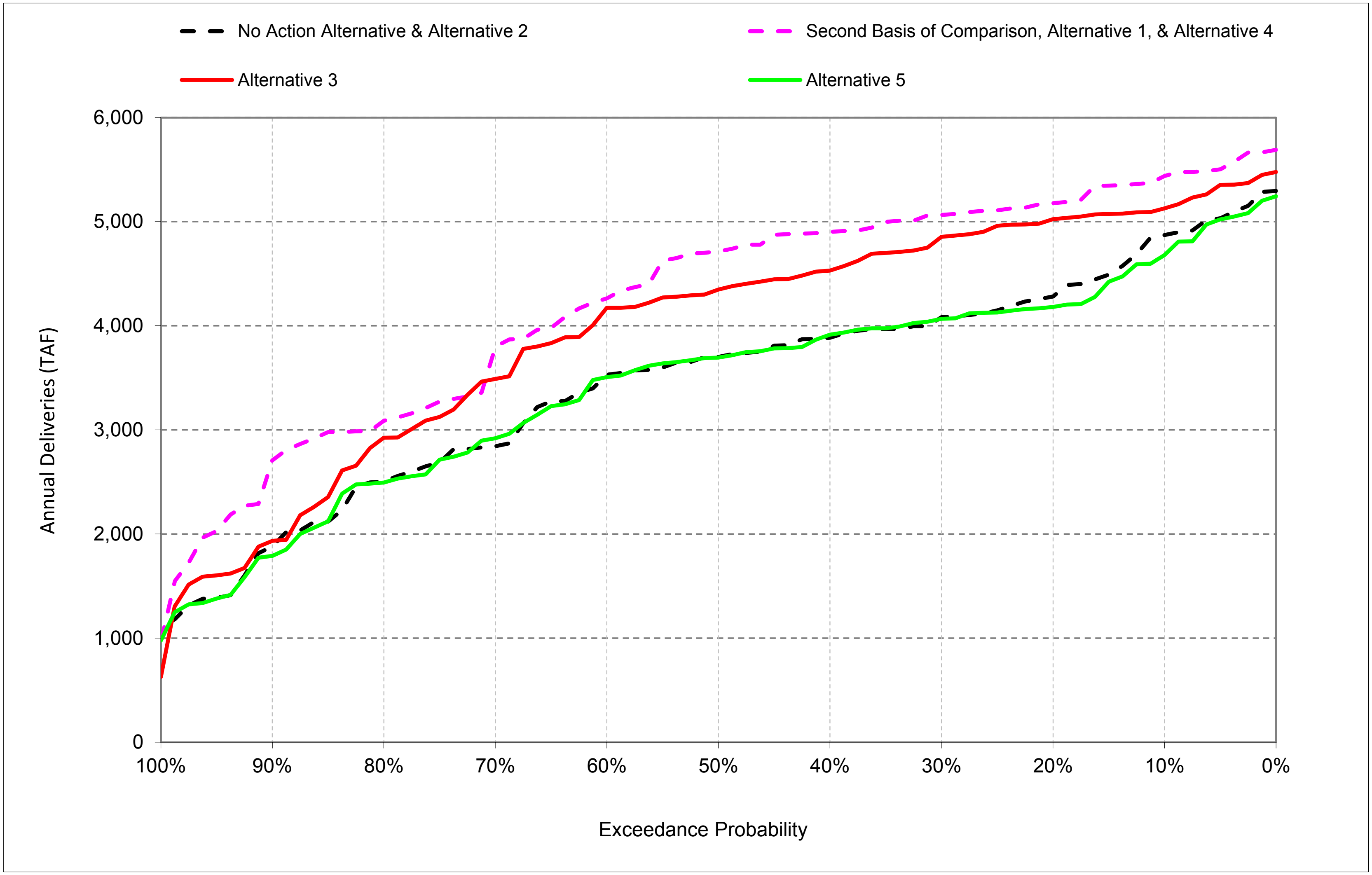
Table C-19-7. Stanislaus CVP and Water Rights Deliveries, Long-Term Averages

	Stanislaus Deliveries		Difference from No Action Alternative		Difference from Second Basis of Comparison	
	CVP	Water Rights	CVP	Water Rights	CVP	Water Rights
	(TAF)	(TAF)	(TAF)	(TAF)	(TAF)	(TAF)
No Action Alternative	103.5	507.8				
Second Basis of Comparison	118.3	514.0	14.8	6.2		
Alternative 2	103.5	507.8			-14.8	-6.2
Alternative 3	123.2	512.7	19.6	4.9	4.8	-1.2
Alternative 5	99.7	502.1	-3.8	-5.7	-18.6	-11.9

Notes:
1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text.
3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

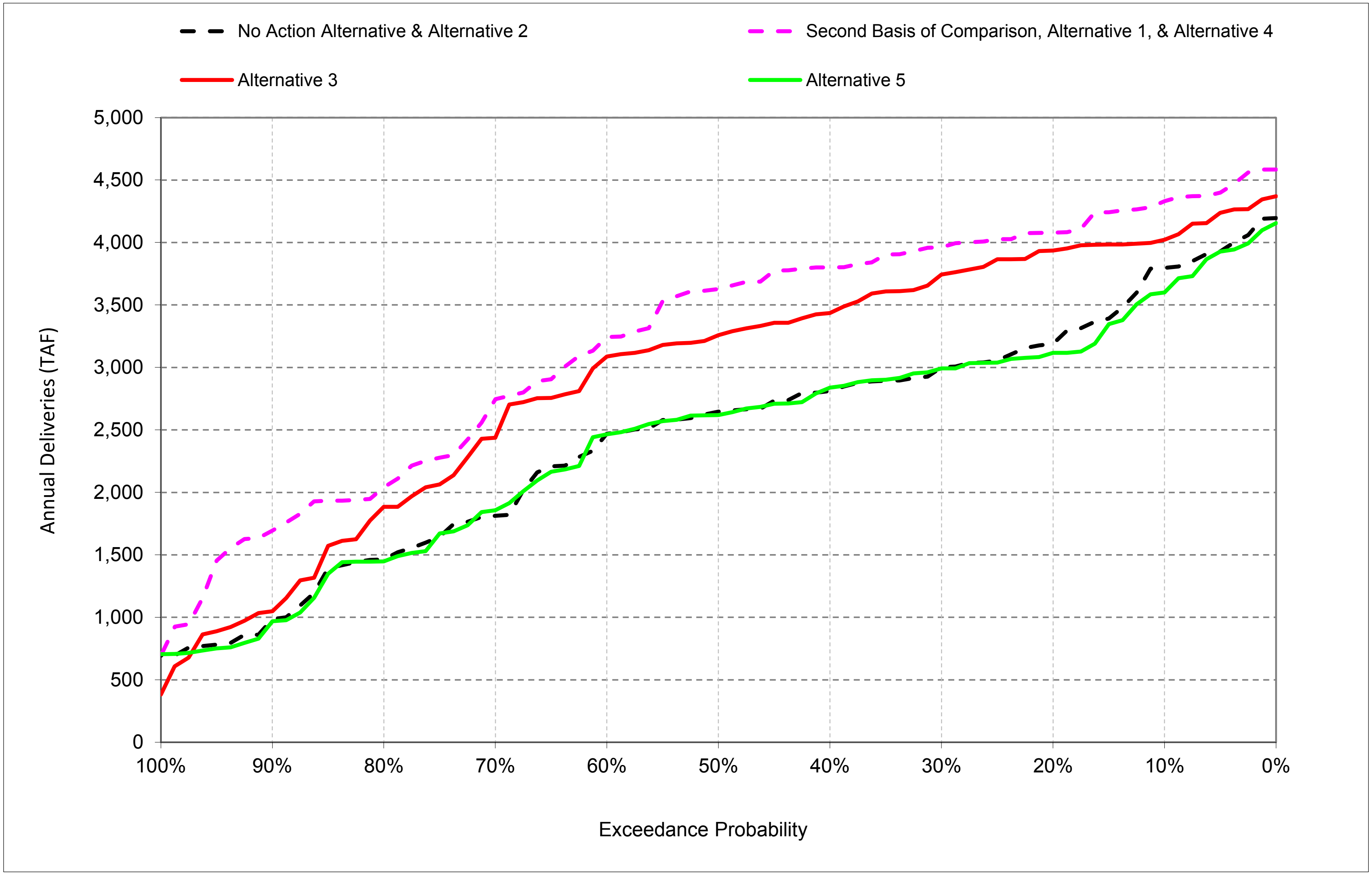
C.20. SWP Deliveries

Figure C-20-1-1. Total Annual SWP Deliveries



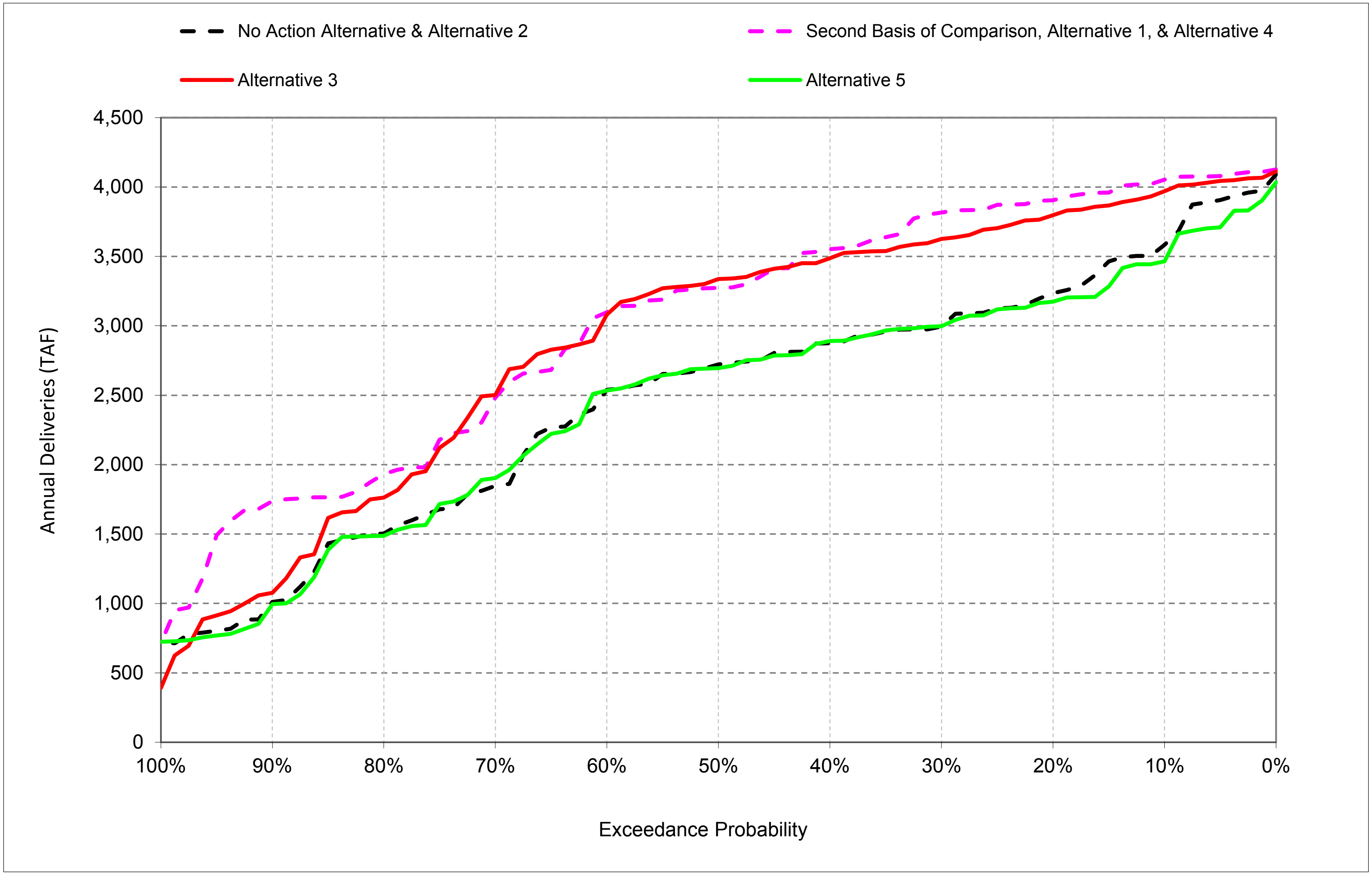
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Figure C-20-1-2. Total Annual SWP South of Delta Deliveries including Article 21 and 56



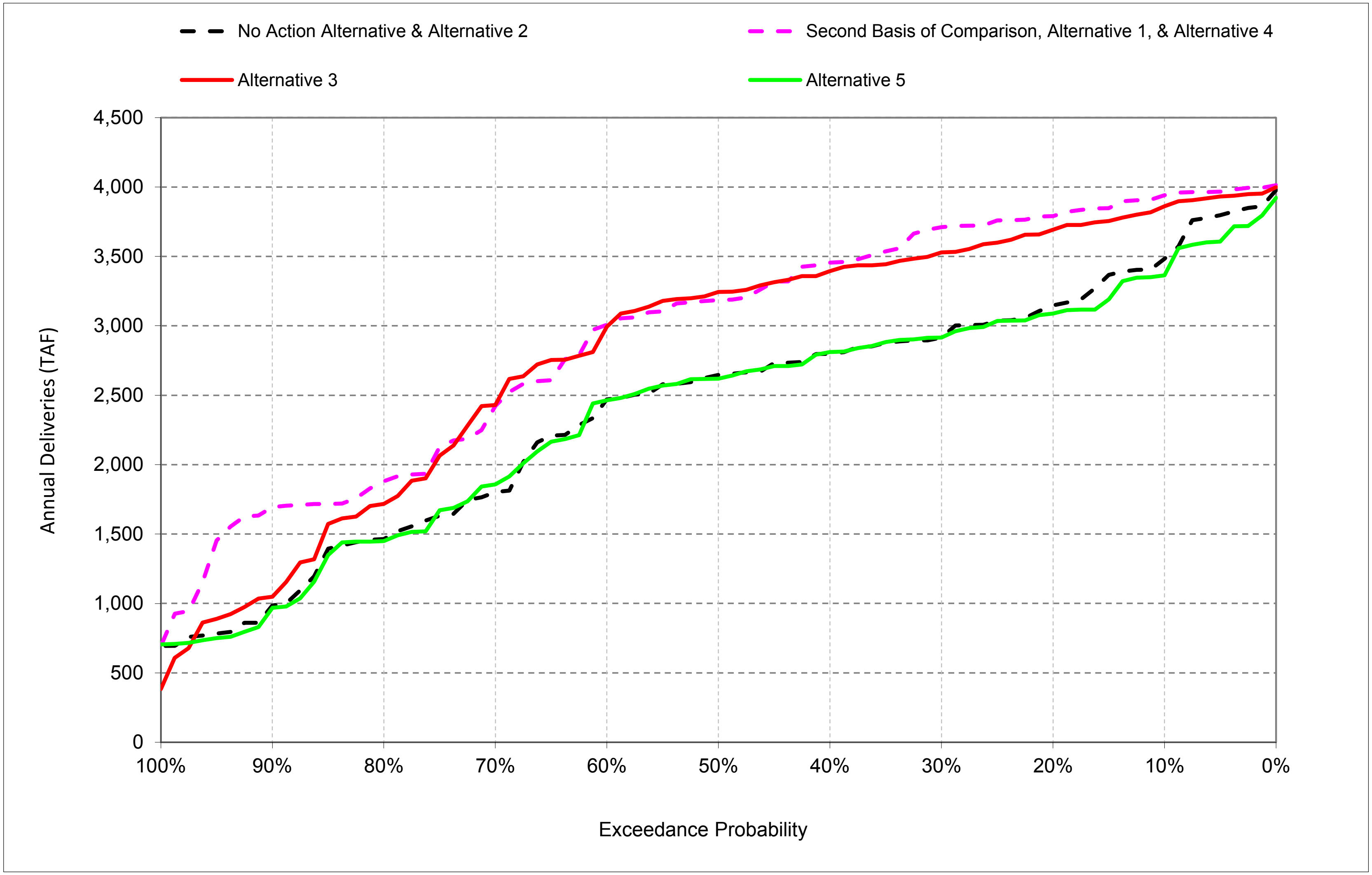
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Figure C-20-1-3. Annual SWP Table A Deliveries with Article 56



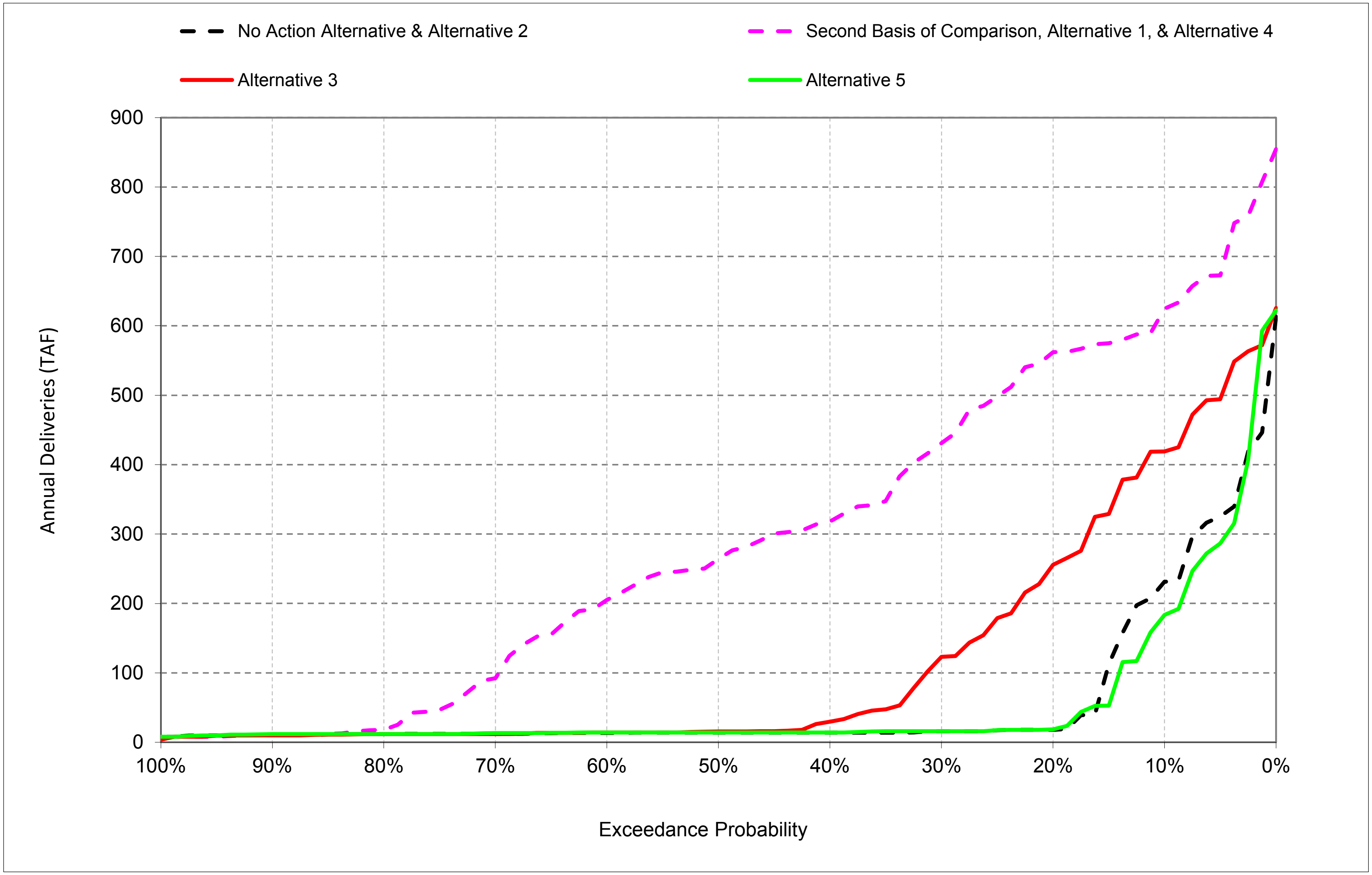
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Figure C-20-1-4. Annual SWP South of Delta Table A Deliveries with Article 56



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Figure C-20-1-5. Annual SWP Article 21 Deliveries



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-1-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

				Alternative 1	No Action Alternative	Alternative 1 minus No Action Alternative
Water Supply Reliability						
Sacramento River Hydrologic Region						
SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term	931	931	0
			Dry	946	946	0
			Critical	709	710	-1
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	27	22	5
			Dry	19	16	3
			Critical	12	9	3
San Joaquin River Hydrologic Region						
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	4	3	1
			Dry	3	3	1
			Critical	2	1	0
San Francisco Bay Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	220	181	39
			Dry	167	137	30
			Critical	103	76	27
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	22	15	7
			Dry	21	14	6
			Critical	12	13	-1
Central Coast Hydrologic Region						
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	52	42	10
			Dry	39	31	8
			Critical	24	17	7
Tulare Lake Hydrologic Region						
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	99	81	18
			Dry	75	60	15
			Critical	46	33	14
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	736	599	137
			Dry	557	447	110
			Critical	340	246	94
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	176	26	150
			Dry	141	5	136
			Critical	28	10	18
South Lahontan Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	325	266	59
			Dry	253	204	50
			Critical	156	115	41
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	4	0	4
			Dry	4	0	4
			Critical	2	1	1
South Coast Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,544	1,276	268
			Dry	1,240	1,008	232
			Critical	792	563	229
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	90	18	72
			Dry	75	4	70
			Critical	7	4	3
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	9	8	2
			Dry	7	6	1
			Critical	4	3	1
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	2	0	2
			Dry	1	0	1
			Critical	0	0	0
Total For All Regions						
Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	3,947	3,409	537
			Dry	3,308	2,858	450
			Critical	2,189	1,773	415
Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	294	60	234
			Dry	242	24	218
			Critical	49	27	22

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-1-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					Alternative 1	No Action Alternative	Alternative 1 minus No Action Alternative
Water Supply Reliability							
North of Delta							
SWP Ag		Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
				Dry	0	0	0
				Critical	0	0	0
SWP M&I (w/o Article 21)		Contract Delivery (annual average)	(TAF/year)	Long Term	83	68	15
				Dry	62	51	11
				Critical	53	43	11
SWP M&I Article 21		Contract Delivery (annual average)	(TAF/year)	Long Term	12	13	-1
				Dry	13	14	-1
				Critical	12	13	-1
Total SWP North of Delta							
Total SWP Ag and M&I NOD (w/o Article 21)		Contract Delivery (annual average)	(TAF/year)	Long Term	83	68	15
				Dry	62	51	11
				Critical	53	43	11
Total SWP Ag and M&I Article 21 NOD		Contract Delivery (annual average)	(TAF/year)	Long Term	12	13	-1
				Dry	13	14	-1
				Critical	12	13	-1
South of Delta							
SWP Ag (w/o Article 21)		Contract Delivery (annual average)	(TAF/year)	Long Term	750	610	139
				Dry	567	455	112
				Critical	484	378	106
SWP Ag Article 21		Contract Delivery (annual average)	(TAF/year)	Long Term	178	27	152
				Dry	143	5	138
				Critical	100	7	93
SWP M&I (w/o Article 21)		Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	2,183	1,800	383
				Dry	1,732	1,406	327
				Critical	1,494	1,173	321
SWP M&I Article 21		Contract Delivery (annual average)	(TAF/year)	Long Term	104	20	84
				Dry	86	5	82
				Critical	58	5	53
Total SWP South of Delta							
Total SWP Ag and M&I SOD (w/o Article 21)		Contract Delivery (annual average)	(TAF/year)	Long Term	2,933	2,410	523
				Dry	2,299	1,861	439
				Critical	1,978	1,551	427
Total SWP Ag and M&I Article 21 SOD		Contract Delivery (annual average)	(TAF/year)	Long Term	282	47	236
				Dry	229	10	219
				Critical	158	12	146

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-2-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					Alternative 3	No Action Alternative	Alternative 3 minus No Action Alternative
Water Supply Reliability							
Sacramento River Hydrologic Region							
	SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term	932	931	1
				Dry	946	946	0
				Critical	721	710	10
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	25	22	4
				Dry	18	16	3
				Critical	9	9	0
San Joaquin River Hydrologic Region							
	SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	4	3	1
				Dry	3	3	0
				Critical	1	1	0
San Francisco Bay Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	211	181	30
				Dry	160	137	23
				Critical	77	76	1
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	17	15	2
				Dry	16	14	1
				Critical	12	13	-1
Central Coast Hydrologic Region							
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	50	42	7
				Dry	37	31	5
				Critical	18	17	1
Tulare Lake Hydrologic Region							
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	95	81	14
				Dry	71	60	11
				Critical	35	33	2
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	703	599	104
				Dry	523	447	76
				Critical	253	246	8
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	72	26	46
				Dry	36	5	31
				Critical	13	10	3
South Lahontan Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	312	266	46
				Dry	240	204	36
				Critical	118	115	4
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	2	0	2
				Dry	2	0	2
				Critical	1	1	0
South Coast Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,493	1,276	216
				Dry	1,182	1,008	174
				Critical	596	563	33
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	26	18	8
				Dry	6	4	2
				Critical	7	4	3
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	9	8	1
				Dry	7	6	1
				Critical	3	3	0
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	1	0	1
				Dry	0	0	0
				Critical	0	0	0
Total For All Regions							
	Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	3,834	3,409	425
				Dry	3,187	2,858	329
				Critical	1,832	1,773	58
	Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	119	60	59
				Dry	60	24	36
				Critical	33	27	6

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-2-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

				Alternative 3	No Action Alternative	Alternative 3 minus No Action Alternative
Water Supply Reliability						
North of Delta						
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	80	68	11
			Dry	60	51	8
			Critical	48	43	5
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	12	13	-1
			Dry	13	14	-1
			Critical	12	13	-1
Total SWP North of Delta						
Total SWP Ag and M&I NOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	80	68	11
			Dry	60	51	8
			Critical	48	43	5
Total SWP Ag and M&I Article 21 NOD	Contract Delivery (annual average)	(TAF/year)	Long Term	12	13	-1
			Dry	13	14	-1
			Critical	12	13	-1
South of Delta						
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	716	610	106
			Dry	533	455	78
			Critical	430	378	52
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	73	27	47
			Dry	36	5	31
			Critical	27	7	21
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	2,106	1,800	306
			Dry	1,649	1,406	243
			Critical	1,340	1,173	167
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	33	20	13
			Dry	11	5	6
			Critical	10	5	5
Total SWP South of Delta						
Total SWP Ag and M&I SOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	2,822	2,410	412
			Dry	2,182	1,861	321
			Critical	1,770	1,551	219
Total SWP Ag and M&I Article 21 SOD	Contract Delivery (annual average)	(TAF/year)	Long Term	106	47	60
			Dry	47	10	37
			Critical	38	12	26

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-3-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

				Alternative 5	No Action Alternative	Alternative 5 minus No Action Alternative
Water Supply Reliability						
Sacramento River Hydrologic Region						
SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term	932	931	1
			Dry	946	946	0
			Critical	717	710	6
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	21	22	0
			Dry	16	16	0
			Critical	9	9	0
San Joaquin River Hydrologic Region						
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	3	3	0
			Dry	3	3	0
			Critical	1	1	0
San Francisco Bay Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	178	181	-3
			Dry	136	137	-1
			Critical	74	76	-2
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	15	15	0
			Dry	15	14	1
			Critical	12	13	0
Central Coast Hydrologic Region						
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	42	42	-1
			Dry	31	31	0
			Critical	17	17	-1
Tulare Lake Hydrologic Region						
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	80	81	-1
			Dry	60	60	0
			Critical	32	33	-1
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	588	599	-12
			Dry	440	447	-6
			Critical	233	246	-13
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	24	26	-2
			Dry	6	5	1
			Critical	0	10	-9
South Lahontan Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	263	266	-3
			Dry	203	204	-1
			Critical	109	115	-6
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	1	-1
South Coast Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,268	1,276	-8
			Dry	1,002	1,008	-6
			Critical	545	563	-18
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	17	18	-1
			Dry	4	4	0
			Critical	0	4	-4
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	7	8	0
			Dry	6	6	0
			Critical	3	3	0
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
Total For All Regions						
Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	3,382	3,409	-27
			Dry	2,842	2,858	-16
			Critical	1,739	1,773	-35
Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	56	60	-3
			Dry	25	24	2
			Critical	13	27	-14

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-3-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					Alternative 5	No Action Alternative	Alternative 5 minus No Action Alternative
Water Supply Reliability							
North of Delta							
	SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
				Dry	0	0	0
				Critical	0	0	0
	SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	67	68	-1
				Dry	51	51	0
				Critical	42	43	-1
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	13	13	0
				Dry	14	14	1
				Critical	13	13	1
Total SWP North of Delta							
	Total SWP Ag and M&I NOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	67	68	-1
				Dry	51	51	0
				Critical	42	43	-1
	Total SWP Ag and M&I Article 21 NOD	Contract Delivery (annual average)	(TAF/year)	Long Term	13	13	0
				Dry	14	14	1
				Critical	13	13	1
South of Delta							
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	598	610	-12
				Dry	449	455	-7
				Critical	369	378	-9
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	24	27	-2
				Dry	6	5	1
				Critical	4	7	-3
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,784	1,800	-15
				Dry	1,397	1,406	-9
				Critical	1,157	1,173	-16
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	19	20	-1
				Dry	5	5	0
				Critical	3	5	-2
Total SWP South of Delta							
	Total SWP Ag and M&I SOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	2,383	2,410	-27
				Dry	1,845	1,861	-15
				Critical	1,526	1,551	-25
	Total SWP Ag and M&I Article 21 SOD	Contract Delivery (annual average)	(TAF/year)	Long Term	43	47	-4
				Dry	11	10	1
				Critical	7	12	-5

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-4-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					No Action Alternative	Second Basis of Comparison	No Action Alternative minus Second Basis of Comparison
Water Supply Reliability							
Sacramento River Hydrologic Region							
SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term		931	931	0
			Dry		946	946	0
			Critical		710	709	1
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		22	27	-5
			Dry		16	19	-3
			Critical		9	12	-3
San Joaquin River Hydrologic Region							
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term		3	4	-1
			Dry		3	3	-1
			Critical		1	2	0
San Francisco Bay Hydrologic Region							
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term		181	220	-39
			Dry		137	167	-30
			Critical		76	103	-27
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		15	22	-7
			Dry		14	21	-6
			Critical		13	12	1
Central Coast Hydrologic Region							
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		42	52	-10
			Dry		31	39	-8
			Critical		17	24	-7
Tulare Lake Hydrologic Region							
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		81	99	-18
			Dry		60	75	-15
			Critical		33	46	-14
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		599	736	-137
			Dry		447	557	-110
			Critical		246	340	-94
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		26	176	-150
			Dry		5	141	-136
			Critical		10	28	-18
South Lahontan Hydrologic Region							
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		266	325	-59
			Dry		204	253	-50
			Critical		115	156	-41
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		0	4	-4
			Dry		0	4	-4
			Critical		1	2	-1
South Coast Hydrologic Region							
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term		1,276	1,544	-268
			Dry		1,008	1,240	-232
			Critical		563	792	-229
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		18	90	-72
			Dry		4	75	-70
			Critical		4	7	-3
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		8	9	-2
			Dry		6	7	-1
			Critical		3	4	-1
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		0	2	-2
			Dry		0	1	-1
			Critical		0	0	0
Total For All Regions							
Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		3,409	3,947	-537
			Dry		2,858	3,308	-450
			Critical		1,773	2,189	-415
Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term		60	294	-234
			Dry		24	242	-218
			Critical		27	49	-22

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-4-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					No Action Alternative	Second Basis of Comparison	No Action Alternative minus Second Basis of Comparison
Water Supply Reliability							
North of Delta							
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term		0	0	0
			Dry		0	0	0
			Critical		0	0	0
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		68	83	-15
			Dry		51	62	-11
			Critical		43	53	-11
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		13	12	1
			Dry		14	13	1
			Critical		13	12	1
Total SWP North of Delta							
Total SWP Ag and M&I NOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		68	83	-15
			Dry		51	62	-11
			Critical		43	53	-11
Total SWP Ag and M&I Article 21 NOD	Contract Delivery (annual average)	(TAF/year)	Long Term		13	12	1
			Dry		14	13	1
			Critical		13	12	1
South of Delta							
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		610	750	-139
			Dry		455	567	-112
			Critical		378	484	-106
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		27	178	-152
			Dry		5	143	-138
			Critical		7	100	-93
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term		1,800	2,183	-383
			Dry		1,406	1,732	-327
			Critical		1,173	1,494	-321
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		20	104	-84
			Dry		5	86	-82
			Critical		5	58	-53
Total SWP South of Delta							
Total SWP Ag and M&I SOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		2,410	2,933	-523
			Dry		1,861	2,299	-439
			Critical		1,551	1,978	-427
Total SWP Ag and M&I Article 21 SOD	Contract Delivery (annual average)	(TAF/year)	Long Term		47	282	-236
			Dry		10	229	-219
			Critical		12	158	-146

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-5-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					Alternative 3	Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison
Water Supply Reliability							
Sacramento River Hydrologic Region							
	SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term	932	931	2
				Dry	946	946	0
				Critical	721	709	11
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	25	27	-1
				Dry	18	19	-1
				Critical	9	12	-3
San Joaquin River Hydrologic Region							
	SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	4	4	0
				Dry	3	3	0
				Critical	1	2	0
San Francisco Bay Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	211	220	-8
				Dry	160	167	-7
				Critical	77	103	-26
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	17	22	-5
				Dry	16	21	-5
				Critical	12	12	0
Central Coast Hydrologic Region							
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	50	52	-2
				Dry	37	39	-2
				Critical	18	24	-6
Tulare Lake Hydrologic Region							
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	95	99	-4
				Dry	71	75	-4
				Critical	35	46	-12
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	703	736	-33
				Dry	523	557	-33
				Critical	253	340	-86
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	72	176	-104
				Dry	36	141	-106
				Critical	13	28	-15
South Lahontan Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	312	325	-13
				Dry	240	253	-14
				Critical	118	156	-38
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	2	4	-1
				Dry	2	4	-2
				Critical	1	2	-1
South Coast Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,493	1,544	-51
				Dry	1,182	1,240	-59
				Critical	596	792	-196
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	26	90	-64
				Dry	6	75	-68
				Critical	7	7	0
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	9	9	0
				Dry	7	7	0
				Critical	3	4	-1
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	1	2	-1
				Dry	0	1	-1
				Critical	0	0	0
Total For All Regions							
	Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	3,834	3,947	-113
				Dry	3,187	3,308	-120
				Critical	1,832	2,189	-357
	Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	119	294	-175
				Dry	60	242	-182
				Critical	33	49	-16

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-5-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

				Alternative 3	Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison
Water Supply Reliability						
North of Delta						
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	80	83	-3
			Dry	60	62	-3
			Critical	48	53	-5
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	1
			Dry	13	13	0
			Critical	12	12	0
Total SWP North of Delta						
Total SWP Ag and M&I NOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	80	83	-3
			Dry	60	62	-3
			Critical	48	53	-5
Total SWP Ag and M&I Article 21 NOD	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	1
			Dry	13	13	0
			Critical	12	12	0
South of Delta						
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	716	750	-34
			Dry	533	567	-34
			Critical	430	484	-54
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	73	178	-105
			Dry	36	143	-107
			Critical	27	100	-72
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	2,106	2,183	-77
			Dry	1,649	1,732	-84
			Critical	1,340	1,494	-154
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	33	104	-71
			Dry	11	86	-75
			Critical	10	58	-48
Total SWP South of Delta						
Total SWP Ag and M&I SOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	2,822	2,933	-111
			Dry	2,182	2,299	-118
			Critical	1,770	1,978	-208
Total SWP Ag and M&I Article 21 SOD	Contract Delivery (annual average)	(TAF/year)	Long Term	106	282	-176
			Dry	47	229	-182
			Critical	38	158	-120

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on January to December average.

Table C-20-6-1. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

				Alternative 5	Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term	932	931	1
			Dry	946	946	0
			Critical	717	709	7
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	21	27	-5
			Dry	16	19	-3
			Critical	9	12	-3
San Joaquin River Hydrologic Region						
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	3	4	-1
			Dry	3	3	-1
			Critical	1	2	0
San Francisco Bay Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	178	220	-42
			Dry	136	167	-31
			Critical	74	103	-30
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	15	22	-7
			Dry	15	21	-6
			Critical	12	12	1
Central Coast Hydrologic Region						
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	42	52	-10
			Dry	31	39	-8
			Critical	17	24	-8
Tulare Lake Hydrologic Region						
SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	80	99	-20
			Dry	60	75	-16
			Critical	32	46	-15
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	588	736	-148
			Dry	440	557	-116
			Critical	233	340	-107
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	24	176	-152
			Dry	6	141	-135
			Critical	0	28	-27
South Lahontan Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	263	325	-63
			Dry	203	253	-51
			Critical	109	156	-47
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	0	4	-4
			Dry	0	4	-4
			Critical	0	2	-2
South Coast Hydrologic Region						
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,268	1,544	-276
			Dry	1,002	1,240	-238
			Critical	545	792	-247
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	17	90	-73
			Dry	4	75	-70
			Critical	0	7	-7
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	7	9	-2
			Dry	6	7	-1
			Critical	3	4	-1
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	0	2	-2
			Dry	0	1	-1
			Critical	0	0	0
Total For All Regions						
Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	3,382	3,947	-565
			Dry	2,842	3,308	-465
			Critical	1,739	2,189	-450
Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	56	294	-238
			Dry	25	242	-217
			Critical	13	49	-36

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Annual deliveries are based on January to December average.

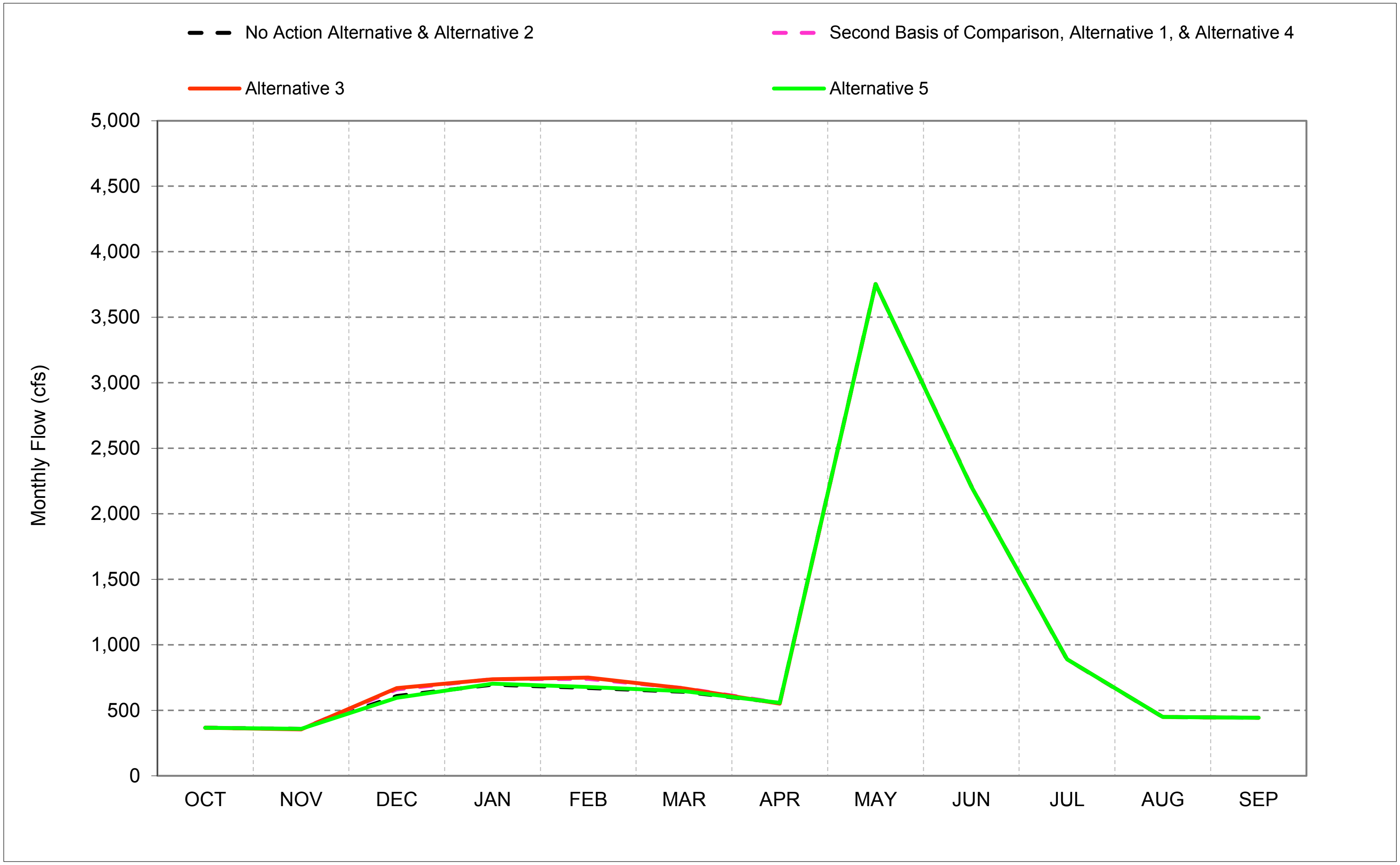
Table C-20-6-2. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

					Alternative 5	Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Water Supply Reliability							
North of Delta							
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term		0	0	0
			Dry		0	0	0
			Critical		0	0	0
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		67	83	-16
			Dry		51	62	-11
			Critical		42	53	-11
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		13	12	2
			Dry		14	13	1
			Critical		13	12	2
Total SWP North of Delta							
Total SWP Ag and M&I NOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		67	83	-16
			Dry		51	62	-11
			Critical		42	53	-11
Total SWP Ag and M&I Article 21 NOD	Contract Delivery (annual average)	(TAF/year)	Long Term		13	12	2
			Dry		14	13	1
			Critical		13	12	2
South of Delta							
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		598	750	-151
			Dry		449	567	-118
			Critical		369	484	-115
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		24	178	-154
			Dry		6	143	-137
			Critical		4	100	-96
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term		1,784	2,183	-399
			Dry		1,397	1,732	-336
			Critical		1,157	1,494	-337
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term		19	104	-85
			Dry		5	86	-81
			Critical		3	58	-55
Total SWP South of Delta							
Total SWP Ag and M&I SOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term		2,383	2,933	-550
			Dry		1,845	2,299	-454
			Critical		1,526	1,978	-451
Total SWP Ag and M&I Article 21 SOD	Contract Delivery (annual average)	(TAF/year)	Long Term		43	282	-239
			Dry		11	229	-218
			Critical		7	158	-151

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on January to December average.

C.21. Trinity River Flow below Lewiston

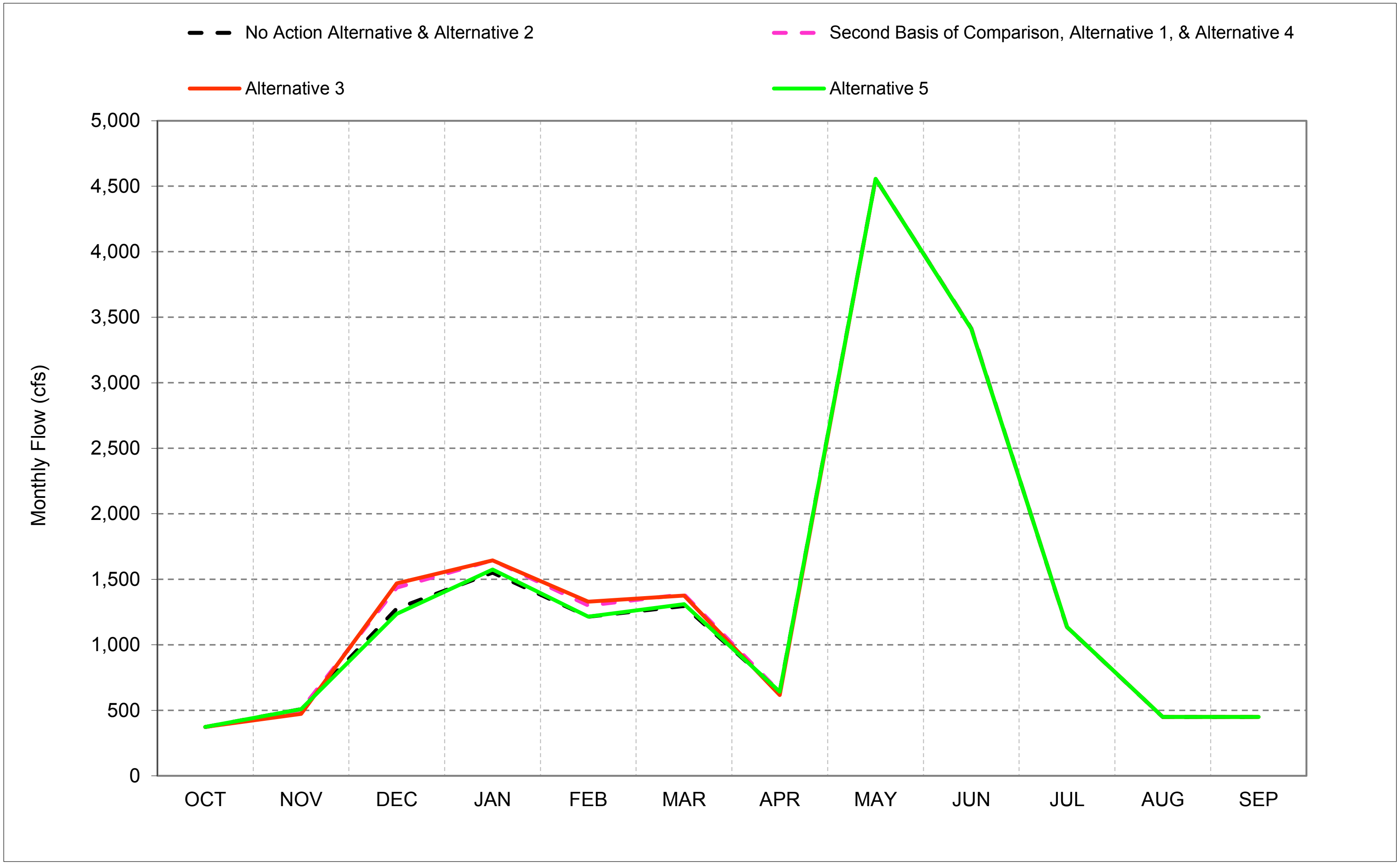
Figure C-21-1. Trinity River below Lewiston Reservoir, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-21-2. Trinity River below Lewiston Reservoir, Wet Year* Long-Term Average Flow**

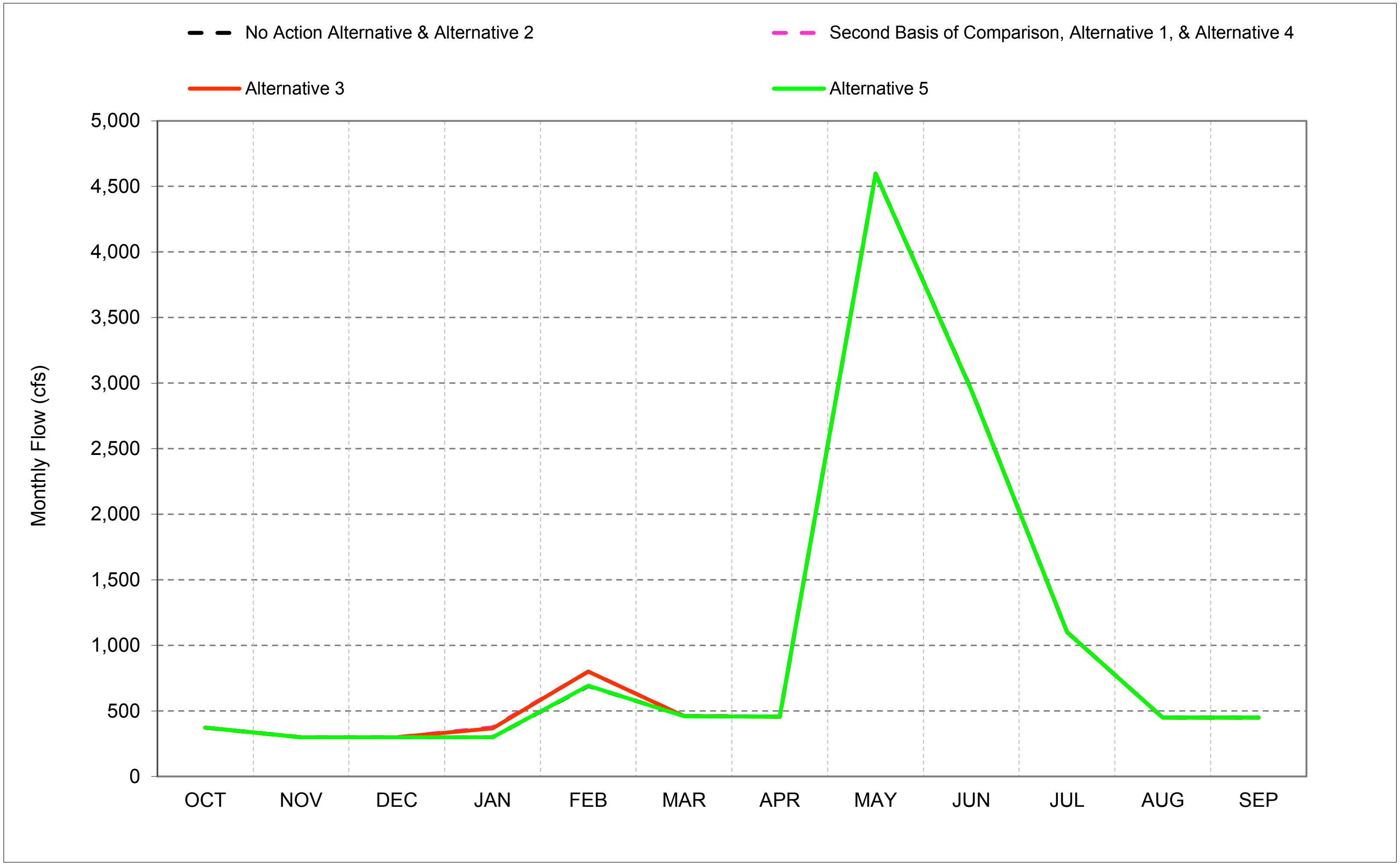


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-21-3. Trinity River below Lewiston Reservoir, Above Normal Year* Long-Term Average Flow**

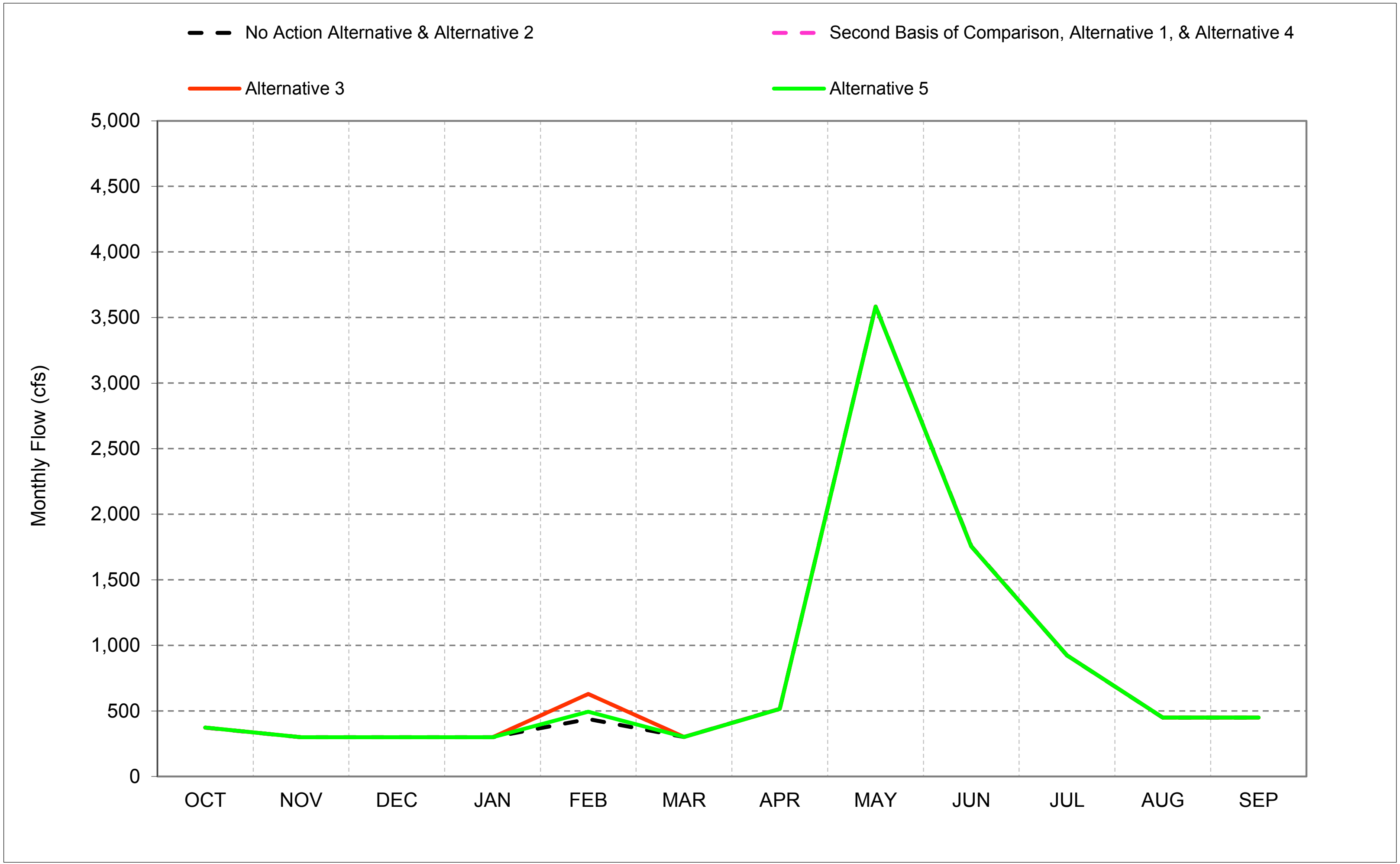


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-21-4. Trinity River below Lewiston Reservoir, Below Normal Year* Long-Term Average Flow**

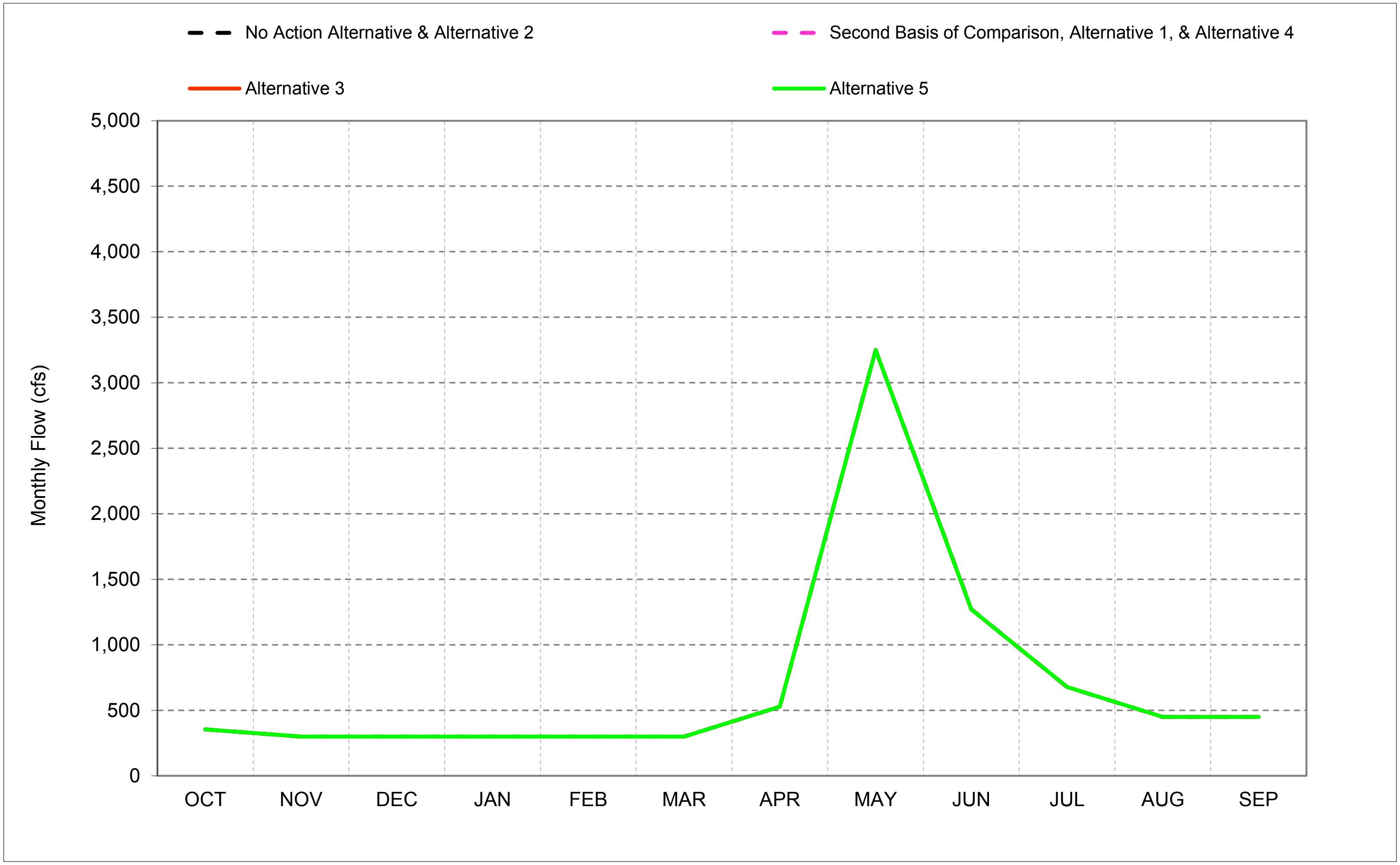


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-21-5. Trinity River below Lewiston Reservoir, Dry Year* Long-Term Average Flow**

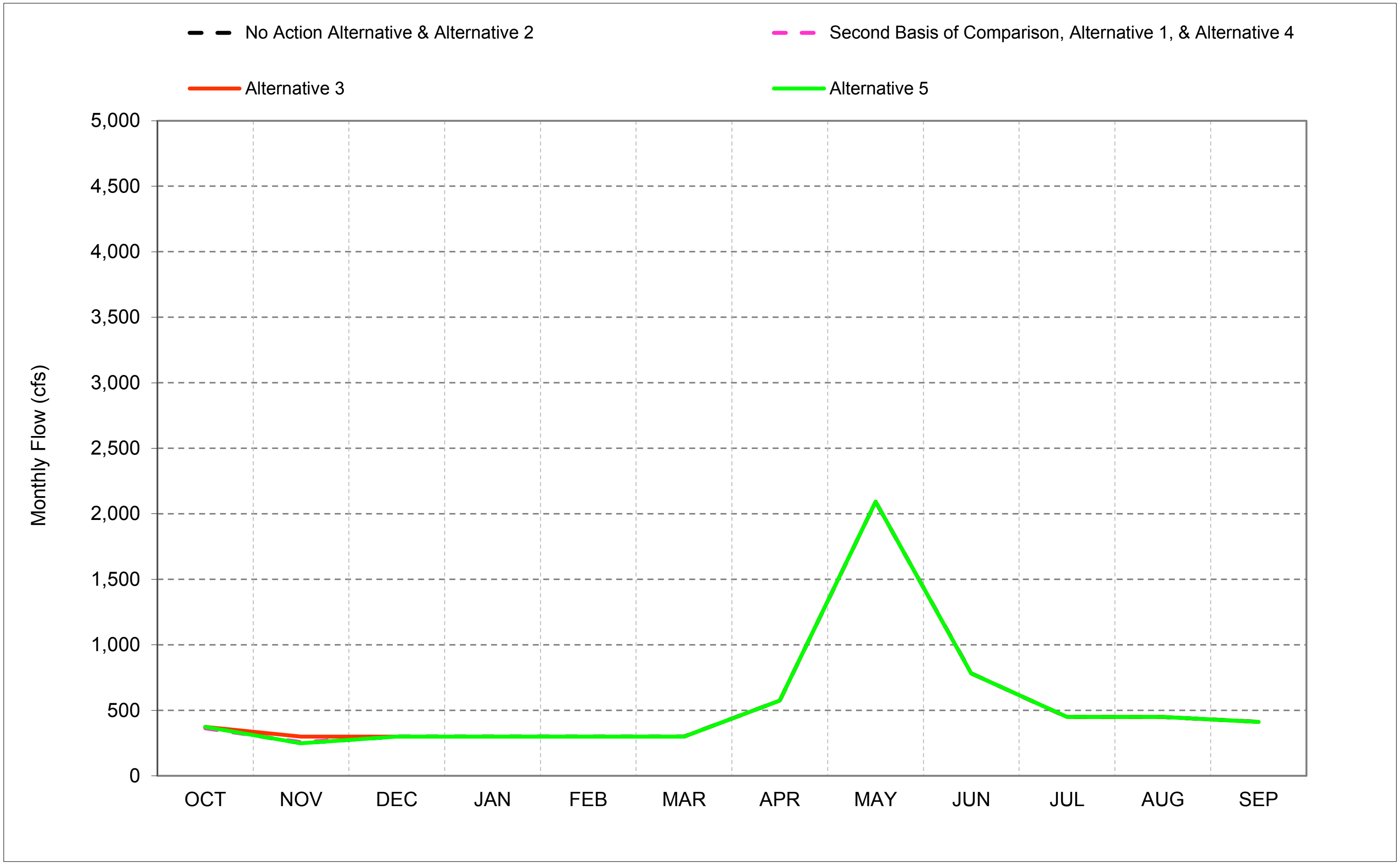


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-21-6. Trinity River below Lewiston Reservoir, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-1. Trinity River below Lewiston Reservoir, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	552	1,240	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	359	610	697	671	642	559	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	510	1,277	1,552	1,215	1,297	643	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	300	691	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	438	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	250	300	300	300	300	575	2,092	783	450	450	413

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,106	527	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	367	358	660	739	741	670	557	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,437	1,646	1,300	1,386	639	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	364	257	300	300	300	300	575	2,092	783	450	450	413

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	896	866	198	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-1	-1	51	42	70	28	-1	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	-6	160	94	86	89	-4	0	0	0	0	0
Above Normal (16%)	0	0	0	74	110	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	192	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	-9	7	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-2. Trinity River below Lewiston Reservoir, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	552	1,240	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	359	610	697	671	642	559	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	510	1,277	1,552	1,215	1,297	643	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	300	691	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	438	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	250	300	300	300	300	575	2,092	783	450	450	413

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	1,439	2,157	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	493	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	355	671	737	750	667	551	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	474	1,469	1,645	1,329	1,376	618	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	367	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	450	413

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	887	916	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	-28	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	-20	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	-4	61	40	79	25	-8	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	-36	193	93	114	79	-26	0	0	0	0	0
Above Normal (16%)	0	0	0	67	110	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	192	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	50	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-3. Trinity River below Lewiston Reservoir, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	552	1,240	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	359	610	697	671	642	559	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	510	1,277	1,552	1,215	1,297	643	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	300	691	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	438	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	250	300	300	300	300	575	2,092	783	450	450	413

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	553	1,747	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	359	597	704	679	647	559	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	510	1,237	1,575	1,217	1,311	643	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	300	694	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	495	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	250	300	300	300	300	575	2,092	783	450	450	413

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	1	506	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	-13	7	9	5	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	-40	23	2	14	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	3	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	56	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-4. Trinity River below Lewiston Reservoir, Monthly Flow

Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,106	527	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	367	358	660	739	741	670	557	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,437	1,646	1,300	1,386	639	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	364	257	300	300	300	300	575	2,092	783	450	450	413

No Action Alternative

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	373	300	300	552	1,240	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	359	610	697	671	642	559	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	510	1,277	1,552	1,215	1,297	643	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	300	691	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	438	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	250	300	300	300	300	575	2,092	783	450	450	413

No Action Alternative minus Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	0	0	0	-896	-866	-198	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	1	1	-51	-42	-70	-28	1	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	6	-160	-94	-86	-89	4	0	0	0	0	0
Above Normal (16%)	0	0	0	-74	-110	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	-192	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	9	-7	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-5. Trinity River below Lewiston Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,106	527	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	367	358	660	739	741	670	557	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,437	1,646	1,300	1,386	639	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	364	257	300	300	300	300	575	2,092	783	450	450	413

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	300	300	1,439	2,157	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	493	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	473	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	355	671	737	750	667	551	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	474	1,469	1,645	1,329	1,376	618	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	367	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	300	300	300	300	300	575	2,092	783	450	450	413

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	-9	51	-198	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	-28	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	-20	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	1	-3	10	-2	9	-3	-7	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	-30	32	-2	29	-10	-22	0	0	0	0	0
Above Normal (16%)	0	0	0	-7	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	9	43	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-6. Trinity River below Lewiston Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,106	527	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	367	358	660	739	741	670	557	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,437	1,646	1,300	1,386	639	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	364	257	300	300	300	300	575	2,092	783	450	450	413

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	373	300	300	553	1,747	328	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	368	359	597	704	679	647	559	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	510	1,237	1,575	1,217	1,311	643	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	300	694	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	495	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	373	250	300	300	300	300	575	2,092	783	450	450	413

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	-895	-359	-198	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	1	1	-63	-34	-62	-24	1	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	6	-200	-71	-84	-75	4	0	0	0	0	0
Above Normal (16%)	0	0	0	-74	-107	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	-135	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	9	-7	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

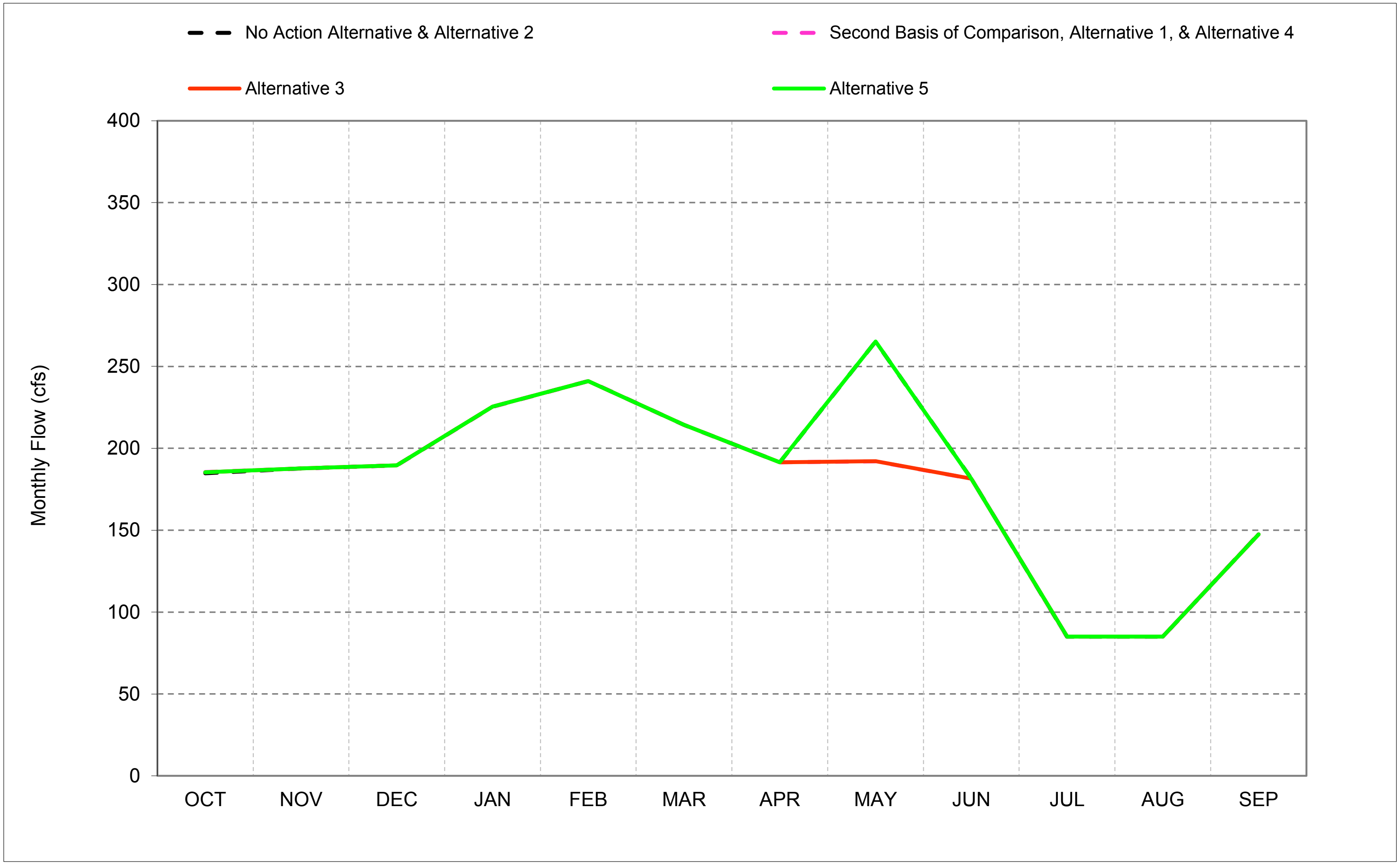
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.22. Clear Creek Flow below Whiskeytown

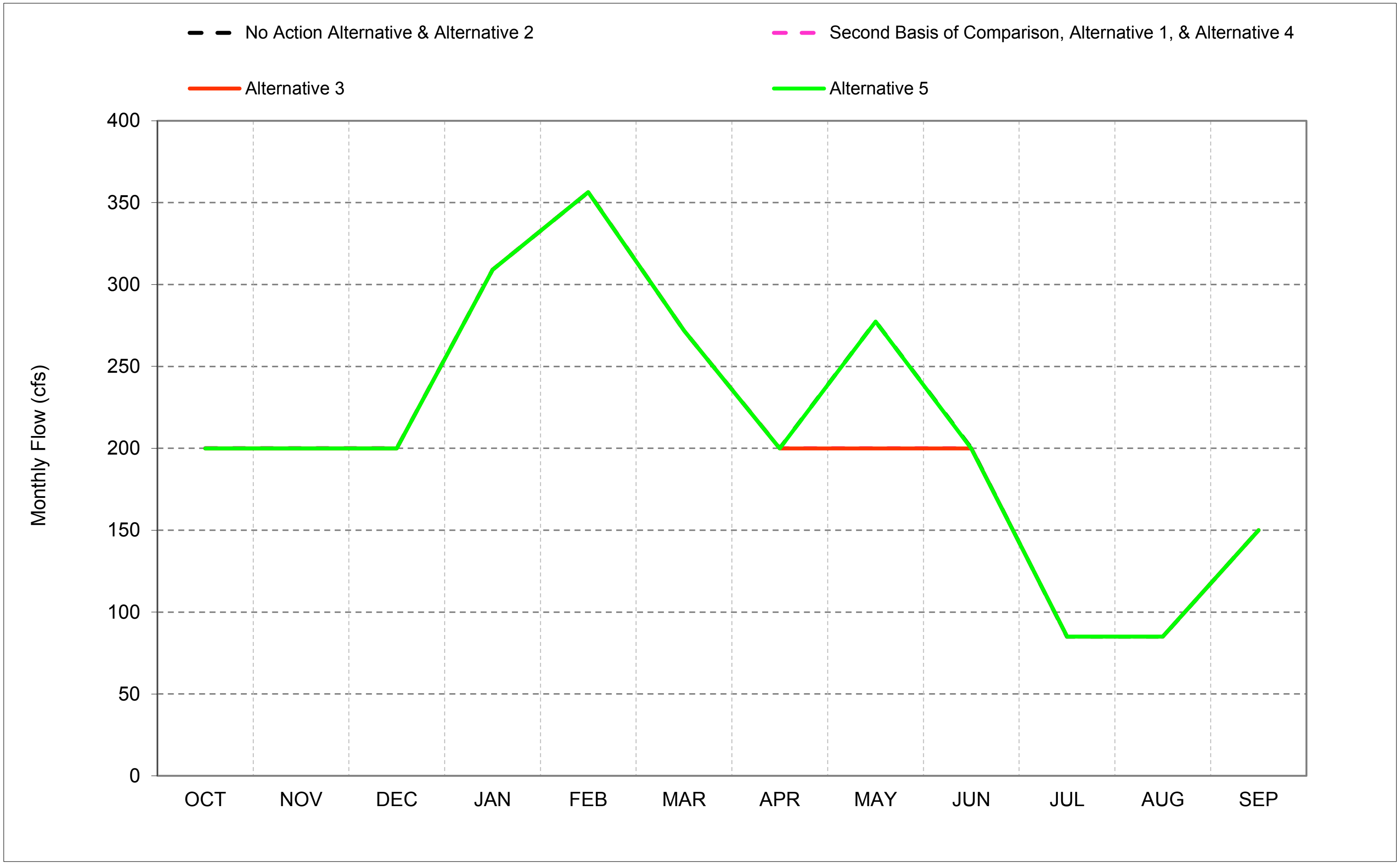
Figure C-22-1. Clear Creek below Whiskeytown, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-22-2. Clear Creek below Whiskeytown, Wet Year* Long-Term Average Flow**

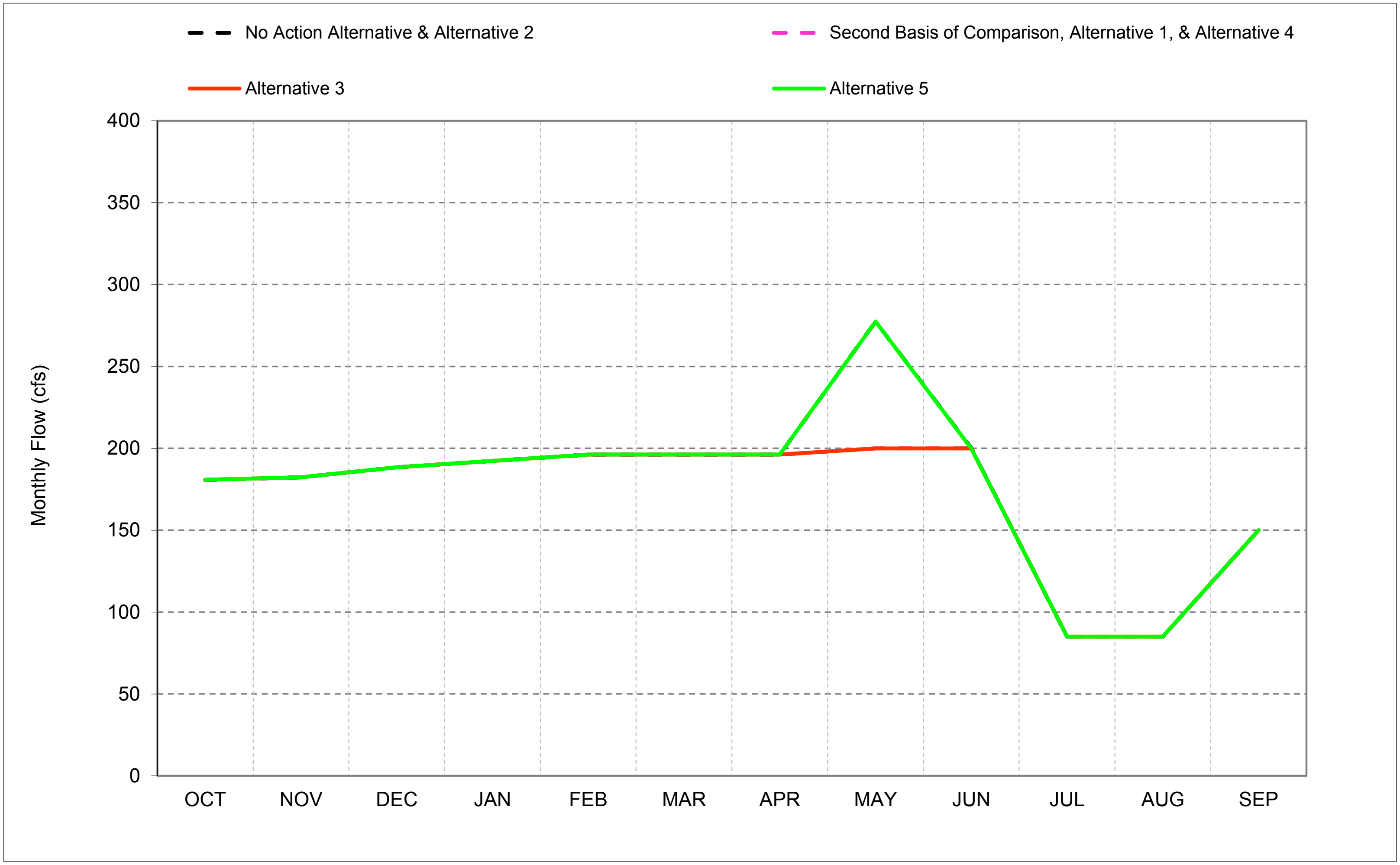


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-22-3. Clear Creek below Whiskeytown, Above Normal Year* Long-Term Average Flow**

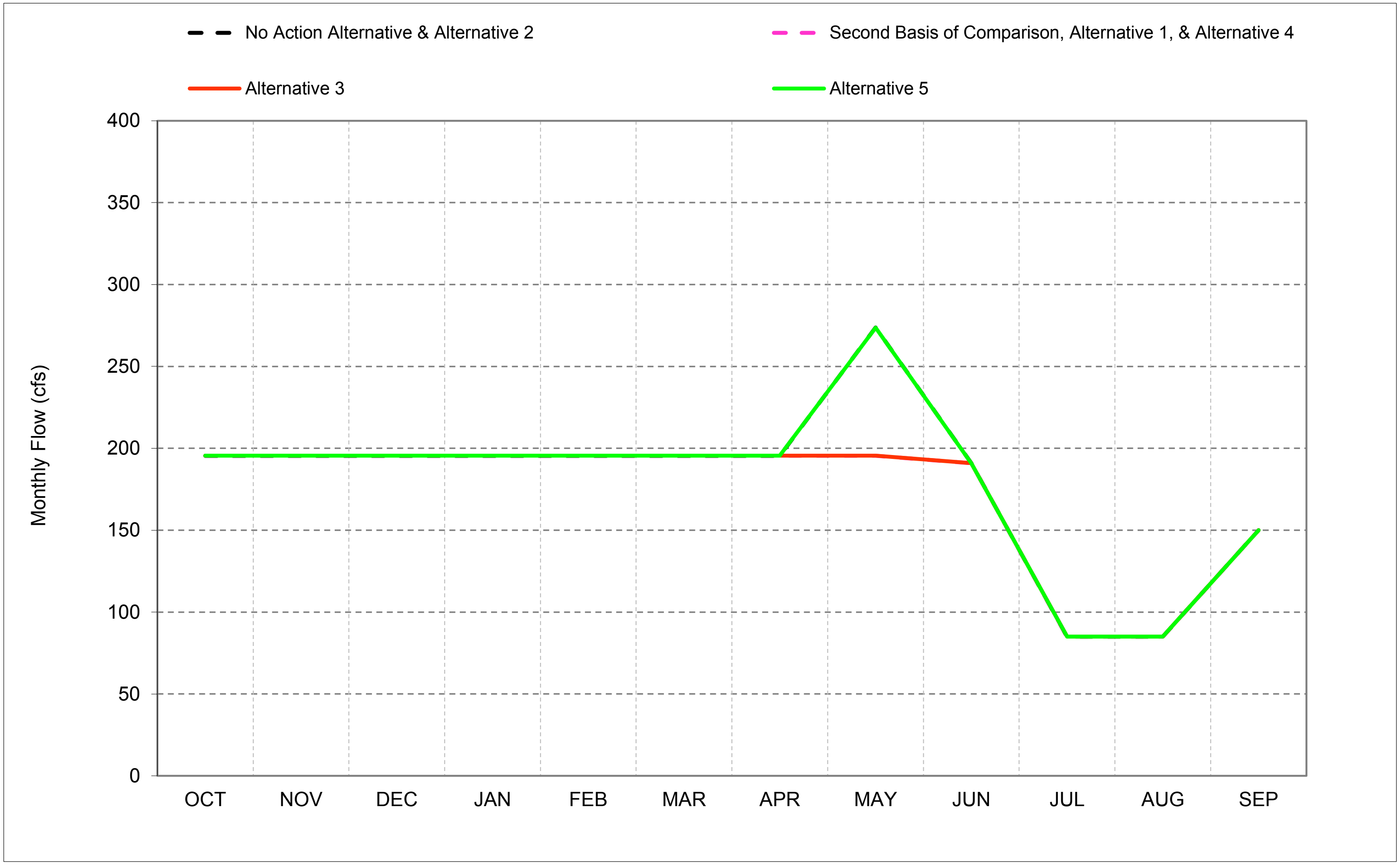


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-22-4. Clear Creek below Whiskeytown, Below Normal Year* Long-Term Average Flow**

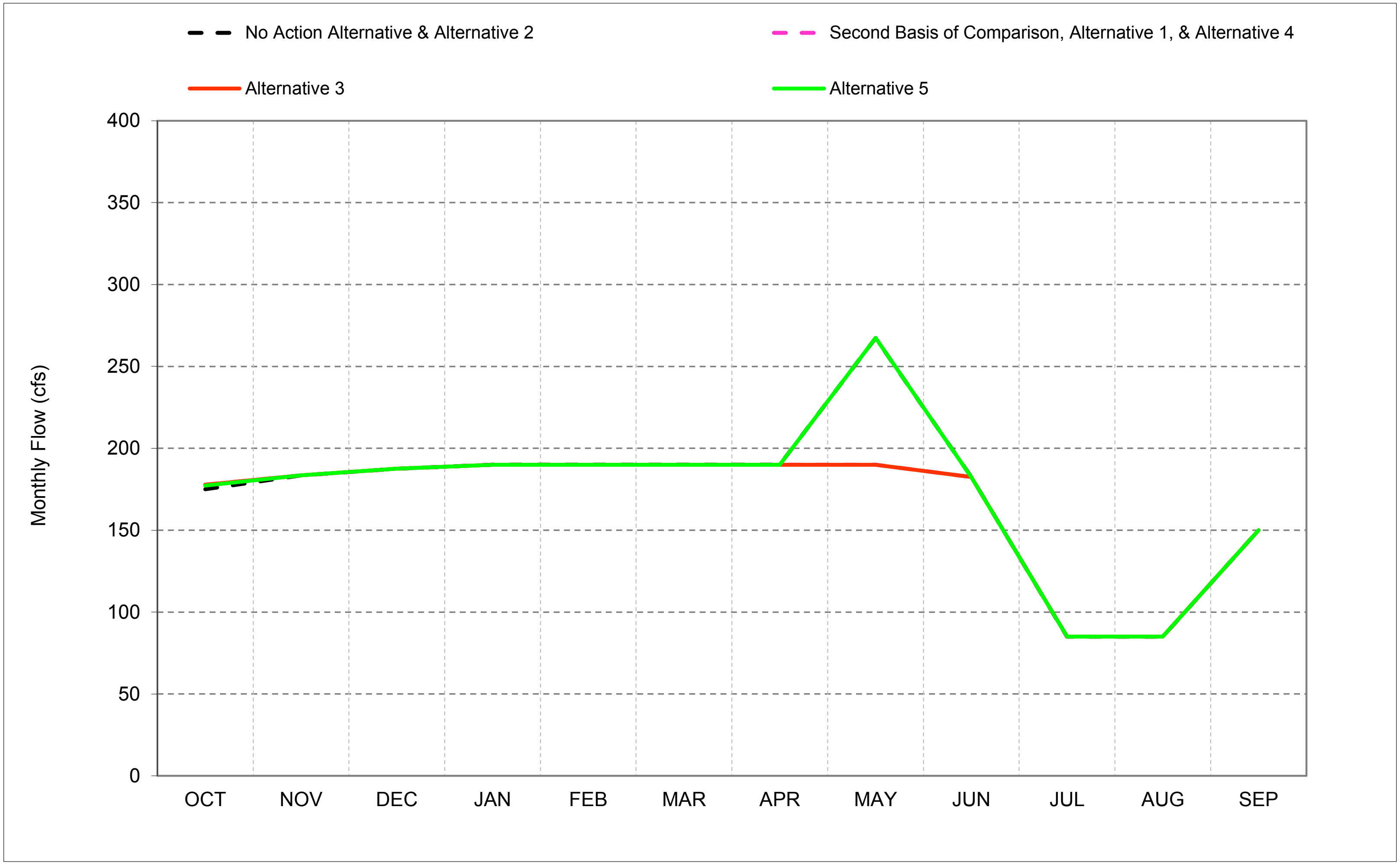


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-22-5. Clear Creek below Whiskeytown, Dry Year* Long-Term Average Flow**

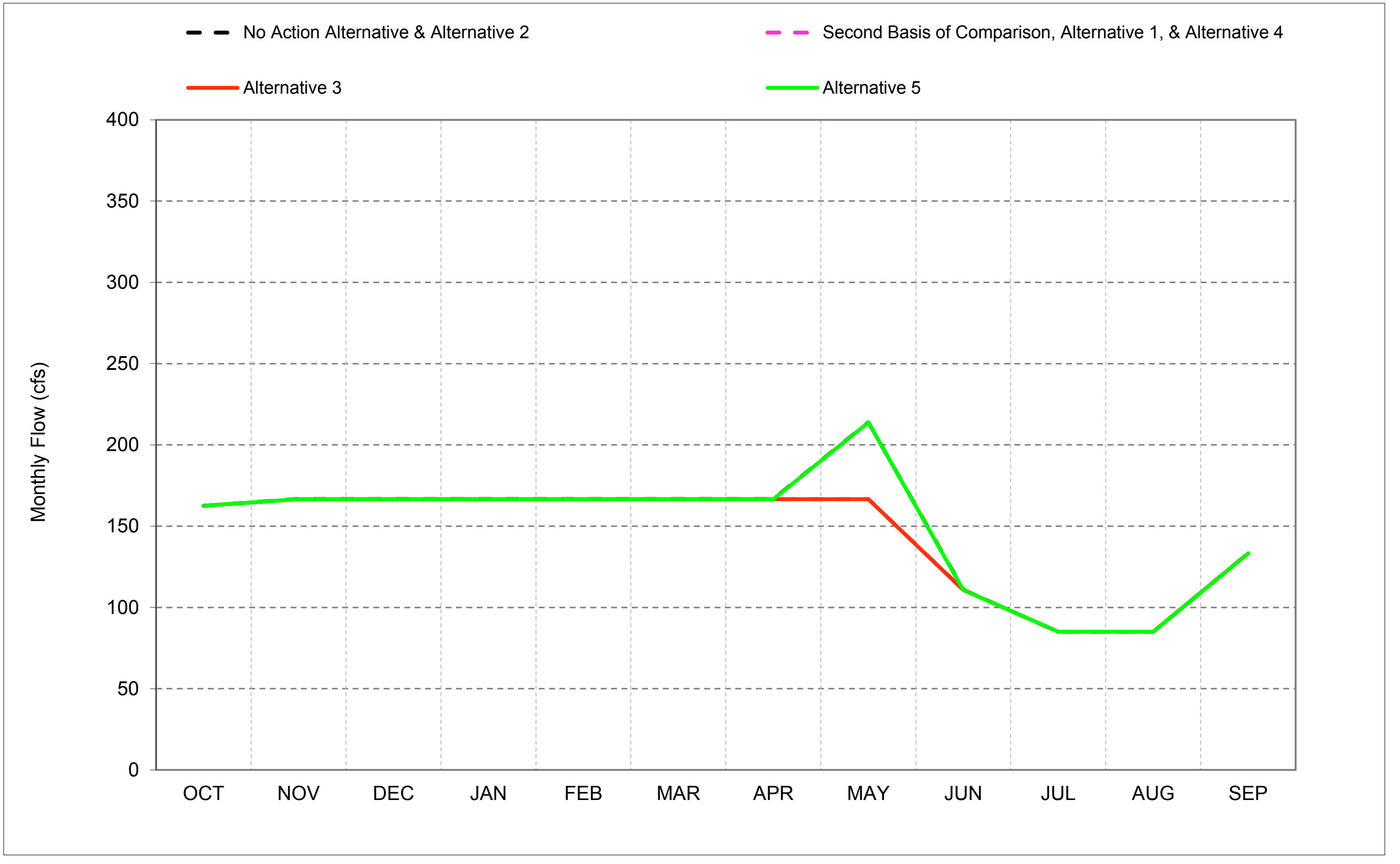


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-22-6. Clear Creek below Whiskeytown, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-1. Clear Creek below Whiskeytown, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	265	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	277	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	277	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	274	191	85	85	150
Dry (24%)	175	184	188	190	190	190	190	267	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	214	111	85	85	133

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	-77	0	0	0	0
20%	0	0	0	0	0	0	0	-77	0	0	0	0
30%	0	0	0	0	0	0	0	-77	0	0	0	0
40%	0	0	0	0	0	0	0	-77	0	0	0	0
50%	0	0	0	0	0	0	0	-77	0	0	0	0
60%	0	0	0	0	0	0	0	-77	0	0	0	0
70%	0	0	0	0	0	0	0	-77	0	0	0	0
80%	0	0	0	0	0	0	0	-77	0	0	0	0
90%	0	0	0	0	0	0	0	-87	0	0	0	0
Long Term												
Full Simulation Period[b]	1	0	0	0	0	0	0	-73	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	-77	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	-77	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	-78	0	0	0	0
Dry (24%)	3	0	0	0	0	0	0	-77	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	-47	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-2. Clear Creek below Whiskeytown, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	265	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	277	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	277	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	274	191	85	85	150
Dry (24%)	175	184	188	190	190	190	190	267	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	214	111	85	85	133

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	-77	0	0	0	0
20%	0	0	0	0	0	0	0	-77	0	0	0	0
30%	0	0	0	0	0	0	0	-77	0	0	0	0
40%	0	0	0	0	0	0	0	-77	0	0	0	0
50%	0	0	0	0	0	0	0	-77	0	0	0	0
60%	0	0	0	0	0	0	0	-77	0	0	0	0
70%	0	0	0	0	0	0	0	-77	0	0	0	0
80%	0	0	0	0	0	0	0	-77	0	0	0	0
90%	0	0	0	0	0	0	0	-87	0	0	0	0
Long Term												
Full Simulation Period[b]	1	0	0	0	0	0	0	-73	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	-77	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	-77	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	-78	0	0	0	0
Dry (24%)	3	0	0	0	0	0	0	-77	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	-47	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-3. Clear Creek below Whiskeytown, Monthly Flow

No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	265	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	277	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	277	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	274	191	85	85	150
Dry (24%)	175	184	188	190	190	190	190	267	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	214	111	85	85	133

Alternative 5

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	265	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	277	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	277	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	274	191	85	85	150
Dry (24%)	177	184	188	190	190	190	190	267	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	214	111	85	85	133

Alternative 5 minus No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	1	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	2	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-4. Clear Creek below Whiskeytown, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	265	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	277	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	277	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	274	191	85	85	150
Dry (24%)	175	184	188	190	190	190	190	267	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	214	111	85	85	133

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	77	0	0	0	0
20%	0	0	0	0	0	0	0	77	0	0	0	0
30%	0	0	0	0	0	0	0	77	0	0	0	0
40%	0	0	0	0	0	0	0	77	0	0	0	0
50%	0	0	0	0	0	0	0	77	0	0	0	0
60%	0	0	0	0	0	0	0	77	0	0	0	0
70%	0	0	0	0	0	0	0	77	0	0	0	0
80%	0	0	0	0	0	0	0	77	0	0	0	0
90%	0	0	0	0	0	0	0	87	0	0	0	0
Long Term												
Full Simulation Period[b]	-1	0	0	0	0	0	0	73	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	77	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	77	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	78	0	0	0	0
Dry (24%)	-3	0	0	0	0	0	0	77	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	47	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-5. Clear Creek below Whiskeytown, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-6. Clear Creek below Whiskeytown, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	277	200	85	85	150
20%	200	200	200	200	200	200	200	277	200	85	85	150
30%	200	200	200	200	200	200	200	277	200	85	85	150
40%	200	200	200	200	200	200	200	277	200	85	85	150
50%	200	200	200	200	200	200	200	277	200	85	85	150
60%	200	200	200	200	200	200	200	277	200	85	85	150
70%	200	200	200	200	200	200	200	277	200	85	85	150
80%	200	200	200	200	200	200	200	277	150	85	85	150
90%	150	150	150	150	150	150	150	237	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	265	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	277	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	277	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	274	191	85	85	150
Dry (24%)	177	184	188	190	190	190	190	267	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	214	111	85	85	133

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	77	0	0	0	0
20%	0	0	0	0	0	0	0	77	0	0	0	0
30%	0	0	0	0	0	0	0	77	0	0	0	0
40%	0	0	0	0	0	0	0	77	0	0	0	0
50%	0	0	0	0	0	0	0	77	0	0	0	0
60%	0	0	0	0	0	0	0	77	0	0	0	0
70%	0	0	0	0	0	0	0	77	0	0	0	0
80%	0	0	0	0	0	0	0	77	0	0	0	0
90%	0	0	0	0	0	0	0	87	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	73	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	77	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	77	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	78	0	0	0	0
Dry (24%)	-1	0	0	0	0	0	0	77	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	47	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

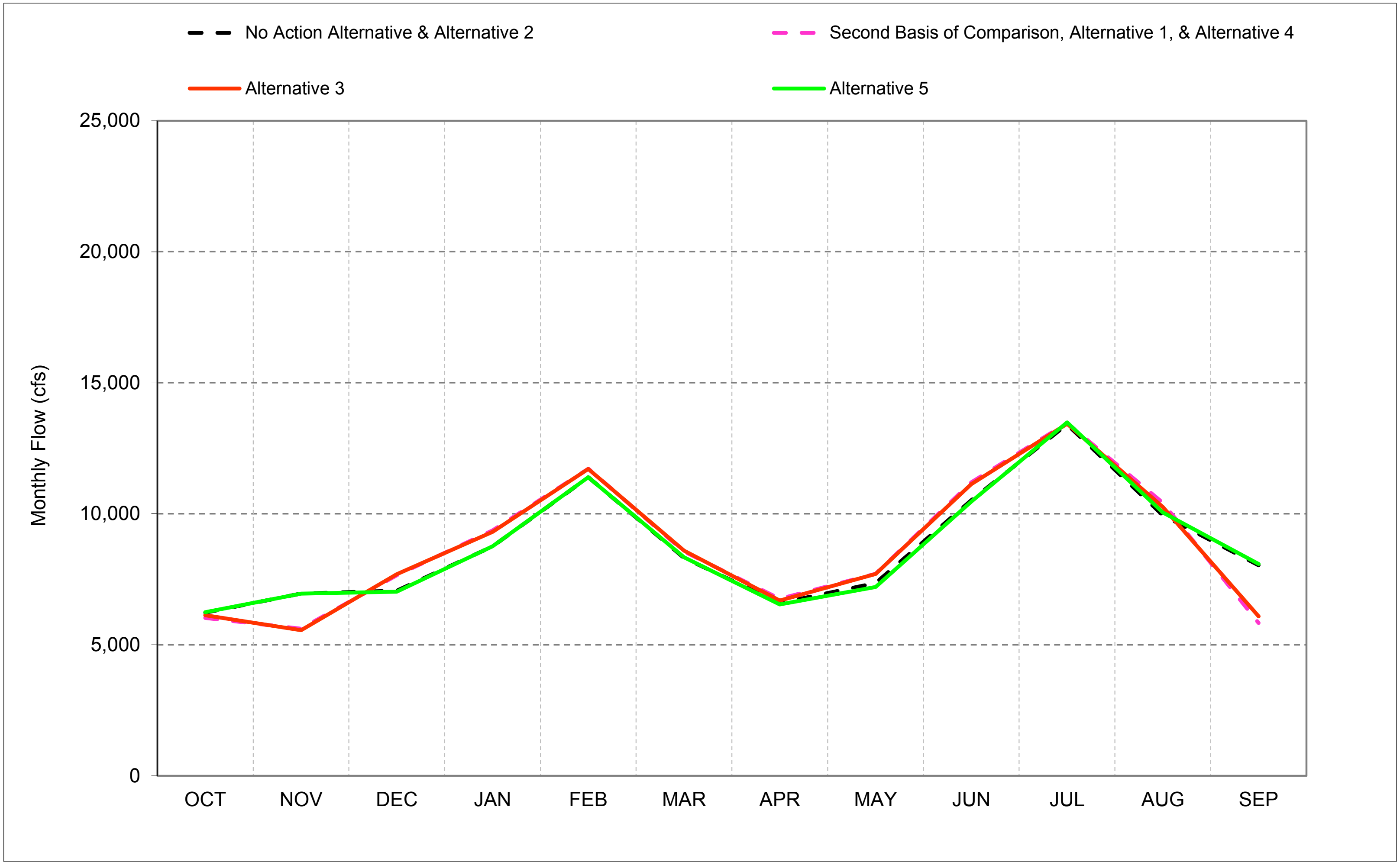
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.23. Sacramento River Flow downstream of Keswick Reservoir

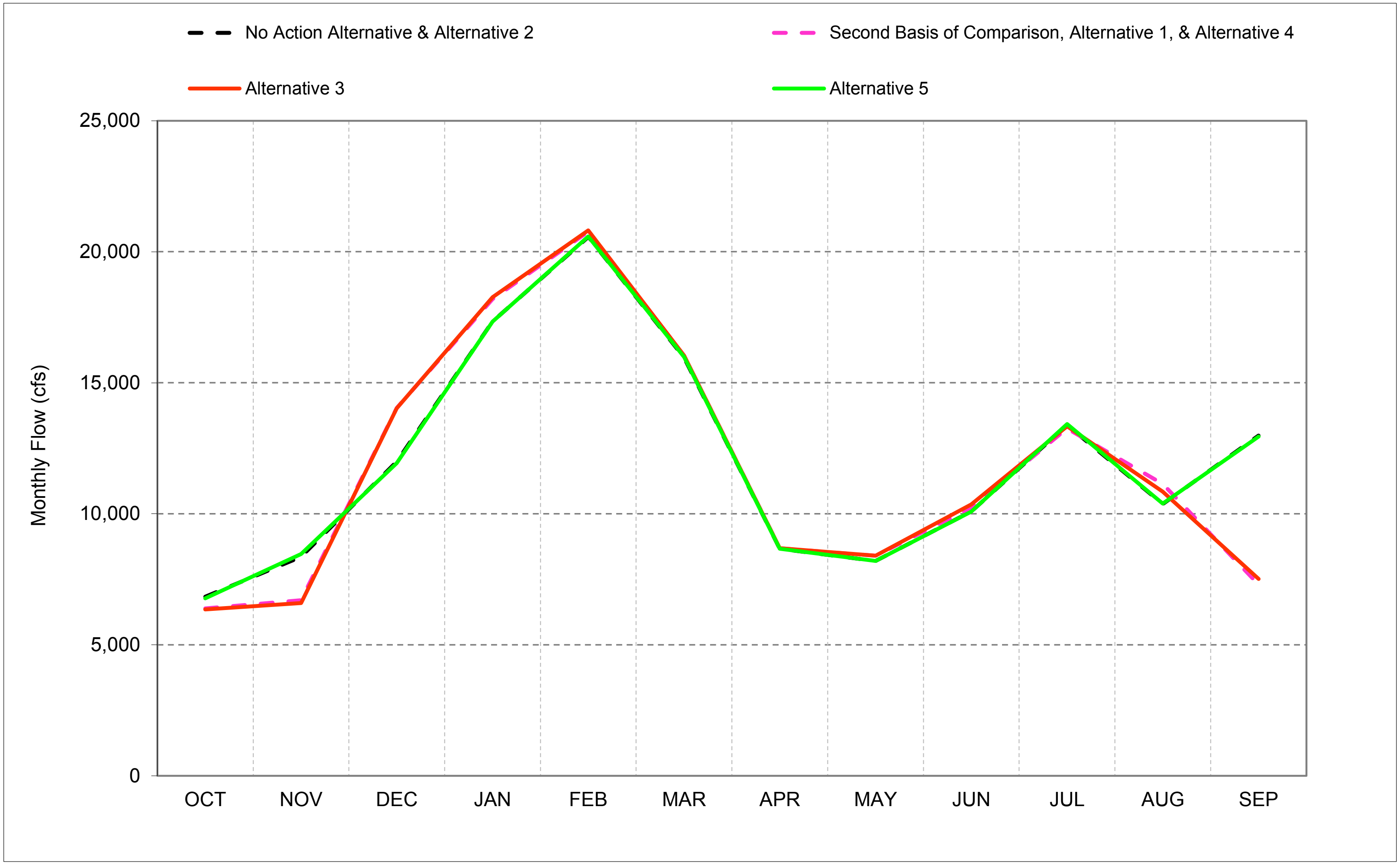
Figure C-23-1. Sacramento River d/s of Keswick Reservoir, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-23-2. Sacramento River d/s of Keswick Reservoir, Wet Year* Long-Term Average Flow**

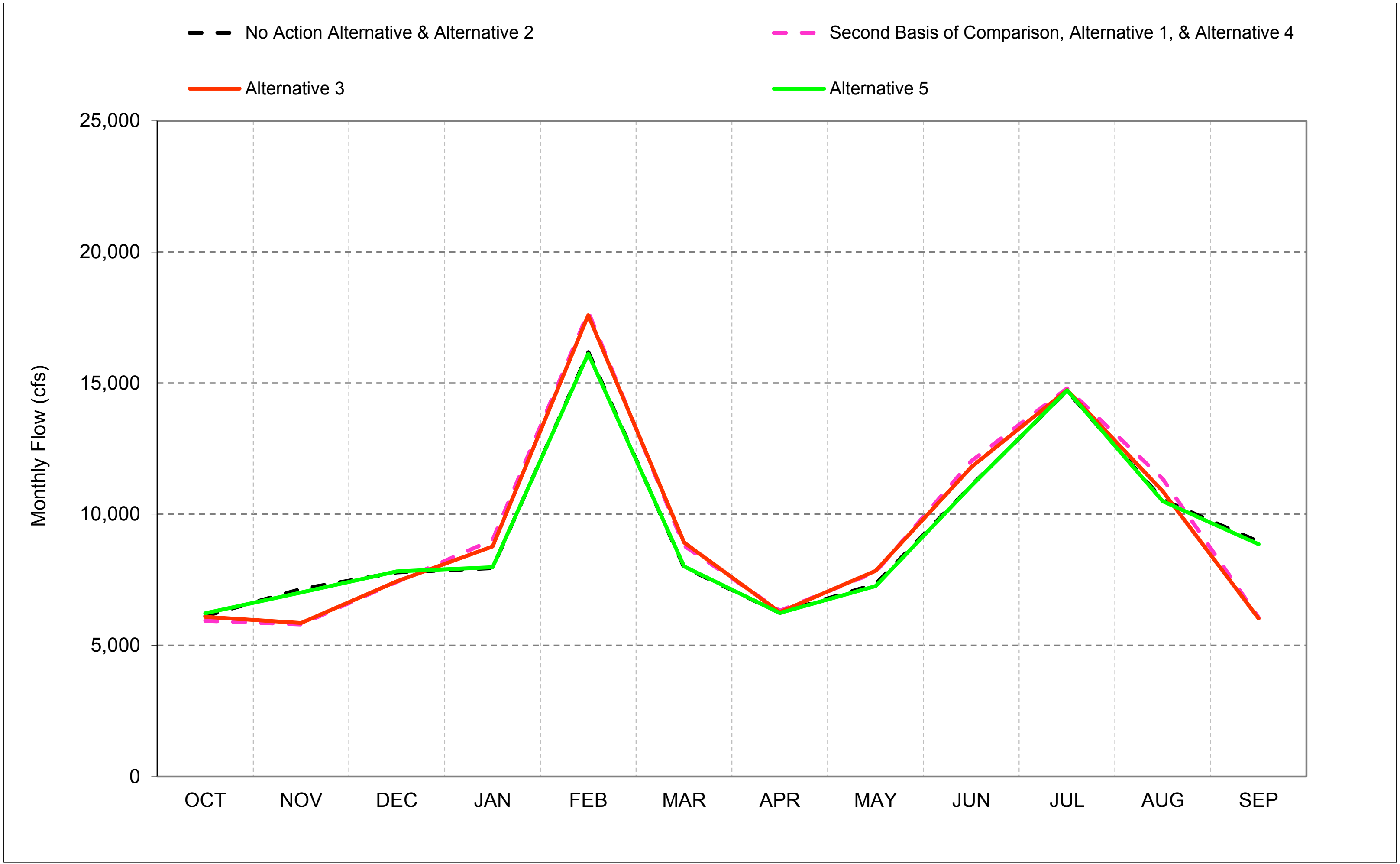


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-23-3. Sacramento River d/s of Keswick Reservoir, Above Normal Year* Long-Term Average Flow**

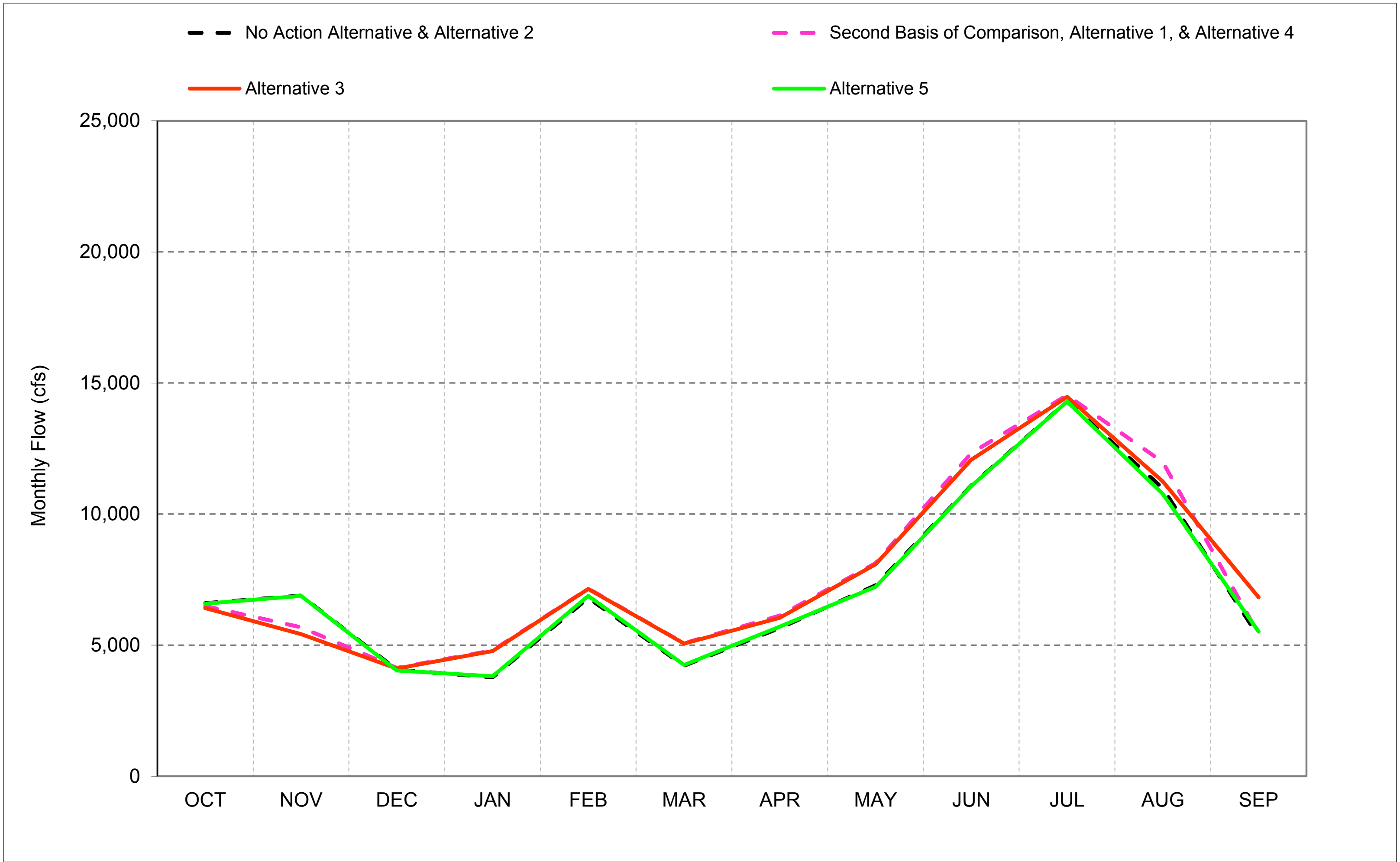


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-23-4. Sacramento River d/s of Keswick Reservoir, Below Normal Year* Long-Term Average Flow**

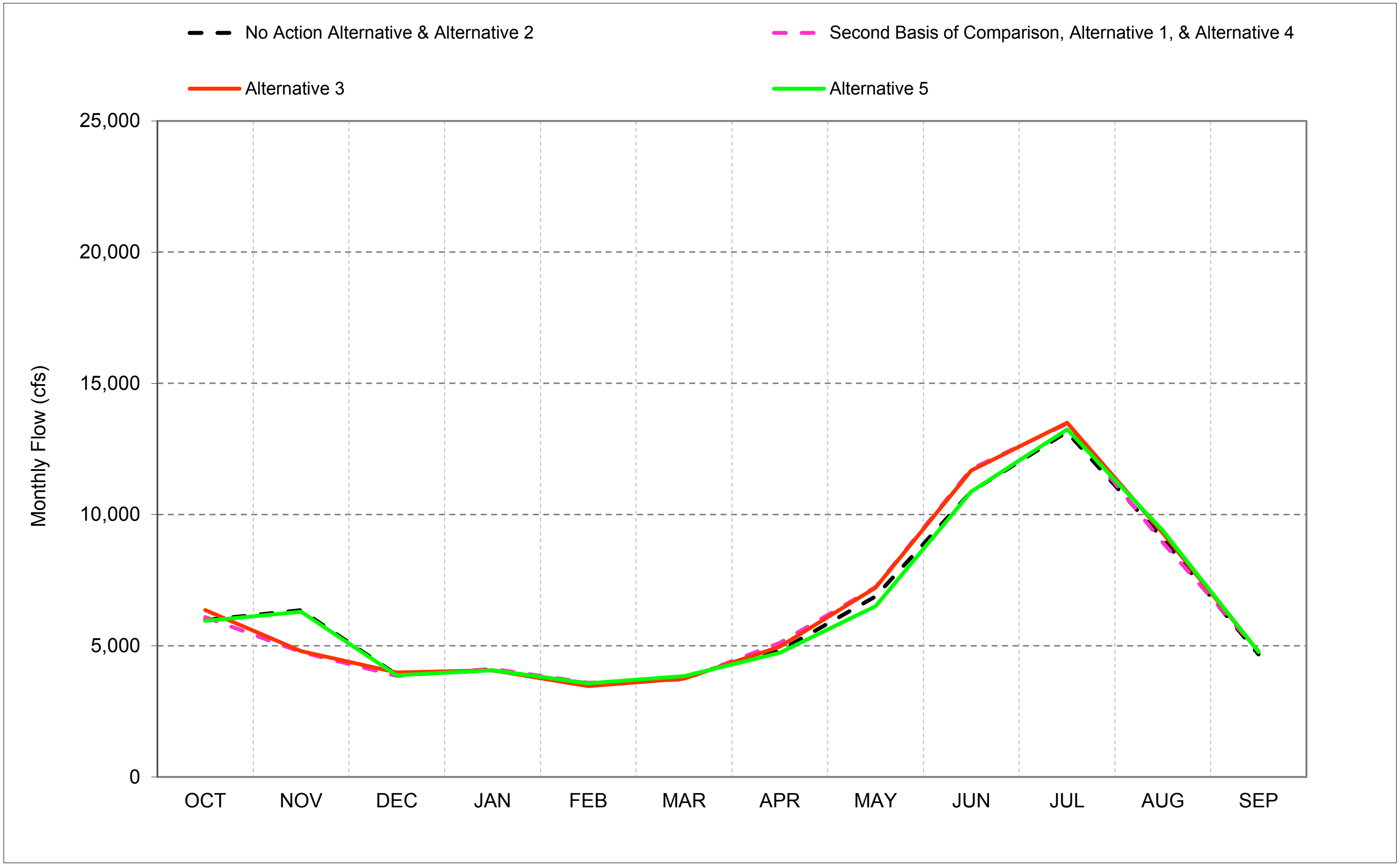


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-23-5. Sacramento River d/s of Keswick Reservoir, Dry Year* Long-Term Average Flow**

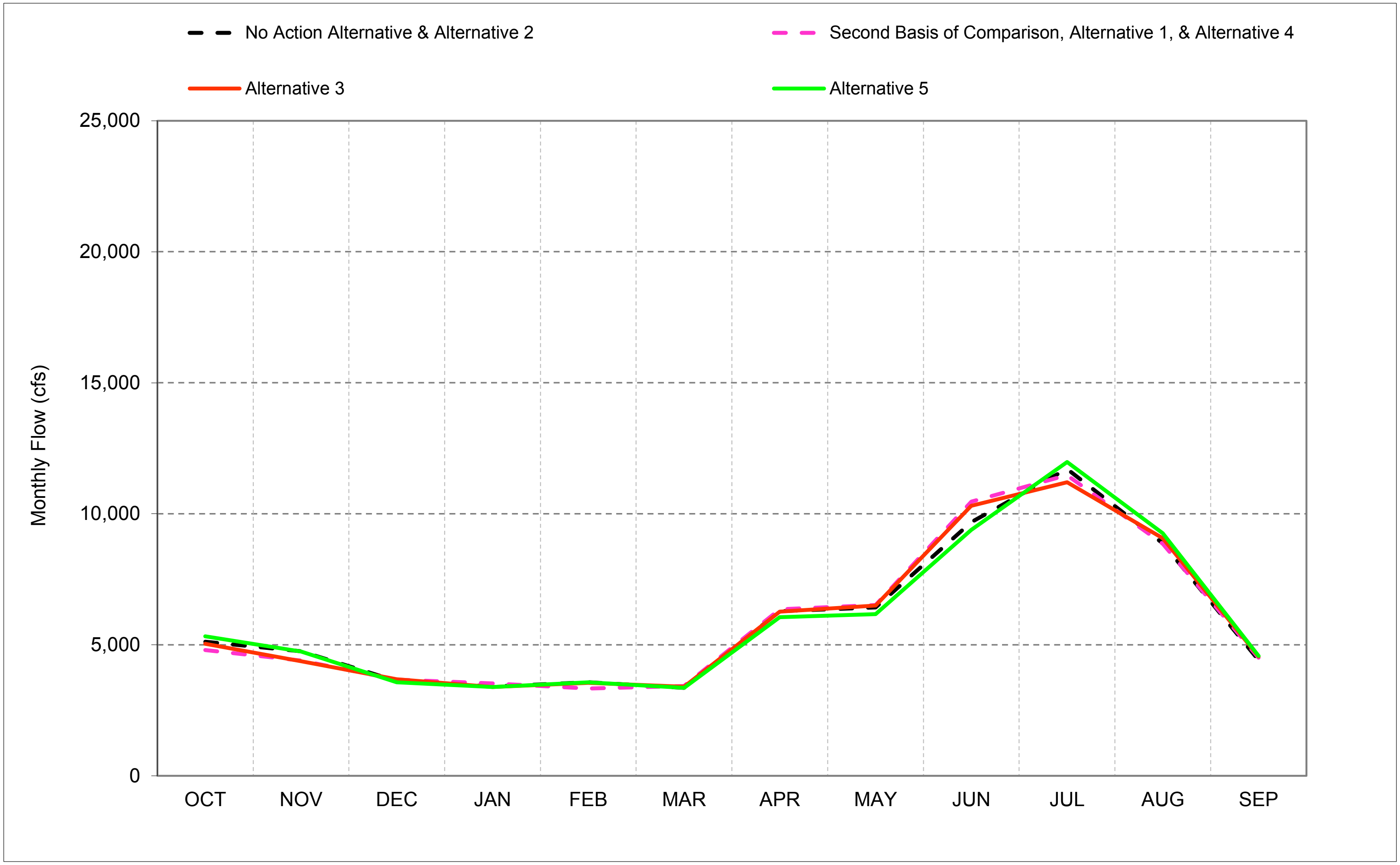


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-23-6. Sacramento River d/s of Keswick Reservoir, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-1. Sacramento River d/s of Keswick Reservoir, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,539	11,351	16,050	19,967	30,773	18,389	10,234	9,624	13,028	15,000	11,592	14,752
20%	7,985	10,020	9,276	12,176	21,412	12,120	7,602	8,744	11,826	15,000	10,909	12,155
30%	7,297	8,317	5,359	7,873	10,878	7,676	6,731	8,256	11,248	15,000	10,724	10,381
40%	6,760	7,008	4,368	4,500	5,039	4,500	5,853	7,615	10,563	14,570	10,286	8,919
50%	5,983	5,888	4,000	4,126	4,500	4,214	5,356	7,192	10,254	13,991	9,978	6,151
60%	5,404	4,822	3,976	3,640	3,565	3,513	5,000	6,503	9,958	13,279	9,568	5,274
70%	5,001	4,379	3,524	3,251	3,250	3,250	4,500	6,168	9,430	12,770	9,152	4,693
80%	4,618	4,000	3,253	3,250	3,250	3,250	4,500	5,666	8,828	11,848	8,861	4,391
90%	4,292	3,502	3,250	3,250	3,250	3,250	3,702	5,145	8,406	10,797	8,089	4,145
Long Term												
Full Simulation Period[b]	6,232	6,954	7,064	8,758	11,392	8,318	6,589	7,361	10,520	13,413	9,951	8,038
Water Year Types[c]												
Wet (32%)	6,837	8,356	11,995	17,343	20,568	15,965	8,669	8,200	10,089	13,385	10,377	12,981
Above Normal (16%)	6,122	7,147	7,783	7,948	16,181	7,984	6,239	7,340	11,102	14,701	10,545	8,958
Below Normal (13%)	6,600	6,895	4,067	3,778	6,800	4,216	5,660	7,283	11,096	14,296	10,988	5,333
Dry (24%)	5,981	6,359	3,899	4,070	3,569	3,827	4,807	6,887	10,885	13,146	9,085	4,673
Critical (15%)	5,119	4,757	3,621	3,410	3,571	3,360	6,285	6,428	9,683	11,714	8,877	4,418

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,508	7,576	19,509	20,146	30,874	18,571	10,177	10,192	14,534	15,000	12,723	8,971
20%	7,890	6,794	11,462	15,160	21,412	12,718	8,220	9,232	13,041	15,000	11,885	6,409
30%	7,356	5,587	6,088	8,978	13,139	8,359	6,971	8,471	12,242	15,000	11,209	6,029
40%	6,136	5,210	4,329	4,737	5,375	4,500	6,320	7,928	11,433	14,639	10,726	5,666
50%	5,715	4,858	4,000	4,333	4,500	4,500	5,731	7,458	11,014	14,084	10,347	5,475
60%	5,257	4,364	3,949	3,798	3,735	3,668	5,202	7,098	10,374	13,509	9,891	5,246
70%	4,871	4,181	3,674	3,251	3,250	3,250	4,500	6,497	9,974	13,051	9,282	4,637
80%	4,389	4,000	3,275	3,250	3,250	3,250	4,500	6,095	9,209	11,861	8,985	4,312
90%	4,000	3,501	3,250	3,250	3,250	3,250	3,713	5,503	8,402	10,691	8,150	4,147
Long Term												
Full Simulation Period[b]	6,028	5,615	7,660	9,366	11,718	8,569	6,754	7,708	11,203	13,462	10,417	5,836
Water Year Types[c]												
Wet (32%)	6,391	6,705	14,039	18,191	20,773	16,037	8,687	8,398	10,243	13,254	11,143	7,306
Above Normal (16%)	5,940	5,801	7,417	9,024	17,709	8,800	6,317	7,789	12,028	14,804	11,351	6,065
Below Normal (13%)	6,491	5,680	4,134	4,805	7,156	5,076	6,127	8,129	12,334	14,533	11,988	5,429
Dry (24%)	6,092	4,768	3,855	4,123	3,591	3,716	5,107	7,240	11,737	13,465	8,939	4,794
Critical (15%)	4,806	4,404	3,675	3,533	3,335	3,431	6,355	6,519	10,465	11,474	8,854	4,513

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-31	-3,775	3,459	179	101	182	-58	568	1,506	0	1,131	-5,781
20%	-95	-3,227	2,186	2,985	0	598	618	487	1,215	0	976	-5,746
30%	59	-2,731	728	1,105	2,261	682	240	215	994	0	485	-4,352
40%	-624	-1,798	-39	237	336	0	467	313	870	69	440	-3,252
50%	-268	-1,029	0	207	0	286	375	266	760	93	369	-676
60%	-147	-458	-27	158	170	155	202	595	416	230	323	-27
70%	-130	-198	150	0	0	0	0	328	545	281	129	-57
80%	-229	0	23	0	0	0	0	428	381	14	124	-79
90%	-292	0	0	0	0	0	11	358	-4	-106	62	2
Long Term												
Full Simulation Period[b]	-204	-1,340	596	608	326	251	164	347	684	50	466	-2,202
Water Year Types[c]												
Wet (32%)	-446	-1,651	2,044	848	205	73	17	198	154	-131	766	-5,675
Above Normal (16%)	-182	-1,346	-366	1,076	1,528	816	78	449	926	103	806	-2,893
Below Normal (13%)	-109	-1,215	67	1,027	356	860	467	846	1,238	238	1,000	96
Dry (24%)	111	-1,591	-44	53	22	-111	300	353	852	319	-146	121
Critical (15%)	-314	-353	54	123	-236	71	70	91	782	-239	-23	96

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-2. Sacramento River d/s of Keswick Reservoir, Monthly Flow

No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,539	11,351	16,050	19,967	30,773	18,389	10,234	9,624	13,028	15,000	11,592	14,752
20%	7,985	10,020	9,276	12,176	21,412	12,120	7,602	8,744	11,826	15,000	10,909	12,155
30%	7,297	8,317	5,359	7,873	10,878	7,676	6,731	8,256	11,248	15,000	10,724	10,381
40%	6,760	7,008	4,368	4,500	5,039	4,500	5,853	7,615	10,563	14,570	10,286	8,919
50%	5,983	5,888	4,000	4,126	4,500	4,214	5,356	7,192	10,254	13,991	9,978	6,151
60%	5,404	4,822	3,976	3,640	3,565	3,513	5,000	6,503	9,958	13,279	9,568	5,274
70%	5,001	4,379	3,524	3,251	3,250	3,250	4,500	6,168	9,430	12,770	9,152	4,693
80%	4,618	4,000	3,253	3,250	3,250	3,250	4,500	5,666	8,828	11,848	8,861	4,391
90%	4,292	3,502	3,250	3,250	3,250	3,250	3,702	5,145	8,406	10,797	8,089	4,145
Long Term												
Full Simulation Period[b]	6,232	6,954	7,064	8,758	11,392	8,318	6,589	7,361	10,520	13,413	9,951	8,038
Water Year Types[c]												
Wet (32%)	6,837	8,356	11,995	17,343	20,568	15,965	8,669	8,200	10,089	13,385	10,377	12,981
Above Normal (16%)	6,122	7,147	7,783	7,948	16,181	7,984	6,239	7,340	11,102	14,701	10,545	8,958
Below Normal (13%)	6,600	6,895	4,067	3,778	6,800	4,216	5,660	7,283	11,096	14,296	10,988	5,333
Dry (24%)	5,981	6,359	3,899	4,070	3,569	3,827	4,807	6,887	10,885	13,146	9,085	4,673
Critical (15%)	5,119	4,757	3,621	3,410	3,571	3,360	6,285	6,428	9,683	11,714	8,877	4,418

Alternative 3

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,587	19,593	21,351	32,017	18,576	10,175	10,159	14,138	15,000	11,998	8,758
20%	8,095	6,362	11,532	15,117	21,412	12,718	8,146	9,311	13,148	15,000	11,420	7,492
30%	7,291	5,638	5,887	8,978	12,526	8,359	6,954	8,617	12,022	15,000	11,107	6,335
40%	6,536	5,073	4,450	4,500	6,142	4,500	6,056	7,930	11,316	14,717	10,669	5,916
50%	5,729	4,755	4,077	4,184	4,500	4,500	5,368	7,437	10,905	14,368	10,087	5,590
60%	5,223	4,361	3,976	3,706	3,565	3,547	5,053	7,055	10,464	13,336	9,838	5,137
70%	4,867	4,160	3,655	3,250	3,250	3,250	4,500	6,478	10,022	12,638	9,556	4,817
80%	4,503	4,000	3,294	3,250	3,250	3,250	4,500	6,060	9,302	11,876	8,943	4,361
90%	4,114	3,501	3,250	3,250	3,250	3,250	3,717	5,503	8,397	10,803	8,489	4,186
Long Term												
Full Simulation Period[b]	6,130	5,556	7,692	9,315	11,713	8,592	6,689	7,706	11,131	13,440	10,268	6,083
Water Year Types[c]												
Wet (32%)	6,352	6,595	14,028	18,268	20,814	16,038	8,692	8,405	10,360	13,341	10,845	7,512
Above Normal (16%)	6,088	5,850	7,442	8,771	17,594	8,923	6,263	7,839	11,793	14,732	10,881	6,029
Below Normal (13%)	6,415	5,424	4,116	4,781	7,144	5,061	6,045	8,088	12,075	14,472	11,247	6,827
Dry (24%)	6,362	4,793	3,982	4,073	3,468	3,755	4,970	7,223	11,682	13,500	9,299	4,770
Critical (15%)	5,047	4,375	3,694	3,396	3,555	3,398	6,266	6,501	10,302	11,206	9,074	4,555

Alternative 3 minus No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-31	-3,764	3,543	1,383	1,245	187	-59	535	1,110	0	406	-5,995
20%	110	-3,659	2,256	2,941	0	598	544	567	1,322	0	510	-4,663
30%	-6	-2,680	528	1,105	1,648	682	223	361	774	0	383	-4,047
40%	-224	-1,935	82	0	1,102	0	203	315	754	147	383	-3,002
50%	-254	-1,133	77	57	0	286	13	246	651	377	109	-561
60%	-181	-461	0	66	0	34	52	552	506	57	270	-137
70%	-134	-219	131	-1	0	0	0	310	592	-132	404	123
80%	-116	0	42	0	0	0	0	393	474	29	81	-29
90%	-178	0	0	0	0	0	15	357	-9	6	401	42
Long Term												
Full Simulation Period[b]	-102	-1,399	628	557	321	273	100	345	612	27	318	-1,954
Water Year Types[c]												
Wet (32%)	-485	-1,760	2,033	925	246	73	23	205	270	-44	468	-5,469
Above Normal (16%)	-34	-1,296	-341	823	1,413	939	24	499	692	32	336	-2,929
Below Normal (13%)	-186	-1,472	49	1,002	344	845	385	805	979	176	258	1,493
Dry (24%)	381	-1,566	84	3	-101	-72	163	337	797	355	215	97
Critical (15%)	-73	-382	73	-14	-16	38	-19	73	618	-508	197	137

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-3. Sacramento River d/s of Keswick Reservoir, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,539	11,351	16,050	19,967	30,773	18,389	10,234	9,624	13,028	15,000	11,592	14,752
20%	7,985	10,020	9,276	12,176	21,412	12,120	7,602	8,744	11,826	15,000	10,909	12,155
30%	7,297	8,317	5,359	7,873	10,878	7,676	6,731	8,256	11,248	15,000	10,724	10,381
40%	6,760	7,008	4,368	4,500	5,039	4,500	5,853	7,615	10,563	14,570	10,286	8,919
50%	5,983	5,888	4,000	4,126	4,500	4,214	5,356	7,192	10,254	13,991	9,978	6,151
60%	5,404	4,822	3,976	3,640	3,565	3,513	5,000	6,503	9,958	13,279	9,568	5,274
70%	5,001	4,379	3,524	3,251	3,250	3,250	4,500	6,168	9,430	12,770	9,152	4,693
80%	4,618	4,000	3,253	3,250	3,250	3,250	4,500	5,666	8,828	11,848	8,861	4,391
90%	4,292	3,502	3,250	3,250	3,250	3,250	3,702	5,145	8,406	10,797	8,089	4,145
Long Term												
Full Simulation Period[b]	6,232	6,954	7,064	8,758	11,392	8,318	6,589	7,361	10,520	13,413	9,951	8,038
Water Year Types[c]												
Wet (32%)	6,837	8,356	11,995	17,343	20,568	15,965	8,669	8,200	10,089	13,385	10,377	12,981
Above Normal (16%)	6,122	7,147	7,783	7,948	16,181	7,984	6,239	7,340	11,102	14,701	10,545	8,958
Below Normal (13%)	6,600	6,895	4,067	3,778	6,800	4,216	5,660	7,283	11,096	14,296	10,988	5,333
Dry (24%)	5,981	6,359	3,899	4,070	3,569	3,827	4,807	6,887	10,885	13,146	9,085	4,673
Critical (15%)	5,119	4,757	3,621	3,410	3,571	3,360	6,285	6,428	9,683	11,714	8,877	4,418

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,668	11,324	15,764	19,967	30,605	18,389	10,163	9,387	12,940	15,000	11,641	14,750
20%	7,868	10,000	9,191	12,163	21,412	12,271	7,595	8,527	11,910	15,000	11,065	11,992
30%	7,258	8,490	5,272	7,912	10,813	7,676	6,656	7,950	11,187	15,000	10,814	10,346
40%	6,651	7,099	4,275	4,500	5,039	4,500	5,875	7,559	10,628	14,598	10,451	8,736
50%	5,959	5,836	4,000	4,126	4,500	4,214	5,314	7,068	10,168	14,173	10,062	5,933
60%	5,518	4,834	3,975	3,671	3,565	3,547	5,003	6,436	9,875	13,393	9,635	5,357
70%	5,048	4,341	3,522	3,250	3,250	3,250	4,500	6,075	9,405	12,954	9,326	4,944
80%	4,818	4,000	3,253	3,250	3,250	3,250	4,500	5,822	8,795	11,851	8,818	4,505
90%	4,427	3,483	3,250	3,250	3,250	3,250	3,702	5,146	8,384	10,611	8,326	4,231
Long Term												
Full Simulation Period[b]	6,247	6,952	7,033	8,765	11,399	8,336	6,545	7,214	10,464	13,490	10,050	8,082
Water Year Types[c]												
Wet (32%)	6,770	8,471	11,936	17,340	20,582	15,979	8,670	8,203	10,080	13,420	10,387	12,950
Above Normal (16%)	6,222	7,015	7,819	7,984	16,119	8,008	6,238	7,262	11,075	14,723	10,501	8,858
Below Normal (13%)	6,583	6,886	4,038	3,814	6,882	4,245	5,705	7,231	11,063	14,293	10,767	5,512
Dry (24%)	5,947	6,300	3,874	4,070	3,576	3,848	4,737	6,509	10,882	13,247	9,397	4,768
Critical (15%)	5,330	4,741	3,569	3,396	3,569	3,363	6,060	6,177	9,388	11,977	9,259	4,574

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	128	-26	-286	0	-167	0	-71	-237	-88	0	49	-2
20%	-117	-20	-85	-13	0	151	-7	-217	84	0	156	-163
30%	-39	172	-87	39	-65	0	-75	-306	-61	0	90	-36
40%	-108	91	-93	0	0	0	22	-56	65	28	165	-183
50%	-24	-51	0	0	0	0	-42	-124	-86	181	84	-218
60%	114	12	0	30	0	34	3	-67	-83	114	67	84
70%	47	-38	-2	-1	0	0	0	-93	-24	184	173	251
80%	200	0	0	0	0	0	0	156	-33	3	-44	114
90%	136	-19	0	0	0	0	0	0	-22	-187	237	87
Long Term												
Full Simulation Period[b]	15	-2	-31	8	7	18	-44	-147	-56	78	99	44
Water Year Types[c]												
Wet (32%)	-67	115	-59	-3	14	15	0	3	-10	36	10	-31
Above Normal (16%)	100	-132	36	36	-62	24	-1	-78	-27	23	-43	-100
Below Normal (13%)	-18	-10	-29	36	82	29	46	-52	-33	-3	-221	179
Dry (24%)	-33	-59	-25	0	7	21	-70	-378	-3	101	312	94
Critical (15%)	210	-16	-52	-14	-2	3	-225	-251	-295	263	381	157

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-4. Sacramento River d/s of Keswick Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,508	7,576	19,509	20,146	30,874	18,571	10,177	10,192	14,534	15,000	12,723	8,971
20%	7,890	6,794	11,462	15,160	21,412	12,718	8,220	9,232	13,041	15,000	11,885	6,409
30%	7,356	5,587	6,088	8,978	13,139	8,359	6,971	8,471	12,242	15,000	11,209	6,029
40%	6,136	5,210	4,329	4,737	5,375	4,500	6,320	7,928	11,433	14,639	10,726	5,666
50%	5,715	4,858	4,000	4,333	4,500	4,500	5,731	7,458	11,014	14,084	10,347	5,475
60%	5,257	4,364	3,949	3,798	3,735	3,668	5,202	7,098	10,374	13,509	9,891	5,246
70%	4,871	4,181	3,674	3,251	3,250	3,250	4,500	6,497	9,974	13,051	9,282	4,637
80%	4,389	4,000	3,275	3,250	3,250	3,250	4,500	6,095	9,209	11,861	8,985	4,312
90%	4,000	3,501	3,250	3,250	3,250	3,250	3,713	5,503	8,402	10,691	8,150	4,147
Long Term												
Full Simulation Period[b]	6,028	5,615	7,660	9,366	11,718	8,569	6,754	7,708	11,203	13,462	10,417	5,836
Water Year Types[c]												
Wet (32%)	6,391	6,705	14,039	18,191	20,773	16,037	8,687	8,398	10,243	13,254	11,143	7,306
Above Normal (16%)	5,940	5,801	7,417	9,024	17,709	8,800	6,317	7,789	12,028	14,804	11,351	6,065
Below Normal (13%)	6,491	5,680	4,134	4,805	7,156	5,076	6,127	8,129	12,334	14,533	11,988	5,429
Dry (24%)	6,092	4,768	3,855	4,123	3,591	3,716	5,107	7,240	11,737	13,465	8,939	4,794
Critical (15%)	4,806	4,404	3,675	3,533	3,335	3,431	6,355	6,519	10,465	11,474	8,854	4,513

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,539	11,351	16,050	19,967	30,773	18,389	10,234	9,624	13,028	15,000	11,592	14,752
20%	7,985	10,020	9,276	12,176	21,412	12,120	7,602	8,744	11,826	15,000	10,909	12,155
30%	7,297	8,317	5,359	7,873	10,878	7,676	6,731	8,256	11,248	15,000	10,724	10,381
40%	6,760	7,008	4,368	4,500	5,039	4,500	5,853	7,615	10,563	14,570	10,286	8,919
50%	5,983	5,888	4,000	4,126	4,500	4,214	5,356	7,192	10,254	13,991	9,978	6,151
60%	5,404	4,822	3,976	3,640	3,565	3,513	5,000	6,503	9,958	13,279	9,568	5,274
70%	5,001	4,379	3,524	3,251	3,250	3,250	4,500	6,168	9,430	12,770	9,152	4,693
80%	4,618	4,000	3,253	3,250	3,250	3,250	4,500	5,666	8,828	11,848	8,861	4,391
90%	4,292	3,502	3,250	3,250	3,250	3,250	3,702	5,145	8,406	10,797	8,089	4,145
Long Term												
Full Simulation Period[b]	6,232	6,954	7,064	8,758	11,392	8,318	6,589	7,361	10,520	13,413	9,951	8,038
Water Year Types[c]												
Wet (32%)	6,837	8,356	11,995	17,343	20,568	15,965	8,669	8,200	10,089	13,385	10,377	12,981
Above Normal (16%)	6,122	7,147	7,783	7,948	16,181	7,984	6,239	7,340	11,102	14,701	10,545	8,958
Below Normal (13%)	6,600	6,895	4,067	3,778	6,800	4,216	5,660	7,283	11,096	14,296	10,988	5,333
Dry (24%)	5,981	6,359	3,899	4,070	3,569	3,827	4,807	6,887	10,885	13,146	9,085	4,673
Critical (15%)	5,119	4,757	3,621	3,410	3,571	3,360	6,285	6,428	9,683	11,714	8,877	4,418

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	31	3,775	-3,459	-179	-101	-182	58	-568	-1,506	0	-1,131	5,781
20%	95	3,227	-2,186	-2,985	0	-598	-618	-487	-1,215	0	-976	5,746
30%	-59	2,731	-728	-1,105	-2,261	-682	-240	-215	-994	0	-485	4,352
40%	624	1,798	39	-237	-336	0	-467	-313	-870	-69	-440	3,252
50%	268	1,029	0	-207	0	-286	-375	-266	-760	-93	-369	676
60%	147	458	27	-158	-170	-155	-202	-595	-416	-230	-323	27
70%	130	198	-150	0	0	0	0	-328	-545	-281	-129	57
80%	229	0	-23	0	0	0	0	-428	-381	-14	-124	79
90%	292	0	0	0	0	0	-11	-358	4	106	-62	-2
Long Term												
Full Simulation Period[b]	204	1,340	-596	-608	-326	-251	-164	-347	-684	-50	-466	2,202
Water Year Types[c]												
Wet (32%)	446	1,651	-2,044	-848	-205	-73	-17	-198	-154	131	-766	5,675
Above Normal (16%)	182	1,346	366	-1,076	-1,528	-816	-78	-449	-926	-103	-806	2,893
Below Normal (13%)	109	1,215	-67	-1,027	-356	-860	-467	-846	-1,238	-238	-1,000	-96
Dry (24%)	-111	1,591	44	-53	-22	111	-300	-353	-852	-319	146	-121
Critical (15%)	314	353	-54	-123	236	-71	-70	-91	-782	239	23	-96

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-5. Sacramento River d/s of Keswick Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,576	19,509	20,146	30,874	18,571	10,177	10,192	14,534	15,000	12,723	8,971
20%	7,890	6,794	11,462	15,160	21,412	12,718	8,220	9,232	13,041	15,000	11,885	6,409
30%	7,356	5,587	6,088	8,978	13,139	8,359	6,971	8,471	12,242	15,000	11,209	6,029
40%	6,136	5,210	4,329	4,737	5,375	4,500	6,320	7,928	11,433	14,639	10,726	5,666
50%	5,715	4,858	4,000	4,333	4,500	4,500	5,731	7,458	11,014	14,084	10,347	5,475
60%	5,257	4,364	3,949	3,798	3,735	3,668	5,202	7,098	10,374	13,509	9,891	5,246
70%	4,871	4,181	3,674	3,251	3,250	3,250	4,500	6,497	9,974	13,051	9,282	4,637
80%	4,389	4,000	3,275	3,250	3,250	3,250	4,500	6,095	9,209	11,861	8,985	4,312
90%	4,000	3,501	3,250	3,250	3,250	3,250	3,713	5,503	8,402	10,691	8,150	4,147
Long Term												
Full Simulation Period[b]	6,028	5,615	7,660	9,366	11,718	8,569	6,754	7,708	11,203	13,462	10,417	5,836
Water Year Types[c]												
Wet (32%)	6,391	6,705	14,039	18,191	20,773	16,037	8,687	8,398	10,243	13,254	11,143	7,306
Above Normal (16%)	5,940	5,801	7,417	9,024	17,709	8,800	6,317	7,789	12,028	14,804	11,351	6,065
Below Normal (13%)	6,491	5,680	4,134	4,805	7,156	5,076	6,127	8,129	12,334	14,533	11,988	5,429
Dry (24%)	6,092	4,768	3,855	4,123	3,591	3,716	5,107	7,240	11,737	13,465	8,939	4,794
Critical (15%)	4,806	4,404	3,675	3,533	3,335	3,431	6,355	6,519	10,465	11,474	8,854	4,513

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,587	19,593	21,351	32,017	18,576	10,175	10,159	14,138	15,000	11,998	8,758
20%	8,095	6,362	11,532	15,117	21,412	12,718	8,146	9,311	13,148	15,000	11,420	7,492
30%	7,291	5,638	5,887	8,978	12,526	8,359	6,954	8,617	12,022	15,000	11,107	6,335
40%	6,536	5,073	4,450	4,500	6,142	4,500	6,056	7,930	11,316	14,717	10,669	5,916
50%	5,729	4,755	4,077	4,184	4,500	4,500	5,368	7,437	10,905	14,368	10,087	5,590
60%	5,223	4,361	3,976	3,706	3,565	3,547	5,053	7,055	10,464	13,336	9,838	5,137
70%	4,867	4,160	3,655	3,250	3,250	3,250	4,500	6,478	10,022	12,638	9,556	4,817
80%	4,503	4,000	3,294	3,250	3,250	3,250	4,500	6,060	9,302	11,876	8,943	4,361
90%	4,114	3,501	3,250	3,250	3,250	3,250	3,717	5,503	8,397	10,803	8,489	4,186
Long Term												
Full Simulation Period[b]	6,130	5,556	7,692	9,315	11,713	8,592	6,689	7,706	11,131	13,440	10,268	6,083
Water Year Types[c]												
Wet (32%)	6,352	6,595	14,028	18,268	20,814	16,038	8,692	8,405	10,360	13,341	10,845	7,512
Above Normal (16%)	6,088	5,850	7,442	8,771	17,594	8,923	6,263	7,839	11,793	14,732	10,881	6,029
Below Normal (13%)	6,415	5,424	4,116	4,781	7,144	5,061	6,045	8,088	12,075	14,472	11,247	6,827
Dry (24%)	6,362	4,793	3,982	4,073	3,468	3,755	4,970	7,223	11,682	13,500	9,299	4,770
Critical (15%)	5,047	4,375	3,694	3,396	3,555	3,398	6,266	6,501	10,302	11,206	9,074	4,555

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	11	84	1,205	1,143	5	-2	-33	-395	0	-725	-213
20%	205	-432	70	-44	0	0	-74	79	107	0	-465	1,083
30%	-65	51	-201	0	-613	0	-17	146	-220	0	-102	305
40%	400	-136	121	-237	766	0	-264	2	-117	78	-56	250
50%	14	-103	77	-150	0	0	-362	-21	-109	284	-260	114
60%	-34	-3	27	-92	-170	-121	-149	-43	90	-173	-53	-109
70%	-4	-20	-19	-1	0	0	0	-18	47	-413	275	180
80%	113	0	19	0	0	0	0	-35	93	15	-42	50
90%	114	0	0	0	0	0	4	0	-6	112	339	39
Long Term												
Full Simulation Period[b]	102	-59	32	-51	-5	22	-64	-2	-72	-23	-148	247
Water Year Types[c]												
Wet (32%)	-38	-109	-11	78	41	0	5	7	116	87	-298	206
Above Normal (16%)	148	50	25	-253	-115	123	-54	50	-235	-72	-470	-36
Below Normal (13%)	-76	-256	-18	-24	-12	-15	-82	-41	-259	-61	-742	1,398
Dry (24%)	270	25	128	-50	-123	39	-137	-16	-55	36	360	-24
Critical (15%)	241	-29	18	-137	220	-33	-89	-18	-164	-269	221	41

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-6. Sacramento River d/s of Keswick Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,508	7,576	19,509	20,146	30,874	18,571	10,177	10,192	14,534	15,000	12,723	8,971
20%	7,890	6,794	11,462	15,160	21,412	12,718	8,220	9,232	13,041	15,000	11,885	6,409
30%	7,356	5,587	6,088	8,978	13,139	8,359	6,971	8,471	12,242	15,000	11,209	6,029
40%	6,136	5,210	4,329	4,737	5,375	4,500	6,320	7,928	11,433	14,639	10,726	5,666
50%	5,715	4,858	4,000	4,333	4,500	4,500	5,731	7,458	11,014	14,084	10,347	5,475
60%	5,257	4,364	3,949	3,798	3,735	3,668	5,202	7,098	10,374	13,509	9,891	5,246
70%	4,871	4,181	3,674	3,251	3,250	3,250	4,500	6,497	9,974	13,051	9,282	4,637
80%	4,389	4,000	3,275	3,250	3,250	3,250	4,500	6,095	9,209	11,861	8,985	4,312
90%	4,000	3,501	3,250	3,250	3,250	3,250	3,713	5,503	8,402	10,691	8,150	4,147
Long Term												
Full Simulation Period[b]	6,028	5,615	7,660	9,366	11,718	8,569	6,754	7,708	11,203	13,462	10,417	5,836
Water Year Types[c]												
Wet (32%)	6,391	6,705	14,039	18,191	20,773	16,037	8,687	8,398	10,243	13,254	11,143	7,306
Above Normal (16%)	5,940	5,801	7,417	9,024	17,709	8,800	6,317	7,789	12,028	14,804	11,351	6,065
Below Normal (13%)	6,491	5,680	4,134	4,805	7,156	5,076	6,127	8,129	12,334	14,533	11,988	5,429
Dry (24%)	6,092	4,768	3,855	4,123	3,591	3,716	5,107	7,240	11,737	13,465	8,939	4,794
Critical (15%)	4,806	4,404	3,675	3,533	3,335	3,431	6,355	6,519	10,465	11,474	8,854	4,513

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	8,668	11,324	15,764	19,967	30,605	18,389	10,163	9,387	12,940	15,000	11,641	14,750
20%	7,868	10,000	9,191	12,163	21,412	12,271	7,595	8,527	11,910	15,000	11,065	11,992
30%	7,258	8,490	5,272	7,912	10,813	7,676	6,656	7,950	11,187	15,000	10,814	10,346
40%	6,651	7,099	4,275	4,500	5,039	4,500	5,875	7,559	10,628	14,598	10,451	8,736
50%	5,959	5,836	4,000	4,126	4,500	4,214	5,314	7,068	10,168	14,173	10,062	5,933
60%	5,518	4,834	3,975	3,671	3,565	3,547	5,003	6,436	9,875	13,393	9,635	5,357
70%	5,048	4,341	3,522	3,250	3,250	3,250	4,500	6,075	9,405	12,954	9,326	4,944
80%	4,818	4,000	3,253	3,250	3,250	3,250	4,500	5,822	8,795	11,851	8,818	4,505
90%	4,427	3,483	3,250	3,250	3,250	3,250	3,702	5,146	8,384	10,611	8,326	4,231
Long Term												
Full Simulation Period[b]	6,247	6,952	7,033	8,765	11,399	8,336	6,545	7,214	10,464	13,490	10,050	8,082
Water Year Types[c]												
Wet (32%)	6,770	8,471	11,936	17,340	20,582	15,979	8,670	8,203	10,080	13,420	10,387	12,950
Above Normal (16%)	6,222	7,015	7,819	7,984	16,119	8,008	6,238	7,262	11,075	14,723	10,501	8,858
Below Normal (13%)	6,583	6,886	4,038	3,814	6,882	4,245	5,705	7,231	11,063	14,293	10,767	5,512
Dry (24%)	5,947	6,300	3,874	4,070	3,576	3,848	4,737	6,509	10,882	13,247	9,397	4,768
Critical (15%)	5,330	4,741	3,569	3,396	3,569	3,363	6,060	6,177	9,388	11,977	9,259	4,574

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	159	3,749	-3,745	-179	-269	-182	-14	-805	-1,594	0	-1,082	5,779
20%	-22	3,206	-2,271	-2,998	0	-447	-625	-704	-1,131	0	-820	5,583
30%	-98	2,903	-816	-1,065	-2,326	-682	-315	-521	-1,055	0	-395	4,316
40%	515	1,889	-54	-237	-336	0	-445	-369	-805	-41	-275	3,070
50%	244	978	0	-207	0	-286	-417	-390	-845	88	-285	458
60%	261	470	26	-127	-170	-121	-199	-661	-499	-116	-256	111
70%	177	160	-152	-1	0	0	0	-421	-569	-97	44	307
80%	429	0	-23	0	0	0	0	-272	-414	-11	-167	193
90%	427	-19	0	0	0	0	-11	-357	-18	-81	175	84
Long Term												
Full Simulation Period[b]	219	1,337	-627	-600	-319	-233	-208	-494	-740	28	-367	2,246
Water Year Types[c]												
Wet (32%)	380	1,766	-2,103	-850	-191	-58	-17	-195	-164	166	-756	5,644
Above Normal (16%)	283	1,214	403	-1,040	-1,590	-792	-79	-527	-953	-81	-850	2,793
Below Normal (13%)	92	1,206	-96	-991	-274	-831	-422	-897	-1,271	-241	-1,221	83
Dry (24%)	-144	1,532	19	-53	-15	132	-370	-731	-855	-218	458	-26
Critical (15%)	524	337	-107	-137	235	-68	-295	-342	-1,077	502	405	61

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

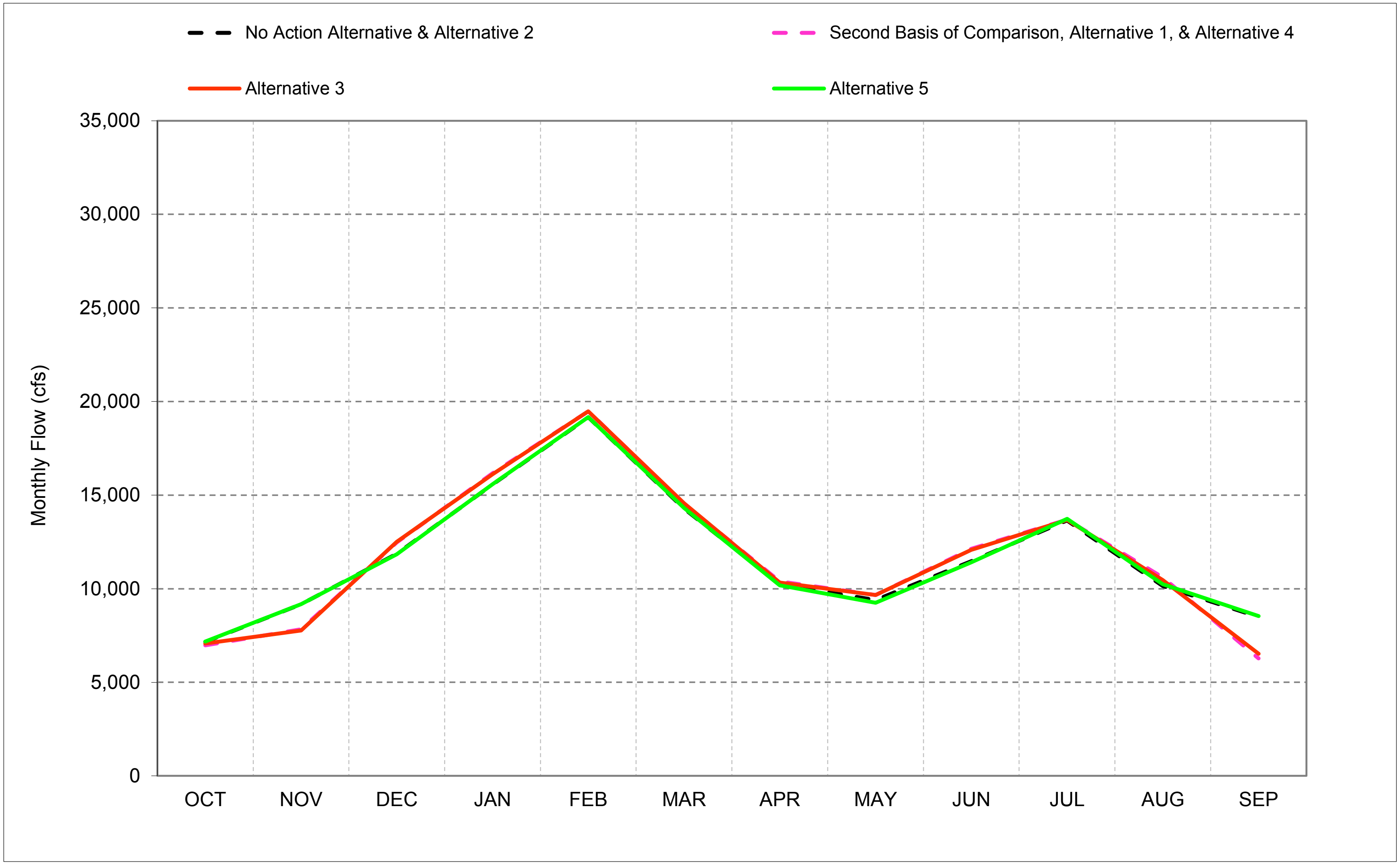
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.24. Sacramento River Flow at Bend Bridge

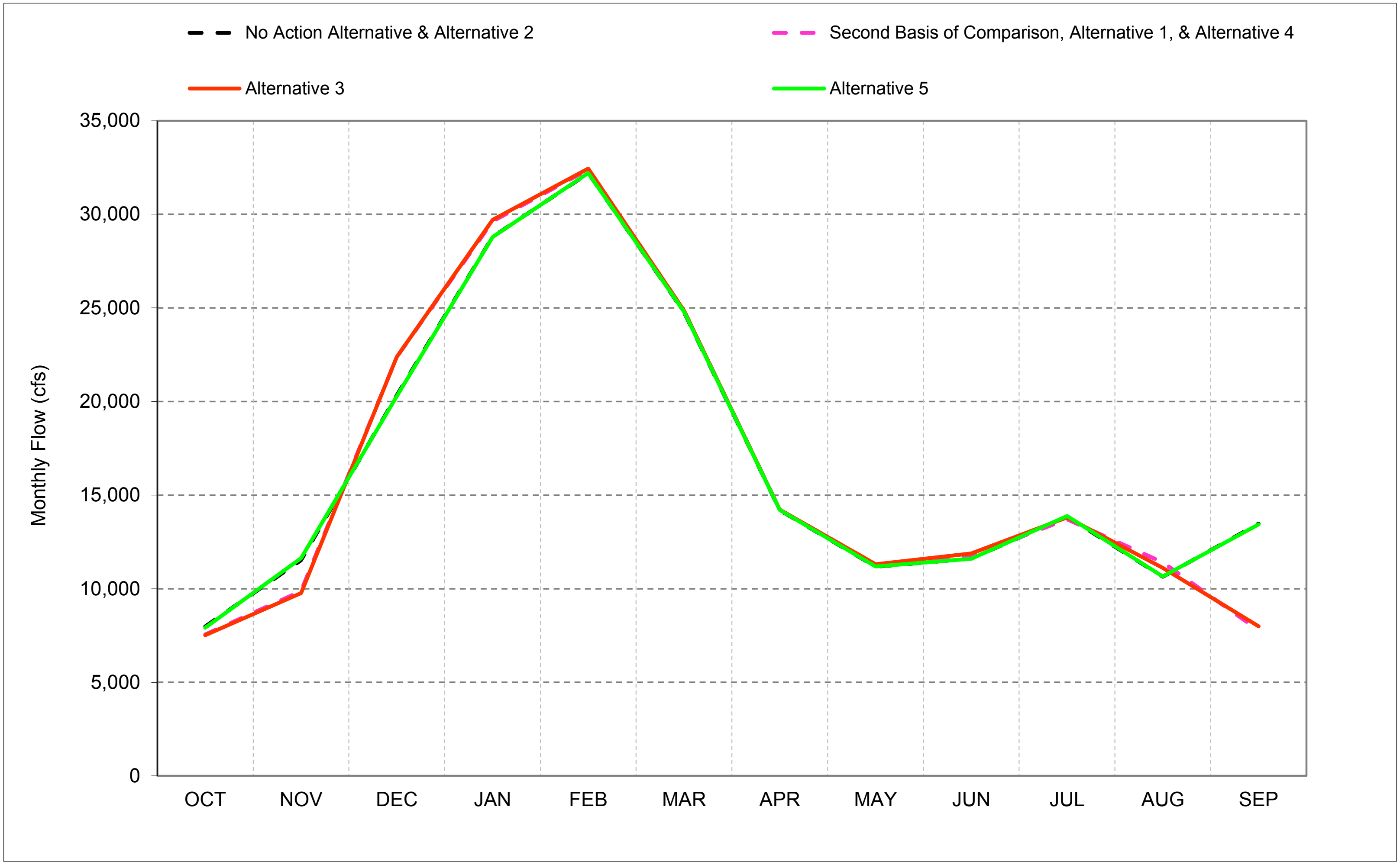
Figure C-24-1. Sacramento River at Bend Bridge, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-24-2. Sacramento River at Bend Bridge, Wet Year* Long-Term Average Flow**

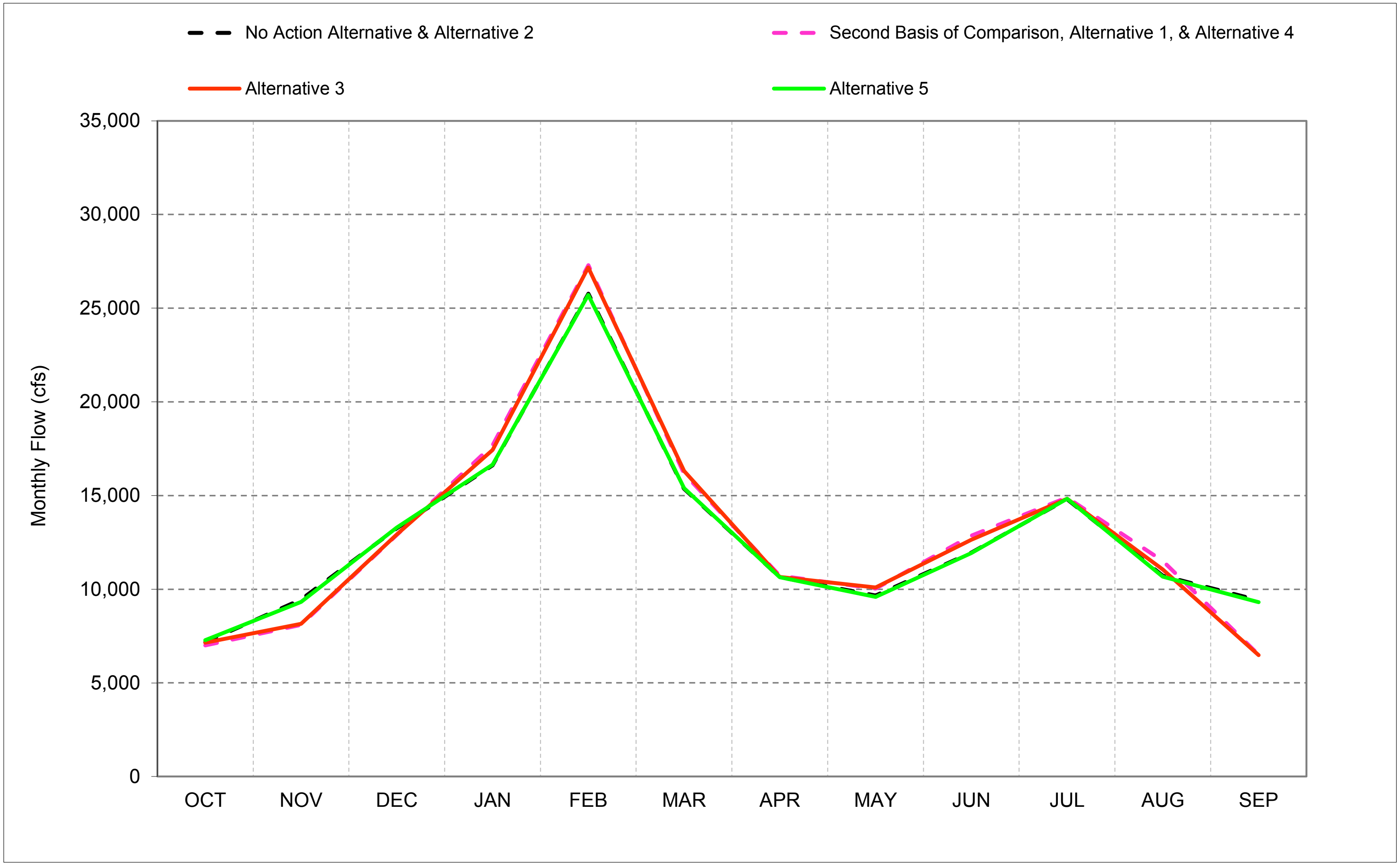


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-24-3. Sacramento River at Bend Bridge, Above Normal Year* Long-Term Average Flow**

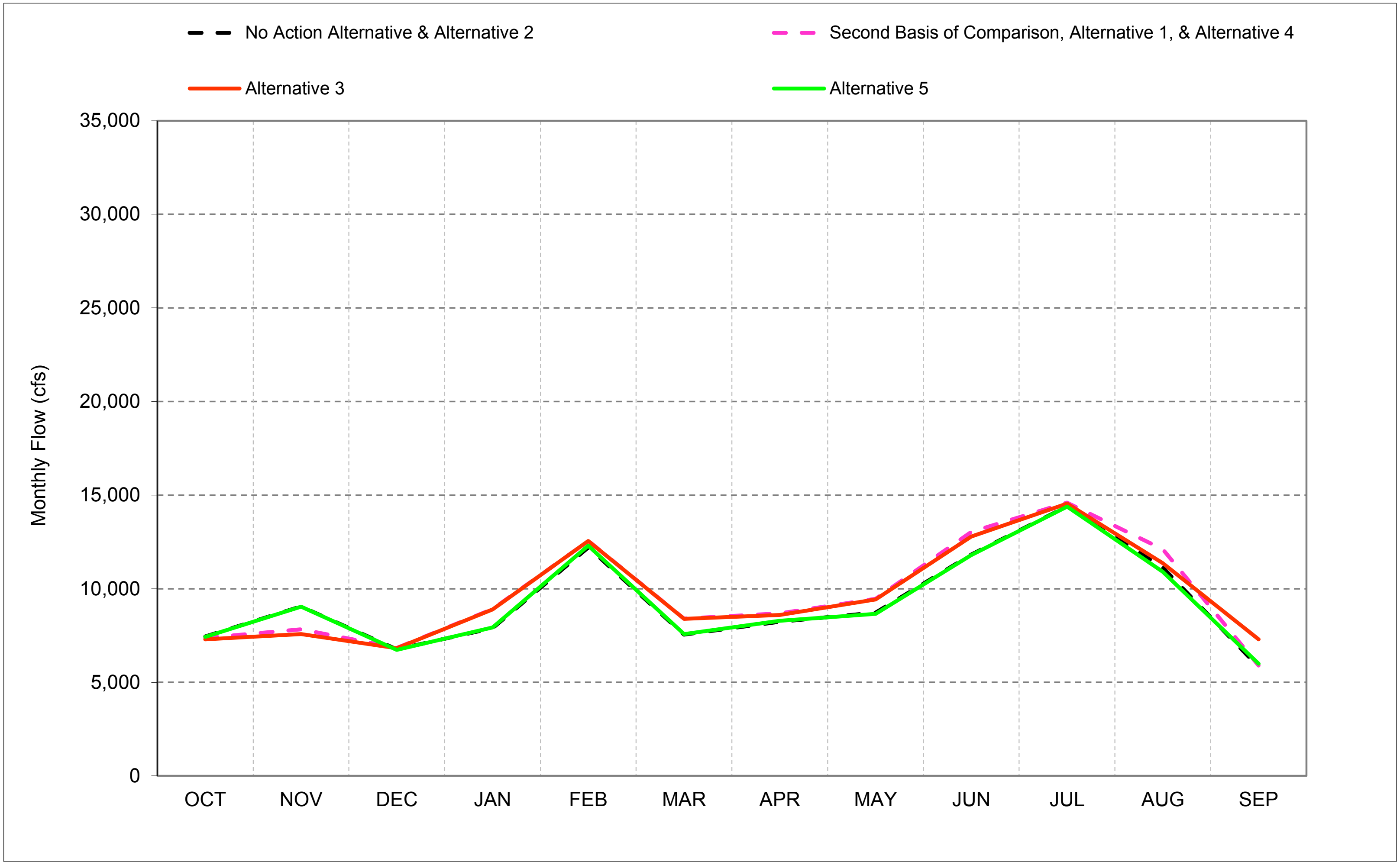


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-24-4. Sacramento River at Bend Bridge, Below Normal Year* Long-Term Average Flow**

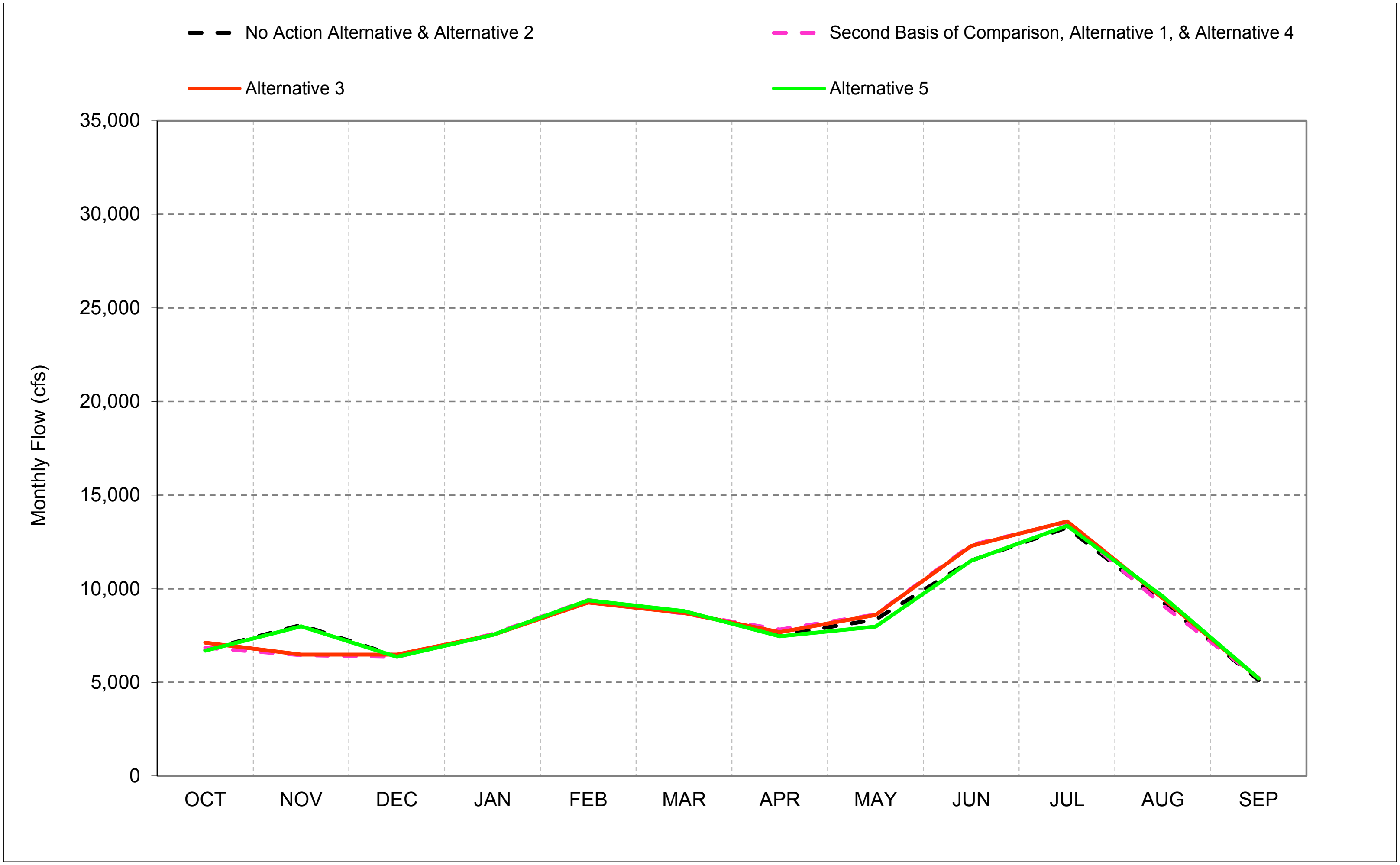


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-24-5. Sacramento River at Bend Bridge, Dry Year* Long-Term Average Flow**

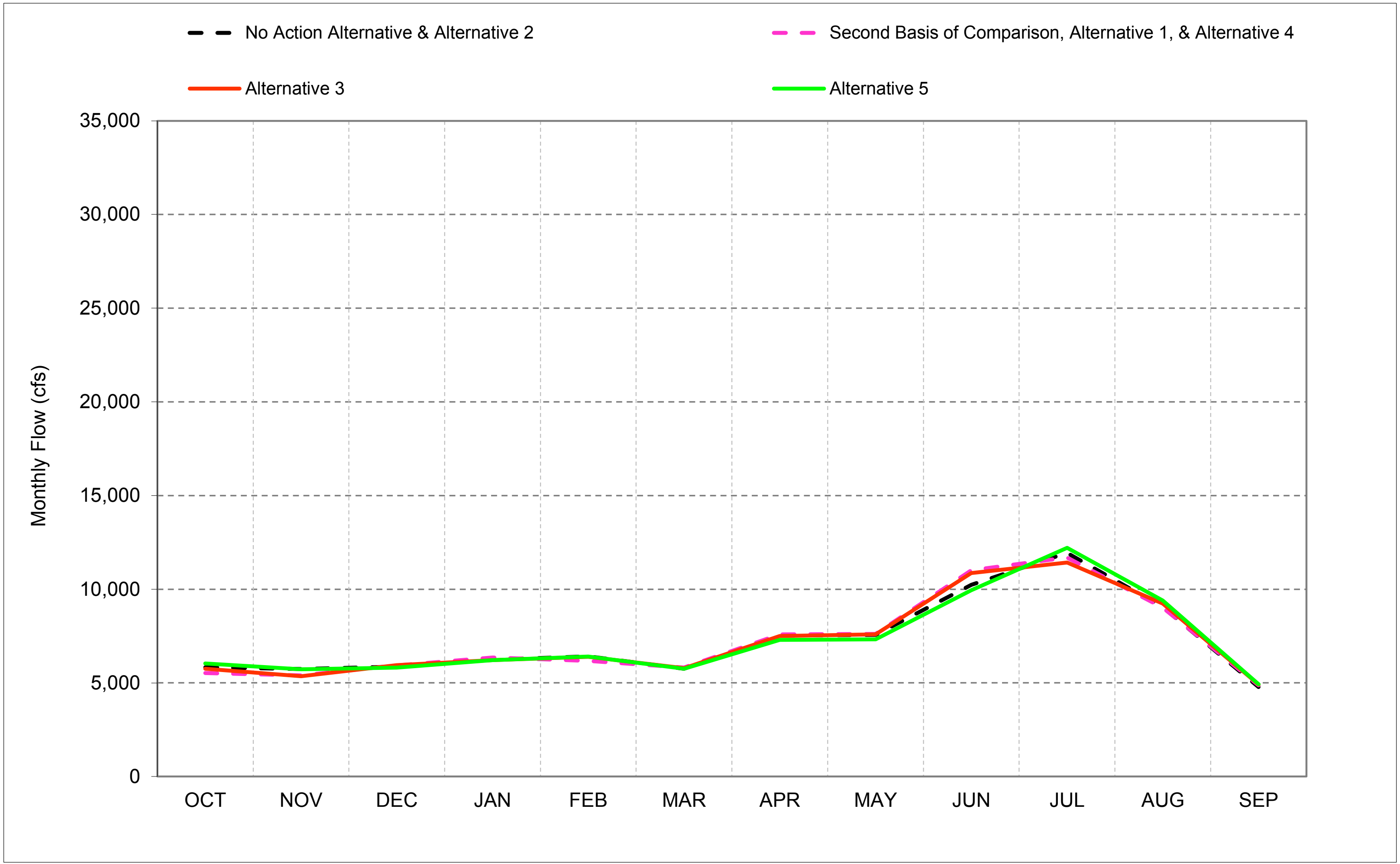


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-24-6. Sacramento River at Bend Bridge, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-1. Sacramento River at Bend Bridge, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	9,666	12,952	25,817	35,635	46,146	29,257	16,364	12,625	13,670	15,334	11,928	15,074
20%	8,705	12,051	16,957	23,582	31,477	19,298	12,989	10,628	12,322	15,096	11,025	12,855
30%	8,311	10,913	11,251	15,985	21,153	13,887	9,331	9,895	12,023	15,004	10,833	10,819
40%	7,595	10,007	8,517	11,441	12,917	10,373	8,599	9,317	11,432	14,799	10,430	9,267
50%	6,667	8,244	7,016	9,051	10,692	8,819	8,344	8,693	11,146	14,437	10,242	6,727
60%	6,367	7,281	6,534	7,486	8,639	7,841	7,824	8,246	10,849	13,548	9,732	5,623
70%	5,897	6,739	6,023	6,528	7,662	7,207	7,219	7,687	10,648	12,954	9,282	5,068
80%	5,567	5,663	5,334	5,902	6,520	5,947	6,917	7,374	10,107	12,203	8,933	4,647
90%	5,271	5,119	5,060	4,956	5,074	4,966	6,354	6,894	9,650	11,155	8,487	4,541
Long Term												
Full Simulation Period[b]	7,162	9,170	11,871	15,570	19,157	14,290	10,232	9,392	11,467	13,652	10,151	8,489
Water Year Types[c]												
Wet (32%)	7,983	11,521	20,328	28,792	32,195	24,782	14,201	11,182	11,611	13,851	10,642	13,466
Above Normal (16%)	7,175	9,450	13,251	16,613	25,773	15,371	10,643	9,666	11,952	14,807	10,718	9,412
Below Normal (13%)	7,451	9,047	6,762	7,891	12,211	7,549	8,235	8,715	11,826	14,395	11,126	5,819
Dry (24%)	6,724	8,054	6,390	7,526	9,373	8,779	7,528	8,354	11,505	13,262	9,276	5,112
Critical (15%)	5,833	5,748	5,872	6,235	6,415	5,750	7,525	7,567	10,241	11,940	9,035	4,780

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	9,210	11,246	30,228	37,208	47,106	29,294	16,401	12,695	14,989	15,329	12,928	9,537
20%	8,808	8,825	18,528	25,046	31,478	18,689	12,991	11,024	13,990	15,135	12,090	6,805
30%	8,518	7,602	11,795	16,326	22,727	14,977	9,942	10,267	12,778	14,969	11,260	6,468
40%	7,130	7,155	8,883	13,229	13,125	10,879	9,199	9,671	12,147	14,760	10,984	6,129
50%	6,545	6,725	7,032	9,590	10,802	8,958	8,529	9,034	11,715	14,420	10,409	5,846
60%	6,018	6,351	6,364	7,482	8,684	7,944	7,994	8,497	11,355	13,635	10,207	5,609
70%	5,634	5,821	5,840	6,526	7,561	7,207	7,475	8,070	11,099	13,202	9,502	5,157
80%	5,395	5,462	5,274	5,906	6,519	5,949	7,110	7,596	10,536	12,408	9,024	4,642
90%	4,882	4,940	4,878	4,979	5,147	5,080	6,586	7,102	10,064	11,119	8,382	4,526
Long Term												
Full Simulation Period[b]	6,974	7,830	12,476	16,171	19,478	14,539	10,390	9,657	12,139	13,686	10,606	6,279
Water Year Types[c]												
Wet (32%)	7,555	9,871	22,382	29,625	32,396	24,855	14,217	11,299	11,760	13,714	11,404	7,783
Above Normal (16%)	7,009	8,103	12,892	17,688	27,292	16,180	10,714	10,030	12,864	14,893	11,513	6,508
Below Normal (13%)	7,368	7,826	6,836	8,912	12,557	8,405	8,681	9,459	13,033	14,597	12,101	5,898
Dry (24%)	6,848	6,461	6,360	7,577	9,392	8,666	7,821	8,617	12,341	13,561	9,116	5,227
Critical (15%)	5,523	5,398	5,929	6,357	6,178	5,823	7,592	7,607	11,018	11,691	9,009	4,874

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-456	-1,706	4,411	1,573	961	37	37	70	1,319	-5	1,000	-5,537
20%	103	-3,226	1,571	1,464	0	-609	2	396	1,668	39	1,066	-6,050
30%	207	-3,311	544	341	1,574	1,090	611	372	754	-34	427	-4,351
40%	-465	-2,852	366	1,788	208	506	599	354	715	-39	553	-3,138
50%	-121	-1,519	16	539	109	139	186	341	569	-17	167	-881
60%	-350	-930	-170	-4	45	102	170	252	506	87	475	-14
70%	-264	-918	-182	-1	-101	0	257	383	451	248	220	89
80%	-172	-201	-60	4	-1	2	194	222	430	205	91	-5
90%	-389	-179	-182	22	73	113	232	208	413	-36	-105	-16
Long Term												
Full Simulation Period[b]	-188	-1,340	605	601	321	250	158	265	671	34	456	-2,210
Water Year Types[c]												
Wet (32%)	-427	-1,650	2,054	832	201	73	17	118	149	-137	763	-5,682
Above Normal (16%)	-166	-1,347	-359	1,076	1,520	809	71	364	912	85	795	-2,904
Below Normal (13%)	-83	-1,221	74	1,020	347	856	446	744	1,207	202	975	79
Dry (24%)	124	-1,593	-31	50	20	-112	294	262	836	299	-160	114
Critical (15%)	-309	-350	57	122	-237	73	66	40	777	-250	-26	94

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-2. Sacramento River at Bend Bridge, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	9,666	12,952	25,817	35,635	46,146	29,257	16,364	12,625	13,670	15,334	11,928	15,074
20%	8,705	12,051	16,957	23,582	31,477	19,298	12,989	10,628	12,322	15,096	11,025	12,855
30%	8,311	10,913	11,251	15,985	21,153	13,887	9,331	9,895	12,023	15,004	10,833	10,819
40%	7,595	10,007	8,517	11,441	12,917	10,373	8,599	9,317	11,432	14,799	10,430	9,267
50%	6,667	8,244	7,016	9,051	10,692	8,819	8,344	8,693	11,146	14,437	10,242	6,727
60%	6,367	7,281	6,534	7,486	8,639	7,841	7,824	8,246	10,849	13,548	9,732	5,623
70%	5,897	6,739	6,023	6,528	7,662	7,207	7,219	7,687	10,648	12,954	9,282	5,068
80%	5,567	5,663	5,334	5,902	6,520	5,947	6,917	7,374	10,107	12,203	8,933	4,647
90%	5,271	5,119	5,060	4,956	5,074	4,966	6,354	6,894	9,650	11,155	8,487	4,541
Long Term												
Full Simulation Period[b]	7,162	9,170	11,871	15,570	19,157	14,290	10,232	9,392	11,467	13,652	10,151	8,489
Water Year Types[c]												
Wet (32%)	7,983	11,521	20,328	28,792	32,195	24,782	14,201	11,182	11,611	13,851	10,642	13,466
Above Normal (16%)	7,175	9,450	13,251	16,613	25,773	15,371	10,643	9,666	11,952	14,807	10,718	9,412
Below Normal (13%)	7,451	9,047	6,762	7,891	12,211	7,549	8,235	8,715	11,826	14,395	11,126	5,819
Dry (24%)	6,724	8,054	6,390	7,526	9,373	8,779	7,528	8,354	11,505	13,262	9,276	5,112
Critical (15%)	5,833	5,748	5,872	6,235	6,415	5,750	7,525	7,567	10,241	11,940	9,035	4,780

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	9,386	11,729	30,238	38,412	47,106	29,297	16,363	12,678	14,680	15,332	12,196	9,287
20%	8,822	8,548	19,566	25,043	31,476	18,693	12,990	10,993	13,862	15,171	11,609	8,174
30%	8,250	7,629	11,041	16,361	22,570	14,976	9,843	10,357	12,690	14,979	11,239	6,799
40%	7,642	7,085	8,883	12,757	12,818	10,771	9,030	9,720	12,023	14,799	10,753	6,356
50%	6,481	6,796	7,033	9,562	10,750	8,962	8,465	9,155	11,717	14,463	10,351	5,959
60%	6,047	6,280	6,540	7,482	8,683	7,944	7,957	8,529	11,338	13,601	10,114	5,491
70%	5,790	5,826	5,947	6,525	7,686	7,207	7,277	8,103	11,119	12,957	9,773	5,224
80%	5,423	5,462	5,360	5,903	6,587	5,951	6,964	7,646	10,568	12,254	9,075	4,828
90%	5,263	5,120	4,897	4,956	5,145	4,977	6,580	6,967	10,057	11,151	8,644	4,543
Long Term												
Full Simulation Period[b]	7,074	7,769	12,509	16,120	19,474	14,561	10,327	9,658	12,070	13,667	10,462	6,529
Water Year Types[c]												
Wet (32%)	7,512	9,763	22,373	29,702	32,436	24,855	14,223	11,307	11,877	13,801	11,107	7,992
Above Normal (16%)	7,153	8,152	12,917	17,436	27,179	16,303	10,662	10,086	12,635	14,830	11,050	6,478
Below Normal (13%)	7,291	7,570	6,819	8,887	12,545	8,390	8,603	9,424	12,780	14,543	11,365	7,301
Dry (24%)	7,120	6,483	6,487	7,525	9,270	8,705	7,686	8,605	12,290	13,602	9,481	5,203
Critical (15%)	5,763	5,362	5,948	6,220	6,399	5,788	7,505	7,592	10,857	11,426	9,234	4,914

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-280	-1,223	4,420	2,777	961	40	-1	53	1,010	-2	268	-5,786
20%	117	-3,503	2,609	1,461	-1	-605	2	365	1,540	75	585	-4,681
30%	-61	-3,284	-210	377	1,417	1,088	512	462	667	-24	406	-4,020
40%	47	-2,922	366	1,316	-99	397	430	403	591	1	322	-2,911
50%	-186	-1,448	17	511	58	143	122	462	571	26	109	-768
60%	-320	-1,001	7	-3	44	103	133	283	488	53	382	-132
70%	-108	-913	-76	-3	24	0	58	416	471	3	491	156
80%	-144	-201	26	1	67	3	47	272	462	52	142	181
90%	-8	2	-162	0	71	11	226	73	406	-4	158	2
Long Term												
Full Simulation Period[b]	-88	-1,401	638	550	317	271	95	266	602	15	311	-1,960
Water Year Types[c]												
Wet (32%)	-471	-1,758	2,044	910	241	73	22	125	266	-50	465	-5,474
Above Normal (16%)	-21	-1,297	-333	823	1,406	932	19	420	683	23	332	-2,934
Below Normal (13%)	-160	-1,477	57	995	334	840	367	709	954	149	239	1,482
Dry (24%)	396	-1,571	96	-1	-103	-73	158	250	785	340	204	90
Critical (15%)	-70	-386	76	-15	-16	38	-20	25	616	-514	199	134

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-3. Sacramento River at Bend Bridge, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,666	12,952	25,817	35,635	46,146	29,257	16,364	12,625	13,670	15,334	11,928	15,074
20%	8,705	12,051	16,957	23,582	31,477	19,298	12,989	10,628	12,322	15,096	11,025	12,855
30%	8,311	10,913	11,251	15,985	21,153	13,887	9,331	9,895	12,023	15,004	10,833	10,819
40%	7,595	10,007	8,517	11,441	12,917	10,373	8,599	9,317	11,432	14,799	10,430	9,267
50%	6,667	8,244	7,016	9,051	10,692	8,819	8,344	8,693	11,146	14,437	10,242	6,727
60%	6,367	7,281	6,534	7,486	8,639	7,841	7,824	8,246	10,849	13,548	9,732	5,623
70%	5,897	6,739	6,023	6,528	7,662	7,207	7,219	7,687	10,648	12,954	9,282	5,068
80%	5,567	5,663	5,334	5,902	6,520	5,947	6,917	7,374	10,107	12,203	8,933	4,647
90%	5,271	5,119	5,060	4,956	5,074	4,966	6,354	6,894	9,650	11,155	8,487	4,541
Long Term												
Full Simulation Period[b]	7,162	9,170	11,871	15,570	19,157	14,290	10,232	9,392	11,467	13,652	10,151	8,489
Water Year Types[c]												
Wet (32%)	7,983	11,521	20,328	28,792	32,195	24,782	14,201	11,182	11,611	13,851	10,642	13,466
Above Normal (16%)	7,175	9,450	13,251	16,613	25,773	15,371	10,643	9,666	11,952	14,807	10,718	9,412
Below Normal (13%)	7,451	9,047	6,762	7,891	12,211	7,549	8,235	8,715	11,826	14,395	11,126	5,819
Dry (24%)	6,724	8,054	6,390	7,526	9,373	8,779	7,528	8,354	11,505	13,262	9,276	5,112
Critical (15%)	5,833	5,748	5,872	6,235	6,415	5,750	7,525	7,567	10,241	11,940	9,035	4,780

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,789	12,949	24,963	35,641	46,144	29,257	16,362	12,591	13,596	15,332	11,804	15,055
20%	8,691	12,012	16,908	23,582	31,478	19,315	12,989	10,466	12,322	15,055	11,114	12,857
30%	8,252	10,947	11,254	16,024	21,199	13,888	9,226	9,619	11,944	14,998	10,911	10,789
40%	7,661	10,173	8,517	11,441	13,003	10,373	8,599	9,122	11,370	14,799	10,628	9,087
50%	6,707	8,257	7,029	9,051	10,692	8,819	8,223	8,549	11,111	14,479	10,289	6,638
60%	6,317	7,328	6,463	7,486	8,626	7,901	7,672	8,111	10,850	13,795	9,962	5,726
70%	5,926	6,741	5,964	6,528	7,662	7,207	7,203	7,641	10,528	12,962	9,498	5,306
80%	5,589	5,403	5,333	5,966	6,520	5,947	6,917	7,371	10,102	12,211	8,998	4,896
90%	5,372	4,947	4,951	4,959	5,074	4,966	6,519	6,860	9,601	11,095	8,442	4,609
Long Term												
Full Simulation Period[b]	7,177	9,168	11,841	15,578	19,164	14,308	10,188	9,245	11,413	13,730	10,245	8,532
Water Year Types[c]												
Wet (32%)	7,916	11,637	20,268	28,790	32,209	24,797	14,201	11,185	11,601	13,886	10,652	13,435
Above Normal (16%)	7,275	9,317	13,289	16,649	25,711	15,396	10,643	9,588	11,926	14,830	10,675	9,313
Below Normal (13%)	7,434	9,037	6,733	7,928	12,293	7,578	8,281	8,663	11,793	14,391	10,905	5,999
Dry (24%)	6,692	7,996	6,366	7,527	9,380	8,800	7,457	7,977	11,505	13,362	9,588	5,204
Critical (15%)	6,040	5,731	5,820	6,222	6,414	5,753	7,301	7,318	9,947	12,204	9,390	4,933

Alternative 5 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	123	-2	-855	6	-1	0	-2	-34	-74	-2	-124	-19
20%	-14	-40	-49	0	1	17	1	-162	0	-41	89	2
30%	-59	34	3	39	45	1	-104	-277	-79	-5	78	-30
40%	67	166	0	0	87	0	0	-195	-61	1	198	-181
50%	41	14	13	0	0	1	-121	-143	-35	42	46	-88
60%	-50	47	-71	1	-13	60	-152	-135	1	247	230	104
70%	28	2	-59	0	0	0	-15	-46	-120	8	216	237
80%	22	-259	-1	64	0	0	0	-2	-4	8	65	249
90%	101	-172	-108	3	0	0	165	-34	-50	-59	-45	68
Long Term												
Full Simulation Period[b]	15	-2	-30	8	7	18	-44	-147	-55	77	95	44
Water Year Types[c]												
Wet (32%)	-66	116	-60	-2	14	15	0	3	-10	35	10	-31
Above Normal (16%)	100	-132	38	36	-62	25	-1	-78	-26	23	-43	-99
Below Normal (13%)	-17	-10	-29	36	82	29	45	-52	-33	-3	-221	180
Dry (24%)	-32	-58	-24	0	7	21	-70	-377	-1	101	311	92
Critical (15%)	207	-17	-52	-13	-2	3	-225	-249	-293	264	355	153

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-4. Sacramento River at Bend Bridge, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,210	11,246	30,228	37,208	47,106	29,294	16,401	12,695	14,989	15,329	12,928	9,537
20%	8,808	8,825	18,528	25,046	31,478	18,689	12,991	11,024	13,990	15,135	12,090	6,805
30%	8,518	7,602	11,795	16,326	22,727	14,977	9,942	10,267	12,778	14,969	11,260	6,468
40%	7,130	7,155	8,883	13,229	13,125	10,879	9,199	9,671	12,147	14,760	10,984	6,129
50%	6,545	6,725	7,032	9,590	10,802	8,958	8,529	9,034	11,715	14,420	10,409	5,846
60%	6,018	6,351	6,364	7,482	8,684	7,944	7,994	8,497	11,355	13,635	10,207	5,609
70%	5,634	5,821	5,840	6,526	7,561	7,207	7,475	8,070	11,099	13,202	9,502	5,157
80%	5,395	5,462	5,274	5,906	6,519	5,949	7,110	7,596	10,536	12,408	9,024	4,642
90%	4,882	4,940	4,878	4,979	5,147	5,080	6,586	7,102	10,064	11,119	8,382	4,526
Long Term												
Full Simulation Period[b]	6,974	7,830	12,476	16,171	19,478	14,539	10,390	9,657	12,139	13,686	10,606	6,279
Water Year Types[c]												
Wet (32%)	7,555	9,871	22,382	29,625	32,396	24,855	14,217	11,299	11,760	13,714	11,404	7,783
Above Normal (16%)	7,009	8,103	12,892	17,688	27,292	16,180	10,714	10,030	12,864	14,893	11,513	6,508
Below Normal (13%)	7,368	7,826	6,836	8,912	12,557	8,405	8,681	9,459	13,033	14,597	12,101	5,898
Dry (24%)	6,848	6,461	6,360	7,577	9,392	8,666	7,821	8,617	12,341	13,561	9,116	5,227
Critical (15%)	5,523	5,398	5,929	6,357	6,178	5,823	7,592	7,607	11,018	11,691	9,009	4,874

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,666	12,952	25,817	35,635	46,146	29,257	16,364	12,625	13,670	15,334	11,928	15,074
20%	8,705	12,051	16,957	23,582	31,477	19,298	12,989	10,628	12,322	15,096	11,025	12,855
30%	8,311	10,913	11,251	15,985	21,153	13,887	9,331	9,895	12,023	15,004	10,833	10,819
40%	7,595	10,007	8,517	11,441	12,917	10,373	8,599	9,317	11,432	14,799	10,430	9,267
50%	6,667	8,244	7,016	9,051	10,692	8,819	8,344	8,693	11,146	14,437	10,242	6,727
60%	6,367	7,281	6,534	7,486	8,639	7,841	7,824	8,246	10,849	13,548	9,732	5,623
70%	5,897	6,739	6,023	6,528	7,662	7,207	7,219	7,687	10,648	12,954	9,282	5,068
80%	5,567	5,663	5,334	5,902	6,520	5,947	6,917	7,374	10,107	12,203	8,933	4,647
90%	5,271	5,119	5,060	4,956	5,074	4,966	6,354	6,894	9,650	11,155	8,487	4,541
Long Term												
Full Simulation Period[b]	7,162	9,170	11,871	15,570	19,157	14,290	10,232	9,392	11,467	13,652	10,151	8,489
Water Year Types[c]												
Wet (32%)	7,983	11,521	20,328	28,792	32,195	24,782	14,201	11,182	11,611	13,851	10,642	13,466
Above Normal (16%)	7,175	9,450	13,251	16,613	25,773	15,371	10,643	9,666	11,952	14,807	10,718	9,412
Below Normal (13%)	7,451	9,047	6,762	7,891	12,211	7,549	8,235	8,715	11,826	14,395	11,126	5,819
Dry (24%)	6,724	8,054	6,390	7,526	9,373	8,779	7,528	8,354	11,505	13,262	9,276	5,112
Critical (15%)	5,833	5,748	5,872	6,235	6,415	5,750	7,525	7,567	10,241	11,940	9,035	4,780

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	456	1,706	-4,411	-1,573	-961	-37	-37	-70	-1,319	5	-1,000	5,537
20%	-103	3,226	-1,571	-1,464	0	609	-2	-396	-1,668	-39	-1,066	6,050
30%	-207	3,311	-544	-341	-1,574	-1,090	-611	-372	-754	34	-427	4,351
40%	465	2,852	-366	-1,788	-208	-506	-599	-354	-715	39	-553	3,138
50%	121	1,519	-16	-539	-109	-139	-186	-341	-569	17	-167	881
60%	350	930	170	4	-45	-102	-170	-252	-506	-87	-475	14
70%	264	918	182	1	101	0	-257	-383	-451	-248	-220	-89
80%	172	201	60	-4	1	-2	-194	-222	-430	-205	-91	5
90%	389	179	182	-22	-73	-113	-232	-208	-413	36	105	16
Long Term												
Full Simulation Period[b]	188	1,340	-605	-601	-321	-250	-158	-265	-671	-34	-456	2,210
Water Year Types[c]												
Wet (32%)	427	1,650	-2,054	-832	-201	-73	-17	-118	-149	137	-763	5,682
Above Normal (16%)	166	1,347	359	-1,076	-1,520	-809	-71	-364	-912	-85	-795	2,904
Below Normal (13%)	83	1,221	-74	-1,020	-347	-856	-446	-744	-1,207	-202	-975	-79
Dry (24%)	-124	1,593	31	-50	-20	112	-294	-262	-836	-299	160	-114
Critical (15%)	309	350	-57	-122	237	-73	-66	-40	-777	250	26	-94

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-5. Sacramento River at Bend Bridge, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	9,210	11,246	30,228	37,208	47,106	29,294	16,401	12,695	14,989	15,329	12,928	9,537
20%	8,808	8,825	18,528	25,046	31,478	18,689	12,991	11,024	13,990	15,135	12,090	6,805
30%	8,518	7,602	11,795	16,326	22,727	14,977	9,942	10,267	12,778	14,969	11,260	6,468
40%	7,130	7,155	8,883	13,229	13,125	10,879	9,199	9,671	12,147	14,760	10,984	6,129
50%	6,545	6,725	7,032	9,590	10,802	8,958	8,529	9,034	11,715	14,420	10,409	5,846
60%	6,018	6,351	6,364	7,482	8,684	7,944	7,994	8,497	11,355	13,635	10,207	5,609
70%	5,634	5,821	5,840	6,526	7,561	7,207	7,475	8,070	11,099	13,202	9,502	5,157
80%	5,395	5,462	5,274	5,906	6,519	5,949	7,110	7,596	10,536	12,408	9,024	4,642
90%	4,882	4,940	4,878	4,979	5,147	5,080	6,586	7,102	10,064	11,119	8,382	4,526
Long Term												
Full Simulation Period[b]	6,974	7,830	12,476	16,171	19,478	14,539	10,390	9,657	12,139	13,686	10,606	6,279
Water Year Types[c]												
Wet (32%)	7,555	9,871	22,382	29,625	32,396	24,855	14,217	11,299	11,760	13,714	11,404	7,783
Above Normal (16%)	7,009	8,103	12,892	17,688	27,292	16,180	10,714	10,030	12,864	14,893	11,513	6,508
Below Normal (13%)	7,368	7,826	6,836	8,912	12,557	8,405	8,681	9,459	13,033	14,597	12,101	5,898
Dry (24%)	6,848	6,461	6,360	7,577	9,392	8,666	7,821	8,617	12,341	13,561	9,116	5,227
Critical (15%)	5,523	5,398	5,929	6,357	6,178	5,823	7,592	7,607	11,018	11,691	9,009	4,874

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	9,386	11,729	30,238	38,412	47,106	29,297	16,363	12,678	14,680	15,332	12,196	9,287
20%	8,822	8,548	19,566	25,043	31,476	18,693	12,990	10,993	13,862	15,171	11,609	8,174
30%	8,250	7,629	11,041	16,361	22,570	14,976	9,843	10,357	12,690	14,979	11,239	6,799
40%	7,642	7,085	8,883	12,757	12,818	10,771	9,030	9,720	12,023	14,799	10,753	6,356
50%	6,481	6,796	7,033	9,562	10,750	8,962	8,465	9,155	11,717	14,463	10,351	5,959
60%	6,047	6,280	6,540	7,482	8,683	7,944	7,957	8,529	11,338	13,601	10,114	5,491
70%	5,790	5,826	5,947	6,525	7,686	7,207	7,277	8,103	11,119	12,957	9,773	5,224
80%	5,423	5,462	5,360	5,903	6,587	5,951	6,964	7,646	10,568	12,254	9,075	4,828
90%	5,263	5,120	4,897	4,956	5,145	4,977	6,580	6,967	10,057	11,151	8,644	4,543
Long Term												
Full Simulation Period[b]	7,074	7,769	12,509	16,120	19,474	14,561	10,327	9,658	12,070	13,667	10,462	6,529
Water Year Types[c]												
Wet (32%)	7,512	9,763	22,373	29,702	32,436	24,855	14,223	11,307	11,877	13,801	11,107	7,992
Above Normal (16%)	7,153	8,152	12,917	17,436	27,179	16,303	10,662	10,086	12,635	14,830	11,050	6,478
Below Normal (13%)	7,291	7,570	6,819	8,887	12,545	8,390	8,603	9,424	12,780	14,543	11,365	7,301
Dry (24%)	7,120	6,483	6,487	7,525	9,270	8,705	7,686	8,605	12,290	13,602	9,481	5,203
Critical (15%)	5,763	5,362	5,948	6,220	6,399	5,788	7,505	7,592	10,857	11,426	9,234	4,914

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	176	483	10	1,204	0	4	-38	-17	-309	3	-732	-249
20%	14	-277	1,038	-3	-2	4	-1	-31	-129	36	-481	1,369
30%	-268	28	-754	36	-157	-1	-99	90	-87	10	-21	331
40%	512	-71	0	-472	-307	-109	-169	49	-125	39	-231	227
50%	-64	71	1	-27	-51	4	-64	121	2	43	-58	113
60%	29	-71	177	1	-1	0	-36	32	-18	-34	-93	-118
70%	156	5	106	-2	124	0	-198	33	20	-245	271	67
80%	28	0	87	-3	67	2	-146	50	32	-153	51	186
90%	380	180	20	-22	-2	-103	-6	-135	-7	32	262	17
Long Term												
Full Simulation Period[b]	100	-61	33	-52	-5	22	-63	1	-69	-18	-145	250
Water Year Types[c]												
Wet (32%)	-44	-108	-10	77	40	0	5	8	117	87	-297	209
Above Normal (16%)	145	50	25	-252	-113	124	-52	56	-228	-63	-463	-30
Below Normal (13%)	-77	-256	-17	-25	-13	-16	-79	-36	-253	-54	-736	1,403
Dry (24%)	272	22	127	-52	-123	39	-136	-12	-50	41	364	-24
Critical (15%)	240	-35	19	-137	221	-35	-87	-15	-161	-265	225	41

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-6. Sacramento River at Bend Bridge, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,210	11,246	30,228	37,208	47,106	29,294	16,401	12,695	14,989	15,329	12,928	9,537
20%	8,808	8,825	18,528	25,046	31,478	18,689	12,991	11,024	13,990	15,135	12,090	6,805
30%	8,518	7,602	11,795	16,326	22,727	14,977	9,942	10,267	12,778	14,969	11,260	6,468
40%	7,130	7,155	8,883	13,229	13,125	10,879	9,199	9,671	12,147	14,760	10,984	6,129
50%	6,545	6,725	7,032	9,590	10,802	8,958	8,529	9,034	11,715	14,420	10,409	5,846
60%	6,018	6,351	6,364	7,482	8,684	7,944	7,994	8,497	11,355	13,635	10,207	5,609
70%	5,634	5,821	5,840	6,526	7,561	7,207	7,475	8,070	11,099	13,202	9,502	5,157
80%	5,395	5,462	5,274	5,906	6,519	5,949	7,110	7,596	10,536	12,408	9,024	4,642
90%	4,882	4,940	4,878	4,979	5,147	5,080	6,586	7,102	10,064	11,119	8,382	4,526
Long Term												
Full Simulation Period[b]	6,974	7,830	12,476	16,171	19,478	14,539	10,390	9,657	12,139	13,686	10,606	6,279
Water Year Types[c]												
Wet (32%)	7,555	9,871	22,382	29,625	32,396	24,855	14,217	11,299	11,760	13,714	11,404	7,783
Above Normal (16%)	7,009	8,103	12,892	17,688	27,292	16,180	10,714	10,030	12,864	14,893	11,513	6,508
Below Normal (13%)	7,368	7,826	6,836	8,912	12,557	8,405	8,681	9,459	13,033	14,597	12,101	5,898
Dry (24%)	6,848	6,461	6,360	7,577	9,392	8,666	7,821	8,617	12,341	13,561	9,116	5,227
Critical (15%)	5,523	5,398	5,929	6,357	6,178	5,823	7,592	7,607	11,018	11,691	9,009	4,874

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9,789	12,949	24,963	35,641	46,144	29,257	16,362	12,591	13,596	15,332	11,804	15,055
20%	8,691	12,012	16,908	23,582	31,478	19,315	12,989	10,466	12,322	15,055	11,114	12,857
30%	8,252	10,947	11,254	16,024	21,199	13,888	9,226	9,619	11,944	14,998	10,911	10,789
40%	7,661	10,173	8,517	11,441	13,003	10,373	8,599	9,122	11,370	14,799	10,628	9,087
50%	6,707	8,257	7,029	9,051	10,692	8,819	8,223	8,549	11,111	14,479	10,289	6,638
60%	6,317	7,328	6,463	7,486	8,626	7,901	7,672	8,111	10,850	13,795	9,962	5,726
70%	5,926	6,741	5,964	6,528	7,662	7,207	7,203	7,641	10,528	12,962	9,498	5,306
80%	5,589	5,403	5,333	5,966	6,520	5,947	6,917	7,371	10,102	12,211	8,998	4,896
90%	5,372	4,947	4,951	4,959	5,074	4,966	6,519	6,860	9,601	11,095	8,442	4,609
Long Term												
Full Simulation Period[b]	7,177	9,168	11,841	15,578	19,164	14,308	10,188	9,245	11,413	13,730	10,245	8,532
Water Year Types[c]												
Wet (32%)	7,916	11,637	20,268	28,790	32,209	24,797	14,201	11,185	11,601	13,886	10,652	13,435
Above Normal (16%)	7,275	9,317	13,289	16,649	25,711	15,396	10,643	9,588	11,926	14,830	10,675	9,313
Below Normal (13%)	7,434	9,037	6,733	7,928	12,293	7,578	8,281	8,663	11,793	14,391	10,905	5,999
Dry (24%)	6,692	7,996	6,366	7,527	9,380	8,800	7,457	7,977	11,505	13,362	9,588	5,204
Critical (15%)	6,040	5,731	5,820	6,222	6,414	5,753	7,301	7,318	9,947	12,204	9,390	4,933

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	579	1,703	-5,266	-1,567	-962	-37	-39	-104	-1,393	3	-1,124	5,519
20%	-117	3,187	-1,620	-1,465	0	626	-2	-557	-1,668	-80	-976	6,052
30%	-266	3,345	-541	-301	-1,528	-1,089	-715	-649	-833	29	-349	4,321
40%	532	3,018	-366	-1,788	-121	-506	-600	-549	-777	39	-355	2,958
50%	162	1,533	-3	-539	-109	-139	-306	-484	-604	59	-120	792
60%	299	977	99	5	-58	-42	-322	-386	-505	160	-246	118
70%	292	920	123	1	100	0	-272	-429	-571	-240	-4	148
80%	194	-59	59	60	1	-2	-194	-225	-434	-197	-26	254
90%	490	7	74	-20	-72	-114	-66	-242	-463	-23	60	83
Long Term												
Full Simulation Period[b]	203	1,338	-635	-593	-314	-232	-202	-411	-726	44	-361	2,254
Water Year Types[c]												
Wet (32%)	361	1,766	-2,114	-835	-187	-59	-16	-114	-159	172	-753	5,652
Above Normal (16%)	266	1,215	397	-1,039	-1,582	-784	-71	-442	-937	-62	-838	2,805
Below Normal (13%)	66	1,211	-103	-984	-265	-827	-401	-797	-1,240	-206	-1,196	101
Dry (24%)	-156	1,535	6	-50	-12	134	-364	-640	-836	-198	471	-22
Critical (15%)	517	333	-108	-135	236	-71	-291	-290	-1,071	513	381	60

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

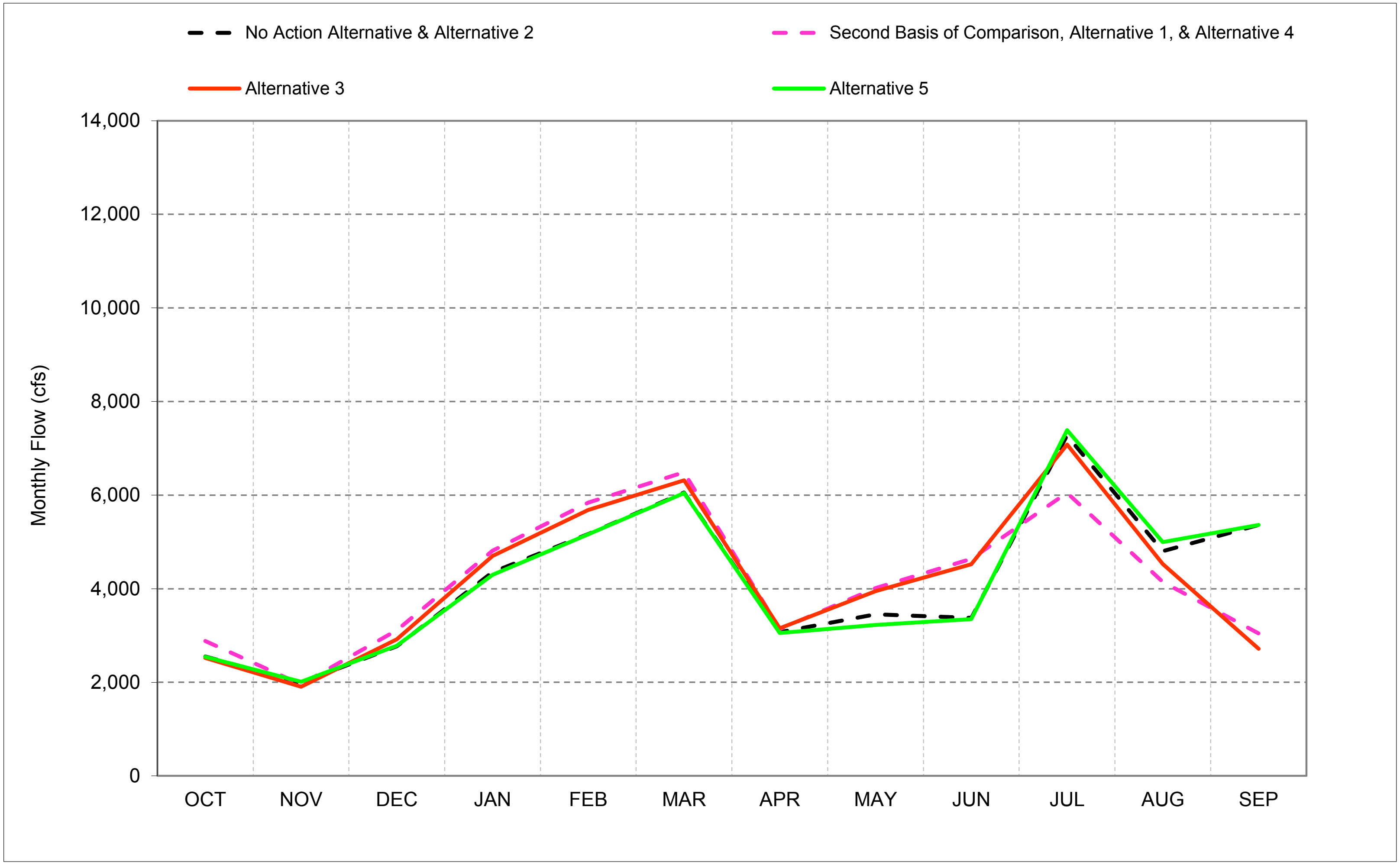
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.25. Feather River Flow downstream of Thermalito

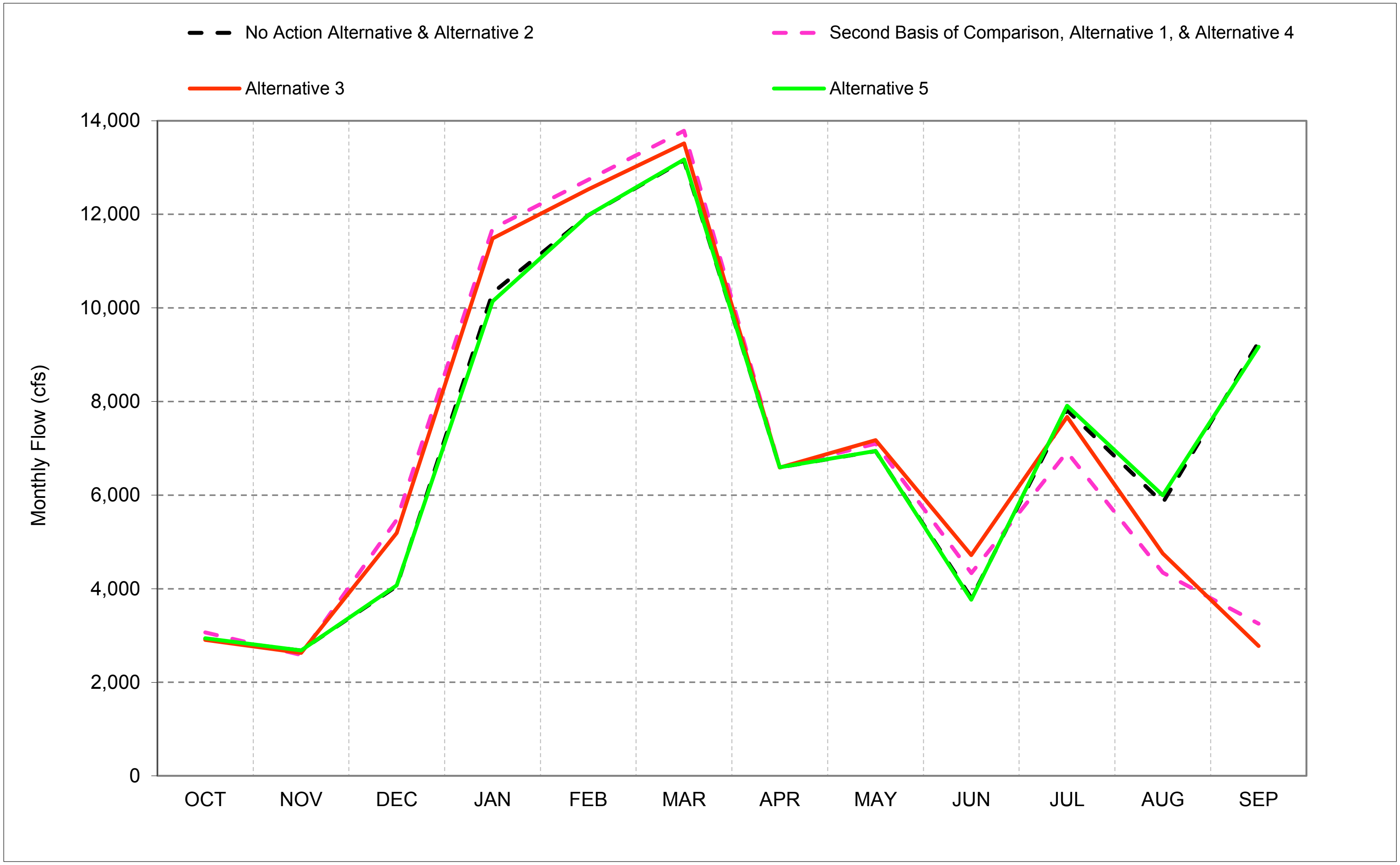
Figure C-25-1. Feather River d/s of Thermalito, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-25-2. Feather River d/s of Thermalito, Wet Year* Long-Term Average Flow**

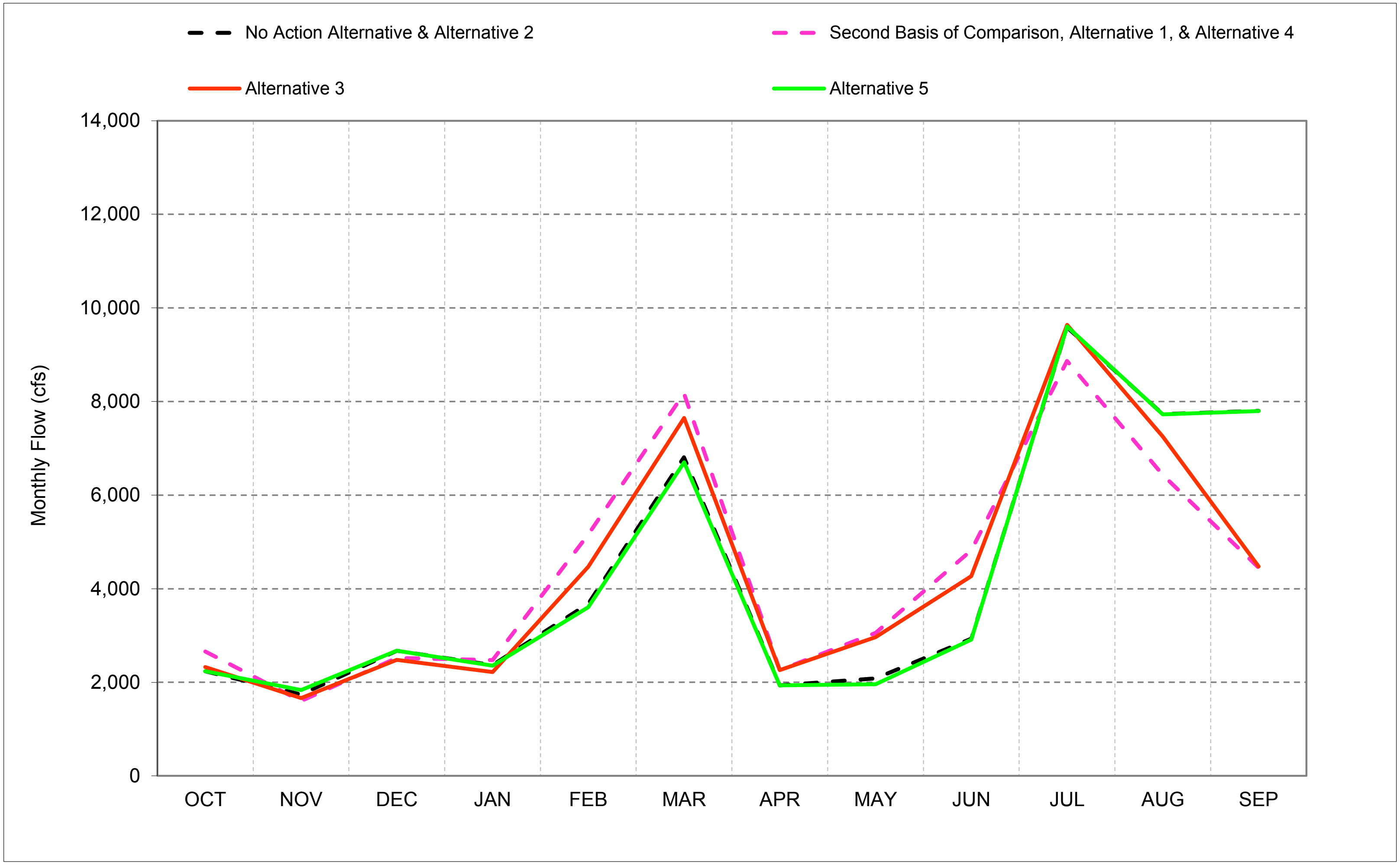


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-25-3. Feather River d/s of Thermalito, Above Normal Year* Long-Term Average Flow**

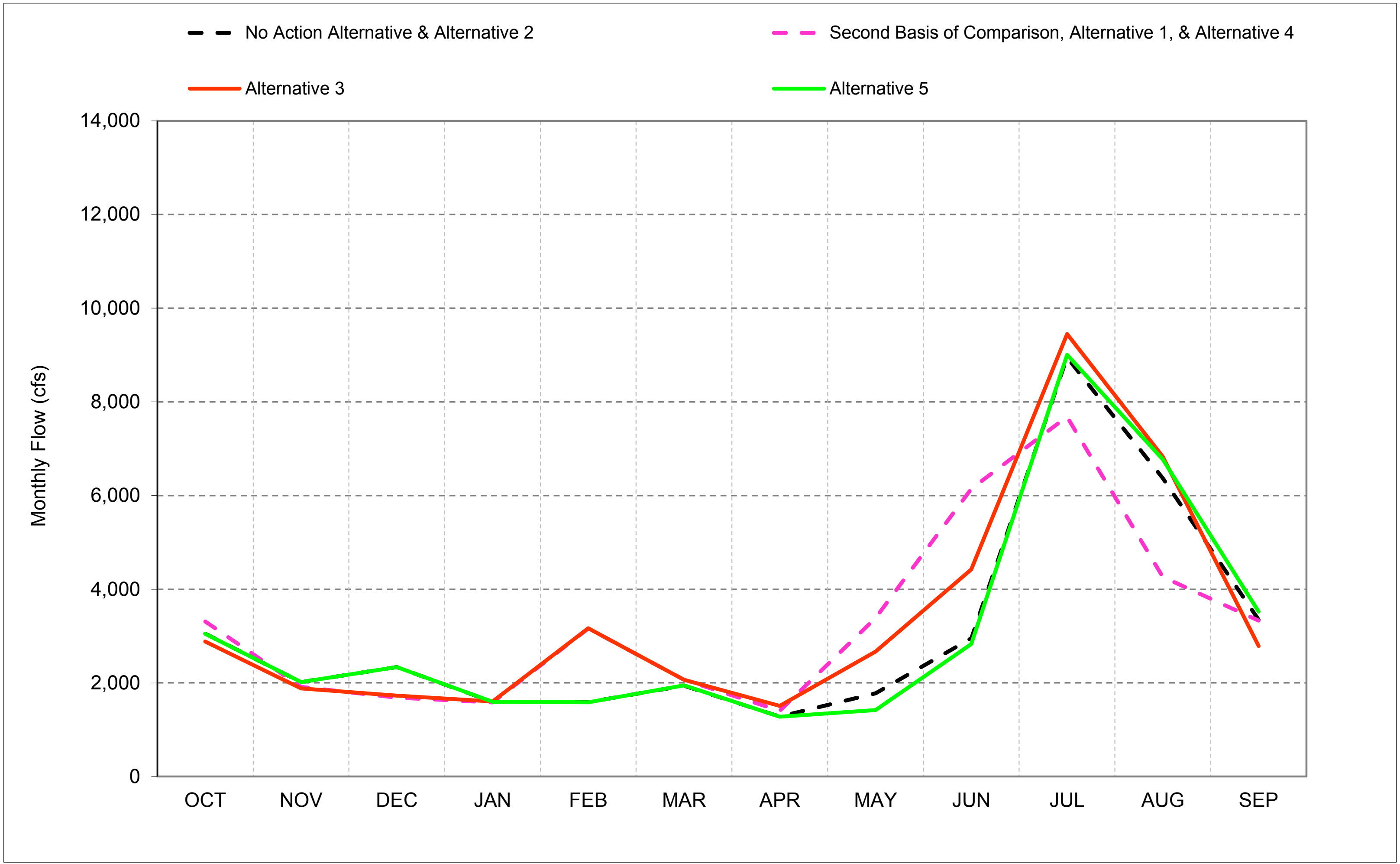


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-25-4. Feather River d/s of Thermalito, Below Normal Year* Long-Term Average Flow**

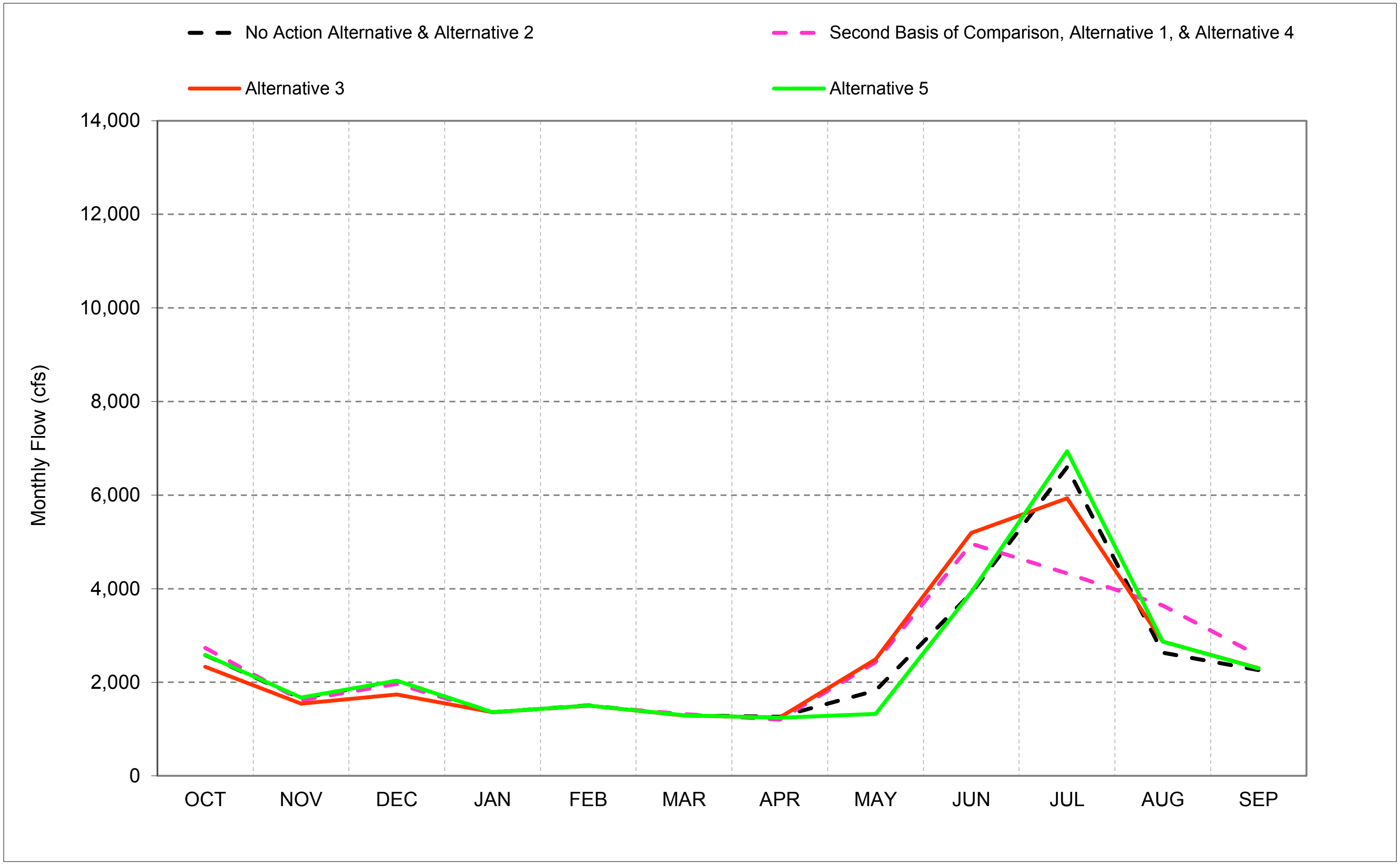


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-25-5. Feather River d/s of Thermalito, Dry Year* Long-Term Average Flow**

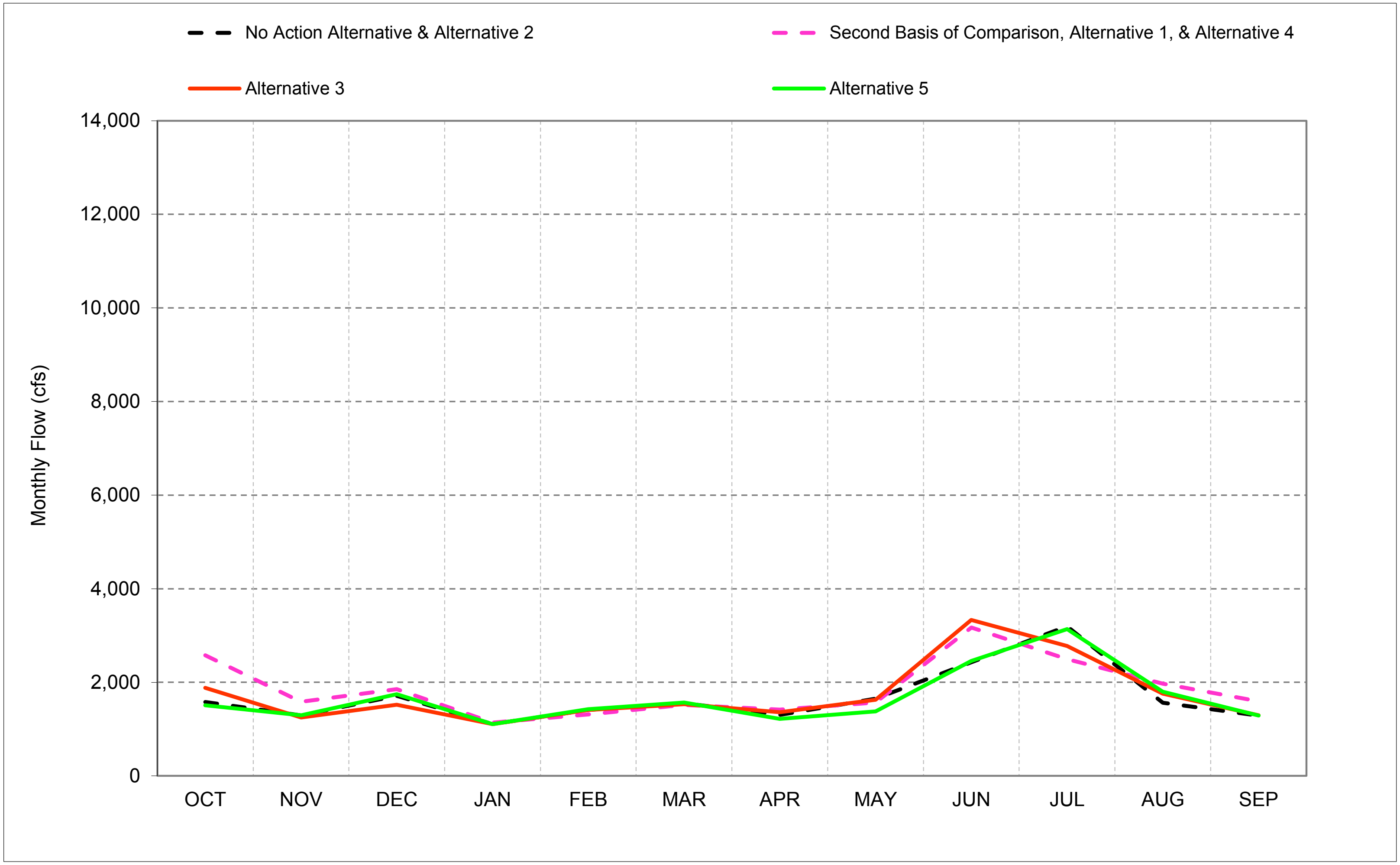


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-25-6. Feather River d/s of Thermalito, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-1. Feather River d/s of Thermalito, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,220	13,743	14,312	13,576	8,403	8,298	5,577	10,000	8,144	10,000
20%	4,000	2,500	3,630	2,003	9,837	9,026	3,608	5,429	4,391	9,787	7,695	9,593
30%	4,000	2,500	1,823	1,700	3,741	6,580	2,690	2,791	3,939	9,427	7,343	8,157
40%	4,000	1,972	1,700	1,700	1,700	4,666	1,806	2,430	3,712	8,907	6,401	7,651
50%	1,898	1,700	1,700	1,700	1,700	1,700	1,104	1,920	3,311	8,572	4,991	5,642
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,427	2,787	8,170	3,941	3,548
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,000	2,524	6,244	2,167	1,424
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	1,922	4,207	1,665	1,170
90%	902	900	901	900	900	800	759	1,000	1,378	2,246	1,229	1,000
Long Term												
Full Simulation Period[b]	2,553	1,991	2,769	4,356	5,170	6,055	3,069	3,455	3,376	7,275	4,802	5,364
Water Year Types[c]												
Wet (32%)	2,929	2,680	4,053	10,322	11,983	13,155	6,595	6,942	3,800	7,817	5,835	9,265
Above Normal (16%)	2,235	1,740	2,676	2,369	3,681	6,808	1,938	2,081	2,935	9,586	7,727	7,802
Below Normal (13%)	3,050	2,018	2,338	1,595	1,589	1,941	1,281	1,778	2,954	8,948	6,371	3,350
Dry (24%)	2,583	1,662	2,032	1,360	1,505	1,296	1,264	1,821	3,909	6,594	2,635	2,261
Critical (15%)	1,578	1,295	1,709	1,108	1,413	1,555	1,305	1,650	2,431	3,196	1,566	1,290

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,073	13,890	19,393	14,789	8,389	8,275	7,910	9,420	7,729	5,580
20%	4,000	2,500	3,420	2,988	11,501	11,022	3,686	6,352	6,635	9,054	6,656	5,247
30%	4,000	2,054	2,218	1,700	6,252	7,843	2,757	5,334	6,248	8,621	5,681	4,554
40%	3,974	1,700	1,700	1,700	2,379	5,528	1,853	3,369	5,222	8,022	4,745	3,796
50%	3,439	1,700	1,700	1,700	1,700	2,535	1,254	2,495	4,272	6,164	3,646	2,481
60%	2,492	1,700	1,700	1,700	1,700	1,700	1,000	1,956	3,834	4,837	2,691	1,904
70%	1,846	1,700	1,700	1,200	1,700	1,700	1,000	1,334	3,356	3,641	2,363	1,244
80%	1,700	1,200	1,374	1,200	1,200	1,000	1,000	1,000	2,525	3,030	1,955	1,051
90%	1,200	900	948	900	900	800	968	1,000	1,714	2,044	1,223	1,000
Long Term												
Full Simulation Period[b]	2,883	1,956	3,113	4,812	5,841	6,488	3,136	4,013	4,637	6,050	4,145	3,045
Water Year Types[c]												
Wet (32%)	3,068	2,585	5,476	11,696	12,740	13,784	6,587	7,101	4,333	6,920	4,346	3,254
Above Normal (16%)	2,660	1,600	2,519	2,477	5,166	8,173	2,259	3,058	4,823	8,866	6,433	4,449
Below Normal (13%)	3,311	1,913	1,687	1,582	3,161	2,066	1,405	3,388	6,145	7,681	4,260	3,333
Dry (24%)	2,736	1,615	1,966	1,360	1,497	1,321	1,203	2,431	4,961	4,326	3,639	2,574
Critical (15%)	2,577	1,582	1,853	1,139	1,317	1,520	1,414	1,569	3,170	2,495	1,969	1,595

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	-147	146	5,081	1,214	-14	-23	2,333	-580	-415	-4,420
20%	0	0	-210	985	1,663	1,996	78	924	2,244	-733	-1,039	-4,346
30%	0	-446	395	0	2,510	1,263	67	2,543	2,309	-806	-1,662	-3,603
40%	-26	-272	0	0	679	862	47	939	1,510	-885	-1,656	-3,856
50%	1,541	0	0	0	0	835	150	575	961	-2,408	-1,345	-3,160
60%	792	0	0	0	0	0	0	529	1,047	-3,333	-1,250	-1,644
70%	146	500	0	0	0	0	0	334	832	-2,604	196	-181
80%	500	0	174	240	0	0	0	0	604	-1,177	290	-119
90%	298	0	47	0	0	0	209	0	336	-202	-6	0
Long Term												
Full Simulation Period[b]	330	-36	344	455	671	433	66	558	1,261	-1,224	-657	-2,319
Water Year Types[c]												
Wet (32%)	139	-94	1,423	1,373	757	628	-8	159	533	-897	-1,490	-6,011
Above Normal (16%)	425	-140	-157	107	1,485	1,365	322	977	1,888	-720	-1,294	-3,354
Below Normal (13%)	262	-105	-651	-13	1,573	125	125	1,611	3,192	-1,267	-2,111	-17
Dry (24%)	154	-46	-66	0	-8	24	-61	610	1,052	-2,268	1,004	313
Critical (15%)	999	287	144	31	-96	-36	109	-81	739	-701	403	305

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-2. Feather River d/s of Thermalito, Monthly Flow

No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,000	2,500	5,220	13,743	14,312	13,576	8,403	8,298	5,577	10,000	8,144	10,000
20%	4,000	2,500	3,630	2,003	9,837	9,026	3,608	5,429	4,391	9,787	7,695	9,593
30%	4,000	2,500	1,823	1,700	3,741	6,580	2,690	2,791	3,939	9,427	7,343	8,157
40%	4,000	1,972	1,700	1,700	1,700	4,666	1,806	2,430	3,712	8,907	6,401	7,651
50%	1,898	1,700	1,700	1,700	1,700	1,700	1,104	1,920	3,311	8,572	4,991	5,642
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,427	2,787	8,170	3,941	3,548
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,000	2,524	6,244	2,167	1,424
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	1,922	4,207	1,665	1,170
90%	902	900	901	900	900	800	759	1,000	1,378	2,246	1,229	1,000
Long Term												
Full Simulation Period[b]	2,553	1,991	2,769	4,356	5,170	6,055	3,069	3,455	3,376	7,275	4,802	5,364
Water Year Types[c]												
Wet (32%)	2,929	2,680	4,053	10,322	11,983	13,155	6,595	6,942	3,800	7,817	5,835	9,265
Above Normal (16%)	2,235	1,740	2,676	2,369	3,681	6,808	1,938	2,081	2,935	9,586	7,727	7,802
Below Normal (13%)	3,050	2,018	2,338	1,595	1,589	1,941	1,281	1,778	2,954	8,948	6,371	3,350
Dry (24%)	2,583	1,662	2,032	1,360	1,505	1,296	1,264	1,821	3,909	6,594	2,635	2,261
Critical (15%)	1,578	1,295	1,709	1,108	1,413	1,555	1,305	1,650	2,431	3,196	1,566	1,290

Alternative 3

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,000	2,500	5,285	14,314	16,714	13,573	8,396	8,298	6,837	10,000	8,031	5,388
20%	4,000	2,500	3,006	1,816	11,330	9,458	3,706	6,213	5,940	9,849	7,592	4,833
30%	4,000	1,700	1,755	1,700	5,977	7,640	2,833	4,432	5,428	9,452	6,512	3,781
40%	3,443	1,700	1,700	1,700	1,894	5,140	1,854	3,105	5,005	9,028	5,444	2,799
50%	2,035	1,700	1,700	1,700	1,700	2,508	1,230	2,641	4,563	8,667	4,544	2,222
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	2,157	4,262	8,162	3,199	1,345
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,669	3,798	5,497	2,312	1,197
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	2,837	3,032	1,710	1,009
90%	902	900	904	900	900	800	853	1,000	2,107	2,030	1,231	1,000
Long Term												
Full Simulation Period[b]	2,522	1,908	2,918	4,703	5,682	6,314	3,153	3,950	4,520	7,081	4,530	2,715
Water Year Types[c]												
Wet (32%)	2,908	2,630	5,192	11,483	12,535	13,516	6,589	7,176	4,718	7,672	4,754	2,778
Above Normal (16%)	2,325	1,662	2,480	2,222	4,471	7,646	2,262	2,966	4,267	9,637	7,249	4,476
Below Normal (13%)	2,884	1,880	1,730	1,606	3,168	2,067	1,509	2,669	4,424	9,449	6,830	2,788
Dry (24%)	2,330	1,542	1,738	1,362	1,505	1,290	1,247	2,494	5,190	5,932	2,869	2,301
Critical (15%)	1,885	1,251	1,524	1,108	1,410	1,533	1,360	1,627	3,335	2,775	1,757	1,296

Alternative 3 minus No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	65	571	2,402	-3	-7	0	1,260	0	-113	-4,612
20%	0	0	-624	-187	1,493	432	98	784	1,550	63	-103	-4,760
30%	0	-800	-68	0	2,236	1,060	143	1,641	1,489	25	-830	-4,376
40%	-557	-272	0	0	194	474	48	675	1,294	121	-956	-4,853
50%	137	0	0	0	0	808	126	721	1,252	95	-447	-3,419
60%	0	0	0	0	0	0	0	731	1,474	-8	-742	-2,202
70%	0	0	0	0	0	0	0	669	1,274	-747	146	-227
80%	0	0	0	0	0	0	0	0	916	-1,174	45	-161
90%	0	0	3	0	0	0	94	0	729	-216	2	0
Long Term												
Full Simulation Period[b]	-31	-83	150	346	512	259	84	495	1,144	-194	-272	-2,649
Water Year Types[c]												
Wet (32%)	-20	-50	1,139	1,161	552	360	-6	235	918	-145	-1,082	-6,487
Above Normal (16%)	90	-79	-195	-148	790	838	324	885	1,332	50	-478	-3,326
Below Normal (13%)	-166	-139	-608	11	1,580	125	228	891	1,470	501	459	-562
Dry (24%)	-253	-120	-294	2	0	-6	-17	673	1,281	-661	234	40
Critical (15%)	307	-44	-186	0	-2	-22	55	-22	904	-421	191	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-3. Feather River d/s of Thermalito, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,220	13,743	14,312	13,576	8,403	8,298	5,577	10,000	8,144	10,000
20%	4,000	2,500	3,630	2,003	9,837	9,026	3,608	5,429	4,391	9,787	7,695	9,593
30%	4,000	2,500	1,823	1,700	3,741	6,580	2,690	2,791	3,939	9,427	7,343	8,157
40%	4,000	1,972	1,700	1,700	1,700	4,666	1,806	2,430	3,712	8,907	6,401	7,651
50%	1,898	1,700	1,700	1,700	1,700	1,700	1,104	1,920	3,311	8,572	4,991	5,642
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,427	2,787	8,170	3,941	3,548
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,000	2,524	6,244	2,167	1,424
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	1,922	4,207	1,665	1,170
90%	902	900	901	900	900	800	759	1,000	1,378	2,246	1,229	1,000
Long Term												
Full Simulation Period[b]	2,553	1,991	2,769	4,356	5,170	6,055	3,069	3,455	3,376	7,275	4,802	5,364
Water Year Types[c]												
Wet (32%)	2,929	2,680	4,053	10,322	11,983	13,155	6,595	6,942	3,800	7,817	5,835	9,265
Above Normal (16%)	2,235	1,740	2,676	2,369	3,681	6,808	1,938	2,081	2,935	9,586	7,727	7,802
Below Normal (13%)	3,050	2,018	2,338	1,595	1,589	1,941	1,281	1,778	2,954	8,948	6,371	3,350
Dry (24%)	2,583	1,662	2,032	1,360	1,505	1,296	1,264	1,821	3,909	6,594	2,635	2,261
Critical (15%)	1,578	1,295	1,709	1,108	1,413	1,555	1,305	1,650	2,431	3,196	1,566	1,290

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,231	13,726	14,296	13,578	8,400	8,302	5,058	10,000	8,153	10,000
20%	4,000	2,500	3,623	2,007	10,475	9,029	3,609	5,429	4,304	9,954	7,732	9,613
30%	4,000	2,500	1,829	1,700	3,773	6,115	2,576	2,423	4,000	9,417	7,482	8,113
40%	4,000	2,031	1,700	1,700	1,700	4,669	1,805	1,708	3,726	8,981	6,683	7,599
50%	1,898	1,700	1,700	1,700	1,700	1,700	1,062	1,434	3,282	8,651	5,737	5,685
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,156	2,772	8,291	3,988	3,116
70%	1,700	1,222	1,700	1,200	1,700	1,700	1,000	1,000	2,483	6,076	2,503	1,553
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	1,915	4,810	1,766	1,190
90%	900	900	901	900	900	800	751	1,000	1,313	2,253	1,284	1,000
Long Term												
Full Simulation Period[b]	2,547	2,010	2,781	4,298	5,160	6,046	3,051	3,229	3,351	7,389	4,998	5,365
Water Year Types[c]												
Wet (32%)	2,942	2,681	4,073	10,143	11,984	13,175	6,596	6,943	3,764	7,907	5,996	9,171
Above Normal (16%)	2,237	1,834	2,674	2,357	3,602	6,700	1,937	1,959	2,913	9,601	7,728	7,796
Below Normal (13%)	3,049	2,018	2,338	1,595	1,589	1,946	1,281	1,420	2,828	9,007	6,773	3,521
Dry (24%)	2,584	1,675	2,038	1,360	1,505	1,296	1,242	1,328	3,924	6,938	2,869	2,298
Critical (15%)	1,507	1,295	1,743	1,108	1,426	1,566	1,218	1,382	2,459	3,139	1,798	1,287

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	11	-18	-16	3	-3	5	-519	0	9	0
20%	0	0	-7	4	638	3	1	1	-87	168	37	20
30%	0	0	6	0	32	-465	-114	-368	62	-9	139	-44
40%	0	59	0	0	0	3	-1	-722	15	74	282	-52
50%	0	0	0	0	0	0	-42	-486	-29	79	746	43
60%	0	0	0	0	0	0	0	-270	-16	121	46	-431
70%	0	22	0	0	0	0	0	0	-40	-168	336	128
80%	0	0	0	0	0	0	0	0	-6	604	101	21
90%	-2	0	0	0	0	0	-8	0	-65	7	55	0
Long Term												
Full Simulation Period[b]	-5	19	13	-59	-10	-9	-18	-226	-24	114	196	1
Water Year Types[c]												
Wet (32%)	13	1	20	-180	2	20	1	1	-36	90	161	-94
Above Normal (16%)	2	94	-2	-12	-79	-108	-1	-122	-23	15	1	-6
Below Normal (13%)	0	0	-1	0	0	4	0	-358	-126	58	401	171
Dry (24%)	1	14	6	0	0	0	-22	-493	15	344	234	37
Critical (15%)	-71	-1	34	0	13	11	-87	-268	27	-57	232	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-4. Feather River d/s of Thermalito, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,073	13,890	19,393	14,789	8,389	8,275	7,910	9,420	7,729	5,580
20%	4,000	2,500	3,420	2,988	11,501	11,022	3,686	6,352	6,635	9,054	6,656	5,247
30%	4,000	2,054	2,218	1,700	6,252	7,843	2,757	5,334	6,248	8,621	5,681	4,554
40%	3,974	1,700	1,700	1,700	2,379	5,528	1,853	3,369	5,222	8,022	4,745	3,796
50%	3,439	1,700	1,700	1,700	1,700	2,535	1,254	2,495	4,272	6,164	3,646	2,481
60%	2,492	1,700	1,700	1,700	1,700	1,700	1,000	1,956	3,834	4,837	2,691	1,904
70%	1,846	1,700	1,700	1,200	1,700	1,700	1,000	1,334	3,356	3,641	2,363	1,244
80%	1,700	1,200	1,374	1,200	1,200	1,000	1,000	1,000	2,525	3,030	1,955	1,051
90%	1,200	900	948	900	900	800	968	1,000	1,714	2,044	1,223	1,000
Long Term												
Full Simulation Period[b]	2,883	1,956	3,113	4,812	5,841	6,488	3,136	4,013	4,637	6,050	4,145	3,045
Water Year Types[c]												
Wet (32%)	3,068	2,585	5,476	11,696	12,740	13,784	6,587	7,101	4,333	6,920	4,346	3,254
Above Normal (16%)	2,660	1,600	2,519	2,477	5,166	8,173	2,259	3,058	4,823	8,866	6,433	4,449
Below Normal (13%)	3,311	1,913	1,687	1,582	3,161	2,066	1,405	3,388	6,145	7,681	4,260	3,333
Dry (24%)	2,736	1,615	1,966	1,360	1,497	1,321	1,203	2,431	4,961	4,326	3,639	2,574
Critical (15%)	2,577	1,582	1,853	1,139	1,317	1,520	1,414	1,569	3,170	2,495	1,969	1,595

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,220	13,743	14,312	13,576	8,403	8,298	5,577	10,000	8,144	10,000
20%	4,000	2,500	3,630	2,003	9,837	9,026	3,608	5,429	4,391	9,787	7,695	9,593
30%	4,000	2,500	1,823	1,700	3,741	6,580	2,690	2,791	3,939	9,427	7,343	8,157
40%	4,000	1,972	1,700	1,700	1,700	4,666	1,806	2,430	3,712	8,907	6,401	7,651
50%	1,898	1,700	1,700	1,700	1,700	1,700	1,104	1,920	3,311	8,572	4,991	5,642
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,427	2,787	8,170	3,941	3,548
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,000	2,524	6,244	2,167	1,424
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	1,922	4,207	1,665	1,170
90%	902	900	901	900	900	800	759	1,000	1,378	2,246	1,229	1,000
Long Term												
Full Simulation Period[b]	2,553	1,991	2,769	4,356	5,170	6,055	3,069	3,455	3,376	7,275	4,802	5,364
Water Year Types[c]												
Wet (32%)	2,929	2,680	4,053	10,322	11,983	13,155	6,595	6,942	3,800	7,817	5,835	9,265
Above Normal (16%)	2,235	1,740	2,676	2,369	3,681	6,808	1,938	2,081	2,935	9,586	7,727	7,802
Below Normal (13%)	3,050	2,018	2,338	1,595	1,589	1,941	1,281	1,778	2,954	8,948	6,371	3,350
Dry (24%)	2,583	1,662	2,032	1,360	1,505	1,296	1,264	1,821	3,909	6,594	2,635	2,261
Critical (15%)	1,578	1,295	1,709	1,108	1,413	1,555	1,305	1,650	2,431	3,196	1,566	1,290

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	147	-146	-5,081	-1,214	14	23	-2,333	580	415	4,420
20%	0	0	210	-985	-1,663	-1,996	-78	-924	-2,244	733	1,039	4,346
30%	0	446	-395	0	-2,510	-1,263	-67	-2,543	-2,309	806	1,662	3,603
40%	26	272	0	0	-679	-862	-47	-939	-1,510	885	1,656	3,856
50%	-1,541	0	0	0	0	-835	-150	-575	-961	2,408	1,345	3,160
60%	-792	0	0	0	0	0	0	-529	-1,047	3,333	1,250	1,644
70%	-146	-500	0	0	0	0	0	-334	-832	2,604	-196	181
80%	-500	0	-174	-240	0	0	0	0	-604	1,177	-290	119
90%	-298	0	-47	0	0	0	-209	0	-336	202	6	0
Long Term												
Full Simulation Period[b]	-330	36	-344	-455	-671	-433	-66	-558	-1,261	1,224	657	2,319
Water Year Types[c]												
Wet (32%)	-139	94	-1,423	-1,373	-757	-628	8	-159	-533	897	1,490	6,011
Above Normal (16%)	-425	140	157	-107	-1,485	-1,365	-322	-977	-1,888	720	1,294	3,354
Below Normal (13%)	-262	105	651	13	-1,573	-125	-125	-1,611	-3,192	1,267	2,111	17
Dry (24%)	-154	46	66	0	8	-24	61	-610	-1,052	2,268	-1,004	-313
Critical (15%)	-999	-287	-144	-31	96	36	-109	81	-739	701	-403	-305

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-5. Feather River d/s of Thermalito, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,073	13,890	19,393	14,789	8,389	8,275	7,910	9,420	7,729	5,580
20%	4,000	2,500	3,420	2,988	11,501	11,022	3,686	6,352	6,635	9,054	6,656	5,247
30%	4,000	2,054	2,218	1,700	6,252	7,843	2,757	5,334	6,248	8,621	5,681	4,554
40%	3,974	1,700	1,700	1,700	2,379	5,528	1,853	3,369	5,222	8,022	4,745	3,796
50%	3,439	1,700	1,700	1,700	1,700	2,535	1,254	2,495	4,272	6,164	3,646	2,481
60%	2,492	1,700	1,700	1,700	1,700	1,700	1,000	1,956	3,834	4,837	2,691	1,904
70%	1,846	1,700	1,700	1,200	1,700	1,700	1,000	1,334	3,356	3,641	2,363	1,244
80%	1,700	1,200	1,374	1,200	1,200	1,000	1,000	1,000	2,525	3,030	1,955	1,051
90%	1,200	900	948	900	900	800	968	1,000	1,714	2,044	1,223	1,000
Long Term												
Full Simulation Period[b]	2,883	1,956	3,113	4,812	5,841	6,488	3,136	4,013	4,637	6,050	4,145	3,045
Water Year Types[c]												
Wet (32%)	3,068	2,585	5,476	11,696	12,740	13,784	6,587	7,101	4,333	6,920	4,346	3,254
Above Normal (16%)	2,660	1,600	2,519	2,477	5,166	8,173	2,259	3,058	4,823	8,866	6,433	4,449
Below Normal (13%)	3,311	1,913	1,687	1,582	3,161	2,066	1,405	3,388	6,145	7,681	4,260	3,333
Dry (24%)	2,736	1,615	1,966	1,360	1,497	1,321	1,203	2,431	4,961	4,326	3,639	2,574
Critical (15%)	2,577	1,582	1,853	1,139	1,317	1,520	1,414	1,569	3,170	2,495	1,969	1,595

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,285	14,314	16,714	13,573	8,396	8,298	6,837	10,000	8,031	5,388
20%	4,000	2,500	3,006	1,816	11,330	9,458	3,706	6,213	5,940	9,849	7,592	4,833
30%	4,000	1,700	1,755	1,700	5,977	7,640	2,833	4,432	5,428	9,452	6,512	3,781
40%	3,443	1,700	1,700	1,700	1,894	5,140	1,854	3,105	5,005	9,028	5,444	2,799
50%	2,035	1,700	1,700	1,700	1,700	2,508	1,230	2,641	4,563	8,667	4,544	2,222
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	2,157	4,262	8,162	3,199	1,345
70%	1,700	1,200	1,700	1,200	1,700	1,700	1,000	1,669	3,798	5,497	2,312	1,197
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	2,837	3,032	1,710	1,009
90%	902	900	904	900	900	800	853	1,000	2,107	2,030	1,231	1,000
Long Term												
Full Simulation Period[b]	2,522	1,908	2,918	4,703	5,682	6,314	3,153	3,950	4,520	7,081	4,530	2,715
Water Year Types[c]												
Wet (32%)	2,908	2,630	5,192	11,483	12,535	13,516	6,589	7,176	4,718	7,672	4,754	2,778
Above Normal (16%)	2,325	1,662	2,480	2,222	4,471	7,646	2,262	2,966	4,267	9,637	7,249	4,476
Below Normal (13%)	2,884	1,880	1,730	1,606	3,168	2,067	1,509	2,669	4,424	9,449	6,830	2,788
Dry (24%)	2,330	1,542	1,738	1,362	1,505	1,290	1,247	2,494	5,190	5,932	2,869	2,301
Critical (15%)	1,885	1,251	1,524	1,108	1,410	1,533	1,360	1,627	3,335	2,775	1,757	1,296

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	212	424	-2,679	-1,216	8	23	-1,073	580	302	-192
20%	0	0	-414	-1,172	-171	-1,564	21	-140	-695	796	936	-415
30%	0	-354	-463	0	-275	-203	76	-901	-820	831	832	-773
40%	-531	0	0	0	-485	-387	1	-264	-216	1,005	700	-997
50%	-1,403	0	0	0	0	-27	-24	146	291	2,503	898	-259
60%	-792	0	0	0	0	0	0	202	428	3,325	508	-559
70%	-146	-500	0	0	0	0	0	335	442	1,857	-50	-47
80%	-500	0	-174	-240	0	0	0	0	312	2	-245	-42
90%	-298	0	-44	0	0	0	-114	0	393	-14	8	0
Long Term												
Full Simulation Period[b]	-361	-47	-194	-109	-159	-174	18	-63	-117	1,031	385	-330
Water Year Types[c]												
Wet (32%)	-159	44	-284	-213	-205	-268	2	75	385	753	408	-476
Above Normal (16%)	-335	62	-39	-255	-695	-528	3	-92	-556	770	816	27
Below Normal (13%)	-428	-33	43	24	7	0	103	-719	-1,722	1,768	2,569	-545
Dry (24%)	-407	-73	-228	2	8	-31	44	63	228	1,606	-770	-274
Critical (15%)	-692	-331	-329	-31	94	13	-54	59	165	280	-212	-299

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-6. Feather River d/s of Thermalito, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,073	13,890	19,393	14,789	8,389	8,275	7,910	9,420	7,729	5,580
20%	4,000	2,500	3,420	2,988	11,501	11,022	3,686	6,352	6,635	9,054	6,656	5,247
30%	4,000	2,054	2,218	1,700	6,252	7,843	2,757	5,334	6,248	8,621	5,681	4,554
40%	3,974	1,700	1,700	1,700	2,379	5,528	1,853	3,369	5,222	8,022	4,745	3,796
50%	3,439	1,700	1,700	1,700	1,700	2,535	1,254	2,495	4,272	6,164	3,646	2,481
60%	2,492	1,700	1,700	1,700	1,700	1,700	1,000	1,956	3,834	4,837	2,691	1,904
70%	1,846	1,700	1,700	1,200	1,700	1,700	1,000	1,334	3,356	3,641	2,363	1,244
80%	1,700	1,200	1,374	1,200	1,200	1,000	1,000	1,000	2,525	3,030	1,955	1,051
90%	1,200	900	948	900	900	800	968	1,000	1,714	2,044	1,223	1,000
Long Term												
Full Simulation Period[b]	2,883	1,956	3,113	4,812	5,841	6,488	3,136	4,013	4,637	6,050	4,145	3,045
Water Year Types[c]												
Wet (32%)	3,068	2,585	5,476	11,696	12,740	13,784	6,587	7,101	4,333	6,920	4,346	3,254
Above Normal (16%)	2,660	1,600	2,519	2,477	5,166	8,173	2,259	3,058	4,823	8,866	6,433	4,449
Below Normal (13%)	3,311	1,913	1,687	1,582	3,161	2,066	1,405	3,388	6,145	7,681	4,260	3,333
Dry (24%)	2,736	1,615	1,966	1,360	1,497	1,321	1,203	2,431	4,961	4,326	3,639	2,574
Critical (15%)	2,577	1,582	1,853	1,139	1,317	1,520	1,414	1,569	3,170	2,495	1,969	1,595

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,000	2,500	5,231	13,726	14,296	13,578	8,400	8,302	5,058	10,000	8,153	10,000
20%	4,000	2,500	3,623	2,007	10,475	9,029	3,609	5,429	4,304	9,954	7,732	9,613
30%	4,000	2,500	1,829	1,700	3,773	6,115	2,576	2,423	4,000	9,417	7,482	8,113
40%	4,000	2,031	1,700	1,700	1,700	4,669	1,805	1,708	3,726	8,981	6,683	7,599
50%	1,898	1,700	1,700	1,700	1,700	1,700	1,062	1,434	3,282	8,651	5,737	5,685
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,156	2,772	8,291	3,988	3,116
70%	1,700	1,222	1,700	1,200	1,700	1,700	1,000	1,000	2,483	6,076	2,503	1,553
80%	1,200	1,200	1,200	960	1,200	1,000	1,000	1,000	1,915	4,810	1,766	1,190
90%	900	900	901	900	900	800	751	1,000	1,313	2,253	1,284	1,000
Long Term												
Full Simulation Period[b]	2,547	2,010	2,781	4,298	5,160	6,046	3,051	3,229	3,351	7,389	4,998	5,365
Water Year Types[c]												
Wet (32%)	2,942	2,681	4,073	10,143	11,984	13,175	6,596	6,943	3,764	7,907	5,996	9,171
Above Normal (16%)	2,237	1,834	2,674	2,357	3,602	6,700	1,937	1,959	2,913	9,601	7,728	7,796
Below Normal (13%)	3,049	2,018	2,338	1,595	1,589	1,946	1,281	1,420	2,828	9,007	6,773	3,521
Dry (24%)	2,584	1,675	2,038	1,360	1,505	1,296	1,242	1,328	3,924	6,938	2,869	2,298
Critical (15%)	1,507	1,295	1,743	1,108	1,426	1,566	1,218	1,382	2,459	3,139	1,798	1,287

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	158	-164	-5,097	-1,211	11	27	-2,852	580	425	4,420
20%	0	0	203	-981	-1,026	-1,993	-77	-923	-2,331	901	1,076	4,366
30%	0	446	-389	0	-2,478	-1,728	-181	-2,911	-2,247	797	1,801	3,559
40%	26	331	0	0	-679	-859	-48	-1,661	-1,495	958	1,938	3,803
50%	-1,541	0	0	0	0	-835	-192	-1,061	-990	2,488	2,091	3,203
60%	-792	0	0	0	0	0	0	-800	-1,062	3,454	1,297	1,212
70%	-146	-478	0	0	0	0	0	-334	-872	2,436	140	309
80%	-500	0	-174	-240	0	0	0	0	-610	1,781	-189	139
90%	-300	0	-47	0	0	0	-217	0	-400	209	61	0
Long Term												
Full Simulation Period[b]	-336	54	-331	-514	-681	-442	-84	-785	-1,286	1,339	853	2,320
Water Year Types[c]												
Wet (32%)	-126	95	-1,403	-1,553	-756	-609	9	-158	-569	988	1,651	5,917
Above Normal (16%)	-423	234	155	-119	-1,564	-1,474	-322	-1,099	-1,911	735	1,295	3,348
Below Normal (13%)	-262	105	650	13	-1,573	-121	-125	-1,969	-3,317	1,325	2,512	188
Dry (24%)	-152	60	72	0	8	-25	39	-1,103	-1,038	2,612	-770	-276
Critical (15%)	-1,070	-287	-110	-31	109	47	-196	-187	-712	644	-171	-307

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

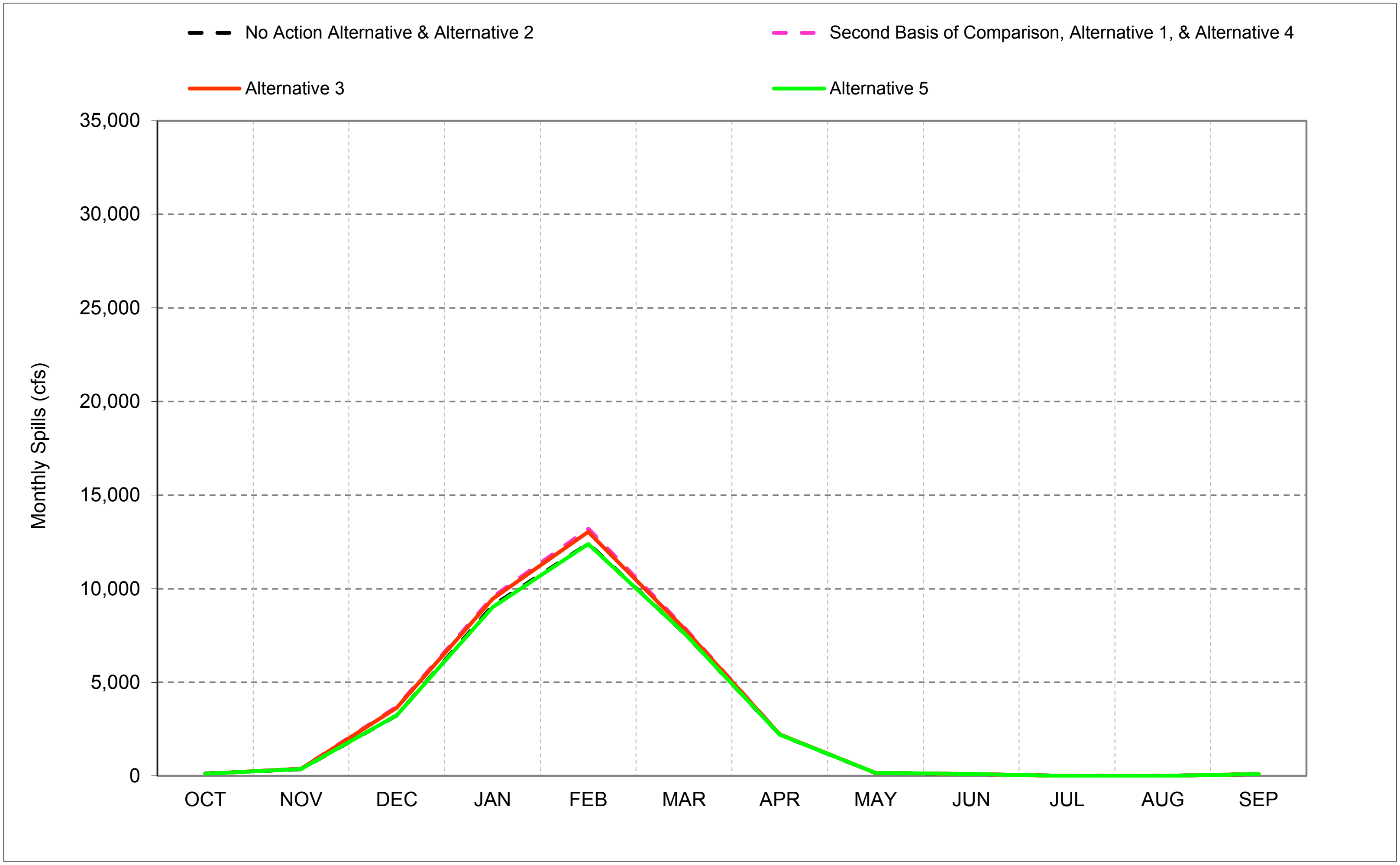
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.26. Fremont Weir Spills

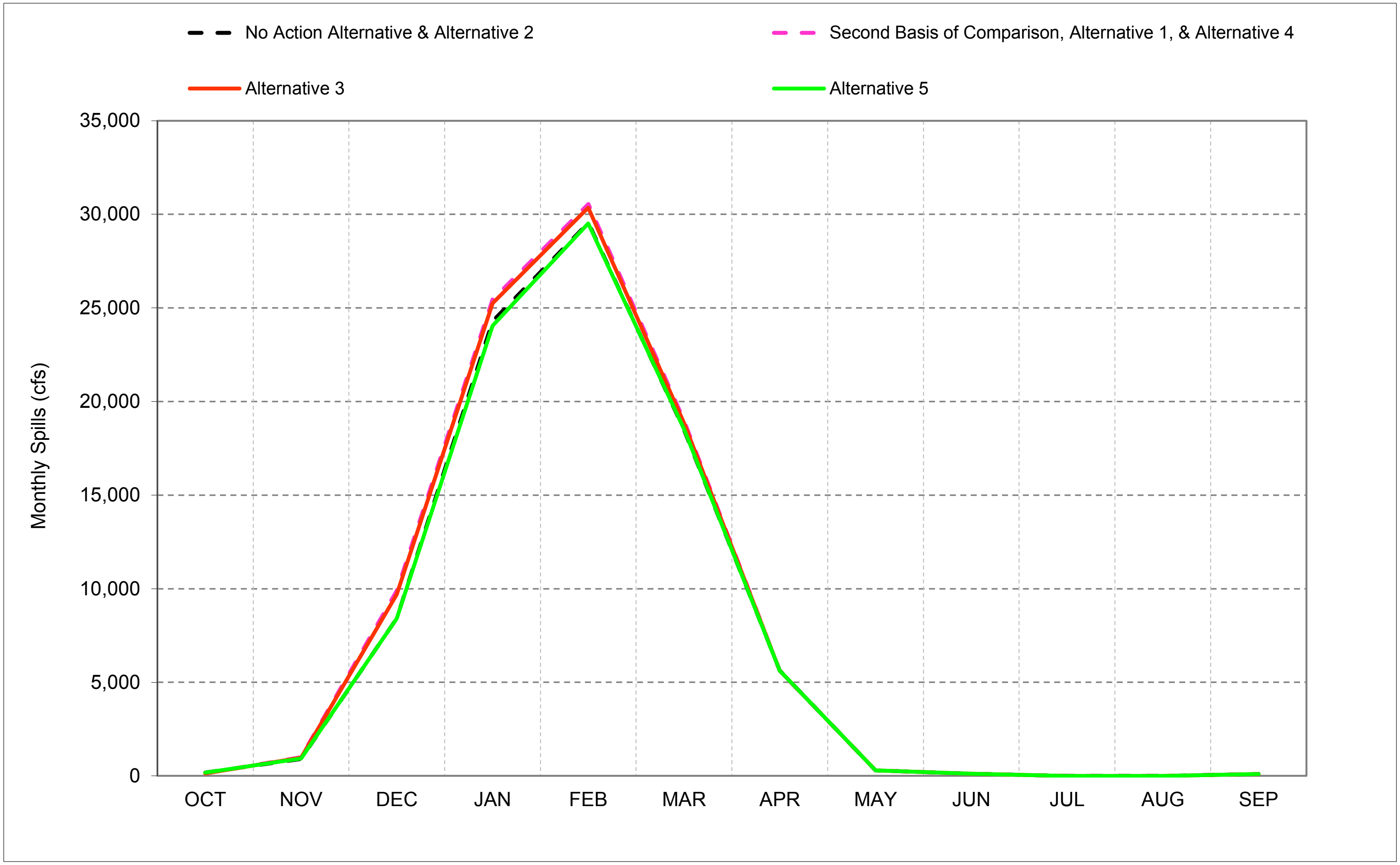
Figure C-26-1. Fremont Weir, Long-Term* Average Spills



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-26-2. Fremont Weir, Wet Year* Long-Term Average Spills**

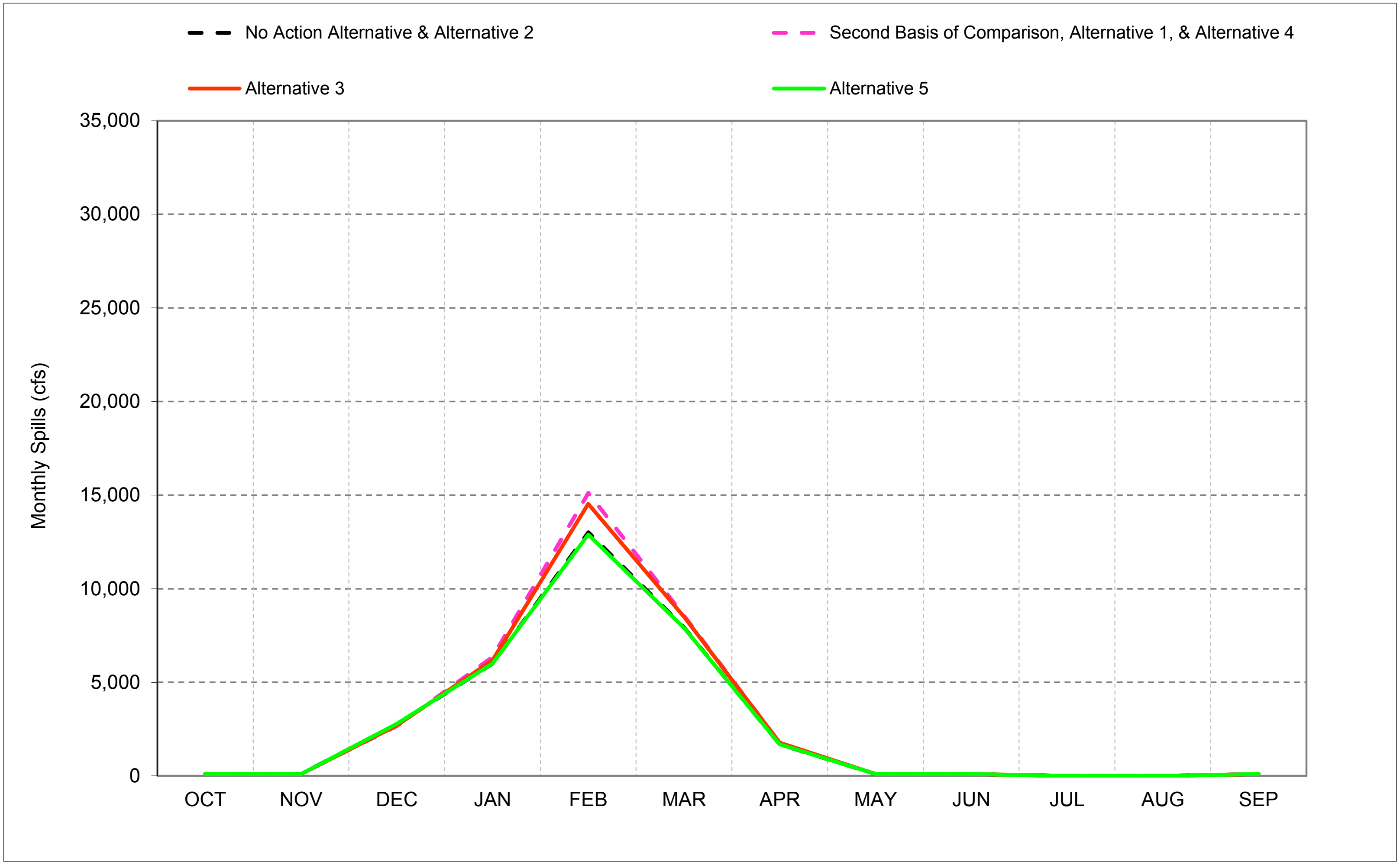


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-26-3. Fremont Weir, Above Normal Year* Long-Term Average Spills**

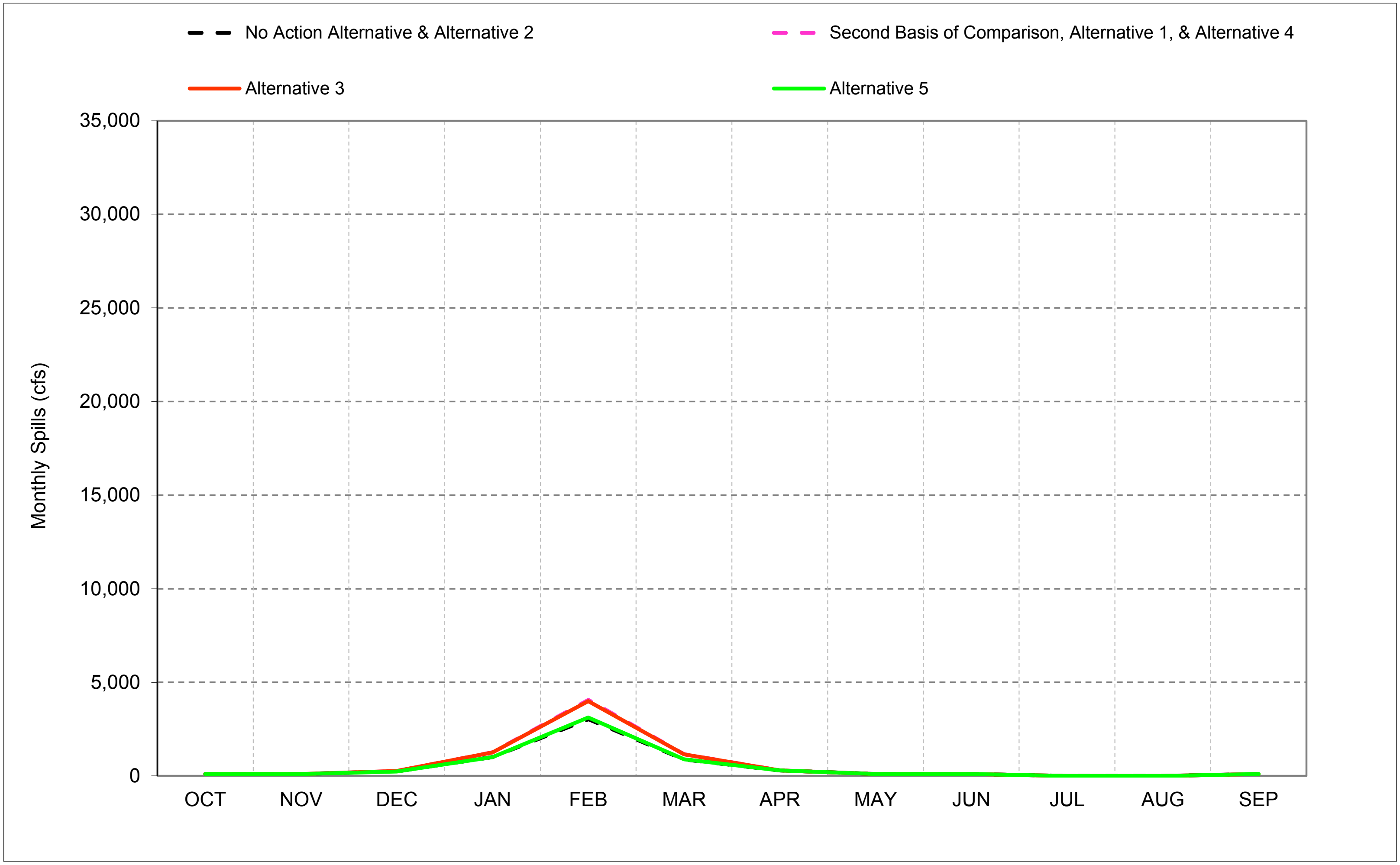


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-26-4. Fremont Weir, Below Normal Year* Long-Term Average Spills**

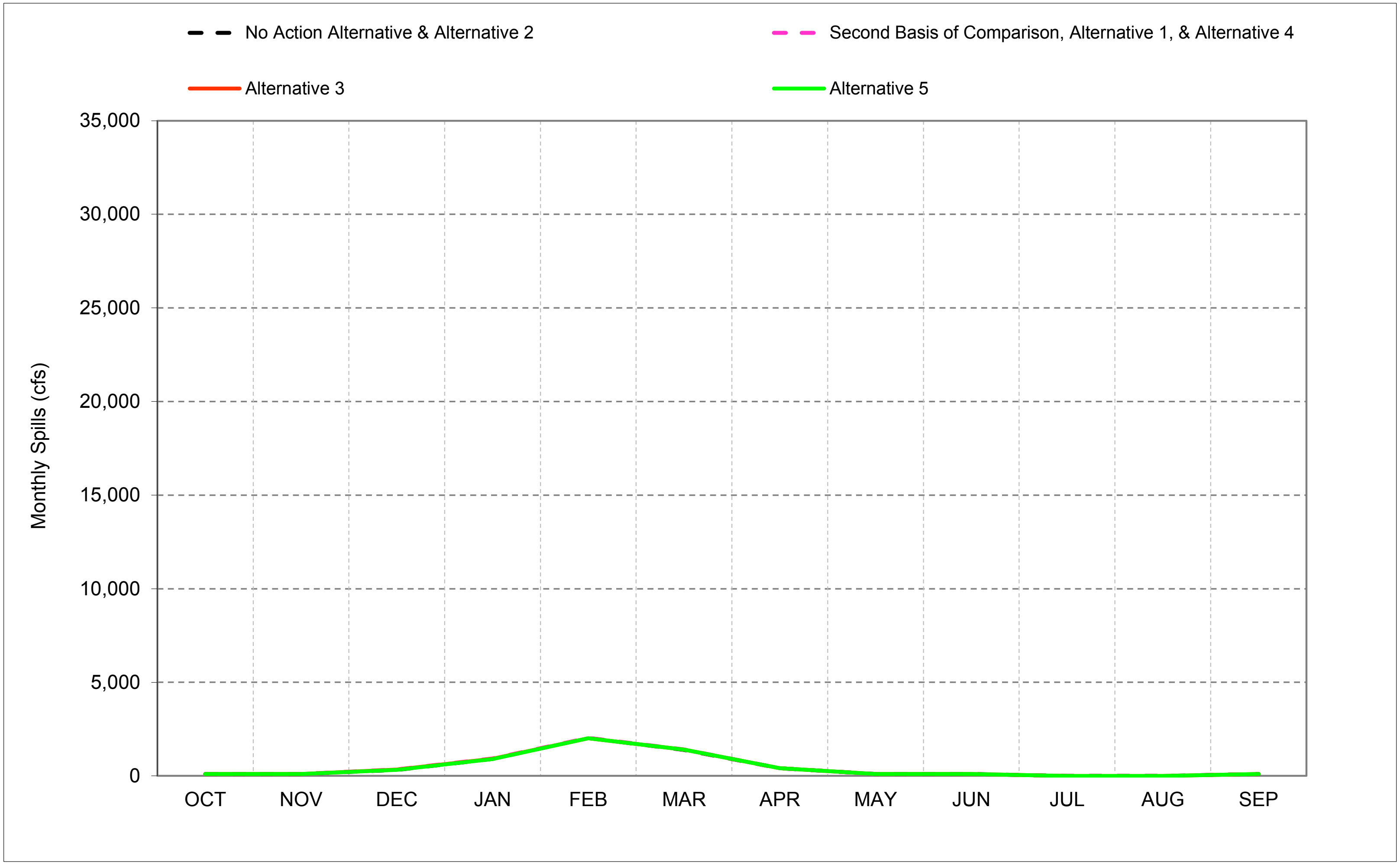


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-26-5. Fremont Weir, Dry Year* Long-Term Average Spills**

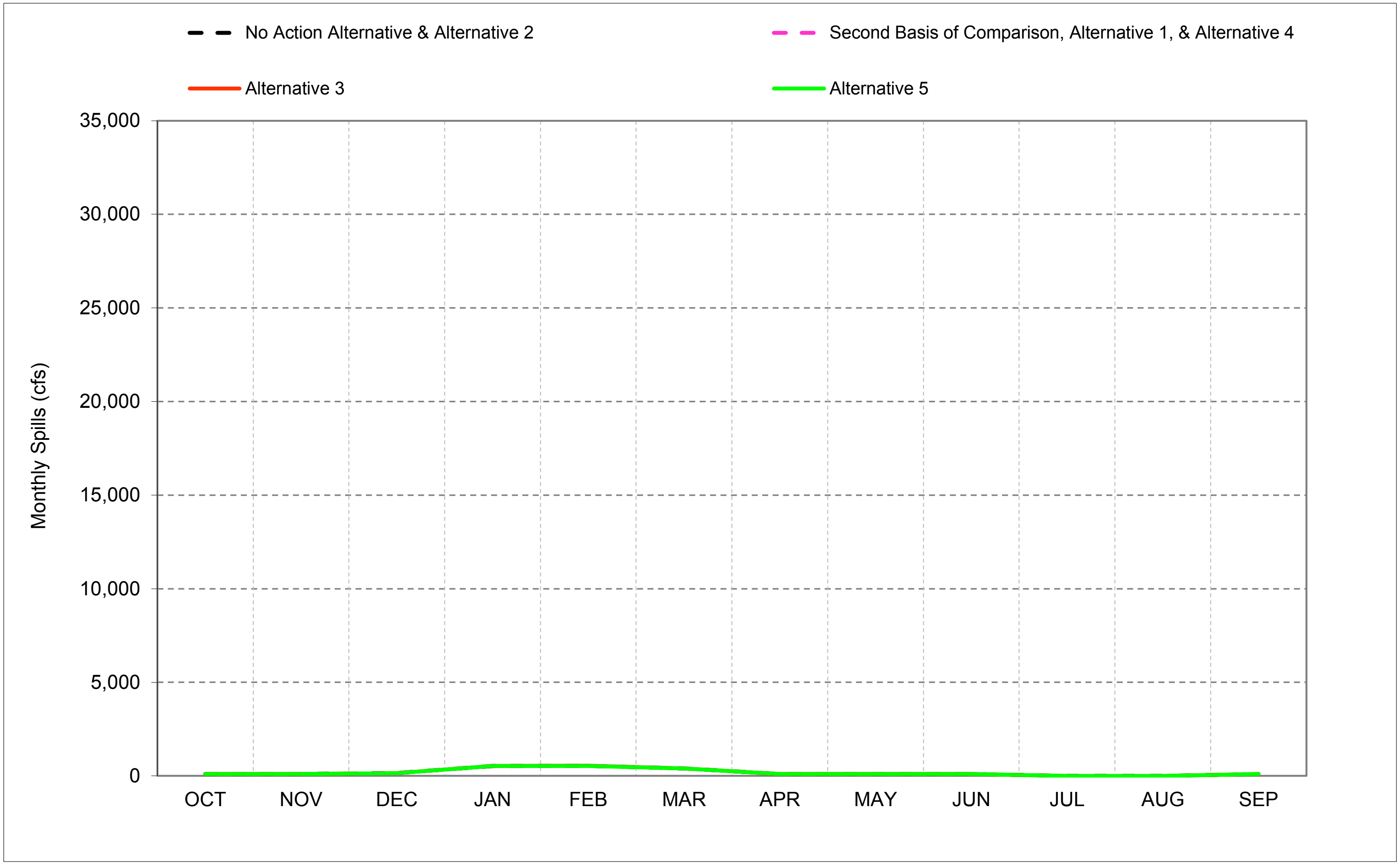


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-26-6. Fremont Weir, Critical Year* Long-Term Average Spills**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-1. Fremont Weir, Monthly Spills

No Action Alternative

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	7,229	23,972	40,788	16,077	5,836	100	100	0	0	100
20%	100	100	3,479	10,411	12,582	6,630	3,995	100	100	0	0	100
30%	100	100	1,219	5,246	7,068	4,531	884	100	100	0	0	100
40%	100	100	507	2,721	5,249	3,462	340	100	100	0	0	100
50%	100	100	185	1,412	3,305	1,749	114	100	100	0	0	100
60%	100	100	100	683	2,173	975	100	100	100	0	0	100
70%	100	100	100	145	932	321	100	100	100	0	0	100
80%	100	100	100	100	187	176	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	126	357	3,241	9,085	12,410	7,637	2,206	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	183	910	8,420	24,291	29,547	18,493	5,627	289	113	0	0	100
Above Normal (16%)	100	100	2,765	5,997	13,013	7,928	1,688	100	100	0	0	100
Below Normal (13%)	100	100	242	1,004	3,031	883	293	100	100	0	0	100
Dry (24%)	100	100	322	902	2,024	1,393	407	100	100	0	0	100
Critical (15%)	100	100	149	528	534	396	106	100	100	0	0	100

Alternative 1

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	10,543	30,193	44,709	18,331	5,859	100	100	0	0	100
20%	100	100	3,673	10,516	13,894	7,379	4,169	100	100	0	0	100
30%	100	100	1,561	5,231	8,342	5,266	966	100	100	0	0	100
40%	100	100	533	2,826	5,470	3,433	341	100	100	0	0	100
50%	100	100	186	1,630	3,269	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,101	100	100	100	0	0	100
70%	100	100	100	153	1,008	481	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	115	384	3,697	9,549	13,200	7,942	2,211	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	147	996	9,888	25,442	30,547	18,997	5,602	289	113	0	0	100
Above Normal (16%)	100	100	2,659	6,349	15,114	8,566	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,256	4,057	1,166	292	100	100	0	0	100
Dry (24%)	100	100	342	932	2,032	1,411	411	100	100	0	0	100
Critical (15%)	100	100	149	542	533	408	106	100	100	0	0	100

Alternative 1 minus No Action Alternative

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	3,314	6,220	3,920	2,254	23	0	0	0	0	0
20%	0	0	194	105	1,312	749	174	0	0	0	0	0
30%	0	0	341	-15	1,273	735	82	0	0	0	0	0
40%	0	0	26	105	221	-29	1	0	0	0	0	0
50%	0	0	1	218	-36	316	5	0	0	0	0	0
60%	0	0	0	168	118	126	0	0	0	0	0	0
70%	0	0	0	8	76	161	0	0	0	0	0	0
80%	0	0	0	0	-2	25	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-12	27	456	464	790	305	5	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	-37	86	1,468	1,151	1,000	504	-25	0	0	0	0	0
Above Normal (16%)	0	0	-106	352	2,102	638	77	0	0	0	0	0
Below Normal (13%)	0	0	20	253	1,026	283	-1	0	0	0	0	0
Dry (24%)	0	0	20	30	7	17	4	0	0	0	0	0
Critical (15%)	0	0	1	15	-1	12	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-2. Fremont Weir, Monthly Spills

No Action Alternative

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	7,229	23,972	40,788	16,077	5,836	100	100	0	0	100
20%	100	100	3,479	10,411	12,582	6,630	3,995	100	100	0	0	100
30%	100	100	1,219	5,246	7,068	4,531	884	100	100	0	0	100
40%	100	100	507	2,721	5,249	3,462	340	100	100	0	0	100
50%	100	100	185	1,412	3,305	1,749	114	100	100	0	0	100
60%	100	100	100	683	2,173	975	100	100	100	0	0	100
70%	100	100	100	145	932	321	100	100	100	0	0	100
80%	100	100	100	100	187	176	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	126	357	3,241	9,085	12,410	7,637	2,206	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	183	910	8,420	24,291	29,547	18,493	5,627	289	113	0	0	100
Above Normal (16%)	100	100	2,765	5,997	13,013	7,928	1,688	100	100	0	0	100
Below Normal (13%)	100	100	242	1,004	3,031	883	293	100	100	0	0	100
Dry (24%)	100	100	322	902	2,024	1,393	407	100	100	0	0	100
Critical (15%)	100	100	149	528	534	396	106	100	100	0	0	100

Alternative 3

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	10,562	27,452	43,972	18,326	5,842	100	100	0	0	100
20%	100	100	3,657	10,624	13,753	6,816	4,163	100	100	0	0	100
30%	100	100	1,554	5,215	8,000	4,697	961	100	100	0	0	100
40%	100	100	535	2,831	5,471	3,406	341	100	100	0	0	100
50%	100	100	215	1,519	3,328	2,006	114	100	100	0	0	100
60%	100	100	100	789	2,202	1,123	100	100	100	0	0	100
70%	100	100	100	152	1,089	440	100	100	100	0	0	100
80%	100	100	100	100	203	179	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	112	377	3,640	9,456	13,036	7,875	2,216	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	139	973	9,693	25,241	30,361	18,837	5,617	289	113	0	0	100
Above Normal (16%)	100	100	2,686	6,188	14,531	8,490	1,768	100	100	0	0	100
Below Normal (13%)	100	100	262	1,250	4,001	1,153	293	100	100	0	0	100
Dry (24%)	100	100	342	923	2,007	1,406	410	100	100	0	0	100
Critical (15%)	100	100	150	534	545	397	106	100	100	0	0	100

Alternative 3 minus No Action Alternative

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	3,333	3,480	3,184	2,249	6	0	0	0	0	0
20%	0	0	178	213	1,170	186	168	0	0	0	0	0
30%	0	0	335	-32	932	166	78	0	0	0	0	0
40%	0	0	28	110	221	-55	2	0	0	0	0	0
50%	0	0	29	107	23	256	0	0	0	0	0	0
60%	0	0	0	106	29	147	0	0	0	0	0	0
70%	0	0	0	7	157	119	0	0	0	0	0	0
80%	0	0	0	0	16	3	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-14	20	399	371	626	238	10	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	-45	64	1,273	950	813	344	-10	1	0	0	0	0
Above Normal (16%)	0	0	-78	192	1,519	562	80	0	0	0	0	0
Below Normal (13%)	0	0	20	247	970	271	-1	0	0	0	0	0
Dry (24%)	0	0	19	22	-17	13	3	0	0	0	0	0
Critical (15%)	0	0	1	7	11	1	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-3. Fremont Weir, Monthly Spills

No Action Alternative

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	7,229	23,972	40,788	16,077	5,836	100	100	0	0	100
20%	100	100	3,479	10,411	12,582	6,630	3,995	100	100	0	0	100
30%	100	100	1,219	5,246	7,068	4,531	884	100	100	0	0	100
40%	100	100	507	2,721	5,249	3,462	340	100	100	0	0	100
50%	100	100	185	1,412	3,305	1,749	114	100	100	0	0	100
60%	100	100	100	683	2,173	975	100	100	100	0	0	100
70%	100	100	100	145	932	321	100	100	100	0	0	100
80%	100	100	100	100	187	176	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	126	357	3,241	9,085	12,410	7,637	2,206	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	183	910	8,420	24,291	29,547	18,493	5,627	289	113	0	0	100
Above Normal (16%)	100	100	2,765	5,997	13,013	7,928	1,688	100	100	0	0	100
Below Normal (13%)	100	100	242	1,004	3,031	883	293	100	100	0	0	100
Dry (24%)	100	100	322	902	2,024	1,393	407	100	100	0	0	100
Critical (15%)	100	100	149	528	534	396	106	100	100	0	0	100

Alternative 5

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	7,431	23,953	40,288	16,133	5,836	100	100	0	0	100
20%	100	100	3,445	10,420	12,539	6,538	3,992	100	100	0	0	100
30%	100	100	1,217	5,246	7,057	4,576	884	100	100	0	0	100
40%	100	100	507	2,676	5,250	3,467	341	100	100	0	0	100
50%	100	100	198	1,412	3,305	1,717	114	100	100	0	0	100
60%	100	100	100	683	2,148	963	100	100	100	0	0	100
70%	100	100	100	144	932	336	100	100	100	0	0	100
80%	100	100	100	100	187	176	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	122	364	3,237	9,006	12,386	7,638	2,206	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	170	933	8,400	24,048	29,507	18,512	5,627	289	113	0	0	100
Above Normal (16%)	100	100	2,786	6,000	12,885	7,895	1,688	100	100	0	0	100
Below Normal (13%)	100	100	242	1,004	3,115	886	293	100	100	0	0	100
Dry (24%)	100	100	317	896	2,015	1,398	407	100	100	0	0	100
Critical (15%)	100	100	151	525	531	393	106	100	100	0	0	100

Alternative 5 minus No Action Alternative

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	202	-19	-501	56	0	0	0	0	0	0
20%	0	0	-34	10	-43	-92	-3	0	0	0	0	0
30%	0	0	-2	-1	-11	45	0	0	0	0	0	0
40%	0	0	0	-44	1	6	1	0	0	0	0	0
50%	0	0	13	0	0	-32	0	0	0	0	0	0
60%	0	0	0	0	-25	-12	0	0	0	0	0	0
70%	0	0	0	-1	0	15	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-4	7	-4	-78	-24	2	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	-13	23	-20	-243	-40	18	0	0	0	0	0	0
Above Normal (16%)	0	0	22	4	-128	-34	0	0	0	0	0	0
Below Normal (13%)	0	0	-1	0	84	3	0	0	0	0	0	0
Dry (24%)	0	0	-5	-6	-10	4	0	0	0	0	0	0
Critical (15%)	0	0	2	-3	-3	-3	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-4. Fremont Weir, Monthly Spills

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Spills (cfs)											
Probability of Exceedance[a]												
10%	100	100	10,543	30,193	44,709	18,331	5,859	100	100	0	0	100
20%	100	100	3,673	10,516	13,894	7,379	4,169	100	100	0	0	100
30%	100	100	1,561	5,231	8,342	5,266	966	100	100	0	0	100
40%	100	100	533	2,826	5,470	3,433	341	100	100	0	0	100
50%	100	100	186	1,630	3,269	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,101	100	100	100	0	0	100
70%	100	100	100	153	1,008	481	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	115	384	3,697	9,549	13,200	7,942	2,211	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	147	996	9,888	25,442	30,547	18,997	5,602	289	113	0	0	100
Above Normal (16%)	100	100	2,659	6,349	15,114	8,566	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,256	4,057	1,166	292	100	100	0	0	100
Dry (24%)	100	100	342	932	2,032	1,411	411	100	100	0	0	100
Critical (15%)	100	100	149	542	533	408	106	100	100	0	0	100

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Spills (cfs)											
Probability of Exceedance[a]												
10%	100	100	7,229	23,972	40,788	16,077	5,836	100	100	0	0	100
20%	100	100	3,479	10,411	12,582	6,630	3,995	100	100	0	0	100
30%	100	100	1,219	5,246	7,068	4,531	884	100	100	0	0	100
40%	100	100	507	2,721	5,249	3,462	340	100	100	0	0	100
50%	100	100	185	1,412	3,305	1,749	114	100	100	0	0	100
60%	100	100	100	683	2,173	975	100	100	100	0	0	100
70%	100	100	100	145	932	321	100	100	100	0	0	100
80%	100	100	100	100	187	176	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	126	357	3,241	9,085	12,410	7,637	2,206	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	183	910	8,420	24,291	29,547	18,493	5,627	289	113	0	0	100
Above Normal (16%)	100	100	2,765	5,997	13,013	7,928	1,688	100	100	0	0	100
Below Normal (13%)	100	100	242	1,004	3,031	883	293	100	100	0	0	100
Dry (24%)	100	100	322	902	2,024	1,393	407	100	100	0	0	100
Critical (15%)	100	100	149	528	534	396	106	100	100	0	0	100

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Spills (cfs)											
Probability of Exceedance[a]												
10%	0	0	-3,314	-6,220	-3,920	-2,254	-23	0	0	0	0	0
20%	0	0	-194	-105	-1,312	-749	-174	0	0	0	0	0
30%	0	0	-341	15	-1,273	-735	-82	0	0	0	0	0
40%	0	0	-26	-105	-221	29	-1	0	0	0	0	0
50%	0	0	-1	-218	36	-316	-5	0	0	0	0	0
60%	0	0	0	-168	-118	-126	0	0	0	0	0	0
70%	0	0	0	-8	-76	-161	0	0	0	0	0	0
80%	0	0	0	0	2	-25	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	12	-27	-456	-464	-790	-305	-5	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	37	-86	-1,468	-1,151	-1,000	-504	25	0	0	0	0	0
Above Normal (16%)	0	0	106	-352	-2,102	-638	-77	0	0	0	0	0
Below Normal (13%)	0	0	-20	-253	-1,026	-283	1	0	0	0	0	0
Dry (24%)	0	0	-20	-30	-7	-17	-4	0	0	0	0	0
Critical (15%)	0	0	-1	-15	1	-12	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-5. Fremont Weir, Monthly Spills

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Spills (cfs)											
Probability of Exceedance[a]												
10%	100	100	10,543	30,193	44,709	18,331	5,859	100	100	0	0	100
20%	100	100	3,673	10,516	13,894	7,379	4,169	100	100	0	0	100
30%	100	100	1,561	5,231	8,342	5,266	966	100	100	0	0	100
40%	100	100	533	2,826	5,470	3,433	341	100	100	0	0	100
50%	100	100	186	1,630	3,269	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,101	100	100	100	0	0	100
70%	100	100	100	153	1,008	481	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	115	384	3,697	9,549	13,200	7,942	2,211	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	147	996	9,888	25,442	30,547	18,997	5,602	289	113	0	0	100
Above Normal (16%)	100	100	2,659	6,349	15,114	8,566	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,256	4,057	1,166	292	100	100	0	0	100
Dry (24%)	100	100	342	932	2,032	1,411	411	100	100	0	0	100
Critical (15%)	100	100	149	542	533	408	106	100	100	0	0	100

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Spills (cfs)											
Probability of Exceedance[a]												
10%	100	100	10,562	27,452	43,972	18,326	5,842	100	100	0	0	100
20%	100	100	3,657	10,624	13,753	6,816	4,163	100	100	0	0	100
30%	100	100	1,554	5,215	8,000	4,697	961	100	100	0	0	100
40%	100	100	535	2,831	5,471	3,406	341	100	100	0	0	100
50%	100	100	215	1,519	3,328	2,006	114	100	100	0	0	100
60%	100	100	100	789	2,202	1,123	100	100	100	0	0	100
70%	100	100	100	152	1,089	440	100	100	100	0	0	100
80%	100	100	100	100	203	179	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	112	377	3,640	9,456	13,036	7,875	2,216	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	139	973	9,693	25,241	30,361	18,837	5,617	289	113	0	0	100
Above Normal (16%)	100	100	2,686	6,188	14,531	8,490	1,768	100	100	0	0	100
Below Normal (13%)	100	100	262	1,250	4,001	1,153	293	100	100	0	0	100
Dry (24%)	100	100	342	923	2,007	1,406	410	100	100	0	0	100
Critical (15%)	100	100	150	534	545	397	106	100	100	0	0	100

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Spills (cfs)											
Probability of Exceedance[a]												
10%	0	0	19	-2,740	-736	-5	-17	0	0	0	0	0
20%	0	0	-16	108	-141	-563	-7	0	0	0	0	0
30%	0	0	-6	-16	-342	-569	-5	0	0	0	0	0
40%	0	0	2	5	1	-26	1	0	0	0	0	0
50%	0	0	29	-111	59	-59	-5	0	0	0	0	0
60%	0	0	0	-61	-89	22	0	0	0	0	0	0
70%	0	0	0	-1	81	-42	0	0	0	0	0	0
80%	0	0	0	0	19	-21	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-3	-7	-58	-93	-163	-67	5	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	-8	-23	-195	-201	-187	-160	15	0	0	0	0	0
Above Normal (16%)	0	0	28	-161	-583	-76	4	0	0	0	0	0
Below Normal (13%)	0	0	0	-6	-56	-13	0	0	0	0	0	0
Dry (24%)	0	0	-1	-9	-24	-4	-2	0	0	0	0	0
Critical (15%)	0	0	0	-8	12	-11	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-6. Fremont Weir, Monthly Spills

Second Basis of Comparison

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	10,543	30,193	44,709	18,331	5,859	100	100	0	0	100
20%	100	100	3,673	10,516	13,894	7,379	4,169	100	100	0	0	100
30%	100	100	1,561	5,231	8,342	5,266	966	100	100	0	0	100
40%	100	100	533	2,826	5,470	3,433	341	100	100	0	0	100
50%	100	100	186	1,630	3,269	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,101	100	100	100	0	0	100
70%	100	100	100	153	1,008	481	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	115	384	3,697	9,549	13,200	7,942	2,211	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	147	996	9,888	25,442	30,547	18,997	5,602	289	113	0	0	100
Above Normal (16%)	100	100	2,659	6,349	15,114	8,566	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,256	4,057	1,166	292	100	100	0	0	100
Dry (24%)	100	100	342	932	2,032	1,411	411	100	100	0	0	100
Critical (15%)	100	100	149	542	533	408	106	100	100	0	0	100

Alternative 5

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	7,431	23,953	40,288	16,133	5,836	100	100	0	0	100
20%	100	100	3,445	10,420	12,539	6,538	3,992	100	100	0	0	100
30%	100	100	1,217	5,246	7,057	4,576	884	100	100	0	0	100
40%	100	100	507	2,676	5,250	3,467	341	100	100	0	0	100
50%	100	100	198	1,412	3,305	1,717	114	100	100	0	0	100
60%	100	100	100	683	2,148	963	100	100	100	0	0	100
70%	100	100	100	144	932	336	100	100	100	0	0	100
80%	100	100	100	100	187	176	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	122	364	3,237	9,006	12,386	7,638	2,206	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	170	933	8,400	24,048	29,507	18,512	5,627	289	113	0	0	100
Above Normal (16%)	100	100	2,786	6,000	12,885	7,895	1,688	100	100	0	0	100
Below Normal (13%)	100	100	242	1,004	3,115	886	293	100	100	0	0	100
Dry (24%)	100	100	317	896	2,015	1,398	407	100	100	0	0	100
Critical (15%)	100	100	151	525	531	393	106	100	100	0	0	100

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	-3,112	-6,239	-4,421	-2,197	-23	0	0	0	0	0
20%	0	0	-228	-96	-1,355	-841	-177	0	0	0	0	0
30%	0	0	-343	15	-1,284	-690	-82	0	0	0	0	0
40%	0	0	-26	-149	-220	34	0	0	0	0	0	0
50%	0	0	12	-219	36	-347	-5	0	0	0	0	0
60%	0	0	0	-168	-143	-138	0	0	0	0	0	0
70%	0	0	0	-9	-76	-145	0	0	0	0	0	0
80%	0	0	0	0	2	-25	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	7	-20	-460	-542	-814	-303	-5	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	23	-63	-1,488	-1,394	-1,040	-486	25	0	0	0	0	0
Above Normal (16%)	0	0	128	-349	-2,230	-671	-77	0	0	0	0	0
Below Normal (13%)	0	0	-20	-252	-942	-280	1	0	0	0	0	0
Dry (24%)	0	0	-25	-36	-17	-13	-4	0	0	0	0	0
Critical (15%)	0	0	2	-17	-2	-15	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

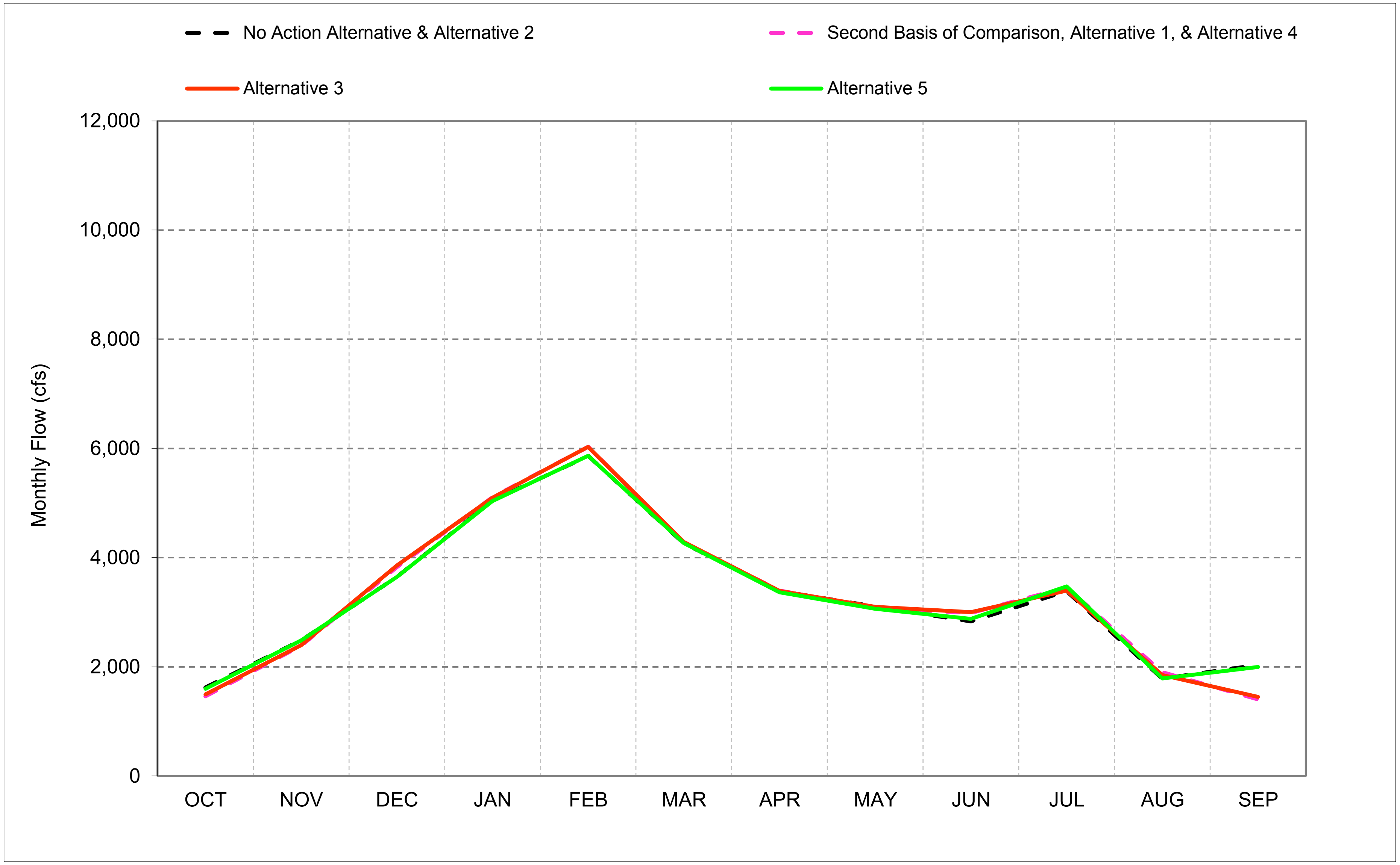
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.27. American River Flow downstream of Nimbus

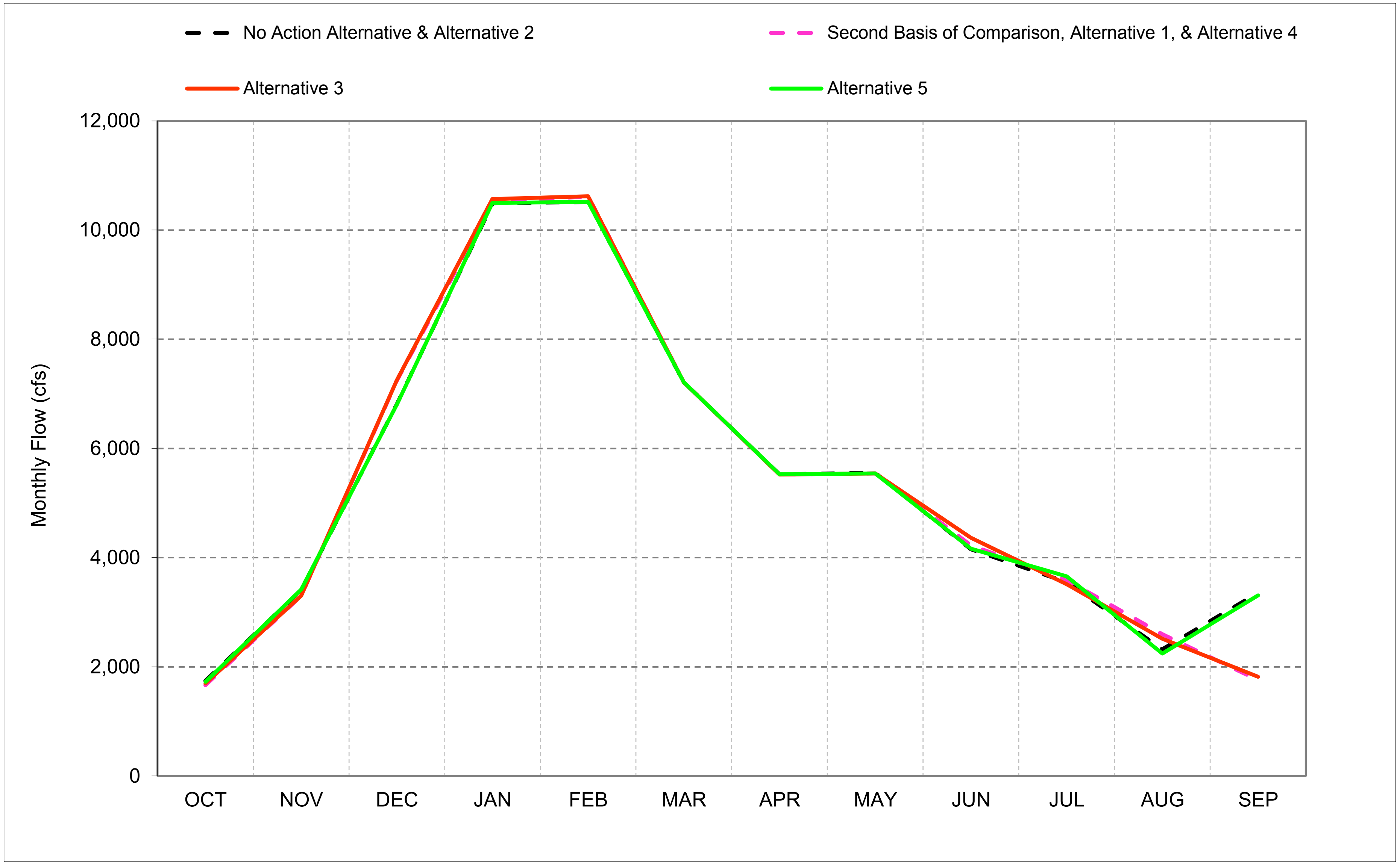
Figure C-27-1. American River d/s of Nimbus Dam, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-27-2. American River d/s of Nimbus Dam, Wet Year* Long-Term Average Flow**

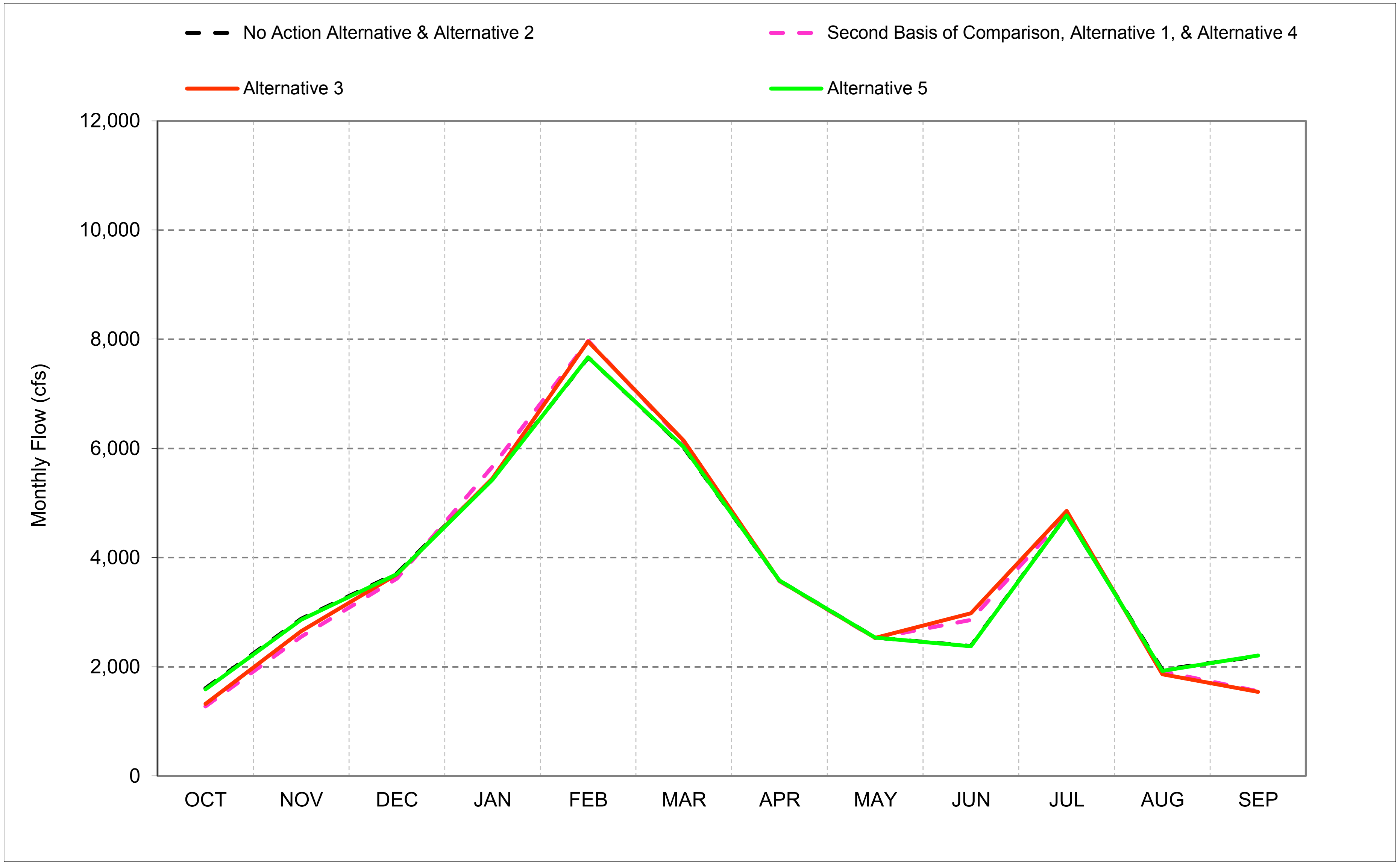


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-27-3. American River d/s of Nimbus Dam, Above Normal Year* Long-Term Average Flow**

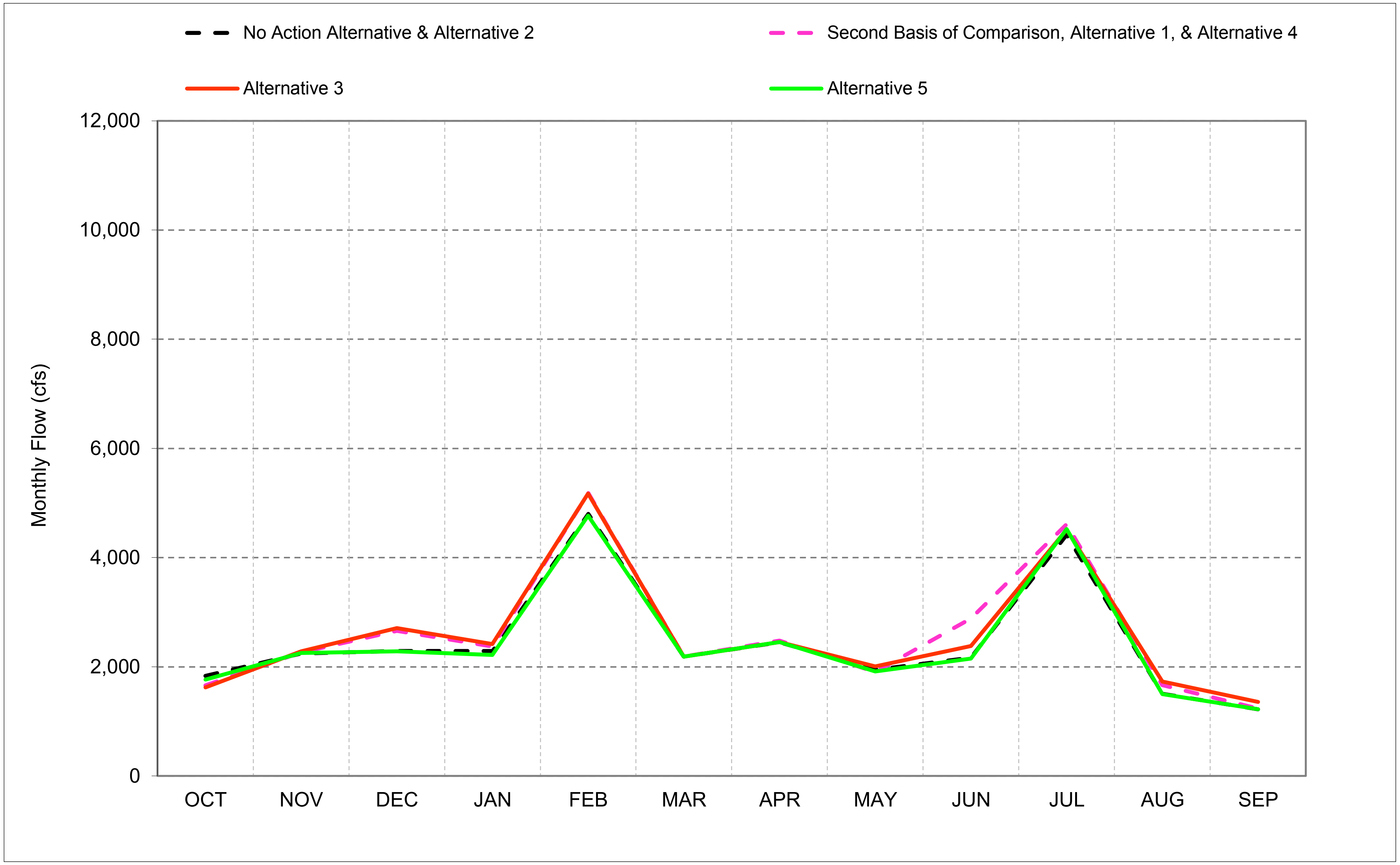


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-27-4. American River d/s of Nimbus Dam, Below Normal Year* Long-Term Average Flow**

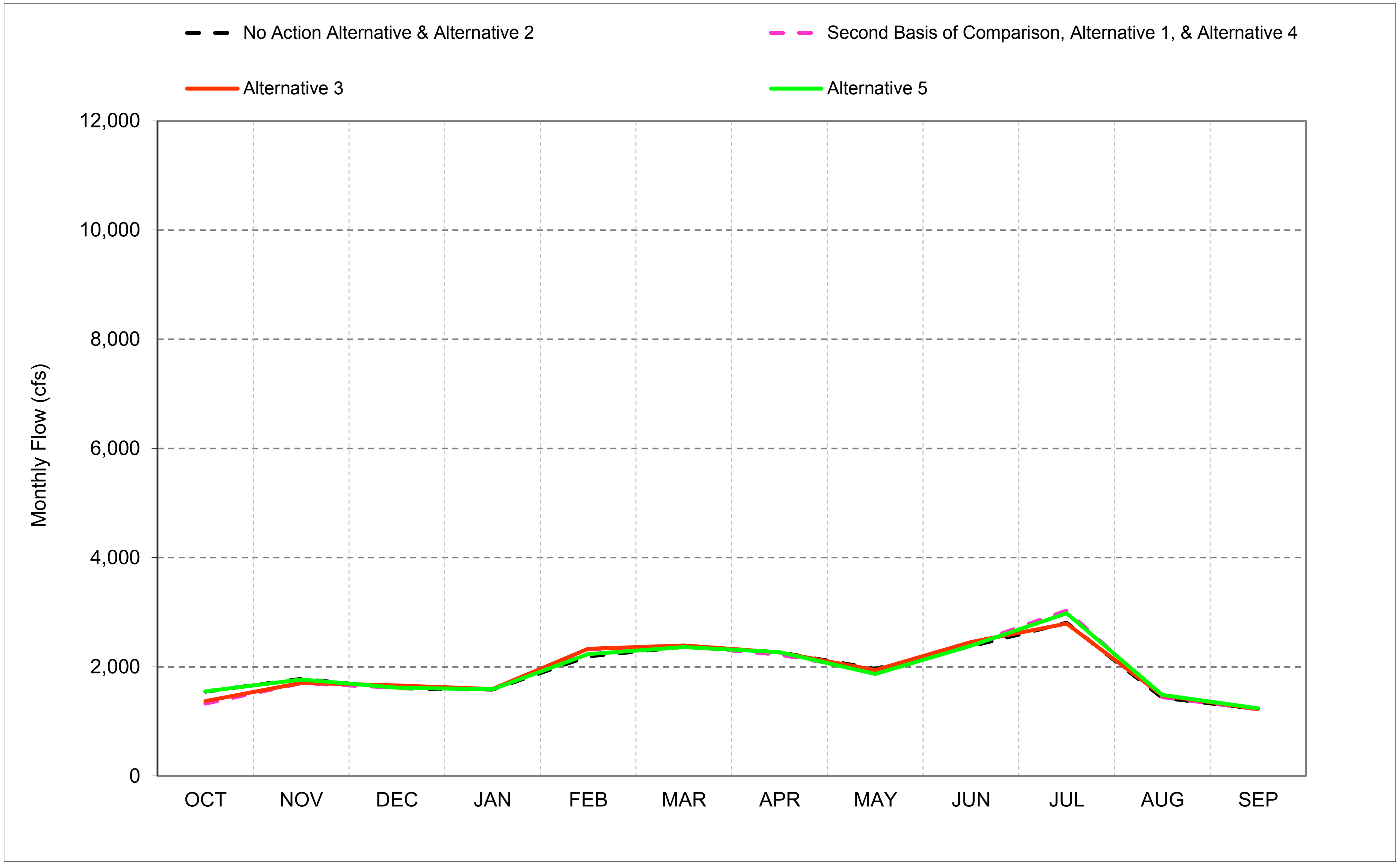


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-27-5. American River d/s of Nimbus Dam, Dry Year* Long-Term Average Flow**

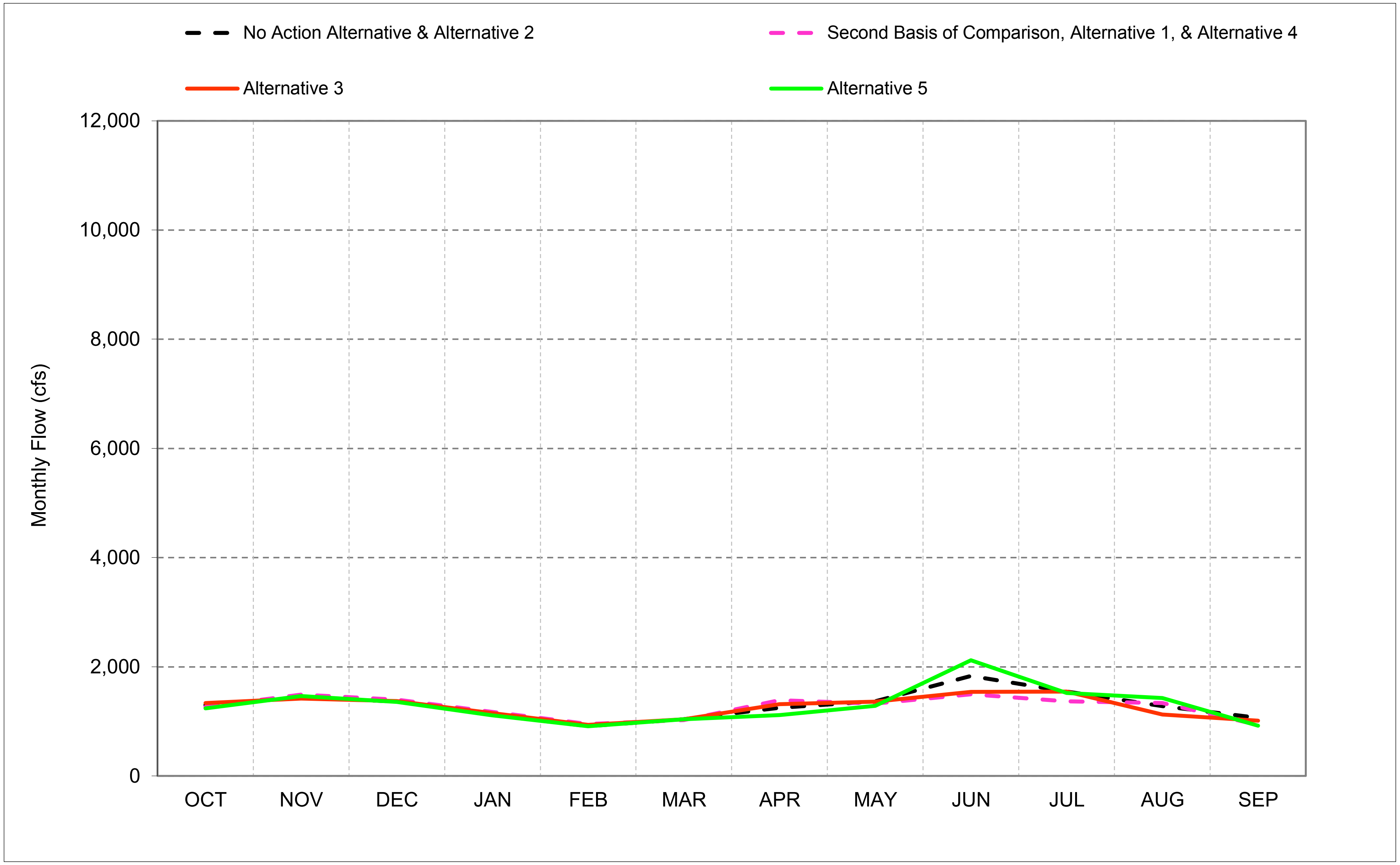


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-27-6. American River d/s of Nimbus Dam, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-27-1. American River d/s of Nimbus Dam, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,600	3,783	8,379	12,160	14,655	9,756	6,737	7,450	4,753	5,000	3,083	3,957
20%	1,962	3,343	3,880	7,656	10,890	6,820	5,085	4,489	3,837	5,000	2,265	3,182
30%	1,639	2,565	2,076	5,303	7,117	5,044	4,494	3,543	3,507	4,916	1,967	2,426
40%	1,500	1,981	2,000	3,583	5,759	4,176	3,491	2,861	2,722	3,856	1,768	1,932
50%	1,500	1,925	2,000	1,750	3,087	3,057	2,544	2,268	2,293	3,567	1,750	1,565
60%	1,500	1,683	1,845	1,700	1,796	2,022	2,111	1,750	1,951	2,854	1,750	1,533
70%	1,500	1,515	1,595	1,700	1,445	1,747	1,747	1,609	1,750	2,510	1,630	1,480
80%	1,182	1,226	1,368	1,362	1,264	854	1,021	1,119	1,401	2,350	895	808
90%	800	800	800	985	901	800	800	800	904	1,137	800	800
Long Term												
Full Simulation Period[b]	1,622	2,483	3,648	5,045	5,861	4,263	3,384	3,103	2,833	3,385	1,783	2,031
Water Year Types[c]												
Wet (32%)	1,743	3,407	6,812	10,489	10,512	7,212	5,524	5,554	4,155	3,549	2,319	3,356
Above Normal (16%)	1,607	2,879	3,712	5,445	7,665	6,015	3,579	2,534	2,383	4,775	1,946	2,193
Below Normal (13%)	1,834	2,246	2,291	2,288	4,800	2,188	2,451	1,946	2,168	4,416	1,508	1,222
Dry (24%)	1,547	1,778	1,608	1,582	2,193	2,366	2,266	1,962	2,375	2,806	1,432	1,230
Critical (15%)	1,303	1,443	1,365	1,114	914	1,042	1,251	1,369	1,832	1,545	1,280	1,064

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	1,967	3,834	9,336	12,160	14,655	9,754	6,737	7,450	4,650	5,000	3,236	1,837
20%	1,500	3,218	4,325	7,873	10,806	6,805	5,083	4,486	3,799	5,000	2,678	1,604
30%	1,500	2,070	2,528	5,813	7,391	5,044	4,483	3,543	3,623	4,957	2,299	1,533
40%	1,500	1,925	2,000	3,587	5,755	4,172	3,491	2,836	3,223	4,250	1,912	1,533
50%	1,500	1,818	2,000	1,776	3,753	3,039	2,499	2,021	2,835	3,591	1,750	1,533
60%	1,500	1,683	1,936	1,700	2,602	2,015	2,089	1,750	2,245	2,935	1,750	1,533
70%	1,449	1,500	1,701	1,700	1,445	1,747	1,750	1,625	1,832	2,589	1,681	1,493
80%	991	1,136	1,146	1,440	1,264	921	1,162	1,074	1,727	2,373	957	800
90%	800	800	800	819	1,032	800	800	800	1,061	1,327	800	780
Long Term												
Full Simulation Period[b]	1,461	2,386	3,826	5,109	6,030	4,279	3,395	3,077	2,987	3,454	1,899	1,404
Water Year Types[c]												
Wet (32%)	1,664	3,300	7,242	10,514	10,615	7,209	5,521	5,541	4,226	3,591	2,597	1,756
Above Normal (16%)	1,274	2,549	3,614	5,670	7,969	6,116	3,572	2,527	2,860	4,782	1,913	1,553
Below Normal (13%)	1,661	2,262	2,660	2,370	5,181	2,187	2,477	1,907	2,881	4,610	1,666	1,236
Dry (24%)	1,329	1,698	1,619	1,587	2,322	2,377	2,222	1,925	2,413	3,028	1,446	1,222
Critical (15%)	1,263	1,492	1,400	1,171	951	1,027	1,391	1,327	1,496	1,368	1,336	935

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-633	52	957	0	0	-2	0	0	-103	0	152	-2,120
20%	-462	-125	444	217	-84	-15	-1	-3	-38	0	413	-1,579
30%	-139	-495	452	510	274	-1	-11	0	116	41	333	-893
40%	0	-56	0	4	-3	-4	0	-26	501	394	145	-399
50%	0	-107	0	26	665	-18	-45	-247	541	24	0	-32
60%	0	0	91	0	806	-7	-22	0	294	82	0	0
70%	-51	-15	107	0	0	0	3	16	82	79	51	13
80%	-191	-90	-222	78	0	67	141	-45	326	23	62	-8
90%	0	0	0	-166	132	0	0	0	156	190	0	-20
Long Term												
Full Simulation Period[b]	-160	-96	178	64	169	15	11	-26	154	69	116	-628
Water Year Types[c]												
Wet (32%)	-79	-107	430	25	102	-3	-3	-13	72	42	278	-1,600
Above Normal (16%)	-332	-330	-98	225	304	101	-8	-7	477	6	-33	-640
Below Normal (13%)	-173	17	369	82	381	-1	27	-39	713	194	159	14
Dry (24%)	-219	-80	11	5	128	12	-43	-38	37	222	14	-8
Critical (15%)	-40	49	35	56	38	-15	140	-42	-336	-177	56	-129

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-27-2. American River d/s of Nimbus Dam, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,600	3,783	8,379	12,160	14,655	9,756	6,737	7,450	4,753	5,000	3,083	3,957
20%	1,962	3,343	3,880	7,656	10,890	6,820	5,085	4,489	3,837	5,000	2,265	3,182
30%	1,639	2,565	2,076	5,303	7,117	5,044	4,494	3,543	3,507	4,916	1,967	2,426
40%	1,500	1,981	2,000	3,583	5,759	4,176	3,491	2,861	2,722	3,856	1,768	1,932
50%	1,500	1,925	2,000	1,750	3,087	3,057	2,544	2,268	2,293	3,567	1,750	1,565
60%	1,500	1,683	1,845	1,700	1,796	2,022	2,111	1,750	1,951	2,854	1,750	1,533
70%	1,500	1,515	1,595	1,700	1,445	1,747	1,747	1,609	1,750	2,510	1,630	1,480
80%	1,182	1,226	1,368	1,362	1,264	854	1,021	1,119	1,401	2,350	895	808
90%	800	800	800	985	901	800	800	800	904	1,137	800	800
Long Term												
Full Simulation Period[b]	1,622	2,483	3,648	5,045	5,861	4,263	3,384	3,103	2,833	3,385	1,783	2,031
Water Year Types[c]												
Wet (32%)	1,743	3,407	6,812	10,489	10,512	7,212	5,524	5,554	4,155	3,549	2,319	3,356
Above Normal (16%)	1,607	2,879	3,712	5,445	7,665	6,015	3,579	2,534	2,383	4,775	1,946	2,193
Below Normal (13%)	1,834	2,246	2,291	2,288	4,800	2,188	2,451	1,946	2,168	4,416	1,508	1,222
Dry (24%)	1,547	1,778	1,608	1,582	2,193	2,366	2,266	1,962	2,375	2,806	1,432	1,230
Critical (15%)	1,303	1,443	1,365	1,114	914	1,042	1,251	1,369	1,832	1,545	1,280	1,064

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,022	3,873	9,622	12,160	14,655	9,756	6,737	7,450	4,944	5,000	3,092	1,949
20%	1,714	3,207	4,325	7,873	10,797	6,816	5,085	4,486	4,005	5,000	2,542	1,687
30%	1,500	2,069	2,733	5,563	7,391	5,044	4,484	3,543	3,661	4,999	2,018	1,533
40%	1,500	1,925	2,000	3,579	5,756	4,172	3,491	2,838	3,200	3,840	1,875	1,533
50%	1,500	1,893	2,000	1,890	3,718	3,047	2,548	2,240	2,664	3,535	1,750	1,533
60%	1,500	1,683	1,960	1,700	2,605	2,017	2,152	1,750	2,230	2,900	1,750	1,533
70%	1,425	1,448	1,596	1,700	1,445	1,747	1,747	1,616	1,851	2,579	1,648	1,493
80%	1,150	1,150	1,244	1,374	1,264	1,059	1,073	1,112	1,598	2,013	1,081	800
90%	800	800	800	825	982	800	800	804	1,011	1,250	800	800
Long Term												
Full Simulation Period[b]	1,496	2,397	3,855	5,095	6,027	4,288	3,390	3,100	2,999	3,396	1,849	1,449
Water Year Types[c]												
Wet (32%)	1,696	3,301	7,254	10,565	10,615	7,210	5,522	5,541	4,361	3,511	2,516	1,815
Above Normal (16%)	1,323	2,651	3,693	5,447	7,960	6,141	3,574	2,529	2,982	4,854	1,863	1,539
Below Normal (13%)	1,622	2,285	2,711	2,417	5,174	2,188	2,454	2,009	2,380	4,514	1,728	1,354
Dry (24%)	1,374	1,704	1,661	1,593	2,327	2,389	2,262	1,942	2,453	2,792	1,476	1,229
Critical (15%)	1,336	1,419	1,371	1,153	938	1,041	1,313	1,362	1,542	1,546	1,125	1,012

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-578	91	1,244	0	0	0	0	0	191	0	8	-2,008
20%	-248	-136	445	217	-93	-4	0	-3	168	0	277	-1,495
30%	-139	-496	657	261	274	-1	-10	0	154	83	52	-893
40%	0	-56	0	-4	-3	-4	0	-24	479	-15	108	-399
50%	0	-32	0	140	631	-10	4	-28	371	-32	0	-32
60%	0	0	115	0	809	-5	41	0	279	46	0	0
70%	-75	-67	2	0	0	0	0	7	101	69	18	13
80%	-32	-75	-125	12	0	206	52	-7	198	-338	186	-8
90%	0	0	0	-160	81	0	0	4	106	113	0	0
Long Term												
Full Simulation Period[b]	-126	-86	207	50	166	25	7	-2	165	10	67	-583
Water Year Types[c]												
Wet (32%)	-47	-106	442	76	103	-3	-3	-13	207	-38	197	-1,541
Above Normal (16%)	-284	-228	-19	2	296	126	-5	-5	600	79	-83	-654
Below Normal (13%)	-213	39	420	128	374	0	3	63	212	98	221	133
Dry (24%)	-174	-73	53	11	134	23	-4	-21	77	-14	44	-1
Critical (15%)	33	-24	6	39	24	-1	62	-7	-290	1	-155	-52

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-27-3. American River d/s of Nimbus Dam, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,600	3,783	8,379	12,160	14,655	9,756	6,737	7,450	4,753	5,000	3,083	3,957
20%	1,962	3,343	3,880	7,656	10,890	6,820	5,085	4,489	3,837	5,000	2,265	3,182
30%	1,639	2,565	2,076	5,303	7,117	5,044	4,494	3,543	3,507	4,916	1,967	2,426
40%	1,500	1,981	2,000	3,583	5,759	4,176	3,491	2,861	2,722	3,856	1,768	1,932
50%	1,500	1,925	2,000	1,750	3,087	3,057	2,544	2,268	2,293	3,567	1,750	1,565
60%	1,500	1,683	1,845	1,700	1,796	2,022	2,111	1,750	1,951	2,854	1,750	1,533
70%	1,500	1,515	1,595	1,700	1,445	1,747	1,747	1,609	1,750	2,510	1,630	1,480
80%	1,182	1,226	1,368	1,362	1,264	854	1,021	1,119	1,401	2,350	895	808
90%	800	800	800	985	901	800	800	800	904	1,137	800	800
Long Term												
Full Simulation Period[b]	1,622	2,483	3,648	5,045	5,861	4,263	3,384	3,103	2,833	3,385	1,783	2,031
Water Year Types[c]												
Wet (32%)	1,743	3,407	6,812	10,489	10,512	7,212	5,524	5,554	4,155	3,549	2,319	3,356
Above Normal (16%)	1,607	2,879	3,712	5,445	7,665	6,015	3,579	2,534	2,383	4,775	1,946	2,193
Below Normal (13%)	1,834	2,246	2,291	2,288	4,800	2,188	2,451	1,946	2,168	4,416	1,508	1,222
Dry (24%)	1,547	1,778	1,608	1,582	2,193	2,366	2,266	1,962	2,375	2,806	1,432	1,230
Critical (15%)	1,303	1,443	1,365	1,114	914	1,042	1,251	1,369	1,832	1,545	1,280	1,064

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,591	3,790	8,385	12,160	14,655	9,756	6,737	7,450	4,997	5,000	2,981	3,872
20%	1,858	3,384	3,894	7,653	10,889	6,820	5,085	4,492	3,883	5,000	2,354	3,145
30%	1,544	2,539	2,092	5,303	7,315	5,044	4,490	3,543	3,613	4,903	1,895	2,423
40%	1,500	1,961	2,000	3,582	5,758	4,175	3,491	2,733	2,886	4,084	1,750	1,910
50%	1,500	1,925	2,000	1,750	3,095	3,057	2,524	2,009	2,330	3,616	1,750	1,533
60%	1,500	1,683	1,823	1,700	1,796	2,022	2,038	1,750	1,965	2,944	1,750	1,533
70%	1,437	1,498	1,608	1,700	1,445	1,747	1,634	1,609	1,750	2,671	1,631	1,356
80%	1,188	1,219	1,262	1,356	1,264	845	1,024	992	1,508	2,392	965	800
90%	800	800	800	992	906	800	800	800	1,006	1,133	800	800
Long Term												
Full Simulation Period[b]	1,596	2,484	3,644	5,034	5,866	4,263	3,364	3,060	2,878	3,473	1,789	1,998
Water Year Types[c]												
Wet (32%)	1,728	3,416	6,805	10,493	10,513	7,212	5,524	5,544	4,165	3,654	2,242	3,306
Above Normal (16%)	1,588	2,861	3,698	5,425	7,666	6,024	3,580	2,535	2,374	4,775	1,927	2,204
Below Normal (13%)	1,768	2,251	2,282	2,218	4,766	2,184	2,450	1,916	2,151	4,524	1,499	1,222
Dry (24%)	1,550	1,768	1,619	1,587	2,233	2,363	2,267	1,867	2,384	2,983	1,485	1,239
Critical (15%)	1,239	1,462	1,358	1,111	912	1,041	1,117	1,285	2,121	1,523	1,430	919

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-9	7	6	0	0	0	0	0	245	0	-102	-85
20%	-104	41	13	-3	-1	0	1	2	46	0	89	-37
30%	-96	-26	16	0	198	0	-4	0	106	-12	-71	-3
40%	0	-20	0	0	0	0	0	-128	164	228	-18	-23
50%	0	0	0	0	7	0	-20	-260	36	49	0	-32
60%	0	0	-22	0	0	0	-73	0	14	90	0	0
70%	-63	-17	13	0	0	0	-112	0	0	161	1	-124
80%	6	-7	-106	-6	0	-8	3	-127	107	41	70	-8
90%	0	0	0	7	6	0	0	0	101	-4	0	0
Long Term												
Full Simulation Period[b]	-26	1	-4	-11	5	0	-19	-43	44	88	6	-33
Water Year Types[c]												
Wet (32%)	-16	8	-7	4	0	0	0	-11	10	105	-77	-50
Above Normal (16%)	-19	-18	-14	-20	1	9	1	1	-9	-1	-19	11
Below Normal (13%)	-66	5	-9	-70	-34	-4	0	-29	-17	108	-9	0
Dry (24%)	3	-10	11	5	39	-3	1	-96	9	176	53	9
Critical (15%)	-64	19	-7	-4	-2	-1	-134	-85	289	-22	150	-145

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-27-4. American River d/s of Nimbus Dam, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	1,967	3,834	9,336	12,160	14,655	9,754	6,737	7,450	4,650	5,000	3,236	1,837
20%	1,500	3,218	4,325	7,873	10,806	6,805	5,083	4,486	3,799	5,000	2,678	1,604
30%	1,500	2,070	2,528	5,813	7,391	5,044	4,483	3,543	3,623	4,957	2,299	1,533
40%	1,500	1,925	2,000	3,587	5,755	4,172	3,491	2,836	3,223	4,250	1,912	1,533
50%	1,500	1,818	2,000	1,776	3,753	3,039	2,499	2,021	2,835	3,591	1,750	1,533
60%	1,500	1,683	1,936	1,700	2,602	2,015	2,089	1,750	2,245	2,935	1,750	1,533
70%	1,449	1,500	1,701	1,700	1,445	1,747	1,750	1,625	1,832	2,589	1,681	1,493
80%	991	1,136	1,146	1,440	1,264	921	1,162	1,074	1,727	2,373	957	800
90%	800	800	800	819	1,032	800	800	800	1,061	1,327	800	780
Long Term												
Full Simulation Period[b]	1,461	2,386	3,826	5,109	6,030	4,279	3,395	3,077	2,987	3,454	1,899	1,404
Water Year Types[c]												
Wet (32%)	1,664	3,300	7,242	10,514	10,615	7,209	5,521	5,541	4,226	3,591	2,597	1,756
Above Normal (16%)	1,274	2,549	3,614	5,670	7,969	6,116	3,572	2,527	2,860	4,782	1,913	1,553
Below Normal (13%)	1,661	2,262	2,660	2,370	5,181	2,187	2,477	1,907	2,881	4,610	1,666	1,236
Dry (24%)	1,329	1,698	1,619	1,587	2,322	2,377	2,222	1,925	2,413	3,028	1,446	1,222
Critical (15%)	1,263	1,492	1,400	1,171	951	1,027	1,391	1,327	1,496	1,368	1,336	935

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,600	3,783	8,379	12,160	14,655	9,756	6,737	7,450	4,753	5,000	3,083	3,957
20%	1,962	3,343	3,880	7,656	10,890	6,820	5,085	4,489	3,837	5,000	2,265	3,182
30%	1,639	2,565	2,076	5,303	7,117	5,044	4,494	3,543	3,507	4,916	1,967	2,426
40%	1,500	1,981	2,000	3,583	5,759	4,176	3,491	2,861	2,722	3,856	1,768	1,932
50%	1,500	1,925	2,000	1,750	3,087	3,057	2,544	2,268	2,293	3,567	1,750	1,565
60%	1,500	1,683	1,845	1,700	1,796	2,022	2,111	1,750	1,951	2,854	1,750	1,533
70%	1,500	1,515	1,595	1,700	1,445	1,747	1,747	1,609	1,750	2,510	1,630	1,480
80%	1,182	1,226	1,368	1,362	1,264	854	1,021	1,119	1,401	2,350	895	808
90%	800	800	800	985	901	800	800	800	904	1,137	800	800
Long Term												
Full Simulation Period[b]	1,622	2,483	3,648	5,045	5,861	4,263	3,384	3,103	2,833	3,385	1,783	2,031
Water Year Types[c]												
Wet (32%)	1,743	3,407	6,812	10,489	10,512	7,212	5,524	5,554	4,155	3,549	2,319	3,356
Above Normal (16%)	1,607	2,879	3,712	5,445	7,665	6,015	3,579	2,534	2,383	4,775	1,946	2,193
Below Normal (13%)	1,834	2,246	2,291	2,288	4,800	2,188	2,451	1,946	2,168	4,416	1,508	1,222
Dry (24%)	1,547	1,778	1,608	1,582	2,193	2,366	2,266	1,962	2,375	2,806	1,432	1,230
Critical (15%)	1,303	1,443	1,365	1,114	914	1,042	1,251	1,369	1,832	1,545	1,280	1,064

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	633	-52	-957	0	0	2	0	0	103	0	-152	2,120
20%	462	125	-444	-217	84	15	1	3	38	0	-413	1,579
30%	139	495	-452	-510	-274	1	11	0	-116	-41	-333	893
40%	0	56	0	-4	3	4	0	26	-501	-394	-145	399
50%	0	107	0	-26	-665	18	45	247	-541	-24	0	32
60%	0	0	-91	0	-806	7	22	0	-294	-82	0	0
70%	51	15	-107	0	0	0	-3	-16	-82	-79	-51	-13
80%	191	90	222	-78	0	-67	-141	45	-326	-23	-62	8
90%	0	0	0	166	-132	0	0	0	-156	-190	0	20
Long Term												
Full Simulation Period[b]	160	96	-178	-64	-169	-15	-11	26	-154	-69	-116	628
Water Year Types[c]												
Wet (32%)	79	107	-430	-25	-102	3	3	13	-72	-42	-278	1,600
Above Normal (16%)	332	330	98	-225	-304	-101	8	7	-477	-6	33	640
Below Normal (13%)	173	-17	-369	-82	-381	1	-27	39	-713	-194	-159	-14
Dry (24%)	219	80	-11	-5	-128	-12	43	38	-37	-222	-14	8
Critical (15%)	40	-49	-35	-56	-38	15	-140	42	336	177	-56	129

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-27-5. American River d/s of Nimbus Dam, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	3,834	9,336	12,160	14,655	9,754	6,737	7,450	4,650	5,000	3,236	1,837
20%	1,500	3,218	4,325	7,873	10,806	6,805	5,083	4,486	3,799	5,000	2,678	1,604
30%	1,500	2,070	2,528	5,813	7,391	5,044	4,483	3,543	3,623	4,957	2,299	1,533
40%	1,500	1,925	2,000	3,587	5,755	4,172	3,491	2,836	3,223	4,250	1,912	1,533
50%	1,500	1,818	2,000	1,776	3,753	3,039	2,499	2,021	2,835	3,591	1,750	1,533
60%	1,500	1,683	1,936	1,700	2,602	2,015	2,089	1,750	2,245	2,935	1,750	1,533
70%	1,449	1,500	1,701	1,700	1,445	1,747	1,750	1,625	1,832	2,589	1,681	1,493
80%	991	1,136	1,146	1,440	1,264	921	1,162	1,074	1,727	2,373	957	800
90%	800	800	800	819	1,032	800	800	800	1,061	1,327	800	780
Long Term												
Full Simulation Period[b]	1,461	2,386	3,826	5,109	6,030	4,279	3,395	3,077	2,987	3,454	1,899	1,404
Water Year Types[c]												
Wet (32%)	1,664	3,300	7,242	10,514	10,615	7,209	5,521	5,541	4,226	3,591	2,597	1,756
Above Normal (16%)	1,274	2,549	3,614	5,670	7,969	6,116	3,572	2,527	2,860	4,782	1,913	1,553
Below Normal (13%)	1,661	2,262	2,660	2,370	5,181	2,187	2,477	1,907	2,881	4,610	1,666	1,236
Dry (24%)	1,329	1,698	1,619	1,587	2,322	2,377	2,222	1,925	2,413	3,028	1,446	1,222
Critical (15%)	1,263	1,492	1,400	1,171	951	1,027	1,391	1,327	1,496	1,368	1,336	935

Alternative 3

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,022	3,873	9,622	12,160	14,655	9,756	6,737	7,450	4,944	5,000	3,092	1,949
20%	1,714	3,207	4,325	7,873	10,797	6,816	5,085	4,486	4,005	5,000	2,542	1,687
30%	1,500	2,069	2,733	5,563	7,391	5,044	4,484	3,543	3,661	4,999	2,018	1,533
40%	1,500	1,925	2,000	3,579	5,756	4,172	3,491	2,838	3,200	3,840	1,875	1,533
50%	1,500	1,893	2,000	1,890	3,718	3,047	2,548	2,240	2,664	3,535	1,750	1,533
60%	1,500	1,683	1,960	1,700	2,605	2,017	2,152	1,750	2,230	2,900	1,750	1,533
70%	1,425	1,448	1,596	1,700	1,445	1,747	1,747	1,616	1,851	2,579	1,648	1,493
80%	1,150	1,150	1,244	1,374	1,264	1,059	1,073	1,112	1,598	2,013	1,081	800
90%	800	800	800	825	982	800	800	804	1,011	1,250	800	800
Long Term												
Full Simulation Period[b]	1,496	2,397	3,855	5,095	6,027	4,288	3,390	3,100	2,999	3,396	1,849	1,449
Water Year Types[c]												
Wet (32%)	1,696	3,301	7,254	10,565	10,615	7,210	5,522	5,541	4,361	3,511	2,516	1,815
Above Normal (16%)	1,323	2,651	3,693	5,447	7,960	6,141	3,574	2,529	2,982	4,854	1,863	1,539
Below Normal (13%)	1,622	2,285	2,711	2,417	5,174	2,188	2,454	2,009	2,380	4,514	1,728	1,354
Dry (24%)	1,374	1,704	1,661	1,593	2,327	2,389	2,262	1,942	2,453	2,792	1,476	1,229
Critical (15%)	1,336	1,419	1,371	1,153	938	1,041	1,313	1,362	1,542	1,546	1,125	1,012

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	39	286	0	0	2	0	0	294	0	-144	112
20%	214	-11	1	0	-9	11	1	0	206	0	-137	84
30%	0	-1	205	-250	0	0	1	0	38	42	-281	0
40%	0	0	0	-8	0	0	0	2	-22	-410	-37	0
50%	0	75	0	113	-34	7	49	219	-171	-56	0	0
60%	0	0	24	0	3	2	63	0	-14	-35	0	0
70%	-24	-52	-105	0	0	0	-3	-9	18	-10	-33	0
80%	159	15	98	-66	0	138	-89	38	-129	-360	124	0
90%	0	0	0	6	-51	0	0	4	-50	-77	0	20
Long Term												
Full Simulation Period[b]	34	10	29	-14	-3	9	-4	23	11	-58	-49	45
Water Year Types[c]												
Wet (32%)	32	1	12	51	1	0	1	0	135	-80	-82	59
Above Normal (16%)	49	103	79	-223	-8	25	2	2	123	72	-50	-14
Below Normal (13%)	-39	22	51	46	-7	1	-23	102	-501	-96	62	119
Dry (24%)	45	6	42	6	6	12	39	17	40	-236	29	7
Critical (15%)	73	-73	-29	-18	-14	14	-77	34	46	178	-211	76

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-27-6. American River d/s of Nimbus Dam, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	1,967	3,834	9,336	12,160	14,655	9,754	6,737	7,450	4,650	5,000	3,236	1,837
20%	1,500	3,218	4,325	7,873	10,806	6,805	5,083	4,486	3,799	5,000	2,678	1,604
30%	1,500	2,070	2,528	5,813	7,391	5,044	4,483	3,543	3,623	4,957	2,299	1,533
40%	1,500	1,925	2,000	3,587	5,755	4,172	3,491	2,836	3,223	4,250	1,912	1,533
50%	1,500	1,818	2,000	1,776	3,753	3,039	2,499	2,021	2,835	3,591	1,750	1,533
60%	1,500	1,683	1,936	1,700	2,602	2,015	2,089	1,750	2,245	2,935	1,750	1,533
70%	1,449	1,500	1,701	1,700	1,445	1,747	1,750	1,625	1,832	2,589	1,681	1,493
80%	991	1,136	1,146	1,440	1,264	921	1,162	1,074	1,727	2,373	957	800
90%	800	800	800	819	1,032	800	800	800	1,061	1,327	800	780
Long Term												
Full Simulation Period[b]	1,461	2,386	3,826	5,109	6,030	4,279	3,395	3,077	2,987	3,454	1,899	1,404
Water Year Types[c]												
Wet (32%)	1,664	3,300	7,242	10,514	10,615	7,209	5,521	5,541	4,226	3,591	2,597	1,756
Above Normal (16%)	1,274	2,549	3,614	5,670	7,969	6,116	3,572	2,527	2,860	4,782	1,913	1,553
Below Normal (13%)	1,661	2,262	2,660	2,370	5,181	2,187	2,477	1,907	2,881	4,610	1,666	1,236
Dry (24%)	1,329	1,698	1,619	1,587	2,322	2,377	2,222	1,925	2,413	3,028	1,446	1,222
Critical (15%)	1,263	1,492	1,400	1,171	951	1,027	1,391	1,327	1,496	1,368	1,336	935

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,591	3,790	8,385	12,160	14,655	9,756	6,737	7,450	4,997	5,000	2,981	3,872
20%	1,858	3,384	3,894	7,653	10,889	6,820	5,085	4,492	3,883	5,000	2,354	3,145
30%	1,544	2,539	2,092	5,303	7,315	5,044	4,490	3,543	3,613	4,903	1,895	2,423
40%	1,500	1,961	2,000	3,582	5,758	4,175	3,491	2,733	2,886	4,084	1,750	1,910
50%	1,500	1,925	2,000	1,750	3,095	3,057	2,524	2,009	2,330	3,616	1,750	1,533
60%	1,500	1,683	1,823	1,700	1,796	2,022	2,038	1,750	1,965	2,944	1,750	1,533
70%	1,437	1,498	1,608	1,700	1,445	1,747	1,634	1,609	1,750	2,671	1,631	1,356
80%	1,188	1,219	1,262	1,356	1,264	845	1,024	992	1,508	2,392	965	800
90%	800	800	800	992	906	800	800	800	1,006	1,133	800	800
Long Term												
Full Simulation Period[b]	1,596	2,484	3,644	5,034	5,866	4,263	3,364	3,060	2,878	3,473	1,789	1,998
Water Year Types[c]												
Wet (32%)	1,728	3,416	6,805	10,493	10,513	7,212	5,524	5,544	4,165	3,654	2,242	3,306
Above Normal (16%)	1,588	2,861	3,698	5,425	7,666	6,024	3,580	2,535	2,374	4,775	1,927	2,204
Below Normal (13%)	1,768	2,251	2,282	2,218	4,766	2,184	2,450	1,916	2,151	4,524	1,499	1,222
Dry (24%)	1,550	1,768	1,619	1,587	2,233	2,363	2,267	1,867	2,384	2,983	1,485	1,239
Critical (15%)	1,239	1,462	1,358	1,111	912	1,041	1,117	1,285	2,121	1,523	1,430	919

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	624	-44	-951	0	0	2	0	0	347	0	-255	2,035
20%	358	166	-431	-220	83	15	2	6	84	0	-324	1,541
30%	44	469	-435	-510	-76	0	7	0	-10	-54	-404	890
40%	0	36	0	-5	3	3	0	-102	-336	-166	-162	376
50%	0	107	0	-26	-658	18	25	-12	-505	25	0	0
60%	0	0	-113	0	-806	7	-51	0	-279	8	0	0
70%	-12	-2	-93	0	0	0	-116	-16	-82	82	-50	-137
80%	197	83	116	-84	0	-76	-138	-82	-219	19	8	0
90%	0	0	0	173	-126	0	0	0	-55	-194	0	20
Long Term												
Full Simulation Period[b]	135	97	-182	-75	-164	-15	-30	-17	-110	19	-110	595
Water Year Types[c]												
Wet (32%)	63	115	-437	-21	-102	3	3	2	-61	63	-355	1,550
Above Normal (16%)	314	312	84	-245	-303	-92	9	8	-486	-7	13	651
Below Normal (13%)	107	-12	-378	-152	-416	-3	-27	10	-730	-86	-167	-14
Dry (24%)	221	70	-1	0	-89	-14	44	-58	-28	-45	39	17
Critical (15%)	-24	-29	-42	-60	-40	14	-273	-43	625	155	93	-16

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

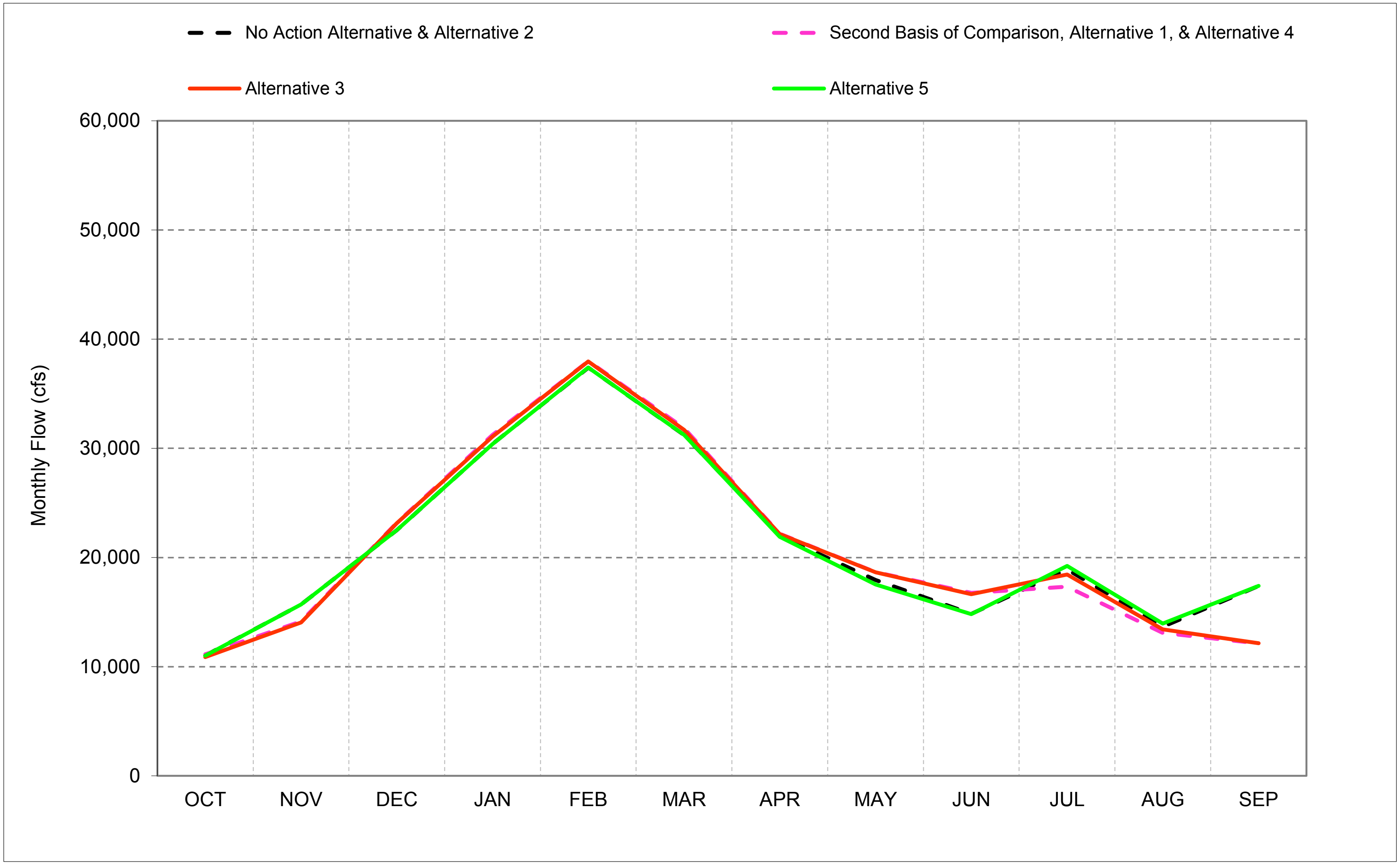
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.28. Sacramento River Flow at Freeport

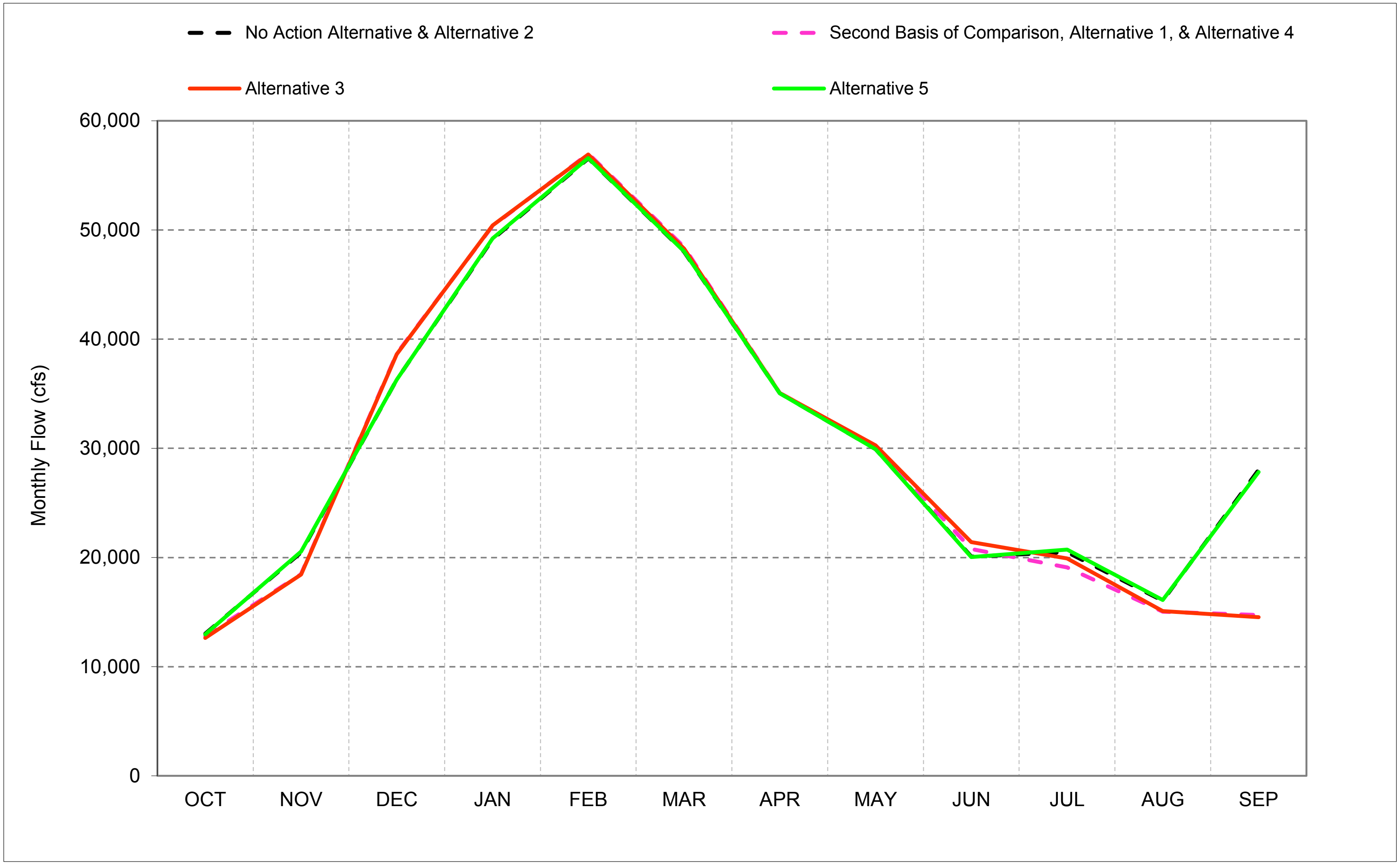
Figure C-28-1. Sacramento River at Freeport, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-28-2. Sacramento River at Freeport, Wet Year* Long-Term Average Flow**

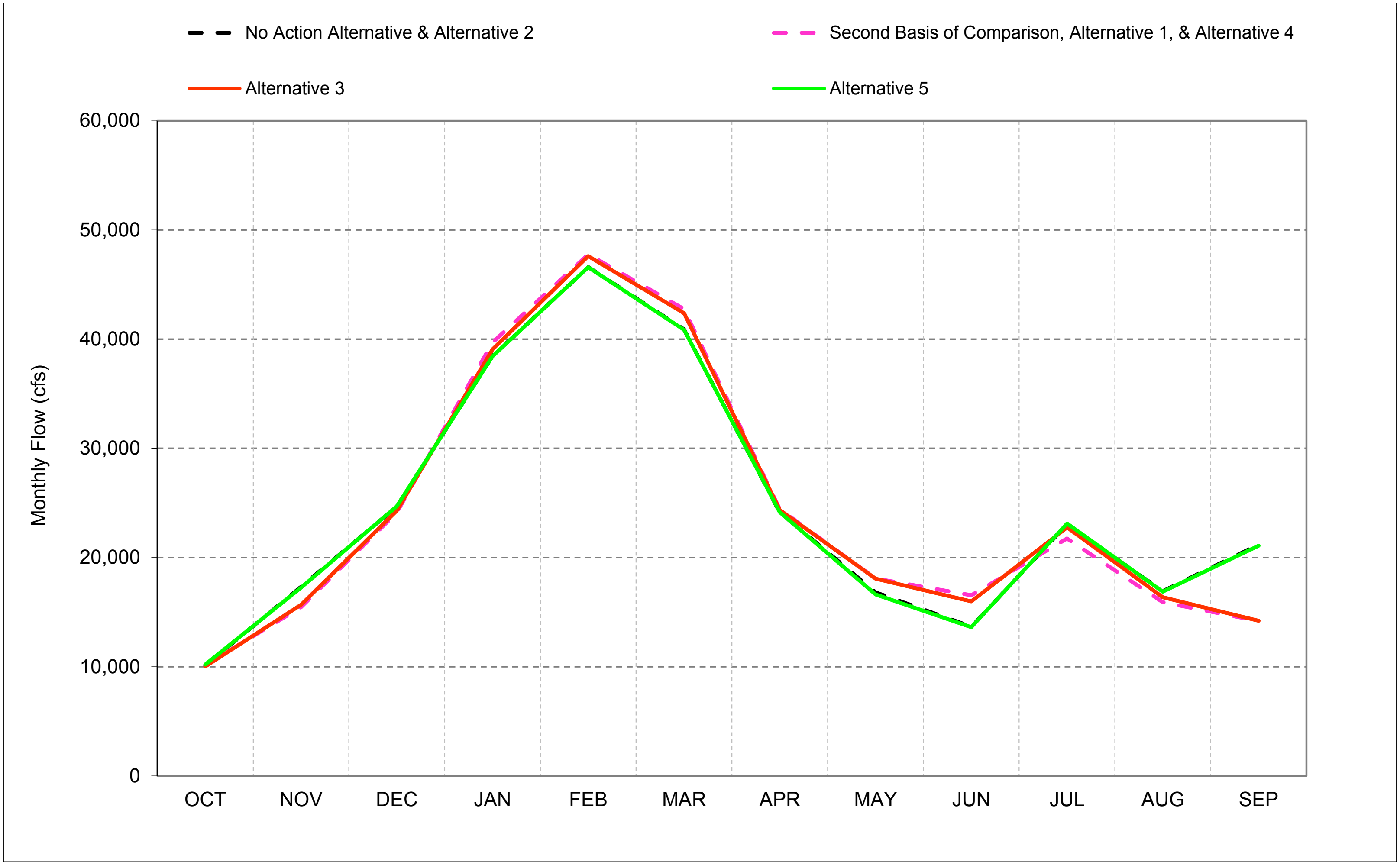


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-28-3. Sacramento River at Freeport, Above Normal Year* Long-Term Average Flow**

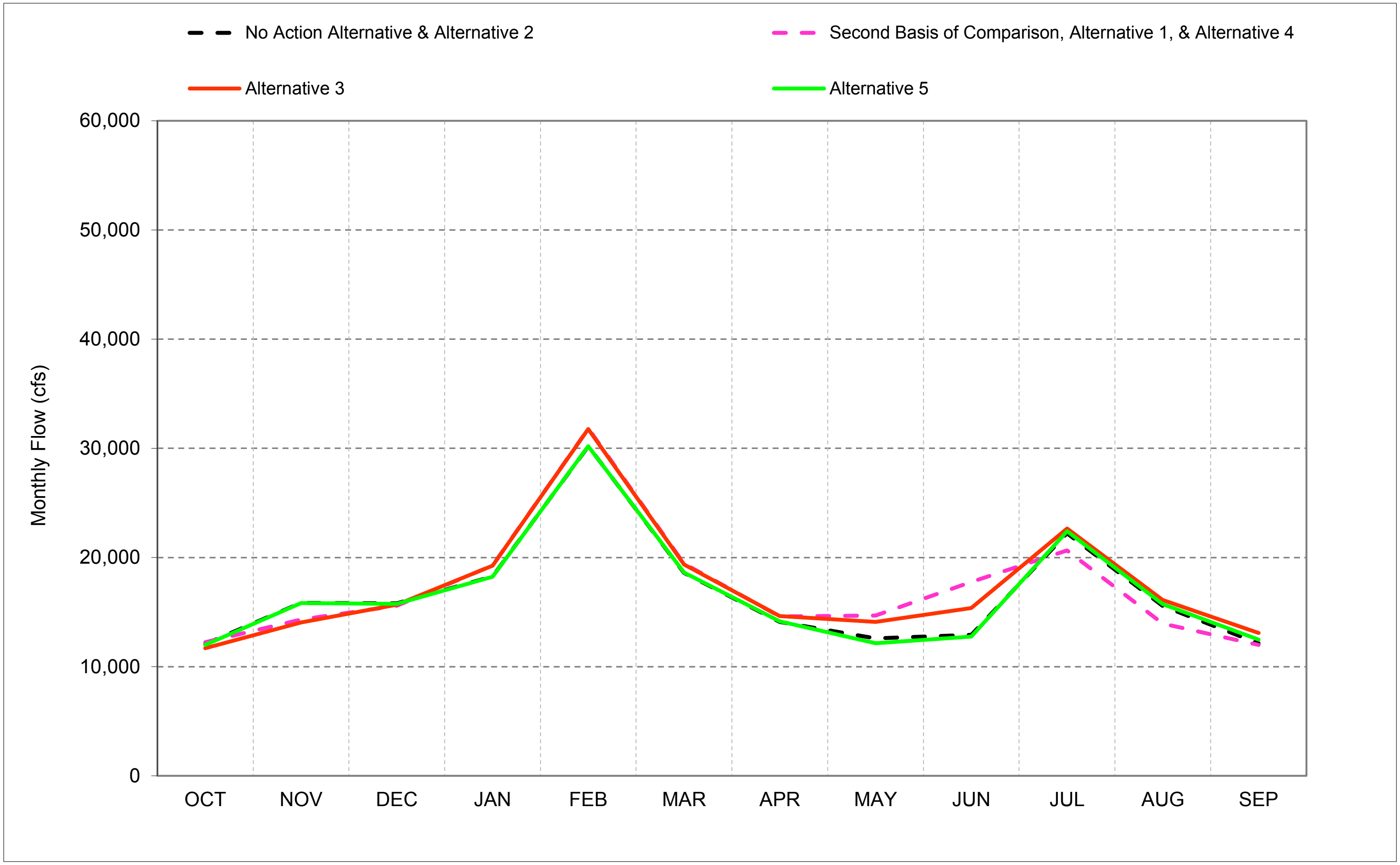


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-28-4. Sacramento River at Freeport, Below Normal Year* Long-Term Average Flow**

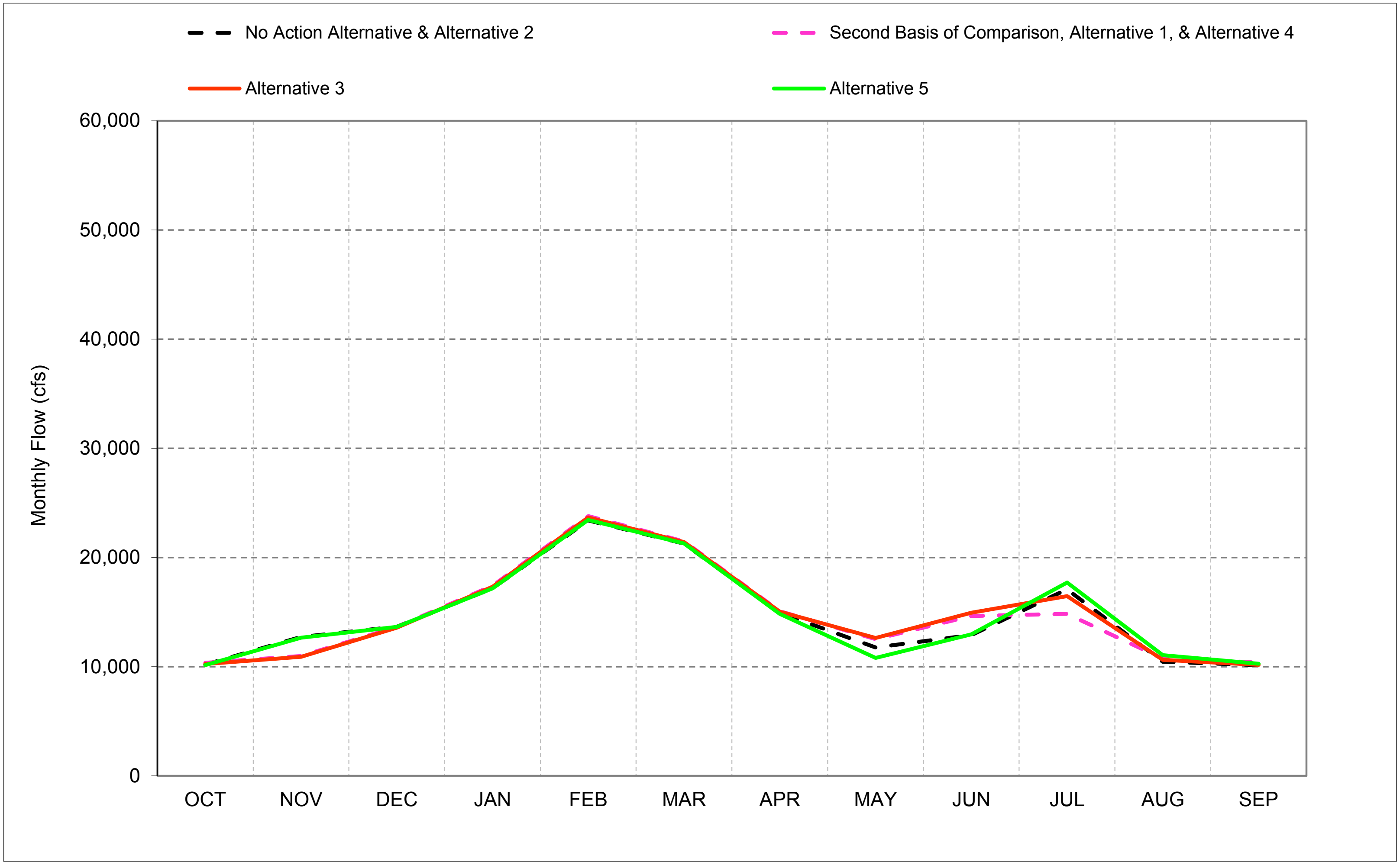


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-28-5. Sacramento River at Freeport, Dry Year* Long-Term Average Flow**

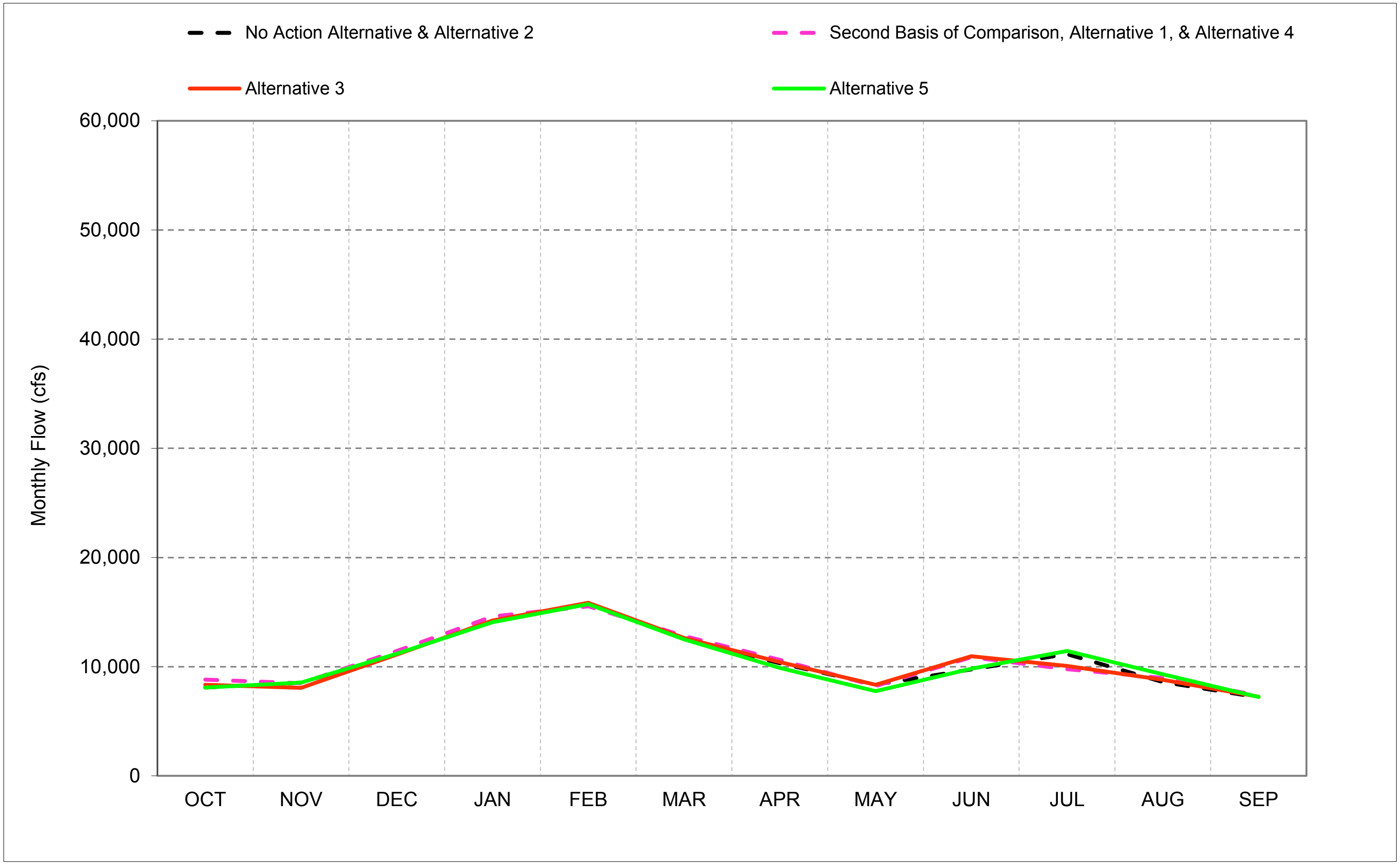


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-28-6. Sacramento River at Freeport, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-28-1. Sacramento River at Freeport, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,943	22,413	49,061	63,978	70,378	62,016	46,176	38,567	19,878	24,622	17,168	29,174
20%	14,024	18,968	32,387	52,720	61,625	51,028	32,558	25,925	16,015	24,044	16,812	28,630
30%	13,242	18,223	21,284	38,363	49,339	37,119	22,938	16,497	13,891	22,798	16,216	22,285
40%	12,114	16,756	17,972	24,564	42,829	29,446	19,999	13,452	13,365	20,928	15,920	21,314
50%	10,960	15,237	15,541	20,767	32,462	24,475	15,899	12,324	13,076	19,016	14,837	14,553
60%	9,175	13,091	15,097	18,151	24,481	20,699	12,818	11,385	12,593	17,772	13,961	12,554
70%	8,278	10,048	13,503	14,788	19,200	18,284	11,560	11,000	12,084	16,743	11,450	10,186
80%	7,916	8,600	10,754	13,471	16,242	14,866	10,757	10,413	11,011	15,241	9,408	8,418
90%	6,406	7,499	9,330	11,750	13,930	11,376	9,707	8,994	10,151	11,748	8,218	6,959
Long Term												
Full Simulation Period[b]	11,027	15,700	22,511	30,389	37,384	31,227	21,984	17,938	14,845	18,927	13,660	17,395
Water Year Types[c]												
Wet (32%)	13,028	20,442	36,300	49,140	56,543	48,019	35,045	29,928	20,087	20,487	16,031	28,019
Above Normal (16%)	10,118	17,302	24,668	38,462	46,588	40,888	24,137	16,812	13,665	23,051	16,920	21,159
Below Normal (13%)	12,085	15,834	15,808	18,273	30,185	18,600	14,108	12,602	12,927	22,211	15,563	12,132
Dry (24%)	10,191	12,717	13,654	17,185	23,392	21,285	14,927	11,770	12,904	17,081	10,453	10,150
Critical (15%)	8,102	8,539	11,205	14,132	15,821	12,526	10,333	8,354	9,755	11,143	8,590	7,198

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,535	22,483	54,532	64,835	70,451	63,654	46,241	38,579	21,089	23,075	16,647	15,053
20%	14,097	14,990	34,381	56,263	62,040	51,425	32,543	27,633	18,924	21,676	15,939	14,645
30%	13,025	13,727	22,366	41,579	51,549	41,505	22,929	17,142	17,961	20,420	15,394	14,129
40%	11,580	13,241	18,580	26,629	45,721	29,974	20,054	15,174	16,521	19,429	14,779	13,931
50%	10,818	12,087	15,606	23,009	33,290	24,771	16,394	13,624	15,588	18,340	13,795	13,397
60%	10,029	11,225	14,369	18,466	24,734	20,966	12,916	12,737	14,567	16,653	12,006	11,957
70%	9,019	10,194	12,581	15,005	19,838	18,448	11,708	11,915	13,085	14,599	10,893	9,897
80%	8,009	8,857	10,799	13,486	16,580	15,217	11,229	10,874	12,353	12,878	9,767	8,646
90%	6,709	7,537	9,360	11,871	14,217	11,487	10,200	8,922	11,289	10,339	8,546	7,115
Long Term												
Full Simulation Period[b]	11,135	14,147	23,180	31,236	37,980	31,862	22,179	18,663	16,752	17,326	13,094	12,141
Water Year Types[c]												
Wet (32%)	12,828	18,463	38,689	50,375	56,977	48,450	35,060	30,181	20,772	19,106	15,038	14,726
Above Normal (16%)	10,150	15,450	24,122	39,692	47,763	42,758	24,410	18,064	16,533	21,746	15,907	14,192
Below Normal (13%)	12,254	14,318	15,586	19,280	31,808	19,442	14,599	14,690	17,758	20,643	13,951	12,000
Dry (24%)	10,354	10,984	13,633	17,418	23,789	21,475	15,084	12,519	14,646	14,838	10,740	10,387
Critical (15%)	8,809	8,499	11,430	14,601	15,535	12,818	10,626	8,240	10,863	9,787	8,969	7,370

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-408	69	5,471	857	73	1,638	65	12	1,211	-1,546	-521	-14,121
20%	73	-3,978	1,994	3,543	414	397	-16	1,708	2,910	-2,368	-873	-13,985
30%	-218	-4,496	1,083	3,216	2,211	4,386	-9	645	4,070	-2,378	-821	-8,157
40%	-534	-3,515	608	2,066	2,892	528	55	1,722	3,156	-1,498	-1,142	-7,383
50%	-142	-3,150	65	2,242	828	296	495	1,300	2,512	-676	-1,042	-1,156
60%	855	-1,866	-728	316	253	267	98	1,352	1,974	-1,119	-1,954	-597
70%	741	146	-923	217	638	164	148	916	1,000	-2,145	-557	-289
80%	94	257	45	15	339	350	472	461	1,343	-2,363	360	228
90%	303	38	30	121	288	111	493	-72	1,138	-1,409	327	157
Long Term												
Full Simulation Period[b]	108	-1,553	669	847	596	635	195	725	1,907	-1,601	-566	-5,254
Water Year Types[c]												
Wet (32%)	-200	-1,979	2,389	1,235	433	431	15	253	685	-1,381	-993	-13,293
Above Normal (16%)	32	-1,852	-547	1,230	1,175	1,870	273	1,252	2,868	-1,304	-1,014	-6,966
Below Normal (13%)	169	-1,516	-223	1,007	1,623	842	491	2,088	4,831	-1,568	-1,611	-132
Dry (24%)	163	-1,733	-22	233	396	190	157	750	1,742	-2,243	287	237
Critical (15%)	707	-40	226	469	-286	292	293	-113	1,108	-1,357	379	172

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-28-2. Sacramento River at Freeport, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	14,943	22,413	49,061	63,978	70,378	62,016	46,176	38,567	19,878	24,622	17,168	29,174
20%	14,024	18,968	32,387	52,720	61,625	51,028	32,558	25,925	16,015	24,044	16,812	28,630
30%	13,242	18,223	21,284	38,363	49,339	37,119	22,938	16,497	13,891	22,798	16,216	22,285
40%	12,114	16,756	17,972	24,564	42,829	29,446	19,999	13,452	13,365	20,928	15,920	21,314
50%	10,960	15,237	15,541	20,767	32,462	24,475	15,899	12,324	13,076	19,016	14,837	14,553
60%	9,175	13,091	15,097	18,151	24,481	20,699	12,818	11,385	12,593	17,772	13,961	12,554
70%	8,278	10,048	13,503	14,788	19,200	18,284	11,560	11,000	12,084	16,743	11,450	10,186
80%	7,916	8,600	10,754	13,471	16,242	14,866	10,757	10,413	11,011	15,241	9,408	8,418
90%	6,406	7,499	9,330	11,750	13,930	11,376	9,707	8,994	10,151	11,748	8,218	6,959
Long Term												
Full Simulation Period[b]	11,027	15,700	22,511	30,389	37,384	31,227	21,984	17,938	14,845	18,927	13,660	17,395
Water Year Types[c]												
Wet (32%)	13,028	20,442	36,300	49,140	56,543	48,019	35,045	29,928	20,087	20,487	16,031	28,019
Above Normal (16%)	10,118	17,302	24,668	38,462	46,588	40,888	24,137	16,812	13,665	23,051	16,920	21,159
Below Normal (13%)	12,085	15,834	15,808	18,273	30,185	18,600	14,108	12,602	12,927	22,211	15,563	12,132
Dry (24%)	10,191	12,717	13,654	17,185	23,392	21,285	14,927	11,770	12,904	17,081	10,453	10,150
Critical (15%)	8,102	8,539	11,205	14,132	15,821	12,526	10,333	8,354	9,755	11,143	8,590	7,198

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	14,522	22,777	54,349	64,547	70,425	63,650	46,194	38,572	19,618	24,124	16,982	15,306
20%	14,016	15,433	35,012	55,813	62,015	51,429	32,554	26,881	18,690	23,538	16,423	14,750
30%	12,928	13,874	22,439	41,575	51,558	39,917	22,941	17,225	16,622	22,859	15,633	14,073
40%	11,616	12,936	18,500	26,437	45,279	29,972	19,998	15,149	16,079	21,097	15,244	13,635
50%	10,659	12,079	15,589	22,431	33,014	24,758	16,406	13,375	15,441	19,572	14,373	13,300
60%	9,263	11,153	13,999	18,180	24,733	20,947	12,825	12,360	14,633	17,322	13,505	12,363
70%	8,269	10,294	12,891	14,734	20,406	18,647	11,997	11,712	14,169	15,486	11,575	9,959
80%	7,912	8,827	11,039	13,490	16,256	15,202	10,876	11,076	12,499	13,687	9,625	8,924
90%	6,450	7,533	9,307	11,790	14,187	11,426	10,192	9,200	11,354	10,481	8,411	6,941
Long Term												
Full Simulation Period[b]	10,882	14,066	23,134	31,069	37,948	31,691	22,137	18,659	16,634	18,450	13,425	12,156
Water Year Types[c]												
Wet (32%)	12,631	18,451	38,620	50,401	56,918	48,277	35,056	30,274	21,422	19,904	15,099	14,529
Above Normal (16%)	10,011	15,687	24,282	39,084	47,607	42,363	24,359	18,074	15,986	22,756	16,372	14,207
Below Normal (13%)	11,703	14,058	15,668	19,267	31,751	19,354	14,632	14,094	15,368	22,662	16,099	13,094
Dry (24%)	10,247	10,917	13,572	17,315	23,665	21,407	15,052	12,639	14,931	16,466	10,640	10,168
Critical (15%)	8,345	8,067	11,116	14,242	15,868	12,641	10,425	8,341	10,959	10,077	8,799	7,248

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-421	363	5,288	569	48	1,634	17	5	-261	-498	-186	-13,869
20%	-8	-3,535	2,626	3,092	390	401	-4	956	2,676	-506	-390	-13,880
30%	-314	-4,349	1,155	3,212	2,219	2,797	3	728	2,731	61	-582	-8,213
40%	-498	-3,820	528	1,874	2,450	526	-1	1,698	2,714	170	-677	-7,679
50%	-301	-3,158	48	1,664	552	283	507	1,052	2,364	556	-464	-1,253
60%	88	-1,938	-1,098	30	251	249	7	975	2,040	-450	-456	-191
70%	-9	246	-612	-54	1,205	363	436	712	2,084	-1,258	125	-227
80%	-3	227	285	20	14	336	119	663	1,488	-1,553	218	506
90%	45	33	-22	40	257	50	485	206	1,204	-1,267	193	-18
Long Term												
Full Simulation Period[b]	-145	-1,634	623	680	564	464	153	720	1,789	-477	-234	-5,239
Water Year Types[c]												
Wet (32%)	-397	-1,991	2,320	1,261	375	259	11	346	1,335	-583	-933	-13,490
Above Normal (16%)	-108	-1,615	-386	622	1,019	1,475	222	1,262	2,321	-294	-548	-6,952
Below Normal (13%)	-382	-1,777	-141	994	1,567	754	524	1,493	2,440	452	536	962
Dry (24%)	57	-1,800	-82	130	272	122	126	870	2,027	-615	188	19
Critical (15%)	243	-472	-88	111	47	116	93	-13	1,204	-1,066	209	50

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-28-3. Sacramento River at Freeport, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,943	22,413	49,061	63,978	70,378	62,016	46,176	38,567	19,878	24,622	17,168	29,174
20%	14,024	18,968	32,387	52,720	61,625	51,028	32,558	25,925	16,015	24,044	16,812	28,630
30%	13,242	18,223	21,284	38,363	49,339	37,119	22,938	16,497	13,891	22,798	16,216	22,285
40%	12,114	16,756	17,972	24,564	42,829	29,446	19,999	13,452	13,365	20,928	15,920	21,314
50%	10,960	15,237	15,541	20,767	32,462	24,475	15,899	12,324	13,076	19,016	14,837	14,553
60%	9,175	13,091	15,097	18,151	24,481	20,699	12,818	11,385	12,593	17,772	13,961	12,554
70%	8,278	10,048	13,503	14,788	19,200	18,284	11,560	11,000	12,084	16,743	11,450	10,186
80%	7,916	8,600	10,754	13,471	16,242	14,866	10,757	10,413	11,011	15,241	9,408	8,418
90%	6,406	7,499	9,330	11,750	13,930	11,376	9,707	8,994	10,151	11,748	8,218	6,959
Long Term												
Full Simulation Period[b]	11,027	15,700	22,511	30,389	37,384	31,227	21,984	17,938	14,845	18,927	13,660	17,395
Water Year Types[c]												
Wet (32%)	13,028	20,442	36,300	49,140	56,543	48,019	35,045	29,928	20,087	20,487	16,031	28,019
Above Normal (16%)	10,118	17,302	24,668	38,462	46,588	40,888	24,137	16,812	13,665	23,051	16,920	21,159
Below Normal (13%)	12,085	15,834	15,808	18,273	30,185	18,600	14,108	12,602	12,927	22,211	15,563	12,132
Dry (24%)	10,191	12,717	13,654	17,185	23,392	21,285	14,927	11,770	12,904	17,081	10,453	10,150
Critical (15%)	8,102	8,539	11,205	14,132	15,821	12,526	10,333	8,354	9,755	11,143	8,590	7,198

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,940	22,403	48,958	63,738	70,363	62,025	46,178	38,574	19,953	24,625	17,185	29,151
20%	13,753	18,981	32,387	52,655	61,599	51,038	32,559	25,815	16,141	24,012	16,842	28,386
30%	13,111	18,329	21,304	38,363	49,567	37,212	22,950	16,490	13,942	23,249	16,214	22,293
40%	11,971	16,727	17,992	24,503	42,844	29,460	20,004	12,900	13,403	21,099	15,960	21,312
50%	10,996	15,185	15,541	20,791	32,715	24,379	15,901	11,905	13,055	19,737	15,468	14,746
60%	9,175	13,119	15,099	18,100	24,483	20,700	12,517	11,096	12,619	18,365	14,543	13,155
70%	8,302	10,026	13,584	14,777	19,202	18,200	11,777	10,131	12,094	17,451	11,864	10,306
80%	7,912	8,595	10,753	13,467	16,241	14,863	10,304	9,401	10,762	15,630	9,789	8,689
90%	6,444	7,512	9,293	11,701	13,900	11,364	9,585	8,003	10,127	11,885	8,975	7,378
Long Term												
Full Simulation Period[b]	11,003	15,715	22,497	30,404	37,388	31,223	21,901	17,523	14,824	19,224	13,951	17,409
Water Year Types[c]												
Wet (32%)	12,973	20,552	36,278	49,232	56,574	48,034	35,045	29,921	20,050	20,717	16,120	27,839
Above Normal (16%)	10,196	17,255	24,677	38,449	46,580	40,841	24,141	16,617	13,618	23,104	16,859	21,070
Below Normal (13%)	12,003	15,829	15,766	18,240	30,181	18,617	14,146	12,152	12,755	22,395	15,727	12,486
Dry (24%)	10,157	12,669	13,658	17,178	23,432	21,280	14,835	10,813	12,951	17,695	11,049	10,285
Critical (15%)	8,100	8,542	11,179	14,090	15,730	12,507	9,883	7,752	9,826	11,428	9,309	7,230

Alternative 5 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3	-10	-103	-240	-15	9	1	7	75	3	17	-24
20%	-271	13	0	-65	-27	10	1	-111	126	-32	29	-244
30%	-131	105	20	0	228	92	12	-7	51	451	-2	7
40%	-143	-29	20	-60	15	14	5	-551	38	171	40	-2
50%	36	-52	0	24	252	-96	2	-418	-21	721	631	193
60%	0	28	2	-50	1	1	-301	-289	26	592	582	602
70%	24	-22	81	-11	2	-84	217	-869	10	708	414	121
80%	-3	-5	-1	-4	-1	-3	-452	-1,012	-249	389	381	271
90%	38	12	-37	-49	-30	-12	-122	-991	-24	137	757	419
Long Term												
Full Simulation Period[b]	-24	15	-14	15	4	-4	-82	-415	-20	298	291	14
Water Year Types[c]												
Wet (32%)	-55	110	-22	92	31	15	0	-8	-37	230	88	-180
Above Normal (16%)	78	-47	9	-13	-9	-47	4	-195	-47	54	-61	-89
Below Normal (13%)	-82	-6	-42	-33	-4	17	38	-450	-172	184	165	354
Dry (24%)	-34	-48	4	-7	39	-5	-92	-957	47	614	596	135
Critical (15%)	-1	3	-26	-42	-92	-19	-450	-602	71	285	719	31

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-28-4. Sacramento River at Freeport, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	14,535	22,483	54,532	64,835	70,451	63,654	46,241	38,579	21,089	23,075	16,647	15,053
20%	14,097	14,990	34,381	56,263	62,040	51,425	32,543	27,633	18,924	21,676	15,939	14,645
30%	13,025	13,727	22,366	41,579	51,549	41,505	22,929	17,142	17,961	20,420	15,394	14,129
40%	11,580	13,241	18,580	26,629	45,721	29,974	20,054	15,174	16,521	19,429	14,779	13,931
50%	10,818	12,087	15,606	23,009	33,290	24,771	16,394	13,624	15,588	18,340	13,795	13,397
60%	10,029	11,225	14,369	18,466	24,734	20,966	12,916	12,737	14,567	16,653	12,006	11,957
70%	9,019	10,194	12,581	15,005	19,838	18,448	11,708	11,915	13,085	14,599	10,893	9,897
80%	8,009	8,857	10,799	13,486	16,580	15,217	11,229	10,874	12,353	12,878	9,767	8,646
90%	6,709	7,537	9,360	11,871	14,217	11,487	10,200	8,922	11,289	10,339	8,546	7,115
Long Term												
Full Simulation Period[b]	11,135	14,147	23,180	31,236	37,980	31,862	22,179	18,663	16,752	17,326	13,094	12,141
Water Year Types[c]												
Wet (32%)	12,828	18,463	38,689	50,375	56,977	48,450	35,060	30,181	20,772	19,106	15,038	14,726
Above Normal (16%)	10,150	15,450	24,122	39,692	47,763	42,758	24,410	18,064	16,533	21,746	15,907	14,192
Below Normal (13%)	12,254	14,318	15,586	19,280	31,808	19,442	14,599	14,690	17,758	20,643	13,951	12,000
Dry (24%)	10,354	10,984	13,633	17,418	23,789	21,475	15,084	12,519	14,646	14,838	10,740	10,387
Critical (15%)	8,809	8,499	11,430	14,601	15,535	12,818	10,626	8,240	10,863	9,787	8,969	7,370

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	14,943	22,413	49,061	63,978	70,378	62,016	46,176	38,567	19,878	24,622	17,168	29,174
20%	14,024	18,968	32,387	52,720	61,625	51,028	32,558	25,925	16,015	24,044	16,812	28,630
30%	13,242	18,223	21,284	38,363	49,339	37,119	22,938	16,497	13,891	22,798	16,216	22,285
40%	12,114	16,756	17,972	24,564	42,829	29,446	19,999	13,452	13,365	20,928	15,920	21,314
50%	10,960	15,237	15,541	20,767	32,462	24,475	15,899	12,324	13,076	19,016	14,837	14,553
60%	9,175	13,091	15,097	18,151	24,481	20,699	12,818	11,385	12,593	17,772	13,961	12,554
70%	8,278	10,048	13,503	14,788	19,200	18,284	11,560	11,000	12,084	16,743	11,450	10,186
80%	7,916	8,600	10,754	13,471	16,242	14,866	10,757	10,413	11,011	15,241	9,408	8,418
90%	6,406	7,499	9,330	11,750	13,930	11,376	9,707	8,994	10,151	11,748	8,218	6,959
Long Term												
Full Simulation Period[b]	11,027	15,700	22,511	30,389	37,384	31,227	21,984	17,938	14,845	18,927	13,660	17,395
Water Year Types[c]												
Wet (32%)	13,028	20,442	36,300	49,140	56,543	48,019	35,045	29,928	20,087	20,487	16,031	28,019
Above Normal (16%)	10,118	17,302	24,668	38,462	46,588	40,888	24,137	16,812	13,665	23,051	16,920	21,159
Below Normal (13%)	12,085	15,834	15,808	18,273	30,185	18,600	14,108	12,602	12,927	22,211	15,563	12,132
Dry (24%)	10,191	12,717	13,654	17,185	23,392	21,285	14,927	11,770	12,904	17,081	10,453	10,150
Critical (15%)	8,102	8,539	11,205	14,132	15,821	12,526	10,333	8,354	9,755	11,143	8,590	7,198

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	408	-69	-5,471	-857	-73	-1,638	-65	-12	-1,211	1,546	521	14,121
20%	-73	3,978	-1,994	-3,543	-414	-397	16	-1,708	-2,910	2,368	873	13,985
30%	218	4,496	-1,083	-3,216	-2,211	-4,386	9	-645	-4,070	2,378	821	8,157
40%	534	3,515	-608	-2,066	-2,892	-528	-55	-1,722	-3,156	1,498	1,142	7,383
50%	142	3,150	-65	-2,242	-828	-296	-495	-1,300	-2,512	676	1,042	1,156
60%	-855	1,866	728	-316	-253	-267	-98	-1,352	-1,974	1,119	1,954	597
70%	-741	-146	923	-217	-638	-164	-148	-916	-1,000	2,145	557	289
80%	-94	-257	-45	-15	-339	-350	-472	-461	-1,343	2,363	-360	-228
90%	-303	-38	-30	-121	-288	-111	-493	72	-1,138	1,409	-327	-157
Long Term												
Full Simulation Period[b]	-108	1,553	-669	-847	-596	-635	-195	-725	-1,907	1,601	566	5,254
Water Year Types[c]												
Wet (32%)	200	1,979	-2,389	-1,235	-433	-431	-15	-253	-685	1,381	993	13,293
Above Normal (16%)	-32	1,852	547	-1,230	-1,175	-1,870	-273	-1,252	-2,868	1,304	1,014	6,966
Below Normal (13%)	-169	1,516	223	-1,007	-1,623	-842	-491	-2,088	-4,831	1,568	1,611	132
Dry (24%)	-163	1,733	22	-233	-396	-190	-157	-750	-1,742	2,243	-287	-237
Critical (15%)	-707	40	-226	-469	286	-292	-293	113	-1,108	1,357	-379	-172

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-28-5. Sacramento River at Freeport, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	14,535	22,483	54,532	64,835	70,451	63,654	46,241	38,579	21,089	23,075	16,647	15,053
20%	14,097	14,990	34,381	56,263	62,040	51,425	32,543	27,633	18,924	21,676	15,939	14,645
30%	13,025	13,727	22,366	41,579	51,549	41,505	22,929	17,142	17,961	20,420	15,394	14,129
40%	11,580	13,241	18,580	26,629	45,721	29,974	20,054	15,174	16,521	19,429	14,779	13,931
50%	10,818	12,087	15,606	23,009	33,290	24,771	16,394	13,624	15,588	18,340	13,795	13,397
60%	10,029	11,225	14,369	18,466	24,734	20,966	12,916	12,737	14,567	16,653	12,006	11,957
70%	9,019	10,194	12,581	15,005	19,838	18,448	11,708	11,915	13,085	14,599	10,893	9,897
80%	8,009	8,857	10,799	13,486	16,580	15,217	11,229	10,874	12,353	12,878	9,767	8,646
90%	6,709	7,537	9,360	11,871	14,217	11,487	10,200	8,922	11,289	10,339	8,546	7,115
Long Term												
Full Simulation Period[b]	11,135	14,147	23,180	31,236	37,980	31,862	22,179	18,663	16,752	17,326	13,094	12,141
Water Year Types[c]												
Wet (32%)	12,828	18,463	38,689	50,375	56,977	48,450	35,060	30,181	20,772	19,106	15,038	14,726
Above Normal (16%)	10,150	15,450	24,122	39,692	47,763	42,758	24,410	18,064	16,533	21,746	15,907	14,192
Below Normal (13%)	12,254	14,318	15,586	19,280	31,808	19,442	14,599	14,690	17,758	20,643	13,951	12,000
Dry (24%)	10,354	10,984	13,633	17,418	23,789	21,475	15,084	12,519	14,646	14,838	10,740	10,387
Critical (15%)	8,809	8,499	11,430	14,601	15,535	12,818	10,626	8,240	10,863	9,787	8,969	7,370

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	14,522	22,777	54,349	64,547	70,425	63,650	46,194	38,572	19,618	24,124	16,982	15,306
20%	14,016	15,433	35,012	55,813	62,015	51,429	32,554	26,881	18,690	23,538	16,423	14,750
30%	12,928	13,874	22,439	41,575	51,558	39,917	22,941	17,225	16,622	22,859	15,633	14,073
40%	11,616	12,936	18,500	26,437	45,279	29,972	19,998	15,149	16,079	21,097	15,244	13,635
50%	10,659	12,079	15,589	22,431	33,014	24,758	16,406	13,375	15,441	19,572	14,373	13,300
60%	9,263	11,153	13,999	18,180	24,733	20,947	12,825	12,360	14,633	17,322	13,505	12,363
70%	8,269	10,294	12,891	14,734	20,406	18,647	11,997	11,712	14,169	15,486	11,575	9,959
80%	7,912	8,827	11,039	13,490	16,256	15,202	10,876	11,076	12,499	13,687	9,625	8,924
90%	6,450	7,533	9,307	11,790	14,187	11,426	10,192	9,200	11,354	10,481	8,411	6,941
Long Term												
Full Simulation Period[b]	10,882	14,066	23,134	31,069	37,948	31,691	22,137	18,659	16,634	18,450	13,425	12,156
Water Year Types[c]												
Wet (32%)	12,631	18,451	38,620	50,401	56,918	48,277	35,056	30,274	21,422	19,904	15,099	14,529
Above Normal (16%)	10,011	15,687	24,282	39,084	47,607	42,363	24,359	18,074	15,986	22,756	16,372	14,207
Below Normal (13%)	11,703	14,058	15,668	19,267	31,751	19,354	14,632	14,094	15,368	22,662	16,099	13,094
Dry (24%)	10,247	10,917	13,572	17,315	23,665	21,407	15,052	12,639	14,931	16,466	10,640	10,168
Critical (15%)	8,345	8,067	11,116	14,242	15,868	12,641	10,425	8,341	10,959	10,077	8,799	7,248

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-13	294	-183	-288	-25	-4	-47	-8	-1,472	1,049	336	252
20%	-81	443	632	-451	-24	4	11	-753	-234	1,862	484	106
30%	-97	147	73	-4	8	-1,588	12	83	-1,339	2,439	239	-56
40%	36	-305	-79	-192	-442	-2	-56	-25	-442	1,668	465	-296
50%	-159	-8	-17	-578	-276	-14	12	-248	-147	1,232	578	-97
60%	-767	-72	-370	-286	-1	-19	-90	-377	67	669	1,498	406
70%	-750	100	310	-271	567	199	288	-203	1,084	887	682	62
80%	-97	-30	241	4	-325	-14	-353	202	146	810	-142	278
90%	-258	-4	-52	-81	-31	-61	-8	278	66	142	-134	-174
Long Term												
Full Simulation Period[b]	-253	-81	-46	-168	-32	-171	-42	-5	-118	1,124	332	15
Water Year Types[c]												
Wet (32%)	-197	-12	-69	26	-58	-172	-4	93	650	798	60	-198
Above Normal (16%)	-140	237	161	-608	-156	-395	-51	10	-547	1,010	466	14
Below Normal (13%)	-551	-260	82	-13	-57	-88	33	-595	-2,390	2,019	2,148	1,094
Dry (24%)	-107	-67	-60	-103	-124	-68	-31	120	285	1,629	-100	-219
Critical (15%)	-464	-432	-314	-358	333	-176	-201	101	96	290	-170	-121

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-28-6. Sacramento River at Freeport, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,535	22,483	54,532	64,835	70,451	63,654	46,241	38,579	21,089	23,075	16,647	15,053
20%	14,097	14,990	34,381	56,263	62,040	51,425	32,543	27,633	18,924	21,676	15,939	14,645
30%	13,025	13,727	22,366	41,579	51,549	41,505	22,929	17,142	17,961	20,420	15,394	14,129
40%	11,580	13,241	18,580	26,629	45,721	29,974	20,054	15,174	16,521	19,429	14,779	13,931
50%	10,818	12,087	15,606	23,009	33,290	24,771	16,394	13,624	15,588	18,340	13,795	13,397
60%	10,029	11,225	14,369	18,466	24,734	20,966	12,916	12,737	14,567	16,653	12,006	11,957
70%	9,019	10,194	12,581	15,005	19,838	18,448	11,708	11,915	13,085	14,599	10,893	9,897
80%	8,009	8,857	10,799	13,486	16,580	15,217	11,229	10,874	12,353	12,878	9,767	8,646
90%	6,709	7,537	9,360	11,871	14,217	11,487	10,200	8,922	11,289	10,339	8,546	7,115
Long Term												
Full Simulation Period[b]	11,135	14,147	23,180	31,236	37,980	31,862	22,179	18,663	16,752	17,326	13,094	12,141
Water Year Types[c]												
Wet (32%)	12,828	18,463	38,689	50,375	56,977	48,450	35,060	30,181	20,772	19,106	15,038	14,726
Above Normal (16%)	10,150	15,450	24,122	39,692	47,763	42,758	24,410	18,064	16,533	21,746	15,907	14,192
Below Normal (13%)	12,254	14,318	15,586	19,280	31,808	19,442	14,599	14,690	17,758	20,643	13,951	12,000
Dry (24%)	10,354	10,984	13,633	17,418	23,789	21,475	15,084	12,519	14,646	14,838	10,740	10,387
Critical (15%)	8,809	8,499	11,430	14,601	15,535	12,818	10,626	8,240	10,863	9,787	8,969	7,370

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,940	22,403	48,958	63,738	70,363	62,025	46,178	38,574	19,953	24,625	17,185	29,151
20%	13,753	18,981	32,387	52,655	61,599	51,038	32,559	25,815	16,141	24,012	16,842	28,386
30%	13,111	18,329	21,304	38,363	49,567	37,212	22,950	16,490	13,942	23,249	16,214	22,293
40%	11,971	16,727	17,992	24,503	42,844	29,460	20,004	12,900	13,403	21,099	15,960	21,312
50%	10,996	15,185	15,541	20,791	32,715	24,379	15,901	11,905	13,055	19,737	15,468	14,746
60%	9,175	13,119	15,099	18,100	24,483	20,700	12,517	11,096	12,619	18,365	14,543	13,155
70%	8,302	10,026	13,584	14,777	19,202	18,200	11,777	10,131	12,094	17,451	11,864	10,306
80%	7,912	8,595	10,753	13,467	16,241	14,863	10,304	9,401	10,762	15,630	9,789	8,689
90%	6,444	7,512	9,293	11,701	13,900	11,364	9,585	8,003	10,127	11,885	8,975	7,378
Long Term												
Full Simulation Period[b]	11,003	15,715	22,497	30,404	37,388	31,223	21,901	17,523	14,824	19,224	13,951	17,409
Water Year Types[c]												
Wet (32%)	12,973	20,552	36,278	49,232	56,574	48,034	35,045	29,921	20,050	20,717	16,120	27,839
Above Normal (16%)	10,196	17,255	24,677	38,449	46,580	40,841	24,141	16,617	13,618	23,104	16,859	21,070
Below Normal (13%)	12,003	15,829	15,766	18,240	30,181	18,617	14,146	12,152	12,755	22,395	15,727	12,486
Dry (24%)	10,157	12,669	13,658	17,178	23,432	21,280	14,835	10,813	12,951	17,695	11,049	10,285
Critical (15%)	8,100	8,542	11,179	14,090	15,730	12,507	9,883	7,752	9,826	11,428	9,309	7,230

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	405	-79	-5,574	-1,097	-88	-1,629	-63	-5	-1,136	1,550	538	14,097
20%	-344	3,991	-1,994	-3,608	-441	-387	16	-1,819	-2,783	2,336	903	13,742
30%	86	4,601	-1,063	-3,216	-1,983	-4,293	21	-652	-4,019	2,829	820	8,164
40%	390	3,486	-588	-2,126	-2,877	-513	-50	-2,273	-3,118	1,670	1,181	7,381
50%	178	3,098	-65	-2,218	-575	-393	-494	-1,719	-2,533	1,397	1,672	1,349
60%	-855	1,894	730	-366	-252	-266	-399	-1,641	-1,948	1,712	2,537	1,199
70%	-716	-168	1,004	-228	-636	-247	69	-1,785	-990	2,853	971	410
80%	-97	-262	-46	-19	-339	-354	-924	-1,474	-1,591	2,752	21	43
90%	-265	-25	-67	-170	-318	-123	-615	-919	-1,162	1,545	430	263
Long Term												
Full Simulation Period[b]	-132	1,568	-683	-832	-592	-640	-278	-1,140	-1,927	1,898	857	5,268
Water Year Types[c]												
Wet (32%)	146	2,089	-2,411	-1,143	-403	-416	-15	-261	-722	1,611	1,081	13,113
Above Normal (16%)	46	1,804	555	-1,243	-1,184	-1,917	-270	-1,447	-2,914	1,358	952	6,878
Below Normal (13%)	-251	1,511	180	-1,040	-1,627	-825	-453	-2,538	-5,003	1,752	1,776	486
Dry (24%)	-197	1,685	26	-240	-357	-195	-249	-1,707	-1,695	2,858	309	-102
Critical (15%)	-709	43	-251	-511	195	-311	-743	-489	-1,037	1,641	339	-140

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

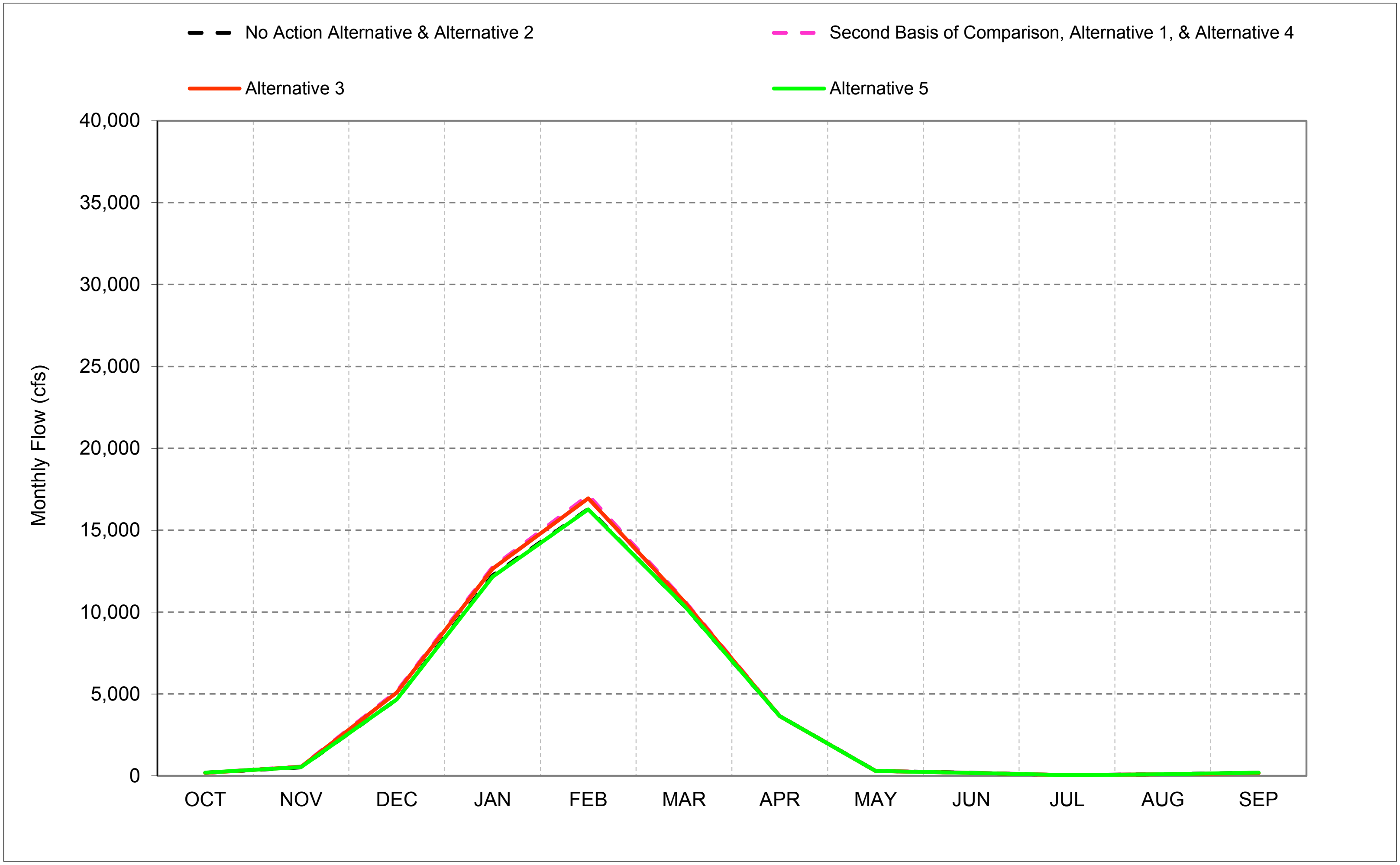
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.29. Yolo Bypass Flow

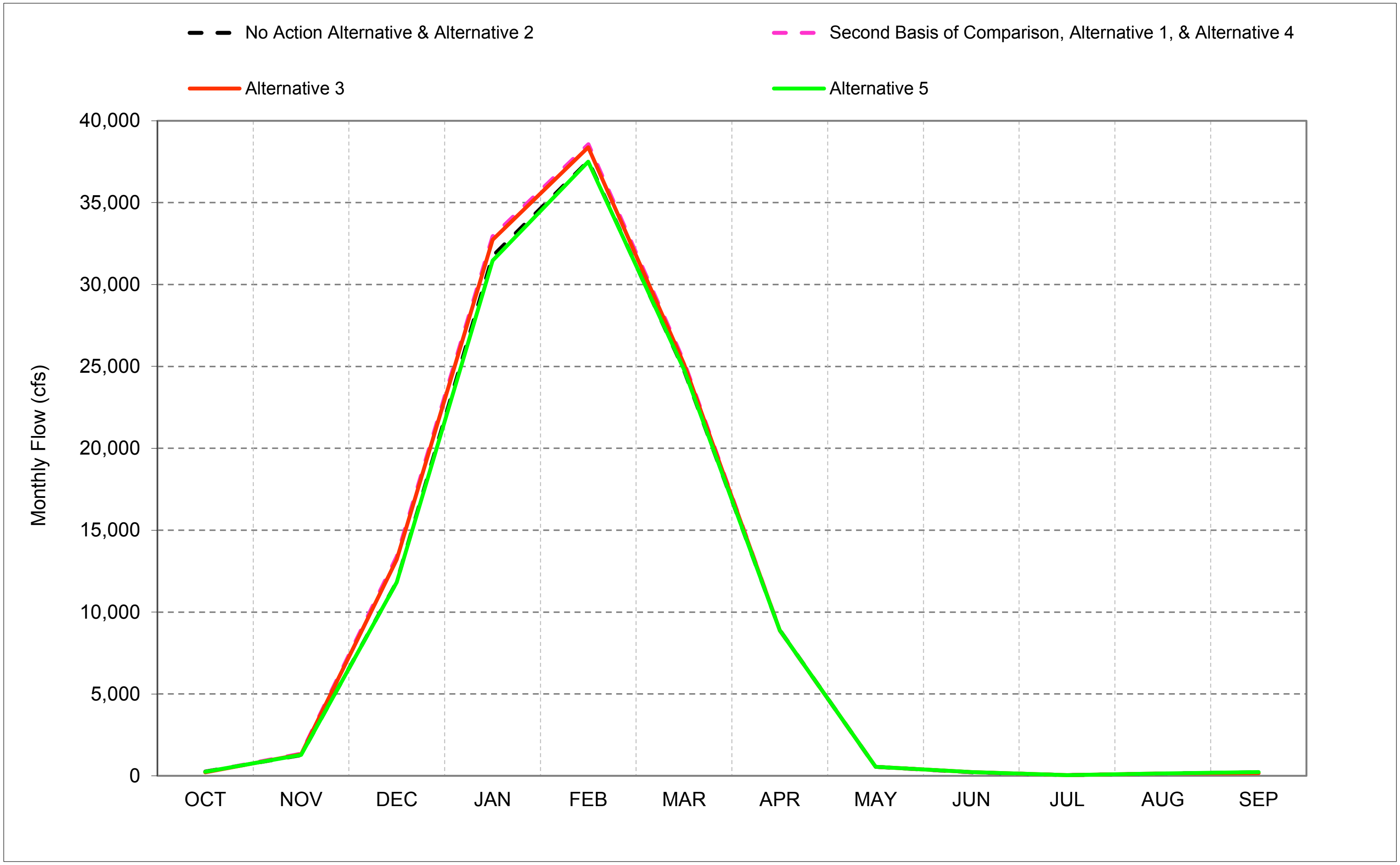
Figure C-29-1. Yolo Bypass, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-29-2. Yolo Bypass, Wet Year* Long-Term Average Flow**

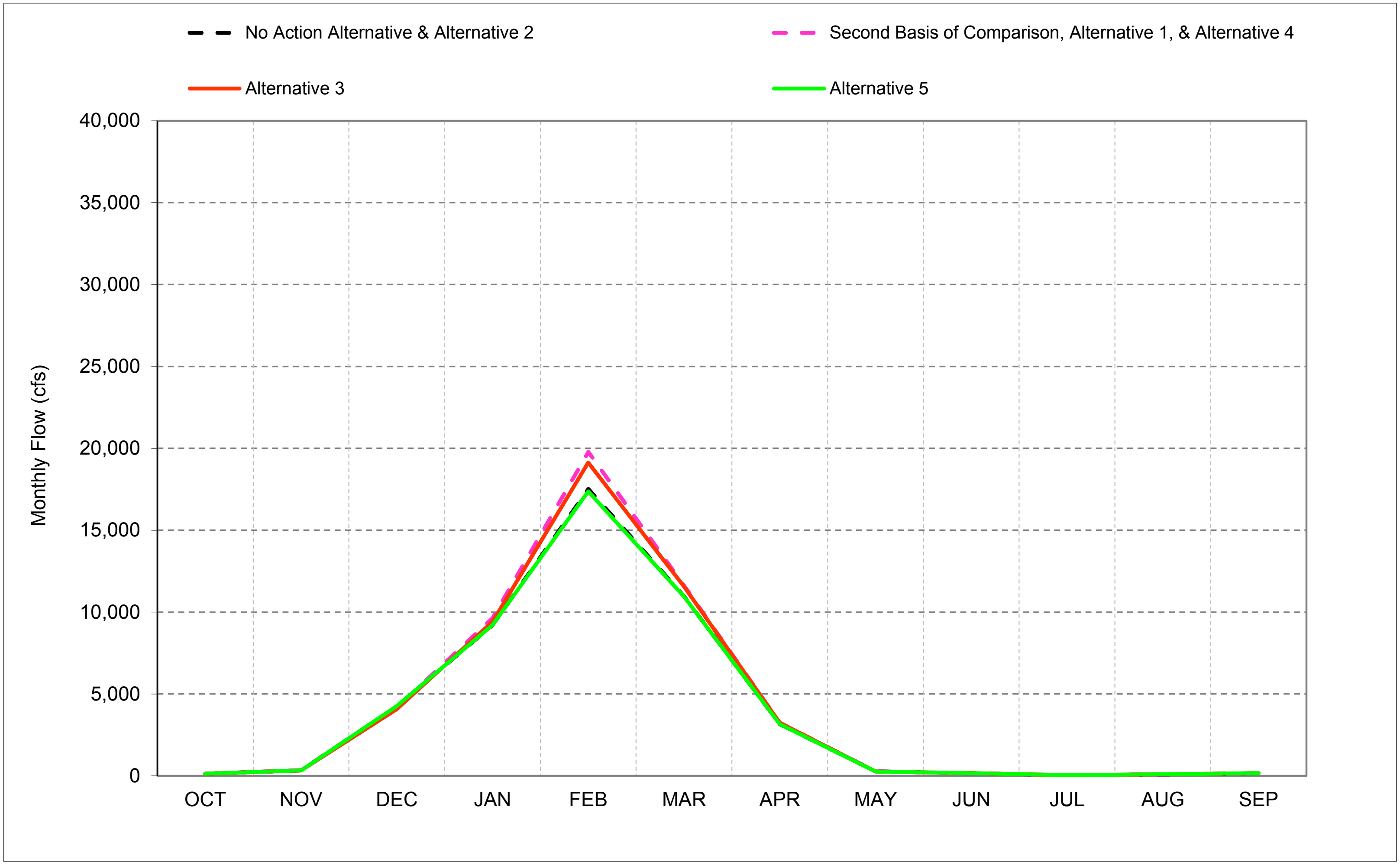


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-29-3. Yolo Bypass, Above Normal Year* Long-Term Average Flow**

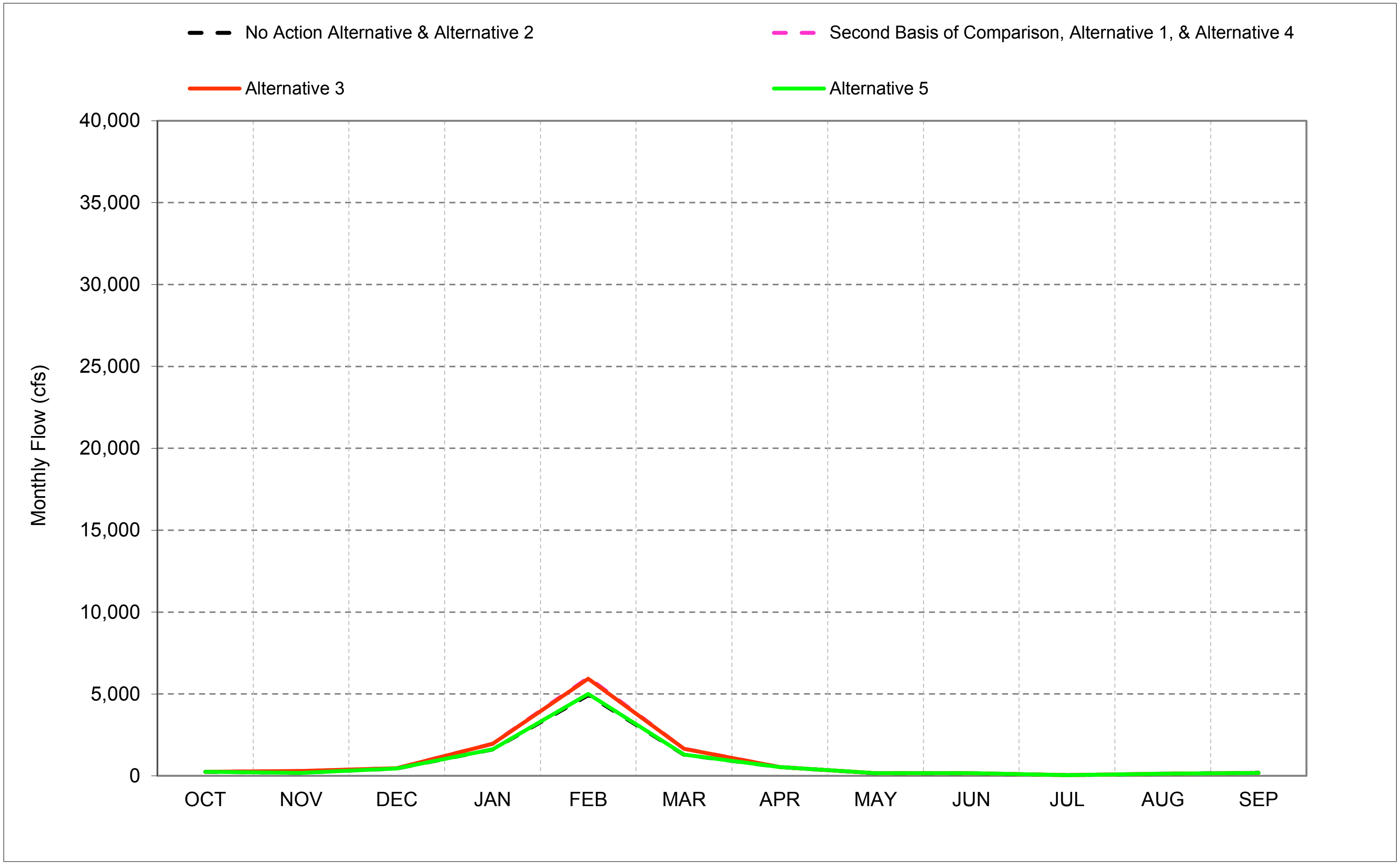


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-29-4. Yolo Bypass, Below Normal Year* Long-Term Average Flow**

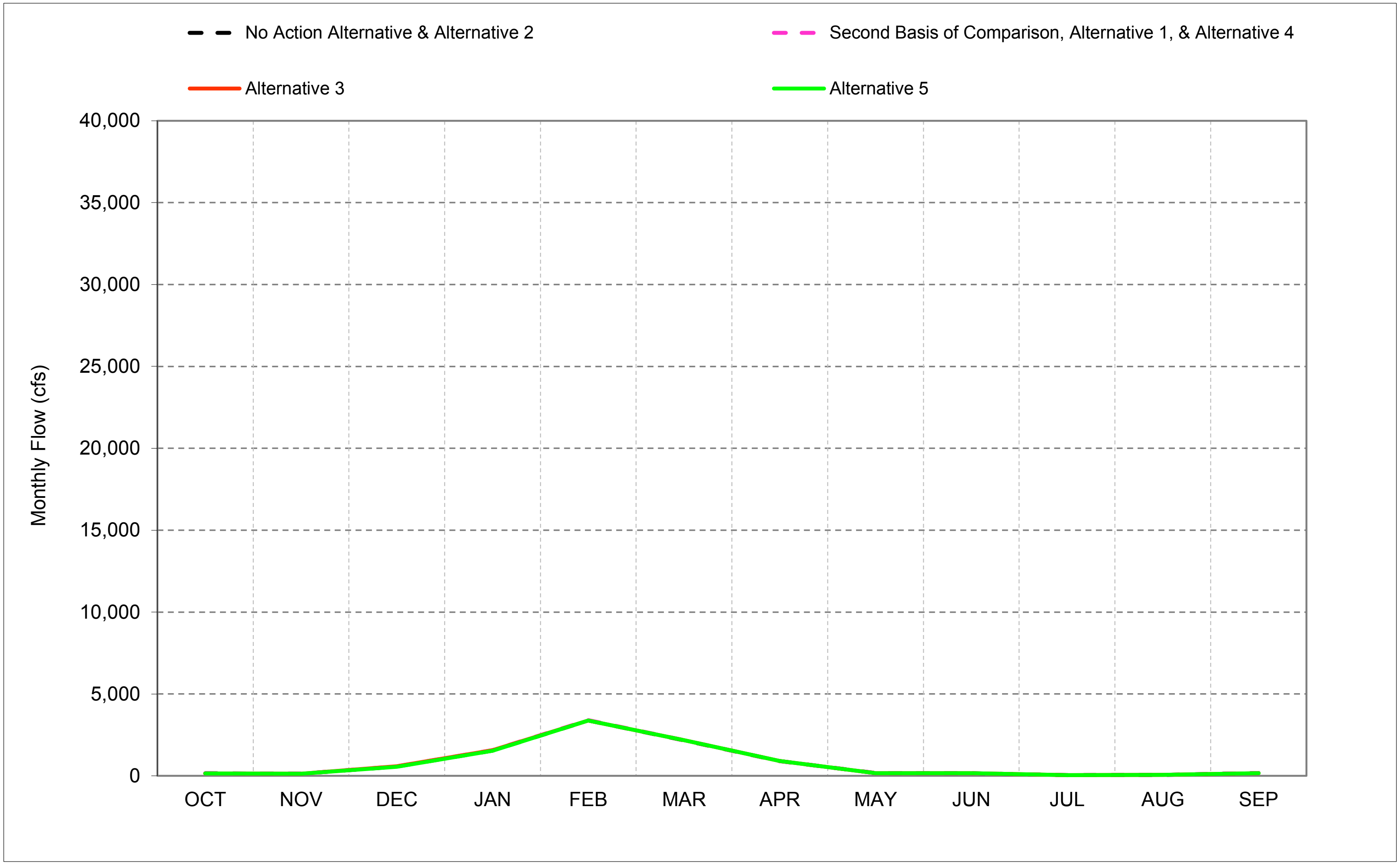


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-29-5. Yolo Bypass, Dry Year* Long-Term Average Flow**

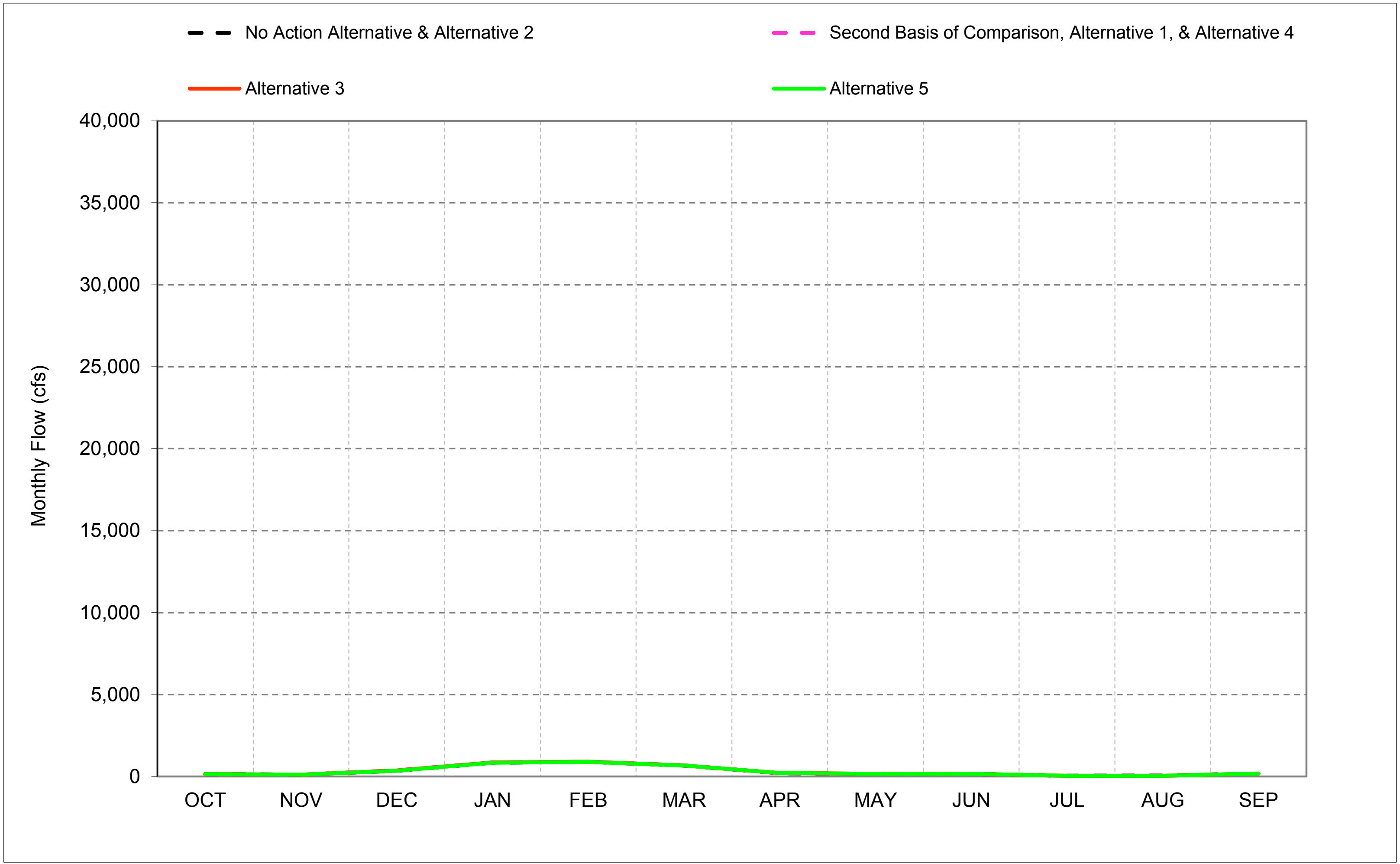


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-29-6. Yolo Bypass, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-29-1. Yolo Bypass, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	163	575	11,441	34,478	52,474	20,341	10,435	335	168	48	183	290
20%	162	245	6,247	15,620	20,921	10,931	7,063	178	168	48	55	194
30%	159	146	2,165	8,237	12,308	7,941	2,042	173	168	48	55	159
40%	153	110	798	4,526	8,343	4,740	497	170	168	48	55	159
50%	146	108	558	1,883	5,503	2,825	267	168	167	48	55	159
60%	141	105	258	776	2,879	1,254	229	165	167	48	55	159
70%	129	100	157	466	951	616	211	163	166	48	55	158
80%	115	100	110	164	321	220	186	159	164	48	55	156
90%	104	100	100	123	152	146	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	198	531	4,678	12,239	16,299	10,398	3,648	311	185	48	101	193
Water Year Types[c]												
Wet (32%)	269	1,266	11,844	31,732	37,542	24,774	8,899	560	227	48	147	227
Above Normal (16%)	131	337	4,234	9,213	17,513	10,972	3,165	273	166	48	92	165
Below Normal (13%)	245	192	447	1,617	4,933	1,299	547	169	166	48	130	192
Dry (24%)	156	131	569	1,540	3,384	2,173	905	175	167	48	61	170
Critical (15%)	145	124	357	847	897	675	210	167	165	48	55	188

Alternative 1

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	164	575	15,113	37,297	53,013	25,747	10,346	335	168	48	183	240
20%	162	245	6,239	16,046	22,314	11,069	7,372	178	168	48	55	159
30%	160	146	2,510	8,216	12,519	8,557	2,043	173	168	48	55	159
40%	154	110	802	5,019	10,224	5,190	498	170	168	48	55	159
50%	147	108	495	2,405	5,513	2,987	272	168	167	48	55	159
60%	142	105	259	970	3,258	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,068	754	211	163	166	48	55	157
80%	116	100	109	167	332	225	186	159	164	48	55	155
90%	106	100	100	122	152	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	187	572	5,169	12,745	17,130	10,720	3,653	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	231	1,348	13,405	32,933	38,563	25,293	8,874	560	227	48	147	173
Above Normal (16%)	137	344	4,156	9,639	19,777	11,623	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,973	5,998	1,664	546	169	166	48	130	192
Dry (24%)	156	131	583	1,579	3,404	2,190	910	175	167	48	61	170
Critical (15%)	145	124	376	856	905	687	210	167	165	48	55	188

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1	0	3,672	2,819	539	5,406	-89	0	0	0	0	-50
20%	1	0	-8	426	1,394	138	309	0	0	0	0	-35
30%	1	0	345	-21	211	616	1	0	0	0	0	0
40%	0	0	3	493	1,881	450	0	0	0	0	0	0
50%	2	0	-63	522	10	163	4	0	0	0	0	0
60%	1	0	1	194	379	148	0	0	0	0	0	-1
70%	3	0	-11	4	118	138	0	0	0	0	0	-1
80%	1	0	-1	3	12	6	0	0	0	0	0	-1
90%	2	0	0	-1	0	3	3	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-11	42	492	507	831	323	5	0	0	0	0	-17
Water Year Types[c]												
Wet (32%)	-38	82	1,561	1,201	1,020	519	-25	0	0	0	0	-55
Above Normal (16%)	6	7	-78	426	2,264	651	77	0	0	0	0	0
Below Normal (13%)	1	108	23	356	1,065	365	-1	0	0	0	0	0
Dry (24%)	0	0	14	39	20	17	4	0	0	0	0	0
Critical (15%)	0	0	19	9	7	12	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-29-2. Yolo Bypass, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	11,441	34,478	52,474	20,341	10,435	335	168	48	183	290
20%	162	245	6,247	15,620	20,921	10,931	7,063	178	168	48	55	194
30%	159	146	2,165	8,237	12,308	7,941	2,042	173	168	48	55	159
40%	153	110	798	4,526	8,343	4,740	497	170	168	48	55	159
50%	146	108	558	1,883	5,503	2,825	267	168	167	48	55	159
60%	141	105	258	776	2,879	1,254	229	165	167	48	55	159
70%	129	100	157	466	951	616	211	163	166	48	55	158
80%	115	100	110	164	321	220	186	159	164	48	55	156
90%	104	100	100	123	152	146	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	198	531	4,678	12,239	16,299	10,398	3,648	311	185	48	101	193
Water Year Types[c]												
Wet (32%)	269	1,266	11,844	31,732	37,542	24,774	8,899	560	227	48	147	227
Above Normal (16%)	131	337	4,234	9,213	17,513	10,972	3,165	273	166	48	92	165
Below Normal (13%)	245	192	447	1,617	4,933	1,299	547	169	166	48	130	192
Dry (24%)	156	131	569	1,540	3,384	2,173	905	175	167	48	61	170
Critical (15%)	145	124	357	847	897	675	210	167	165	48	55	188

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	15,105	36,977	52,994	23,562	10,346	335	168	48	183	240
20%	162	245	6,398	16,162	20,780	10,937	7,383	178	168	48	55	159
30%	159	146	2,014	8,057	12,403	8,314	2,042	173	168	48	55	159
40%	153	110	802	5,022	10,223	5,060	498	170	168	48	55	159
50%	146	108	496	2,336	5,513	2,933	272	168	167	48	55	159
60%	141	105	287	945	2,888	1,421	229	165	167	48	55	159
70%	129	100	149	466	1,114	738	211	163	166	48	55	157
80%	116	100	114	166	323	220	186	159	164	48	55	155
90%	104	100	100	123	152	149	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	184	564	5,096	12,644	16,954	10,652	3,658	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	223	1,325	13,210	32,736	38,378	25,127	8,889	561	227	48	147	173
Above Normal (16%)	132	338	4,083	9,412	19,135	11,550	3,246	273	166	48	92	165
Below Normal (13%)	246	299	471	1,968	5,929	1,651	546	169	166	48	130	192
Dry (24%)	156	131	590	1,571	3,376	2,186	908	175	167	48	61	170
Critical (15%)	145	124	365	856	908	676	210	167	165	48	55	188

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	3,663	2,500	520	3,221	-89	0	0	0	0	-50
20%	0	0	151	542	-140	6	321	0	0	0	0	-35
30%	0	0	-150	-180	95	373	0	0	0	0	0	0
40%	0	0	4	496	1,881	320	1	0	0	0	0	0
50%	0	0	-62	453	10	108	4	0	0	0	0	0
60%	0	0	29	169	9	167	0	0	0	0	0	-1
70%	1	0	-8	0	163	122	0	0	0	0	0	-1
80%	1	0	3	3	2	0	0	0	0	0	0	-1
90%	0	0	0	0	0	3	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-14	33	419	406	655	254	10	0	0	0	0	-17
Water Year Types[c]												
Wet (32%)	-46	59	1,366	1,004	836	353	-10	1	0	0	0	-55
Above Normal (16%)	1	1	-151	198	1,622	579	80	0	0	0	0	0
Below Normal (13%)	1	108	24	351	996	352	-1	0	0	0	0	0
Dry (24%)	1	0	21	30	-8	13	3	0	0	0	0	0
Critical (15%)	0	0	8	9	11	1	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-29-3. Yolo Bypass, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	11,441	34,478	52,474	20,341	10,435	335	168	48	183	290
20%	162	245	6,247	15,620	20,921	10,931	7,063	178	168	48	55	194
30%	159	146	2,165	8,237	12,308	7,941	2,042	173	168	48	55	159
40%	153	110	798	4,526	8,343	4,740	497	170	168	48	55	159
50%	146	108	558	1,883	5,503	2,825	267	168	167	48	55	159
60%	141	105	258	776	2,879	1,254	229	165	167	48	55	159
70%	129	100	157	466	951	616	211	163	166	48	55	158
80%	115	100	110	164	321	220	186	159	164	48	55	156
90%	104	100	100	123	152	146	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	198	531	4,678	12,239	16,299	10,398	3,648	311	185	48	101	193
Water Year Types[c]												
Wet (32%)	269	1,266	11,844	31,732	37,542	24,774	8,899	560	227	48	147	227
Above Normal (16%)	131	337	4,234	9,213	17,513	10,972	3,165	273	166	48	92	165
Below Normal (13%)	245	192	447	1,617	4,933	1,299	547	169	166	48	130	192
Dry (24%)	156	131	569	1,540	3,384	2,173	905	175	167	48	61	170
Critical (15%)	145	124	357	847	897	675	210	167	165	48	55	188

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	11,727	33,139	52,516	20,378	10,436	335	168	48	183	290
20%	162	245	6,221	15,644	20,577	10,932	7,063	178	168	48	55	194
30%	159	146	2,160	8,237	12,384	8,053	2,042	173	168	48	55	159
40%	153	110	824	4,526	8,343	4,746	497	170	168	48	55	159
50%	146	108	533	1,874	5,503	2,793	267	168	167	48	55	159
60%	141	105	258	770	2,873	1,250	229	165	167	48	55	159
70%	129	100	157	466	951	616	211	163	166	48	55	158
80%	115	100	106	164	321	220	186	159	164	48	55	156
90%	104	100	100	126	150	146	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	194	538	4,670	12,152	16,274	10,399	3,649	311	185	48	101	193
Water Year Types[c]												
Wet (32%)	255	1,289	11,815	31,464	37,505	24,793	8,899	560	227	48	147	227
Above Normal (16%)	131	337	4,256	9,217	17,377	10,938	3,165	273	166	48	92	165
Below Normal (13%)	245	192	451	1,617	5,013	1,302	546	169	166	48	130	192
Dry (24%)	156	131	556	1,533	3,378	2,177	906	175	167	48	61	170
Critical (15%)	145	124	359	846	897	673	210	167	165	48	55	188

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	0	0	285	-1,339	42	37	1	0	0	0	0	0
20%	0	0	-26	24	-343	0	1	0	0	0	0	0
30%	0	0	-5	-1	76	112	0	0	0	0	0	0
40%	0	0	26	0	0	6	0	0	0	0	0	0
50%	0	0	-25	-9	0	-32	0	0	0	0	0	0
60%	0	0	0	-7	-7	-4	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	-5	0	0	0	0	0	0	0	0	0
90%	0	0	0	3	-2	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-4	7	-8	-86	-24	2	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	-14	23	-29	-268	-37	19	0	0	0	0	0	0
Above Normal (16%)	0	0	22	4	-137	-33	0	0	0	0	0	0
Below Normal (13%)	0	0	4	0	81	3	0	0	0	0	0	0
Dry (24%)	0	0	-13	-7	-7	4	0	0	0	0	0	0
Critical (15%)	0	0	1	0	-1	-3	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-29-4. Yolo Bypass, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	164	575	15,113	37,297	53,013	25,747	10,346	335	168	48	183	240
20%	162	245	6,239	16,046	22,314	11,069	7,372	178	168	48	55	159
30%	160	146	2,510	8,216	12,519	8,557	2,043	173	168	48	55	159
40%	154	110	802	5,019	10,224	5,190	498	170	168	48	55	159
50%	147	108	495	2,405	5,513	2,987	272	168	167	48	55	159
60%	142	105	259	970	3,258	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,068	754	211	163	166	48	55	157
80%	116	100	109	167	332	225	186	159	164	48	55	155
90%	106	100	100	122	152	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	187	572	5,169	12,745	17,130	10,720	3,653	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	231	1,348	13,405	32,933	38,563	25,293	8,874	560	227	48	147	173
Above Normal (16%)	137	344	4,156	9,639	19,777	11,623	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,973	5,998	1,664	546	169	166	48	130	192
Dry (24%)	156	131	583	1,579	3,404	2,190	910	175	167	48	61	170
Critical (15%)	145	124	376	856	905	687	210	167	165	48	55	188

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	11,441	34,478	52,474	20,341	10,435	335	168	48	183	290
20%	162	245	6,247	15,620	20,921	10,931	7,063	178	168	48	55	194
30%	159	146	2,165	8,237	12,308	7,941	2,042	173	168	48	55	159
40%	153	110	798	4,526	8,343	4,740	497	170	168	48	55	159
50%	146	108	558	1,883	5,503	2,825	267	168	167	48	55	159
60%	141	105	258	776	2,879	1,254	229	165	167	48	55	159
70%	129	100	157	466	951	616	211	163	166	48	55	158
80%	115	100	110	164	321	220	186	159	164	48	55	156
90%	104	100	100	123	152	146	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	198	531	4,678	12,239	16,299	10,398	3,648	311	185	48	101	193
Water Year Types[c]												
Wet (32%)	269	1,266	11,844	31,732	37,542	24,774	8,899	560	227	48	147	227
Above Normal (16%)	131	337	4,234	9,213	17,513	10,972	3,165	273	166	48	92	165
Below Normal (13%)	245	192	447	1,617	4,933	1,299	547	169	166	48	130	192
Dry (24%)	156	131	569	1,540	3,384	2,173	905	175	167	48	61	170
Critical (15%)	145	124	357	847	897	675	210	167	165	48	55	188

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-1	0	-3,672	-2,819	-539	-5,406	89	0	0	0	0	50
20%	-1	0	8	-426	-1,394	-138	-309	0	0	0	0	35
30%	-1	0	-345	21	-211	-616	-1	0	0	0	0	0
40%	0	0	-3	-493	-1,881	-450	0	0	0	0	0	0
50%	-2	0	63	-522	-10	-163	-4	0	0	0	0	0
60%	-1	0	-1	-194	-379	-148	0	0	0	0	0	1
70%	-3	0	11	-4	-118	-138	0	0	0	0	0	1
80%	-1	0	1	-3	-12	-6	0	0	0	0	0	1
90%	-2	0	0	1	0	-3	-3	0	0	0	0	0
Long Term												
Full Simulation Period[b]	11	-42	-492	-507	-831	-323	-5	0	0	0	0	17
Water Year Types[c]												
Wet (32%)	38	-82	-1,561	-1,201	-1,020	-519	25	0	0	0	0	55
Above Normal (16%)	-6	-7	78	-426	-2,264	-651	-77	0	0	0	0	0
Below Normal (13%)	-1	-108	-23	-356	-1,065	-365	1	0	0	0	0	0
Dry (24%)	0	0	-14	-39	-20	-17	-4	0	0	0	0	0
Critical (15%)	0	0	-19	-9	-7	-12	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-29-5. Yolo Bypass, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	164	575	15,113	37,297	53,013	25,747	10,346	335	168	48	183	240
20%	162	245	6,239	16,046	22,314	11,069	7,372	178	168	48	55	159
30%	160	146	2,510	8,216	12,519	8,557	2,043	173	168	48	55	159
40%	154	110	802	5,019	10,224	5,190	498	170	168	48	55	159
50%	147	108	495	2,405	5,513	2,987	272	168	167	48	55	159
60%	142	105	259	970	3,258	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,068	754	211	163	166	48	55	157
80%	116	100	109	167	332	225	186	159	164	48	55	155
90%	106	100	100	122	152	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	187	572	5,169	12,745	17,130	10,720	3,653	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	231	1,348	13,405	32,933	38,563	25,293	8,874	560	227	48	147	173
Above Normal (16%)	137	344	4,156	9,639	19,777	11,623	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,973	5,998	1,664	546	169	166	48	130	192
Dry (24%)	156	131	583	1,579	3,404	2,190	910	175	167	48	61	170
Critical (15%)	145	124	376	856	905	687	210	167	165	48	55	188

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	15,105	36,977	52,994	23,562	10,346	335	168	48	183	240
20%	162	245	6,398	16,162	20,780	10,937	7,383	178	168	48	55	159
30%	159	146	2,014	8,057	12,403	8,314	2,042	173	168	48	55	159
40%	153	110	802	5,022	10,223	5,060	498	170	168	48	55	159
50%	146	108	496	2,336	5,513	2,933	272	168	167	48	55	159
60%	141	105	287	945	2,888	1,421	229	165	167	48	55	159
70%	129	100	149	466	1,114	738	211	163	166	48	55	157
80%	116	100	114	166	323	220	186	159	164	48	55	155
90%	104	100	100	123	152	149	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	184	564	5,096	12,644	16,954	10,652	3,658	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	223	1,325	13,210	32,736	38,378	25,127	8,889	561	227	48	147	173
Above Normal (16%)	132	338	4,083	9,412	19,135	11,550	3,246	273	166	48	92	165
Below Normal (13%)	246	299	471	1,968	5,929	1,651	546	169	166	48	130	192
Dry (24%)	156	131	590	1,571	3,376	2,186	908	175	167	48	61	170
Critical (15%)	145	124	365	856	908	676	210	167	165	48	55	188

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-1	0	-8	-319	-19	-2,185	0	0	0	0	0	0
20%	-1	0	159	116	-1,534	-131	11	0	0	0	0	0
30%	-1	0	-495	-159	-116	-243	-1	0	0	0	0	0
40%	0	0	1	3	0	-130	1	0	0	0	0	0
50%	-2	0	1	-68	0	-55	0	0	0	0	0	0
60%	-1	0	28	-24	-370	19	0	0	0	0	0	0
70%	-3	0	3	-4	45	-16	0	0	0	0	0	0
80%	0	0	4	-1	-9	-6	0	0	0	0	0	0
90%	-2	0	0	2	0	0	-3	0	0	0	0	0
Long Term												
Full Simulation Period[b]	-3	-8	-73	-101	-176	-68	5	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	-8	-23	-195	-197	-185	-166	15	0	0	0	0	0
Above Normal (16%)	-5	-6	-73	-228	-642	-72	4	0	0	0	0	0
Below Normal (13%)	0	0	0	-5	-69	-13	0	0	0	0	0	0
Dry (24%)	1	0	7	-9	-28	-4	-2	0	0	0	0	0
Critical (15%)	0	0	-11	0	4	-11	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-29-6. Yolo Bypass, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	164	575	15,113	37,297	53,013	25,747	10,346	335	168	48	183	240
20%	162	245	6,239	16,046	22,314	11,069	7,372	178	168	48	55	159
30%	160	146	2,510	8,216	12,519	8,557	2,043	173	168	48	55	159
40%	154	110	802	5,019	10,224	5,190	498	170	168	48	55	159
50%	147	108	495	2,405	5,513	2,987	272	168	167	48	55	159
60%	142	105	259	970	3,258	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,068	754	211	163	166	48	55	157
80%	116	100	109	167	332	225	186	159	164	48	55	155
90%	106	100	100	122	152	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	187	572	5,169	12,745	17,130	10,720	3,653	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	231	1,348	13,405	32,933	38,563	25,293	8,874	560	227	48	147	173
Above Normal (16%)	137	344	4,156	9,639	19,777	11,623	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,973	5,998	1,664	546	169	166	48	130	192
Dry (24%)	156	131	583	1,579	3,404	2,190	910	175	167	48	61	170
Critical (15%)	145	124	376	856	905	687	210	167	165	48	55	188

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	163	575	11,727	33,139	52,516	20,378	10,436	335	168	48	183	290
20%	162	245	6,221	15,644	20,577	10,932	7,063	178	168	48	55	194
30%	159	146	2,160	8,237	12,384	8,053	2,042	173	168	48	55	159
40%	153	110	824	4,526	8,343	4,746	497	170	168	48	55	159
50%	146	108	533	1,874	5,503	2,793	267	168	167	48	55	159
60%	141	105	258	770	2,873	1,250	229	165	167	48	55	159
70%	129	100	157	466	951	616	211	163	166	48	55	158
80%	115	100	106	164	321	220	186	159	164	48	55	156
90%	104	100	100	126	150	146	170	153	162	48	54	152
Long Term												
Full Simulation Period[b]	194	538	4,670	12,152	16,274	10,399	3,649	311	185	48	101	193
Water Year Types[c]												
Wet (32%)	255	1,289	11,815	31,464	37,505	24,793	8,899	560	227	48	147	227
Above Normal (16%)	131	337	4,256	9,217	17,377	10,938	3,165	273	166	48	92	165
Below Normal (13%)	245	192	451	1,617	5,013	1,302	546	169	166	48	130	192
Dry (24%)	156	131	556	1,533	3,378	2,177	906	175	167	48	61	170
Critical (15%)	145	124	359	846	897	673	210	167	165	48	55	188

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-1	0	-3,386	-4,158	-497	-5,369	90	0	0	0	0	50
20%	-1	0	-17	-402	-1,737	-137	-309	0	0	0	0	35
30%	-1	0	-350	20	-135	-504	-1	0	0	0	0	0
40%	0	0	22	-493	-1,880	-444	0	0	0	0	0	0
50%	-2	0	38	-530	-9	-194	-4	0	0	0	0	0
60%	-1	0	-1	-200	-386	-152	0	0	0	0	0	1
70%	-3	0	11	-4	-118	-138	0	0	0	0	0	1
80%	-1	0	-4	-3	-12	-6	0	0	0	0	0	1
90%	-2	0	0	4	-2	-3	-3	0	0	0	0	0
Long Term												
Full Simulation Period[b]	6	-34	-500	-593	-856	-321	-5	0	0	0	0	17
Water Year Types[c]												
Wet (32%)	24	-59	-1,590	-1,468	-1,057	-500	26	0	0	0	0	55
Above Normal (16%)	-6	-7	100	-422	-2,401	-684	-77	0	0	0	0	0
Below Normal (13%)	-1	-108	-19	-355	-984	-362	1	0	0	0	0	0
Dry (24%)	0	0	-27	-46	-26	-13	-4	0	0	0	0	0
Critical (15%)	0	0	-18	-9	-8	-15	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

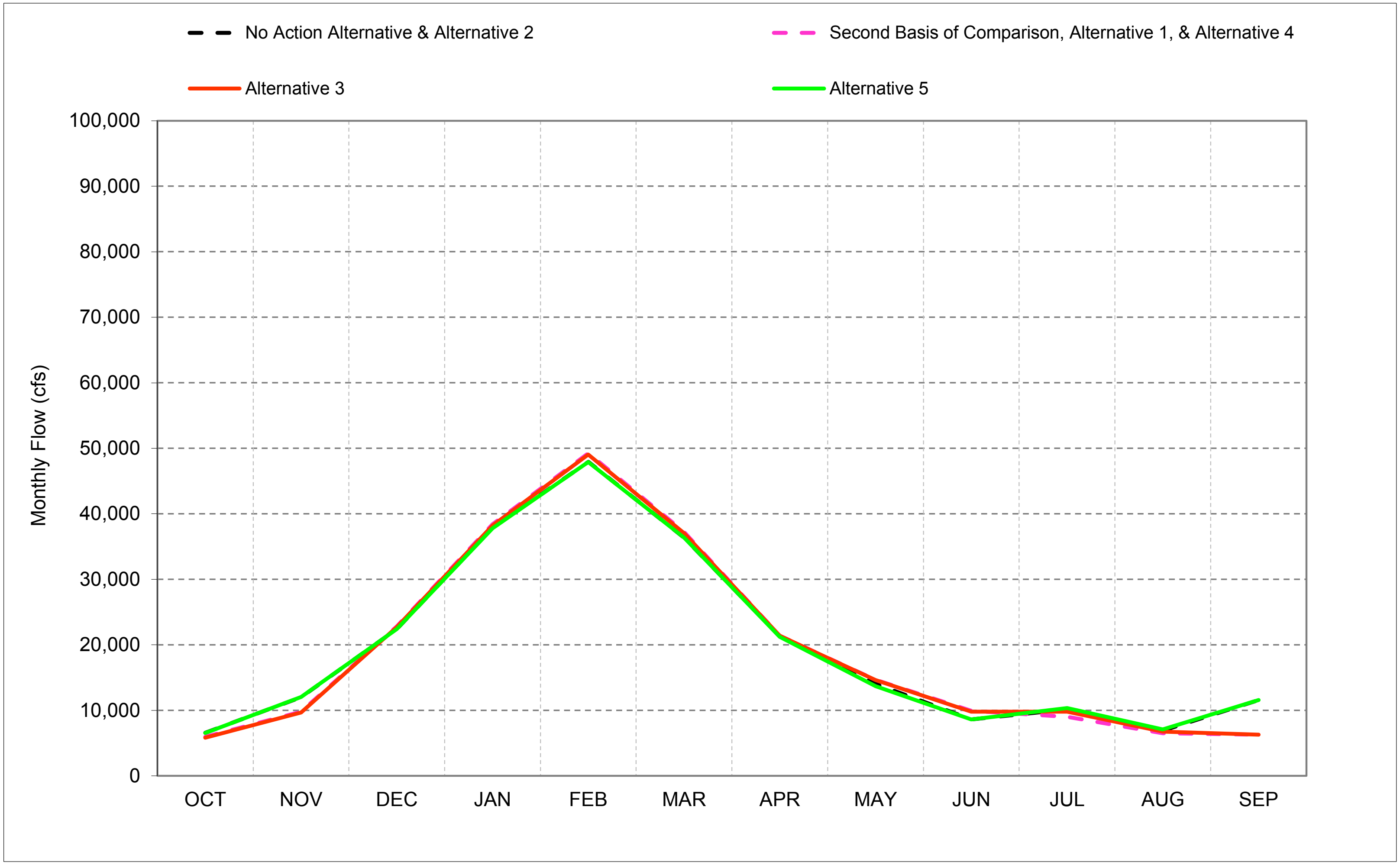
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.30. Sacramento River Flow at Rio Vista

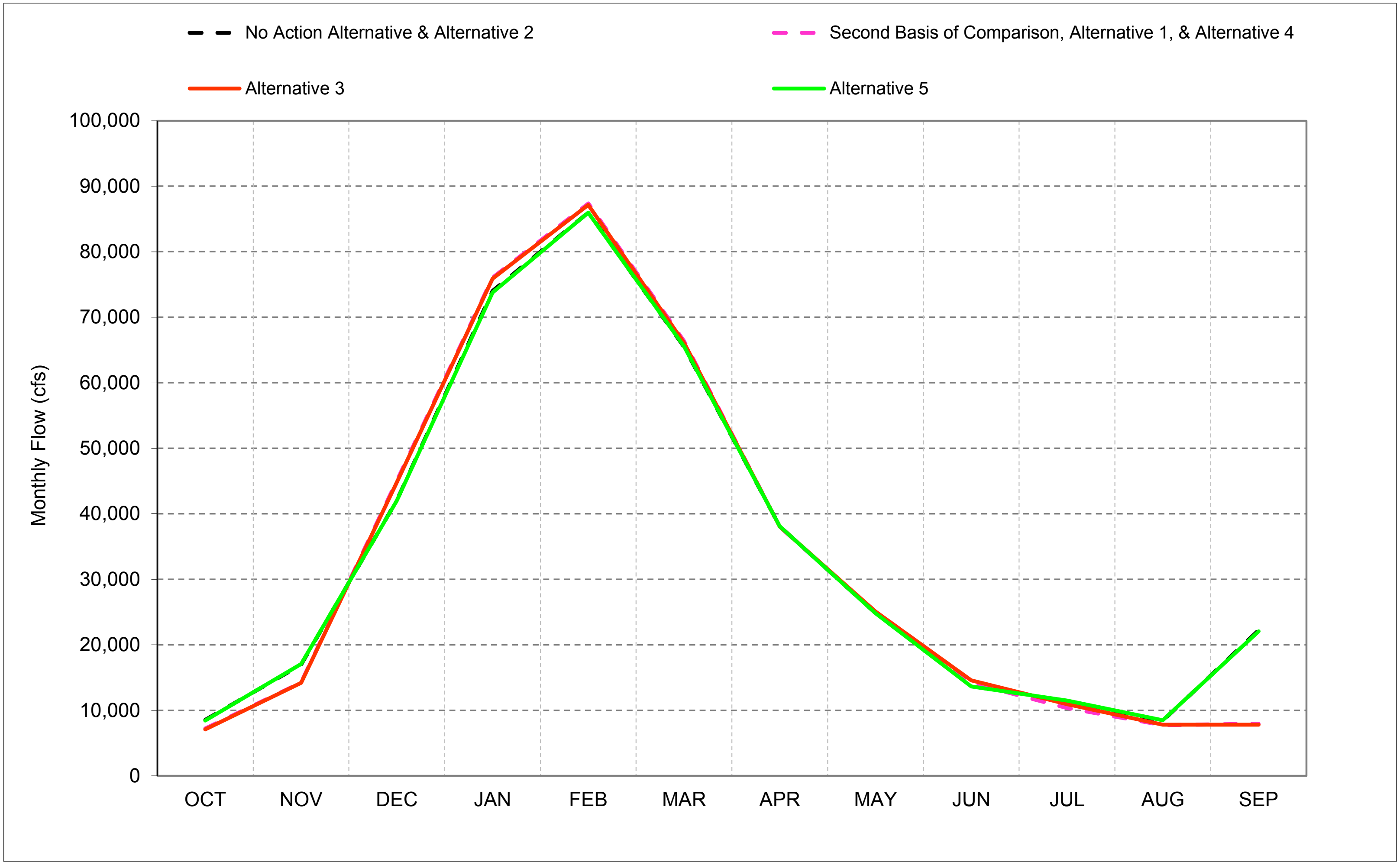
Figure C-30-1. Sacramento River at Rio Vista, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-30-2. Sacramento River at Rio Vista, Wet Year* Long-Term Average Flow**

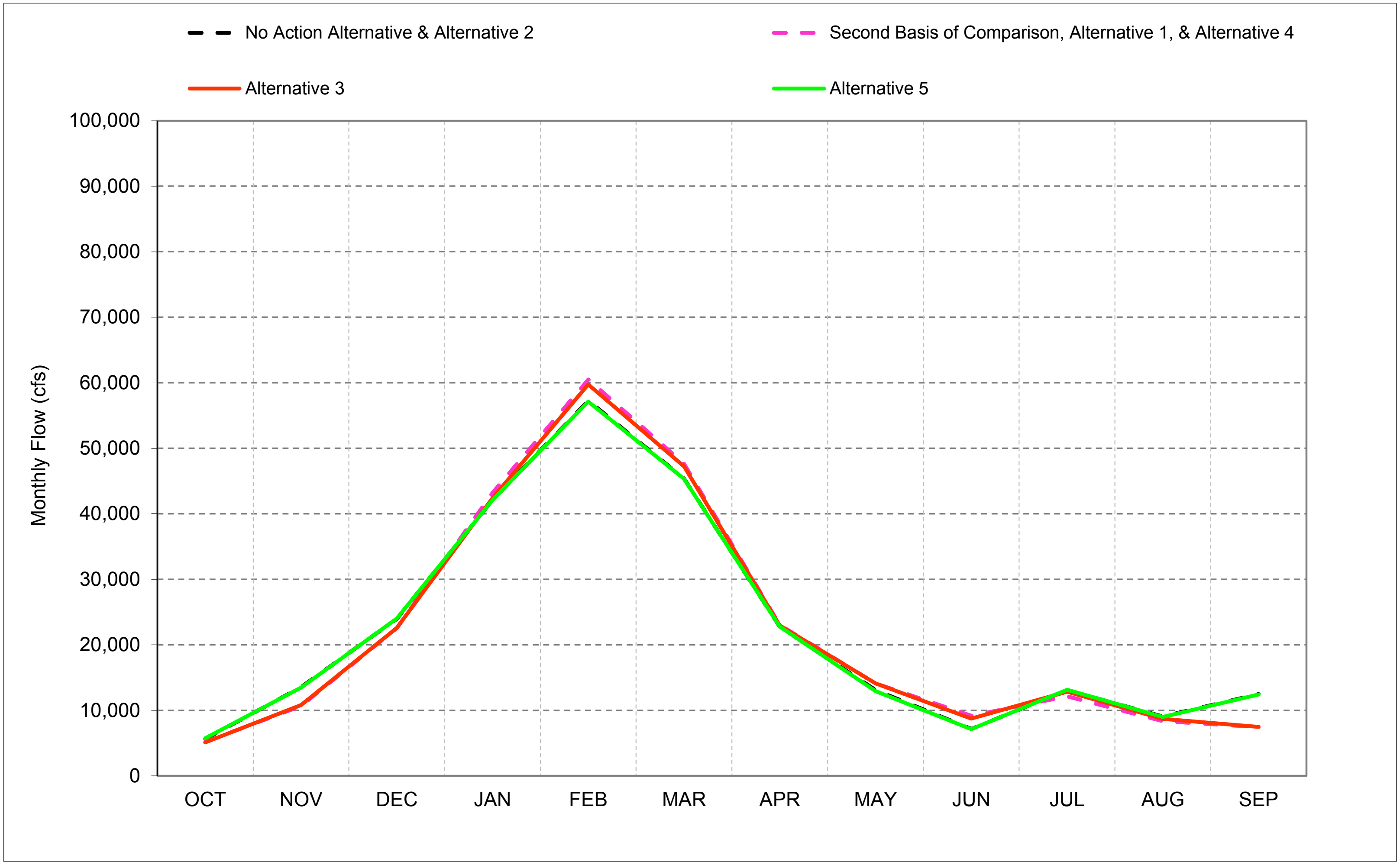


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-30-3. Sacramento River at Rio Vista, Above Normal Year* Long-Term Average Flow**

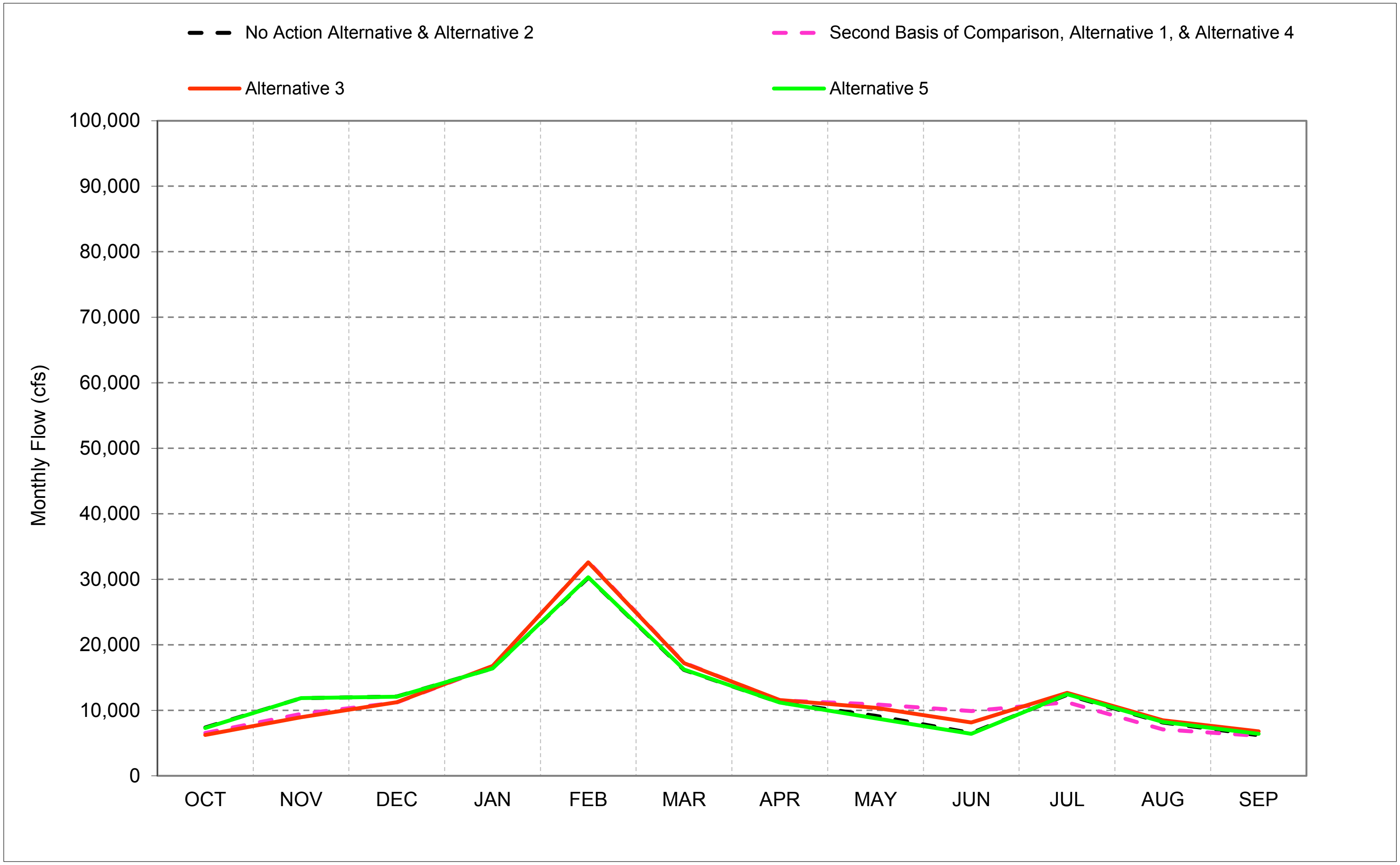


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-30-4. Sacramento River at Rio Vista, Below Normal Year* Long-Term Average Flow**

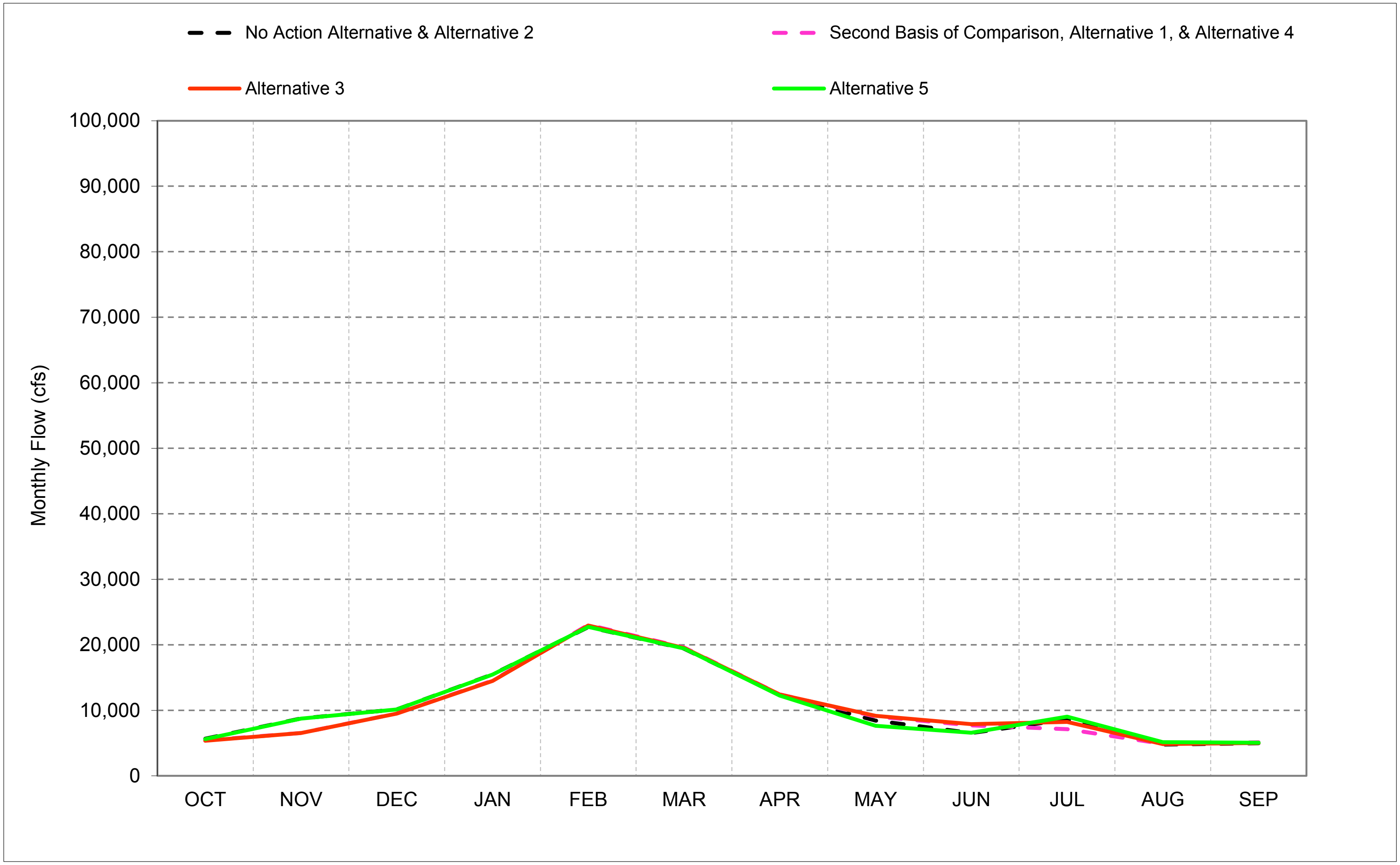


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-30-5. Sacramento River at Rio Vista, Dry Year* Long-Term Average Flow**

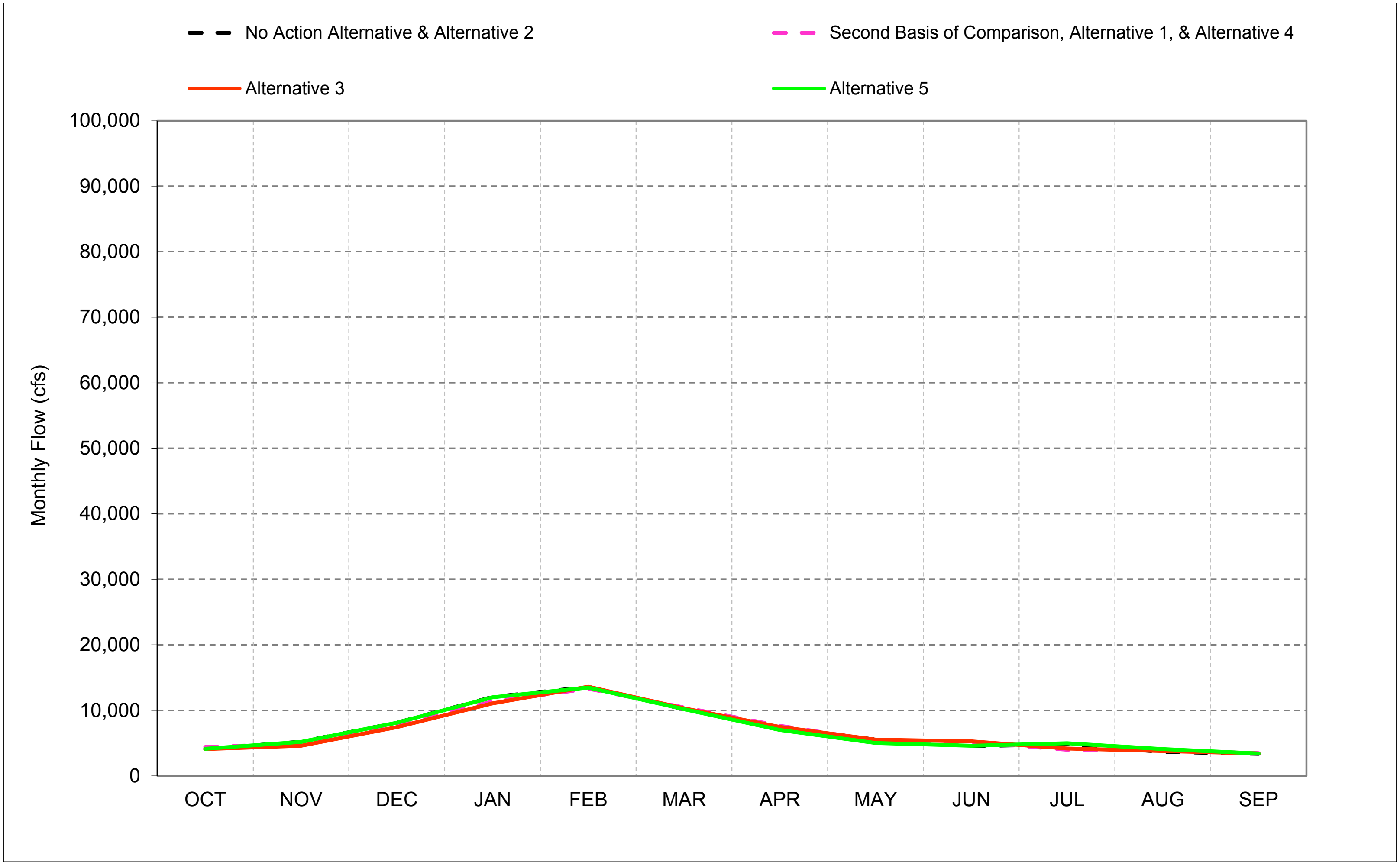


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-30-6. Sacramento River at Rio Vista, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-30-1. Sacramento River at Rio Vista, Monthly Flow

No Action Alternative & Alternative 2

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	10,070	18,978	58,014	88,870	115,150	71,556	52,709	32,159	12,044	14,311	9,331	23,977
20%	9,164	15,087	33,016	59,223	73,063	55,386	33,858	21,120	9,112	13,769	9,021	23,320
30%	7,820	14,319	19,139	43,990	55,265	39,150	20,511	12,940	7,154	12,689	8,637	13,495
40%	6,837	12,410	15,044	26,918	43,815	28,806	17,119	9,913	6,800	11,527	8,237	12,638
50%	5,696	10,612	11,920	19,664	32,125	23,004	12,566	9,009	6,655	10,242	7,597	7,728
60%	4,657	8,444	10,519	15,734	23,143	17,885	9,773	8,093	6,402	9,294	7,198	6,444
70%	4,247	6,189	10,183	12,389	16,301	15,737	8,487	7,678	5,975	8,594	5,139	4,865
80%	3,935	4,800	6,794	10,428	13,181	11,784	7,768	7,067	5,215	7,289	4,202	3,999
90%	3,260	4,011	5,682	9,124	11,209	8,346	6,927	5,954	4,837	5,221	3,592	3,294
Long Term												
Full Simulation Period[b]	6,582	12,014	22,422	37,879	47,932	36,375	21,273	14,053	8,621	10,146	6,909	11,570
Water Year Types[c]												
Wet (32%)	8,546	16,954	42,039	73,996	85,996	65,510	38,081	24,838	13,700	11,352	8,425	22,213
Above Normal (16%)	5,650	13,536	23,981	42,104	57,259	45,401	22,762	13,104	7,166	13,089	9,057	12,475
Below Normal (13%)	7,377	11,863	12,133	16,417	30,256	16,204	11,190	9,160	6,541	12,354	8,153	6,213
Dry (24%)	5,672	8,760	10,143	15,485	22,720	19,433	12,329	8,452	6,559	8,641	4,784	5,005
Critical (15%)	4,120	5,220	8,128	12,048	13,576	10,197	7,390	5,535	4,537	4,827	3,696	3,381

Alternative 1

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7,936	16,012	59,280	91,700	115,954	76,198	51,404	32,132	12,280	13,021	8,831	8,155
20%	7,592	9,452	34,803	60,639	73,800	55,589	33,804	22,340	11,036	12,187	8,574	7,770
30%	7,001	8,564	18,270	44,793	56,713	41,187	20,362	13,312	10,122	11,113	7,943	7,501
40%	6,038	8,016	13,391	26,341	49,187	29,860	17,124	11,207	9,247	10,377	7,536	7,315
50%	5,520	7,275	10,877	19,788	32,753	23,496	12,771	9,869	8,418	9,640	7,185	6,894
60%	5,002	6,617	9,412	14,739	23,353	18,189	9,629	9,369	7,891	8,661	5,815	6,014
70%	4,528	5,979	8,074	11,402	17,101	16,023	8,714	8,559	6,652	6,929	4,952	4,858
80%	4,107	5,091	6,604	9,443	13,382	12,111	8,104	7,695	6,268	5,965	4,428	4,138
90%	3,389	4,022	5,717	8,429	11,115	8,501	7,405	5,936	5,654	4,150	3,632	3,255
Long Term												
Full Simulation Period[b]	5,963	9,788	22,796	38,425	49,250	37,228	21,405	14,644	9,919	9,034	6,503	6,284
Water Year Types[c]												
Wet (32%)	7,239	14,226	45,019	76,053	87,371	66,392	38,027	25,019	14,188	10,354	7,761	7,961
Above Normal (16%)	5,193	10,653	22,550	43,221	60,499	47,632	23,011	14,132	9,164	12,139	8,384	7,447
Below Normal (13%)	6,564	9,456	11,190	16,732	32,676	17,278	11,534	10,910	9,888	11,233	7,092	6,118
Dry (24%)	5,418	6,568	9,526	14,565	23,057	19,592	12,439	9,069	7,718	7,116	4,894	5,129
Critical (15%)	4,392	4,907	7,671	11,351	13,313	10,450	7,643	5,432	5,181	3,991	3,883	3,465

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2,134	-2,966	1,266	2,830	804	4,642	-1,305	-28	236	-1,290	-500	-15,822
20%	-1,572	-5,635	1,788	1,416	737	203	-54	1,221	1,924	-1,583	-447	-15,550
30%	-819	-5,755	-869	803	1,448	2,037	-149	372	2,968	-1,576	-694	-5,994
40%	-799	-4,394	-1,653	-577	5,372	1,054	4	1,295	2,446	-1,150	-701	-5,323
50%	-176	-3,337	-1,043	124	628	492	205	859	1,763	-602	-412	-834
60%	344	-1,827	-1,107	-995	210	304	-144	1,276	1,489	-633	-1,383	-430
70%	281	-210	-2,109	-986	801	286	228	881	677	-1,665	-186	-7
80%	172	291	-191	-985	201	327	336	628	1,054	-1,324	227	139
90%	129	12	35	-696	-93	155	477	-19	817	-1,070	40	-39
Long Term												
Full Simulation Period[b]	-618	-2,226	374	545	1,318	853	133	591	1,297	-1,111	-406	-5,286
Water Year Types[c]												
Wet (32%)	-1,308	-2,728	2,980	2,056	1,376	882	-54	181	488	-998	-664	-14,251
Above Normal (16%)	-458	-2,884	-1,431	1,118	3,240	2,231	249	1,027	1,998	-950	-673	-5,029
Below Normal (13%)	-813	-2,407	-943	315	2,420	1,075	344	1,750	3,347	-1,121	-1,062	-94
Dry (24%)	-254	-2,193	-617	-919	337	158	111	617	1,159	-1,524	110	124
Critical (15%)	272	-313	-457	-698	-263	252	253	-102	645	-836	187	84

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-30-2. Sacramento River at Rio Vista, Monthly Flow

No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	10,070	18,978	58,014	88,870	115,150	71,556	52,709	32,159	12,044	14,311	9,331	23,977
20%	9,164	15,087	33,016	59,223	73,063	55,386	33,858	21,120	9,112	13,769	9,021	23,320
30%	7,820	14,319	19,139	43,990	55,265	39,150	20,511	12,940	7,154	12,689	8,637	13,495
40%	6,837	12,410	15,044	26,918	43,815	28,806	17,119	9,913	6,800	11,527	8,237	12,638
50%	5,696	10,612	11,920	19,664	32,125	23,004	12,566	9,009	6,655	10,242	7,597	7,728
60%	4,657	8,444	10,519	15,734	23,143	17,885	9,773	8,093	6,402	9,294	7,198	6,444
70%	4,247	6,189	10,183	12,389	16,301	15,737	8,487	7,678	5,975	8,594	5,139	4,865
80%	3,935	4,800	6,794	10,428	13,181	11,784	7,768	7,067	5,215	7,289	4,202	3,999
90%	3,260	4,011	5,682	9,124	11,209	8,346	6,927	5,954	4,837	5,221	3,592	3,294
Long Term												
Full Simulation Period[b]	6,582	12,014	22,422	37,879	47,932	36,375	21,273	14,053	8,621	10,146	6,909	11,570
Water Year Types[c]												
Wet (32%)	8,546	16,954	42,039	73,996	85,996	65,510	38,081	24,838	13,700	11,352	8,425	22,213
Above Normal (16%)	5,650	13,536	23,981	42,104	57,259	45,401	22,762	13,104	7,166	13,089	9,057	12,475
Below Normal (13%)	7,377	11,863	12,133	16,417	30,256	16,204	11,190	9,160	6,541	12,354	8,153	6,213
Dry (24%)	5,672	8,760	10,143	15,485	22,720	19,433	12,329	8,452	6,559	8,641	4,784	5,005
Critical (15%)	4,120	5,220	8,128	12,048	13,576	10,197	7,390	5,535	4,537	4,827	3,696	3,381

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	7,954	16,006	60,411	91,548	115,759	74,068	51,953	32,121	11,790	13,871	9,089	8,186
20%	7,349	9,732	35,930	60,659	74,471	55,585	33,797	21,564	10,764	13,398	8,857	7,898
30%	6,676	8,627	18,042	44,626	56,689	40,207	20,482	13,162	9,187	13,034	8,204	7,468
40%	6,159	7,822	13,466	26,035	49,055	29,853	17,049	11,324	8,737	11,626	7,879	7,156
50%	5,457	7,283	10,961	19,032	32,637	23,522	12,775	9,807	8,372	10,267	7,266	6,934
60%	4,540	6,524	9,468	14,903	23,481	18,149	9,676	8,808	7,718	9,308	6,754	6,239
70%	4,137	6,021	8,437	11,280	17,194	16,114	8,836	8,317	7,279	7,631	5,433	4,830
80%	3,947	4,912	6,649	9,425	13,173	12,063	8,010	7,821	6,326	6,527	4,278	4,140
90%	3,255	4,020	5,536	8,233	11,220	8,370	7,342	6,223	5,519	4,434	3,543	3,164
Long Term												
Full Simulation Period[b]	5,814	9,693	22,698	38,205	49,065	37,021	21,373	14,632	9,809	9,824	6,741	6,305
Water Year Types[c]												
Wet (32%)	7,114	14,209	44,782	75,904	87,147	66,076	38,034	25,087	14,587	10,942	7,814	7,836
Above Normal (16%)	5,095	10,808	22,598	42,408	59,743	47,228	22,970	14,131	8,754	12,872	8,695	7,468
Below Normal (13%)	6,235	8,981	11,261	16,777	32,582	17,195	11,575	10,388	8,166	12,666	8,512	6,807
Dry (24%)	5,377	6,530	9,495	14,518	22,947	19,552	12,408	9,167	7,914	8,224	4,861	5,010
Critical (15%)	4,118	4,626	7,447	11,093	13,627	10,298	7,468	5,518	5,265	4,164	3,812	3,424

Alternative 3 minus No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-2,116	-2,971	2,397	2,677	609	2,512	-756	-39	-254	-440	-242	-15,791
20%	-1,814	-5,355	2,914	1,436	1,408	199	-61	445	1,652	-371	-163	-15,422
30%	-1,144	-5,693	-1,097	637	1,423	1,057	-29	222	2,033	345	-433	-6,027
40%	-678	-4,588	-1,578	-883	5,240	1,047	-71	1,411	1,937	98	-358	-5,482
50%	-238	-3,329	-959	-632	512	518	209	798	1,717	25	-331	-794
60%	-117	-1,920	-1,051	-831	338	264	-97	715	1,316	15	-443	-204
70%	-110	-168	-1,746	-1,108	893	377	349	639	1,304	-963	294	-35
80%	11	112	-145	-1,002	-8	279	242	754	1,111	-762	76	141
90%	-6	10	-145	-891	11	24	414	268	681	-786	-49	-130
Long Term												
Full Simulation Period[b]	-768	-2,321	276	326	1,134	646	101	579	1,188	-321	-167	-5,265
Water Year Types[c]												
Wet (32%)	-1,433	-2,745	2,743	1,908	1,151	566	-47	249	887	-410	-611	-14,377
Above Normal (16%)	-555	-2,728	-1,383	304	2,485	1,827	209	1,027	1,588	-217	-362	-5,007
Below Normal (13%)	-1,142	-2,881	-872	359	2,326	992	385	1,228	1,625	312	359	594
Dry (24%)	-295	-2,230	-648	-966	227	118	80	715	1,355	-417	77	5
Critical (15%)	-2	-594	-681	-956	50	101	79	-17	728	-663	116	42

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-30-3. Sacramento River at Rio Vista, Monthly Flow

No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	10,070	18,978	58,014	88,870	115,150	71,556	52,709	32,159	12,044	14,311	9,331	23,977
20%	9,164	15,087	33,016	59,223	73,063	55,386	33,858	21,120	9,112	13,769	9,021	23,320
30%	7,820	14,319	19,139	43,990	55,265	39,150	20,511	12,940	7,154	12,689	8,637	13,495
40%	6,837	12,410	15,044	26,918	43,815	28,806	17,119	9,913	6,800	11,527	8,237	12,638
50%	5,696	10,612	11,920	19,664	32,125	23,004	12,566	9,009	6,655	10,242	7,597	7,728
60%	4,657	8,444	10,519	15,734	23,143	17,885	9,773	8,093	6,402	9,294	7,198	6,444
70%	4,247	6,189	10,183	12,389	16,301	15,737	8,487	7,678	5,975	8,594	5,139	4,865
80%	3,935	4,800	6,794	10,428	13,181	11,784	7,768	7,067	5,215	7,289	4,202	3,999
90%	3,260	4,011	5,682	9,124	11,209	8,346	6,927	5,954	4,837	5,221	3,592	3,294
Long Term												
Full Simulation Period[b]	6,582	12,014	22,422	37,879	47,932	36,375	21,273	14,053	8,621	10,146	6,909	11,570
Water Year Types[c]												
Wet (32%)	8,546	16,954	42,039	73,996	85,996	65,510	38,081	24,838	13,700	11,352	8,425	22,213
Above Normal (16%)	5,650	13,536	23,981	42,104	57,259	45,401	22,762	13,104	7,166	13,089	9,057	12,475
Below Normal (13%)	7,377	11,863	12,133	16,417	30,256	16,204	11,190	9,160	6,541	12,354	8,153	6,213
Dry (24%)	5,672	8,760	10,143	15,485	22,720	19,433	12,329	8,452	6,559	8,641	4,784	5,005
Critical (15%)	4,120	5,220	8,128	12,048	13,576	10,197	7,390	5,535	4,537	4,827	3,696	3,381

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	10,094	18,906	58,192	87,361	115,151	71,563	52,709	32,164	12,098	14,214	9,400	23,931
20%	8,702	15,066	33,012	59,113	73,118	55,358	33,862	21,077	9,063	13,803	9,066	23,141
30%	7,616	14,401	19,148	43,992	55,699	39,157	20,576	12,945	7,163	13,152	8,660	13,501
40%	6,915	12,559	15,050	26,809	43,815	28,822	17,139	9,532	6,803	11,639	8,257	12,562
50%	5,973	10,603	11,923	19,684	32,387	22,896	12,582	8,592	6,633	10,511	7,890	7,921
60%	4,624	8,466	10,503	15,733	23,141	17,883	9,449	7,823	6,441	9,531	7,392	6,668
70%	4,312	6,202	10,097	12,390	16,303	15,706	8,668	6,906	5,981	9,114	5,457	4,960
80%	3,990	4,799	6,804	10,462	13,181	11,781	7,452	6,414	5,162	7,510	4,448	4,211
90%	3,291	4,017	5,656	9,117	11,173	8,346	6,712	5,188	4,806	5,427	3,831	3,370
Long Term												
Full Simulation Period[b]	6,555	12,049	22,404	37,806	47,909	36,373	21,208	13,710	8,608	10,348	7,081	11,562
Water Year Types[c]												
Wet (32%)	8,465	17,099	41,993	73,808	85,986	65,543	38,083	24,834	13,674	11,515	8,488	22,059
Above Normal (16%)	5,746	13,499	24,025	42,096	57,115	45,328	22,768	12,943	7,133	13,127	9,015	12,411
Below Normal (13%)	7,311	11,858	12,095	16,389	30,330	16,221	11,220	8,790	6,427	12,485	8,257	6,438
Dry (24%)	5,628	8,744	10,132	15,472	22,747	19,433	12,263	7,651	6,588	9,060	5,144	5,080
Critical (15%)	4,145	5,217	8,105	12,011	13,488	10,178	7,021	5,047	4,594	4,996	4,087	3,400

Alternative 5 minus No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	24	-72	178	-1,510	1	7	0	5	54	-96	68	-46
20%	-461	-21	-4	-110	55	-28	4	-43	-49	34	45	-179
30%	-204	82	8	2	434	7	65	4	9	463	23	6
40%	77	149	6	-110	0	15	20	-380	2	112	20	-76
50%	278	-9	3	20	261	-108	16	-417	-23	269	293	193
60%	-33	22	-16	-1	-2	-2	-324	-270	38	237	194	224
70%	65	13	-86	2	2	-31	182	-772	6	520	319	95
80%	54	0	10	34	-1	-3	-315	-653	-52	222	246	212
90%	31	6	-26	-8	-36	0	-216	-767	-31	207	239	76
Long Term												
Full Simulation Period[b]	-27	35	-19	-73	-22	-2	-64	-343	-13	202	172	-7
Water Year Types[c]												
Wet (32%)	-81	145	-46	-188	-9	33	1	-4	-26	163	63	-153
Above Normal (16%)	96	-37	44	-7	-144	-74	6	-161	-33	39	-42	-64
Below Normal (13%)	-67	-5	-38	-28	74	17	31	-370	-114	131	104	226
Dry (24%)	-44	-16	-11	-13	27	0	-65	-801	30	419	360	75
Critical (15%)	26	-3	-23	-37	-88	-19	-369	-488	57	168	391	19

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-30-4. Sacramento River at Rio Vista, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7,936	16,012	59,280	91,700	115,954	76,198	51,404	32,132	12,280	13,021	8,831	8,155
20%	7,592	9,452	34,803	60,639	73,800	55,589	33,804	22,340	11,036	12,187	8,574	7,770
30%	7,001	8,564	18,270	44,793	56,713	41,187	20,362	13,312	10,122	11,113	7,943	7,501
40%	6,038	8,016	13,391	26,341	49,187	29,860	17,124	11,207	9,247	10,377	7,536	7,315
50%	5,520	7,275	10,877	19,788	32,753	23,496	12,771	9,869	8,418	9,640	7,185	6,894
60%	5,002	6,617	9,412	14,739	23,353	18,189	9,629	9,369	7,891	8,661	5,815	6,014
70%	4,528	5,979	8,074	11,402	17,101	16,023	8,714	8,559	6,652	6,929	4,952	4,858
80%	4,107	5,091	6,604	9,443	13,382	12,111	8,104	7,695	6,268	5,965	4,428	4,138
90%	3,389	4,022	5,717	8,429	11,115	8,501	7,405	5,936	5,654	4,150	3,632	3,255
Long Term												
Full Simulation Period[b]	5,963	9,788	22,796	38,425	49,250	37,228	21,405	14,644	9,919	9,034	6,503	6,284
Water Year Types[c]												
Wet (32%)	7,239	14,226	45,019	76,053	87,371	66,392	38,027	25,019	14,188	10,354	7,761	7,961
Above Normal (16%)	5,193	10,653	22,550	43,221	60,499	47,632	23,011	14,132	9,164	12,139	8,384	7,447
Below Normal (13%)	6,564	9,456	11,190	16,732	32,676	17,278	11,534	10,910	9,888	11,233	7,092	6,118
Dry (24%)	5,418	6,568	9,526	14,565	23,057	19,592	12,439	9,069	7,718	7,116	4,894	5,129
Critical (15%)	4,392	4,907	7,671	11,351	13,313	10,450	7,643	5,432	5,181	3,991	3,883	3,465

No Action Alternative & Alternative 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	10,070	18,978	58,014	88,870	115,150	71,556	52,709	32,159	12,044	14,311	9,331	23,977
20%	9,164	15,087	33,016	59,223	73,063	55,386	33,858	21,120	9,112	13,769	9,021	23,320
30%	7,820	14,319	19,139	43,990	55,265	39,150	20,511	12,940	7,154	12,689	8,637	13,495
40%	6,837	12,410	15,044	26,918	43,815	28,806	17,119	9,913	6,800	11,527	8,237	12,638
50%	5,696	10,612	11,920	19,664	32,125	23,004	12,566	9,009	6,655	10,242	7,597	7,728
60%	4,657	8,444	10,519	15,734	23,143	17,885	9,773	8,093	6,402	9,294	7,198	6,444
70%	4,247	6,189	10,183	12,389	16,301	15,737	8,487	7,678	5,975	8,594	5,139	4,865
80%	3,935	4,800	6,794	10,428	13,181	11,784	7,768	7,067	5,215	7,289	4,202	3,999
90%	3,260	4,011	5,682	9,124	11,209	8,346	6,927	5,954	4,837	5,221	3,592	3,294
Long Term												
Full Simulation Period[b]	6,582	12,014	22,422	37,879	47,932	36,375	21,273	14,053	8,621	10,146	6,909	11,570
Water Year Types[c]												
Wet (32%)	8,546	16,954	42,039	73,996	85,996	65,510	38,081	24,838	13,700	11,352	8,425	22,213
Above Normal (16%)	5,650	13,536	23,981	42,104	57,259	45,401	22,762	13,104	7,166	13,089	9,057	12,475
Below Normal (13%)	7,377	11,863	12,133	16,417	30,256	16,204	11,190	9,160	6,541	12,354	8,153	6,213
Dry (24%)	5,672	8,760	10,143	15,485	22,720	19,433	12,329	8,452	6,559	8,641	4,784	5,005
Critical (15%)	4,120	5,220	8,128	12,048	13,576	10,197	7,390	5,535	4,537	4,827	3,696	3,381

No Action Alternative & Alternative 2 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,134	2,966	-1,266	-2,830	-804	-4,642	1,305	28	-236	1,290	500	15,822
20%	1,572	5,635	-1,788	-1,416	-737	-203	54	-1,221	-1,924	1,583	447	15,550
30%	819	5,755	869	-803	-1,448	-2,037	149	-372	-2,968	1,576	694	5,994
40%	799	4,394	1,653	577	-5,372	-1,054	-4	-1,295	-2,446	1,150	701	5,323
50%	176	3,337	1,043	-124	-628	-492	-205	-859	-1,763	602	412	834
60%	-344	1,827	1,107	995	-210	-304	144	-1,276	-1,489	633	1,383	430
70%	-281	210	2,109	986	-801	-286	-228	-881	-677	1,665	186	7
80%	-172	-291	191	985	-201	-327	-336	-628	-1,054	1,324	-227	-139
90%	-129	-12	-35	696	93	-155	-477	19	-817	1,070	-40	39
Long Term												
Full Simulation Period[b]	618	2,226	-374	-545	-1,318	-853	-133	-591	-1,297	1,111	406	5,286
Water Year Types[c]												
Wet (32%)	1,308	2,728	-2,980	-2,056	-1,376	-882	54	-181	-488	998	664	14,251
Above Normal (16%)	458	2,884	1,431	-1,118	-3,240	-2,231	-249	-1,027	-1,998	950	673	5,029
Below Normal (13%)	813	2,407	943	-315	-2,420	-1,075	-344	-1,750	-3,347	1,121	1,062	94
Dry (24%)	254	2,193	617	919	-337	-158	-111	-617	-1,159	1,524	-110	-124
Critical (15%)	-272	313	457	698	263	-252	-253	102	-645	836	-187	-84

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-30-5. Sacramento River at Rio Vista, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7,936	16,012	59,280	91,700	115,954	76,198	51,404	32,132	12,280	13,021	8,831	8,155
20%	7,592	9,452	34,803	60,639	73,800	55,589	33,804	22,340	11,036	12,187	8,574	7,770
30%	7,001	8,564	18,270	44,793	56,713	41,187	20,362	13,312	10,122	11,113	7,943	7,501
40%	6,038	8,016	13,391	26,341	49,187	29,860	17,124	11,207	9,247	10,377	7,536	7,315
50%	5,520	7,275	10,877	19,788	32,753	23,496	12,771	9,869	8,418	9,640	7,185	6,894
60%	5,002	6,617	9,412	14,739	23,353	18,189	9,629	9,369	7,891	8,661	5,815	6,014
70%	4,528	5,979	8,074	11,402	17,101	16,023	8,714	8,559	6,652	6,929	4,952	4,858
80%	4,107	5,091	6,604	9,443	13,382	12,111	8,104	7,695	6,268	5,965	4,428	4,138
90%	3,389	4,022	5,717	8,429	11,115	8,501	7,405	5,936	5,654	4,150	3,632	3,255
Long Term												
Full Simulation Period[b]	5,963	9,788	22,796	38,425	49,250	37,228	21,405	14,644	9,919	9,034	6,503	6,284
Water Year Types[c]												
Wet (32%)	7,239	14,226	45,019	76,053	87,371	66,392	38,027	25,019	14,188	10,354	7,761	7,961
Above Normal (16%)	5,193	10,653	22,550	43,221	60,499	47,632	23,011	14,132	9,164	12,139	8,384	7,447
Below Normal (13%)	6,564	9,456	11,190	16,732	32,676	17,278	11,534	10,910	9,888	11,233	7,092	6,118
Dry (24%)	5,418	6,568	9,526	14,565	23,057	19,592	12,439	9,069	7,718	7,116	4,894	5,129
Critical (15%)	4,392	4,907	7,671	11,351	13,313	10,450	7,643	5,432	5,181	3,991	3,883	3,465

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7,954	16,006	60,411	91,548	115,759	74,068	51,953	32,121	11,790	13,871	9,089	8,186
20%	7,349	9,732	35,930	60,659	74,471	55,585	33,797	21,564	10,764	13,398	8,857	7,898
30%	6,676	8,627	18,042	44,626	56,689	40,207	20,482	13,162	9,187	13,034	8,204	7,468
40%	6,159	7,822	13,466	26,035	49,055	29,853	17,049	11,324	8,737	11,626	7,879	7,156
50%	5,457	7,283	10,961	19,032	32,637	23,522	12,775	9,807	8,372	10,267	7,266	6,934
60%	4,540	6,524	9,468	14,903	23,481	18,149	9,676	8,808	7,718	9,308	6,754	6,239
70%	4,137	6,021	8,437	11,280	17,194	16,114	8,836	8,317	7,279	7,631	5,433	4,830
80%	3,947	4,912	6,649	9,425	13,173	12,063	8,010	7,821	6,326	6,527	4,278	4,140
90%	3,255	4,020	5,536	8,233	11,220	8,370	7,342	6,223	5,519	4,434	3,543	3,164
Long Term												
Full Simulation Period[b]	5,814	9,693	22,698	38,205	49,065	37,021	21,373	14,632	9,809	9,824	6,741	6,305
Water Year Types[c]												
Wet (32%)	7,114	14,209	44,782	75,904	87,147	66,076	38,034	25,087	14,587	10,942	7,814	7,836
Above Normal (16%)	5,095	10,808	22,598	42,408	59,743	47,228	22,970	14,131	8,754	12,872	8,695	7,468
Below Normal (13%)	6,235	8,981	11,261	16,777	32,582	17,195	11,575	10,388	8,166	12,666	8,512	6,807
Dry (24%)	5,377	6,530	9,495	14,518	22,947	19,552	12,408	9,167	7,914	8,224	4,861	5,010
Critical (15%)	4,118	4,626	7,447	11,093	13,627	10,298	7,468	5,518	5,265	4,164	3,812	3,424

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	18	-6	1,131	-153	-195	-2,130	549	-11	-490	850	258	31
20%	-243	280	1,126	20	671	-4	-7	-776	-272	1,211	284	128
30%	-325	62	-228	-166	-24	-980	120	-150	-935	1,921	260	-33
40%	121	-195	75	-306	-132	-8	-75	116	-510	1,248	343	-159
50%	-62	8	83	-756	-116	25	4	-61	-46	627	82	40
60%	-461	-93	56	164	127	-40	47	-561	-173	647	939	225
70%	-391	42	363	-122	92	91	121	-241	627	702	481	-28
80%	-160	-179	46	-17	-209	-48	-93	126	57	562	-150	2
90%	-134	-2	-180	-195	104	-132	-63	287	-136	284	-89	-91
Long Term												
Full Simulation Period[b]	-149	-95	-98	-219	-184	-207	-32	-12	-110	790	238	21
Water Year Types[c]												
Wet (32%)	-125	-17	-237	-148	-224	-316	7	68	399	588	53	-125
Above Normal (16%)	-98	156	48	-814	-755	-404	-40	0	-410	733	311	22
Below Normal (13%)	-329	-474	72	45	-93	-83	41	-522	-1,722	1,433	1,421	689
Dry (24%)	-41	-38	-31	-47	-110	-40	-31	98	196	1,107	-33	-119
Critical (15%)	-274	-282	-224	-258	314	-152	-174	85	83	173	-71	-42

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-30-6. Sacramento River at Rio Vista, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	7,936	16,012	59,280	91,700	115,954	76,198	51,404	32,132	12,280	13,021	8,831	8,155
20%	7,592	9,452	34,803	60,639	73,800	55,589	33,804	22,340	11,036	12,187	8,574	7,770
30%	7,001	8,564	18,270	44,793	56,713	41,187	20,362	13,312	10,122	11,113	7,943	7,501
40%	6,038	8,016	13,391	26,341	49,187	29,860	17,124	11,207	9,247	10,377	7,536	7,315
50%	5,520	7,275	10,877	19,788	32,753	23,496	12,771	9,869	8,418	9,640	7,185	6,894
60%	5,002	6,617	9,412	14,739	23,353	18,189	9,629	9,369	7,891	8,661	5,815	6,014
70%	4,528	5,979	8,074	11,402	17,101	16,023	8,714	8,559	6,652	6,929	4,952	4,858
80%	4,107	5,091	6,604	9,443	13,382	12,111	8,104	7,695	6,268	5,965	4,428	4,138
90%	3,389	4,022	5,717	8,429	11,115	8,501	7,405	5,936	5,654	4,150	3,632	3,255
Long Term												
Full Simulation Period[b]	5,963	9,788	22,796	38,425	49,250	37,228	21,405	14,644	9,919	9,034	6,503	6,284
Water Year Types[c]												
Wet (32%)	7,239	14,226	45,019	76,053	87,371	66,392	38,027	25,019	14,188	10,354	7,761	7,961
Above Normal (16%)	5,193	10,653	22,550	43,221	60,499	47,632	23,011	14,132	9,164	12,139	8,384	7,447
Below Normal (13%)	6,564	9,456	11,190	16,732	32,676	17,278	11,534	10,910	9,888	11,233	7,092	6,118
Dry (24%)	5,418	6,568	9,526	14,565	23,057	19,592	12,439	9,069	7,718	7,116	4,894	5,129
Critical (15%)	4,392	4,907	7,671	11,351	13,313	10,450	7,643	5,432	5,181	3,991	3,883	3,465

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	10,094	18,906	58,192	87,361	115,151	71,563	52,709	32,164	12,098	14,214	9,400	23,931
20%	8,702	15,066	33,012	59,113	73,118	55,358	33,862	21,077	9,063	13,803	9,066	23,141
30%	7,616	14,401	19,148	43,992	55,699	39,157	20,576	12,945	7,163	13,152	8,660	13,501
40%	6,915	12,559	15,050	26,809	43,815	28,822	17,139	9,532	6,803	11,639	8,257	12,562
50%	5,973	10,603	11,923	19,684	32,387	22,896	12,582	8,592	6,633	10,511	7,890	7,921
60%	4,624	8,466	10,503	15,733	23,141	17,883	9,449	7,823	6,441	9,531	7,392	6,668
70%	4,312	6,202	10,097	12,390	16,303	15,706	8,668	6,906	5,981	9,114	5,457	4,960
80%	3,990	4,799	6,804	10,462	13,181	11,781	7,452	6,414	5,162	7,510	4,448	4,211
90%	3,291	4,017	5,656	9,117	11,173	8,346	6,712	5,188	4,806	5,427	3,831	3,370
Long Term												
Full Simulation Period[b]	6,555	12,049	22,404	37,806	47,909	36,373	21,208	13,710	8,608	10,348	7,081	11,562
Water Year Types[c]												
Wet (32%)	8,465	17,099	41,993	73,808	85,986	65,543	38,083	24,834	13,674	11,515	8,488	22,059
Above Normal (16%)	5,746	13,499	24,025	42,096	57,115	45,328	22,768	12,943	7,133	13,127	9,015	12,411
Below Normal (13%)	7,311	11,858	12,095	16,389	30,330	16,221	11,220	8,790	6,427	12,485	8,257	6,438
Dry (24%)	5,628	8,744	10,132	15,472	22,747	19,433	12,263	7,651	6,588	9,060	5,144	5,080
Critical (15%)	4,145	5,217	8,105	12,011	13,488	10,178	7,021	5,047	4,594	4,996	4,087	3,400

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,157	2,894	-1,088	-4,340	-803	-4,635	1,305	33	-182	1,193	569	15,776
20%	1,110	5,615	-1,791	-1,527	-682	-231	58	-1,263	-1,973	1,617	492	15,371
30%	615	5,837	877	-801	-1,014	-2,030	214	-367	-2,959	2,039	717	5,999
40%	876	4,542	1,659	468	-5,372	-1,039	16	-1,675	-2,444	1,262	720	5,247
50%	453	3,328	1,046	-104	-366	-601	-190	-1,277	-1,785	871	705	1,027
60%	-378	1,849	1,091	994	-212	-305	-180	-1,546	-1,450	870	1,577	654
70%	-216	223	2,023	988	-799	-316	-46	-1,652	-671	2,185	505	102
80%	-118	-292	201	1,019	-202	-330	-651	-1,281	-1,106	1,546	19	73
90%	-98	-5	-61	688	58	-155	-693	-748	-848	1,277	199	115
Long Term												
Full Simulation Period[b]	592	2,261	-393	-618	-1,340	-855	-197	-934	-1,311	1,314	578	5,279
Water Year Types[c]												
Wet (32%)	1,226	2,873	-3,026	-2,245	-1,385	-849	55	-185	-514	1,160	727	14,098
Above Normal (16%)	553	2,847	1,475	-1,125	-3,384	-2,305	-243	-1,189	-2,030	989	631	4,965
Below Normal (13%)	747	2,402	906	-343	-2,345	-1,057	-314	-2,120	-3,461	1,252	1,166	320
Dry (24%)	210	2,176	606	906	-310	-158	-176	-1,419	-1,130	1,944	250	-49
Critical (15%)	-247	310	434	660	175	-271	-621	-386	-588	1,004	204	-65

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

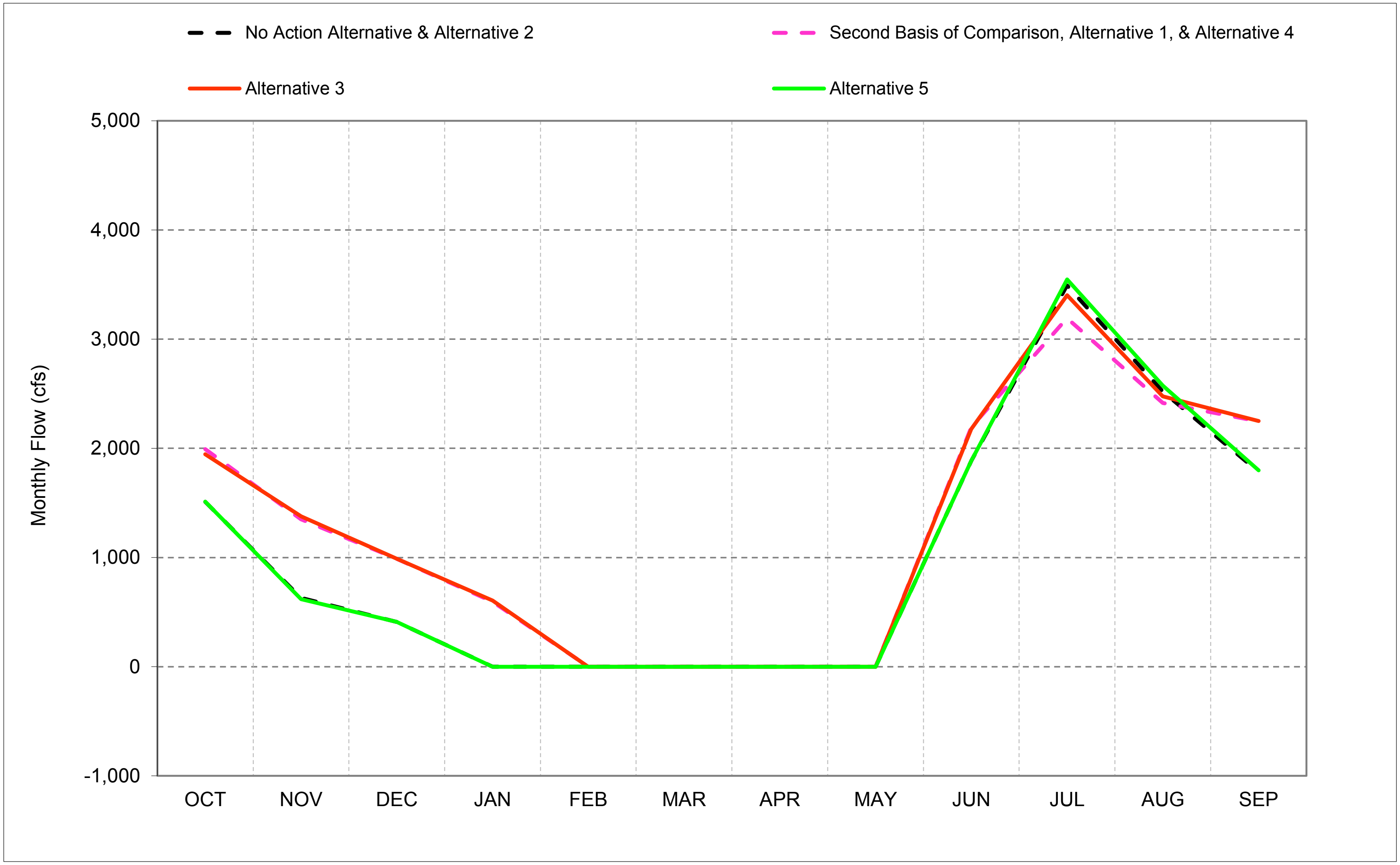
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.31. Delta Cross Channel Flow

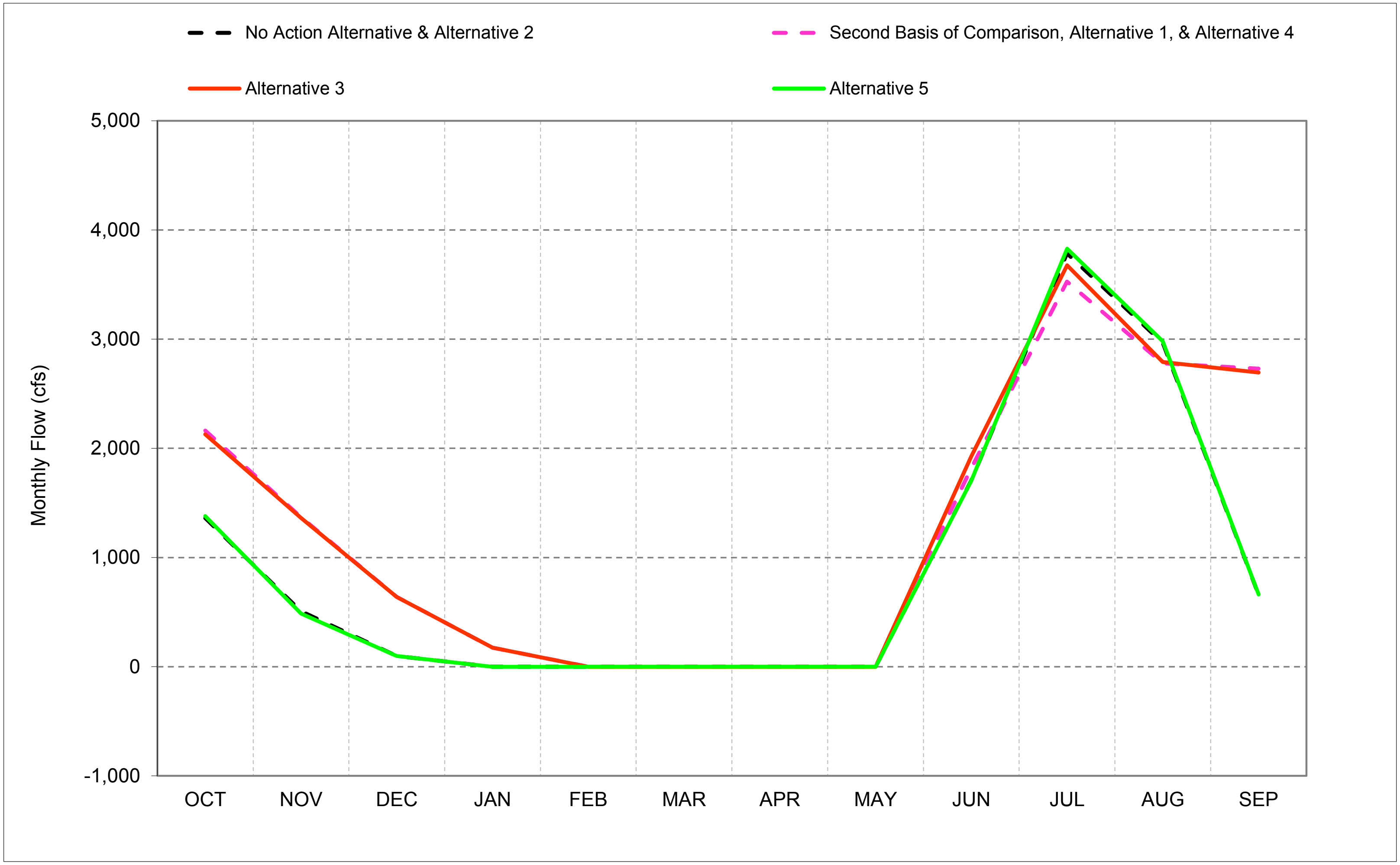
Figure C-31-1. Delta Cross Channel, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-31-2. Delta Cross Channel, Wet Year* Long-Term Average Flow**

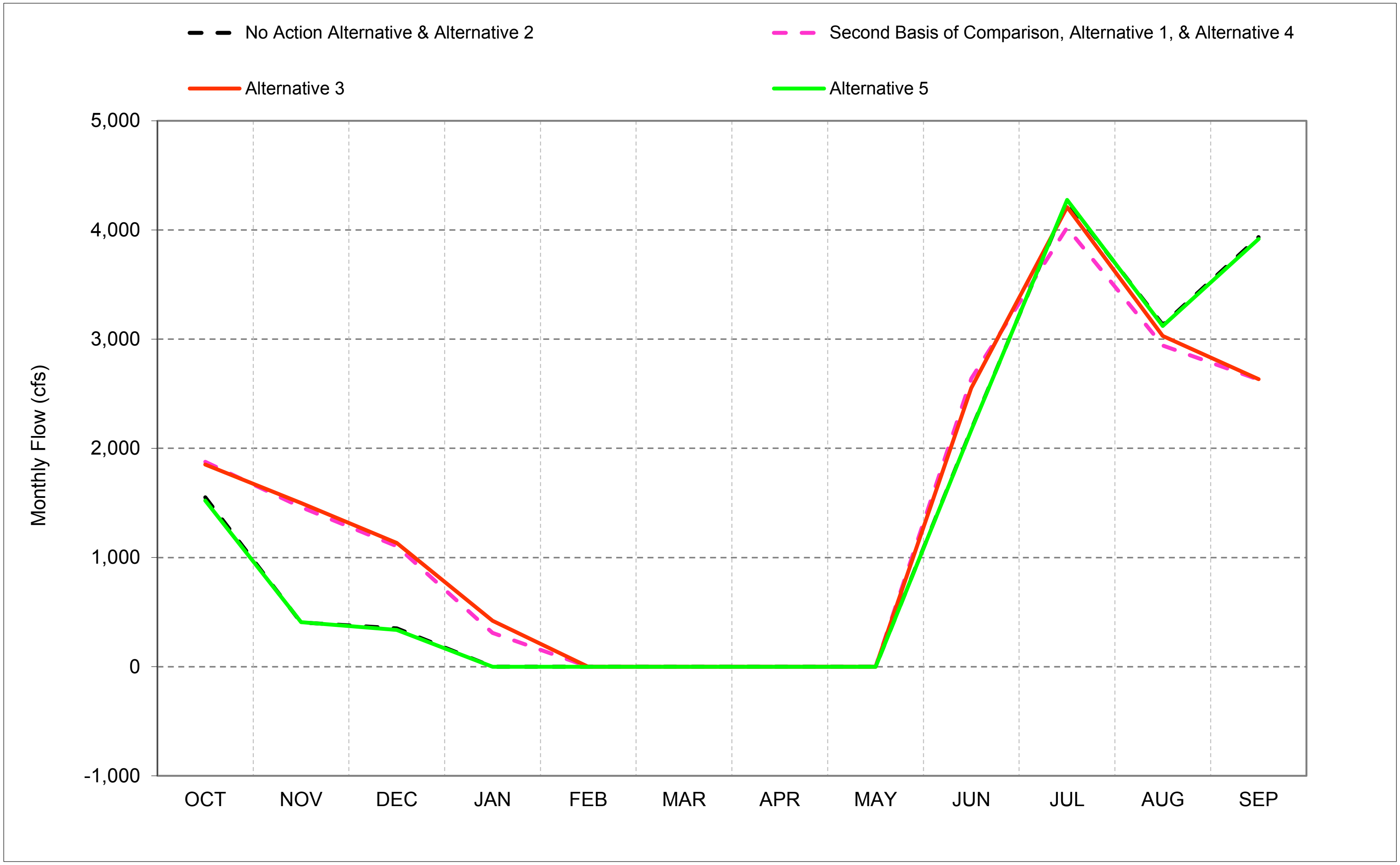


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-31-3. Delta Cross Channel, Above Normal Year* Long-Term Average Flow**

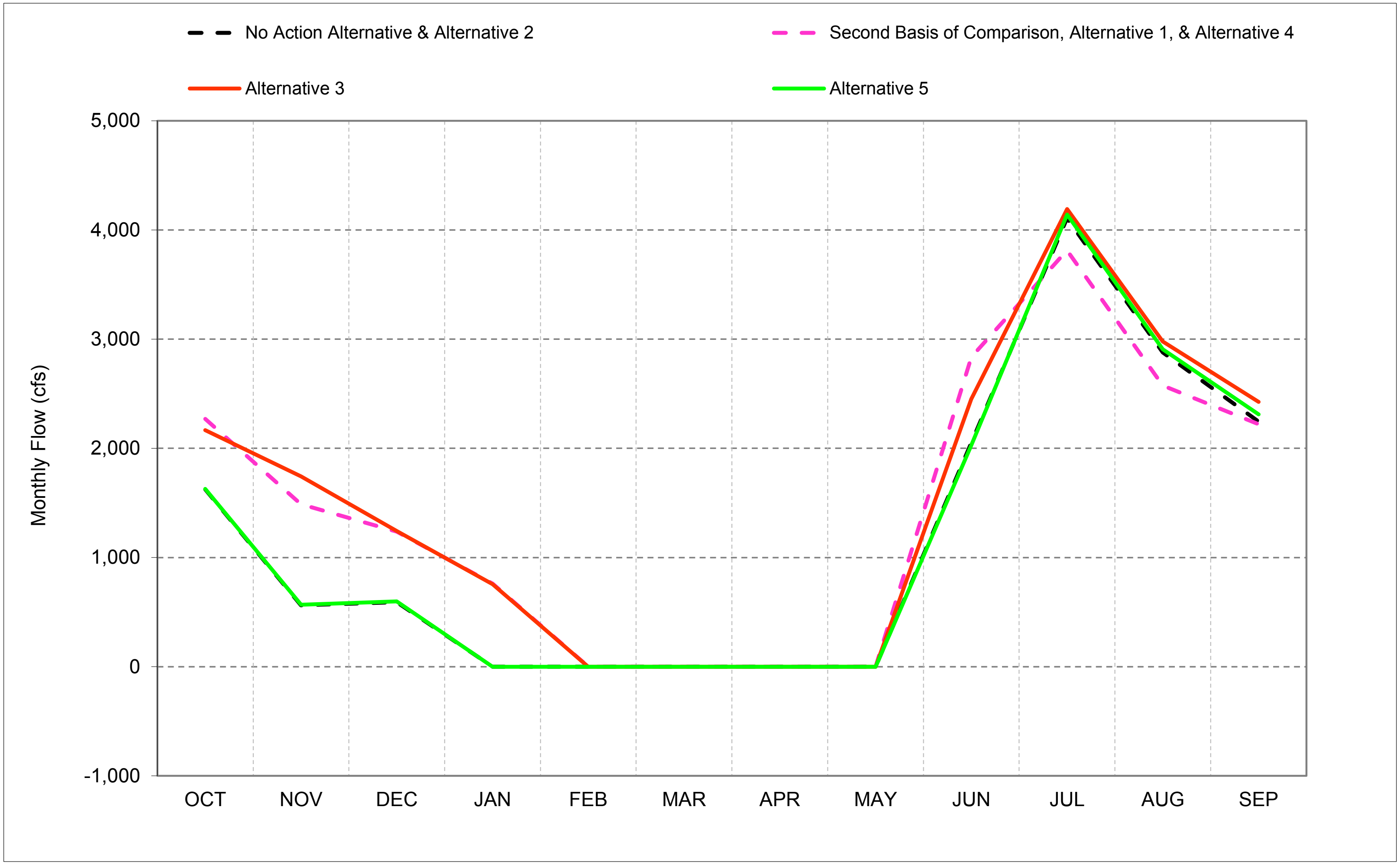


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-31-4. Delta Cross Channel, Below Normal Year* Long-Term Average Flow**

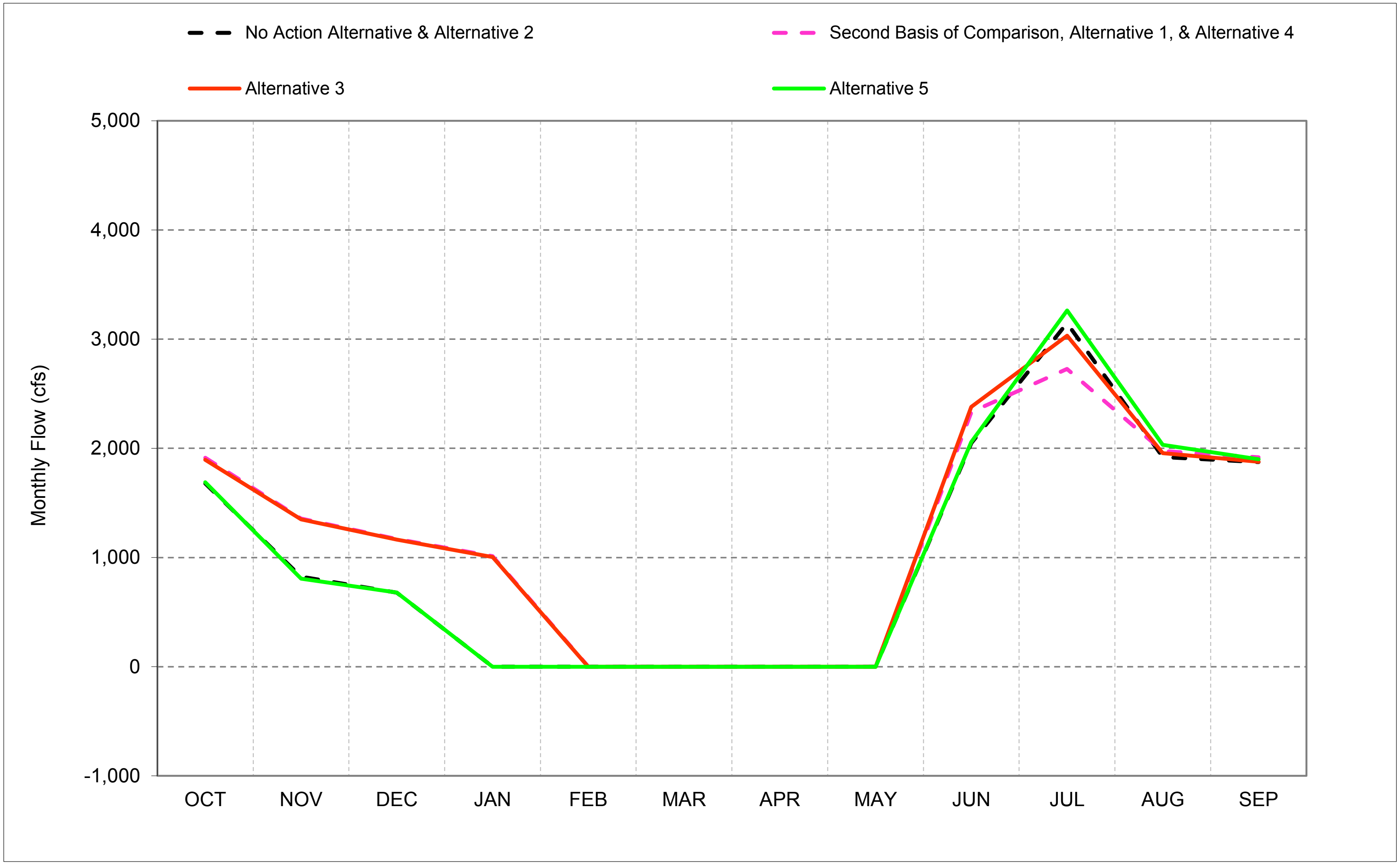


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-31-5. Delta Cross Channel, Dry Year* Long-Term Average Flow**

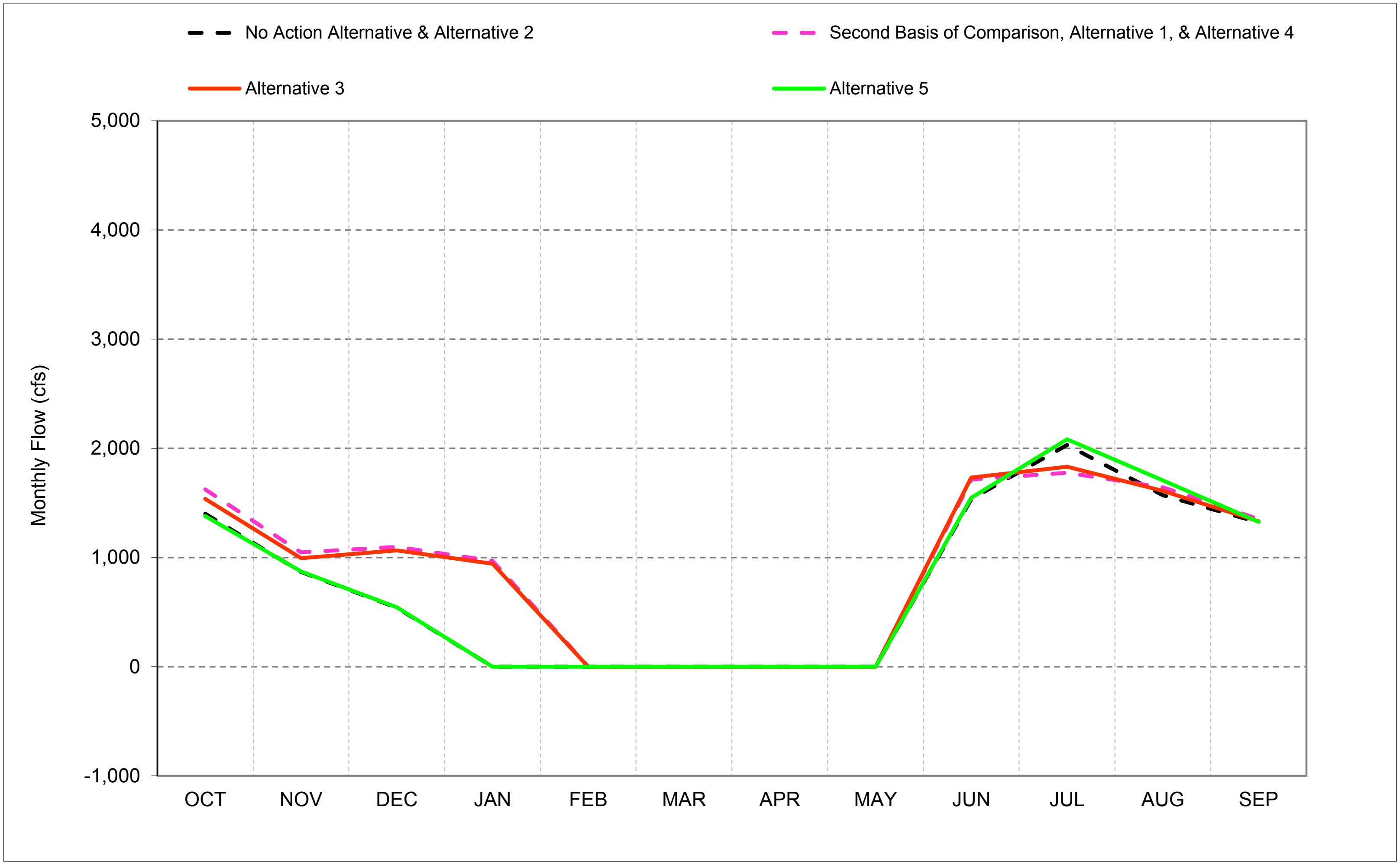


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-31-6. Delta Cross Channel, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-31-1. Delta Cross Channel, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,113	1,241	917	0	0	0	0	0	2,565	4,561	3,177	4,016
20%	1,890	1,053	822	0	0	0	0	0	2,240	4,452	3,109	3,318
30%	1,745	953	725	0	0	0	0	0	2,130	4,216	2,999	2,471
40%	1,611	813	627	0	0	0	0	0	2,088	3,867	2,944	1,929
50%	1,494	768	415	0	0	0	0	0	2,004	3,510	2,739	1,632
60%	1,444	474	0	0	0	0	0	0	1,935	3,272	2,577	1,442
70%	1,248	246	0	0	0	0	0	0	1,755	3,086	2,107	1,171
80%	1,142	0	0	0	0	0	0	0	1,615	2,802	1,727	0
90%	986	0	0	0	0	0	0	0	1,176	2,140	1,501	0
Long Term												
Full Simulation Period[b]	1,509	629	411	0	0	0	0	0	1,887	3,491	2,521	1,785
Water Year Types[c]												
Wet (32%)	1,362	509	99	0	0	0	0	0	1,709	3,785	2,964	660
Above Normal (16%)	1,552	406	351	0	0	0	0	0	2,175	4,264	3,131	3,933
Below Normal (13%)	1,624	562	591	0	0	0	0	0	2,054	4,106	2,877	2,246
Dry (24%)	1,677	824	678	0	0	0	0	0	2,050	3,146	1,921	1,874
Critical (15%)	1,401	869	542	0	0	0	0	0	1,536	2,030	1,572	1,321

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,682	1,880	1,855	1,359	0	0	0	0	3,057	4,269	3,079	2,792
20%	2,598	1,713	1,538	1,154	0	0	0	0	2,903	4,011	2,947	2,714
30%	2,387	1,645	1,421	935	0	0	0	0	2,679	3,772	2,844	2,617
40%	2,119	1,509	1,256	868	0	0	0	0	2,495	3,585	2,731	2,582
50%	1,987	1,391	1,094	739	0	0	0	0	2,350	3,385	2,547	2,483
60%	1,839	1,269	936	0	0	0	0	0	2,091	3,068	2,210	2,212
70%	1,642	1,108	781	0	0	0	0	0	1,978	2,681	2,003	1,826
80%	1,468	962	0	0	0	0	0	0	1,840	2,356	1,791	1,591
90%	1,192	768	0	0	0	0	0	0	1,369	1,878	1,565	1,305
Long Term												
Full Simulation Period[b]	1,992	1,350	989	595	0	0	0	0	2,196	3,192	2,415	2,246
Water Year Types[c]												
Wet (32%)	2,162	1,371	638	174	0	0	0	0	1,819	3,527	2,779	2,730
Above Normal (16%)	1,877	1,462	1,104	309	0	0	0	0	2,640	4,020	2,941	2,630
Below Normal (13%)	2,270	1,488	1,237	761	0	0	0	0	2,837	3,813	2,575	2,221
Dry (24%)	1,914	1,358	1,170	1,012	0	0	0	0	2,332	2,727	1,975	1,919
Critical (15%)	1,624	1,047	1,096	968	0	0	0	0	1,716	1,776	1,643	1,354

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	569	638	938	1,359	0	0	0	0	492	-292	-97	-1,224
20%	709	660	716	1,154	0	0	0	0	663	-441	-162	-604
30%	641	692	697	935	0	0	0	0	549	-444	-155	146
40%	507	697	629	868	0	0	0	0	408	-282	-213	653
50%	493	623	679	739	0	0	0	0	346	-125	-193	850
60%	396	795	936	0	0	0	0	0	156	-204	-367	770
70%	394	862	781	0	0	0	0	0	222	-406	-104	655
80%	325	962	0	0	0	0	0	0	225	-446	64	1,591
90%	205	768	0	0	0	0	0	0	192	-262	64	1,305
Long Term												
Full Simulation Period[b]	483	721	578	595	0	0	0	0	309	-299	-106	462
Water Year Types[c]												
Wet (32%)	801	862	540	174	0	0	0	0	111	-258	-186	2,069
Above Normal (16%)	325	1,056	753	309	0	0	0	0	465	-244	-190	-1,303
Below Normal (13%)	647	926	646	761	0	0	0	0	783	-293	-301	-25
Dry (24%)	237	534	492	1,012	0	0	0	0	283	-420	54	44
Critical (15%)	224	178	555	968	0	0	0	0	180	-254	71	32

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-31-2. Delta Cross Channel, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,113	1,241	917	0	0	0	0	0	2,565	4,561	3,177	4,016
20%	1,890	1,053	822	0	0	0	0	0	2,240	4,452	3,109	3,318
30%	1,745	953	725	0	0	0	0	0	2,130	4,216	2,999	2,471
40%	1,611	813	627	0	0	0	0	0	2,088	3,867	2,944	1,929
50%	1,494	768	415	0	0	0	0	0	2,004	3,510	2,739	1,632
60%	1,444	474	0	0	0	0	0	0	1,935	3,272	2,577	1,442
70%	1,248	246	0	0	0	0	0	0	1,755	3,086	2,107	1,171
80%	1,142	0	0	0	0	0	0	0	1,615	2,802	1,727	0
90%	986	0	0	0	0	0	0	0	1,176	2,140	1,501	0
Long Term												
Full Simulation Period[b]	1,509	629	411	0	0	0	0	0	1,887	3,491	2,521	1,785
Water Year Types[c]												
Wet (32%)	1,362	509	99	0	0	0	0	0	1,709	3,785	2,964	660
Above Normal (16%)	1,552	406	351	0	0	0	0	0	2,175	4,264	3,131	3,933
Below Normal (13%)	1,624	562	591	0	0	0	0	0	2,054	4,106	2,877	2,246
Dry (24%)	1,677	824	678	0	0	0	0	0	2,050	3,146	1,921	1,874
Critical (15%)	1,401	869	542	0	0	0	0	0	1,536	2,030	1,572	1,321

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,673	1,943	1,853	1,448	0	0	0	0	3,006	4,466	3,141	2,838
20%	2,573	1,787	1,552	1,160	0	0	0	0	2,654	4,357	3,037	2,735
30%	2,297	1,665	1,422	941	0	0	0	0	2,571	4,228	2,892	2,608
40%	2,123	1,523	1,294	864	0	0	0	0	2,474	3,893	2,818	2,527
50%	1,967	1,388	1,093	746	0	0	0	0	2,354	3,609	2,653	2,463
60%	1,697	1,291	916	0	0	0	0	0	2,265	3,191	2,494	2,287
70%	1,513	1,113	738	0	0	0	0	0	2,000	2,848	2,129	1,840
80%	1,456	961	0	0	0	0	0	0	1,823	2,514	1,765	1,644
90%	1,166	771	0	0	0	0	0	0	1,288	1,902	1,540	1,276
Long Term												
Full Simulation Period[b]	1,946	1,378	989	606	0	0	0	0	2,177	3,402	2,477	2,249
Water Year Types[c]												
Wet (32%)	2,129	1,362	639	174	0	0	0	0	1,925	3,676	2,790	2,693
Above Normal (16%)	1,851	1,499	1,134	419	0	0	0	0	2,551	4,209	3,029	2,633
Below Normal (13%)	2,167	1,743	1,242	756	0	0	0	0	2,450	4,191	2,977	2,426
Dry (24%)	1,894	1,350	1,164	1,005	0	0	0	0	2,378	3,031	1,956	1,878
Critical (15%)	1,537	993	1,066	945	0	0	0	0	1,731	1,830	1,611	1,331

Alternative 3 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	561	701	935	1,448	0	0	0	0	441	-95	-36	-1,178
20%	684	734	730	1,160	0	0	0	0	415	-95	-72	-582
30%	551	712	697	941	0	0	0	0	441	12	-107	137
40%	512	711	667	864	0	0	0	0	386	26	-126	598
50%	473	620	678	746	0	0	0	0	350	99	-86	831
60%	253	817	916	0	0	0	0	0	330	-80	-84	845
70%	265	867	738	0	0	0	0	0	244	-238	23	669
80%	314	961	0	0	0	0	0	0	208	-289	38	1,644
90%	180	771	0	0	0	0	0	0	111	-238	39	1,276
Long Term												
Full Simulation Period[b]	436	749	578	606	0	0	0	0	290	-89	-44	465
Water Year Types[c]												
Wet (32%)	767	853	540	174	0	0	0	0	216	-109	-175	2,032
Above Normal (16%)	299	1,093	783	419	0	0	0	0	376	-55	-102	-1,301
Below Normal (13%)	544	1,181	651	756	0	0	0	0	396	84	100	180
Dry (24%)	217	525	487	1,005	0	0	0	0	329	-115	35	3
Critical (15%)	137	124	525	945	0	0	0	0	195	-200	39	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-31-3. Delta Cross Channel, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,113	1,241	917	0	0	0	0	0	2,565	4,561	3,177	4,016
20%	1,890	1,053	822	0	0	0	0	0	2,240	4,452	3,109	3,318
30%	1,745	953	725	0	0	0	0	0	2,130	4,216	2,999	2,471
40%	1,611	813	627	0	0	0	0	0	2,088	3,867	2,944	1,929
50%	1,494	768	415	0	0	0	0	0	2,004	3,510	2,739	1,632
60%	1,444	474	0	0	0	0	0	0	1,935	3,272	2,577	1,442
70%	1,248	246	0	0	0	0	0	0	1,755	3,086	2,107	1,171
80%	1,142	0	0	0	0	0	0	0	1,615	2,802	1,727	0
90%	986	0	0	0	0	0	0	0	1,176	2,140	1,501	0
Long Term												
Full Simulation Period[b]	1,509	629	411	0	0	0	0	0	1,887	3,491	2,521	1,785
Water Year Types[c]												
Wet (32%)	1,362	509	99	0	0	0	0	0	1,709	3,785	2,964	660
Above Normal (16%)	1,552	406	351	0	0	0	0	0	2,175	4,264	3,131	3,933
Below Normal (13%)	1,624	562	591	0	0	0	0	0	2,054	4,106	2,877	2,246
Dry (24%)	1,677	824	678	0	0	0	0	0	2,050	3,146	1,921	1,874
Critical (15%)	1,401	869	542	0	0	0	0	0	1,536	2,030	1,572	1,321

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,136	1,242	913	0	0	0	0	0	2,583	4,560	3,180	3,993
20%	1,977	1,034	823	0	0	0	0	0	2,241	4,446	3,116	3,329
30%	1,719	952	725	0	0	0	0	0	2,134	4,301	3,000	2,471
40%	1,585	813	639	0	0	0	0	0	2,085	3,897	2,950	1,922
50%	1,491	769	376	0	0	0	0	0	2,010	3,644	2,859	1,673
60%	1,451	386	0	0	0	0	0	0	1,952	3,387	2,687	1,472
70%	1,261	228	0	0	0	0	0	0	1,723	3,219	2,184	1,169
80%	1,161	0	0	0	0	0	0	0	1,606	2,875	1,796	0
90%	988	0	0	0	0	0	0	0	1,186	2,173	1,651	0
Long Term												
Full Simulation Period[b]	1,511	620	410	0	0	0	0	0	1,883	3,547	2,575	1,798
Water Year Types[c]												
Wet (32%)	1,380	487	99	0	0	0	0	0	1,702	3,828	2,981	661
Above Normal (16%)	1,521	407	338	0	0	0	0	0	2,167	4,275	3,120	3,917
Below Normal (13%)	1,628	567	597	0	0	0	0	0	2,026	4,141	2,908	2,312
Dry (24%)	1,690	807	679	0	0	0	0	0	2,057	3,261	2,033	1,899
Critical (15%)	1,379	872	545	0	0	0	0	0	1,548	2,083	1,706	1,327

Alternative 5 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	23	1	-4	0	0	0	0	0	19	0	3	-23
20%	88	-19	1	0	0	0	0	0	1	-6	6	11
30%	-26	-2	0	0	0	0	0	0	5	85	1	0
40%	-26	0	12	0	0	0	0	0	-3	30	7	-7
50%	-3	0	-39	0	0	0	0	0	7	134	119	40
60%	7	-88	0	0	0	0	0	0	17	115	110	30
70%	13	-18	0	0	0	0	0	0	-32	133	77	-2
80%	18	0	0	0	0	0	0	0	-9	72	69	0
90%	1	0	0	0	0	0	0	0	10	33	150	0
Long Term												
Full Simulation Period[b]	1	-10	-1	0	0	0	0	0	-3	56	54	13
Water Year Types[c]												
Wet (32%)	18	-22	0	0	0	0	0	0	-6	43	17	1
Above Normal (16%)	-31	1	-13	0	0	0	0	0	-8	10	-11	-17
Below Normal (13%)	5	5	6	0	0	0	0	0	-28	34	31	66
Dry (24%)	13	-17	1	0	0	0	0	0	8	115	112	25
Critical (15%)	-22	3	3	0	0	0	0	0	12	53	134	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-31-4. Delta Cross Channel, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,682	1,880	1,855	1,359	0	0	0	0	3,057	4,269	3,079	2,792
20%	2,598	1,713	1,538	1,154	0	0	0	0	2,903	4,011	2,947	2,714
30%	2,387	1,645	1,421	935	0	0	0	0	2,679	3,772	2,844	2,617
40%	2,119	1,509	1,256	868	0	0	0	0	2,495	3,585	2,731	2,582
50%	1,987	1,391	1,094	739	0	0	0	0	2,350	3,385	2,547	2,483
60%	1,839	1,269	936	0	0	0	0	0	2,091	3,068	2,210	2,212
70%	1,642	1,108	781	0	0	0	0	0	1,978	2,681	2,003	1,826
80%	1,468	962	0	0	0	0	0	0	1,840	2,356	1,791	1,591
90%	1,192	768	0	0	0	0	0	0	1,369	1,878	1,565	1,305
Long Term												
Full Simulation Period[b]	1,992	1,350	989	595	0	0	0	0	2,196	3,192	2,415	2,246
Water Year Types[c]												
Wet (32%)	2,162	1,371	638	174	0	0	0	0	1,819	3,527	2,779	2,730
Above Normal (16%)	1,877	1,462	1,104	309	0	0	0	0	2,640	4,020	2,941	2,630
Below Normal (13%)	2,270	1,488	1,237	761	0	0	0	0	2,837	3,813	2,575	2,221
Dry (24%)	1,914	1,358	1,170	1,012	0	0	0	0	2,332	2,727	1,975	1,919
Critical (15%)	1,624	1,047	1,096	968	0	0	0	0	1,716	1,776	1,643	1,354

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,113	1,241	917	0	0	0	0	0	2,565	4,561	3,177	4,016
20%	1,890	1,053	822	0	0	0	0	0	2,240	4,452	3,109	3,318
30%	1,745	953	725	0	0	0	0	0	2,130	4,216	2,999	2,471
40%	1,611	813	627	0	0	0	0	0	2,088	3,867	2,944	1,929
50%	1,494	768	415	0	0	0	0	0	2,004	3,510	2,739	1,632
60%	1,444	474	0	0	0	0	0	0	1,935	3,272	2,577	1,442
70%	1,248	246	0	0	0	0	0	0	1,755	3,086	2,107	1,171
80%	1,142	0	0	0	0	0	0	0	1,615	2,802	1,727	0
90%	986	0	0	0	0	0	0	0	1,176	2,140	1,501	0
Long Term												
Full Simulation Period[b]	1,509	629	411	0	0	0	0	0	1,887	3,491	2,521	1,785
Water Year Types[c]												
Wet (32%)	1,362	509	99	0	0	0	0	0	1,709	3,785	2,964	660
Above Normal (16%)	1,552	406	351	0	0	0	0	0	2,175	4,264	3,131	3,933
Below Normal (13%)	1,624	562	591	0	0	0	0	0	2,054	4,106	2,877	2,246
Dry (24%)	1,677	824	678	0	0	0	0	0	2,050	3,146	1,921	1,874
Critical (15%)	1,401	869	542	0	0	0	0	0	1,536	2,030	1,572	1,321

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-569	-638	-938	-1,359	0	0	0	0	-492	292	97	1,224
20%	-709	-660	-716	-1,154	0	0	0	0	-663	441	162	604
30%	-641	-692	-697	-935	0	0	0	0	-549	444	155	-146
40%	-507	-697	-629	-868	0	0	0	0	-408	282	213	-653
50%	-493	-623	-679	-739	0	0	0	0	-346	125	193	-850
60%	-396	-795	-936	0	0	0	0	0	-156	204	367	-770
70%	-394	-862	-781	0	0	0	0	0	-222	406	104	-655
80%	-325	-962	0	0	0	0	0	0	-225	446	-64	-1,591
90%	-205	-768	0	0	0	0	0	0	-192	262	-64	-1,305
Long Term												
Full Simulation Period[b]	-483	-721	-578	-595	0	0	0	0	-309	299	106	-462
Water Year Types[c]												
Wet (32%)	-801	-862	-540	-174	0	0	0	0	-111	258	186	-2,069
Above Normal (16%)	-325	-1,056	-753	-309	0	0	0	0	-465	244	190	1,303
Below Normal (13%)	-647	-926	-646	-761	0	0	0	0	-783	293	301	25
Dry (24%)	-237	-534	-492	-1,012	0	0	0	0	-283	420	-54	-44
Critical (15%)	-224	-178	-555	-968	0	0	0	0	-180	254	-71	-32

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-31-5. Delta Cross Channel, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,682	1,880	1,855	1,359	0	0	0	0	3,057	4,269	3,079	2,792
20%	2,598	1,713	1,538	1,154	0	0	0	0	2,903	4,011	2,947	2,714
30%	2,387	1,645	1,421	935	0	0	0	0	2,679	3,772	2,844	2,617
40%	2,119	1,509	1,256	868	0	0	0	0	2,495	3,585	2,731	2,582
50%	1,987	1,391	1,094	739	0	0	0	0	2,350	3,385	2,547	2,483
60%	1,839	1,269	936	0	0	0	0	0	2,091	3,068	2,210	2,212
70%	1,642	1,108	781	0	0	0	0	0	1,978	2,681	2,003	1,826
80%	1,468	962	0	0	0	0	0	0	1,840	2,356	1,791	1,591
90%	1,192	768	0	0	0	0	0	0	1,369	1,878	1,565	1,305
Long Term												
Full Simulation Period[b]	1,992	1,350	989	595	0	0	0	0	2,196	3,192	2,415	2,246
Water Year Types[c]												
Wet (32%)	2,162	1,371	638	174	0	0	0	0	1,819	3,527	2,779	2,730
Above Normal (16%)	1,877	1,462	1,104	309	0	0	0	0	2,640	4,020	2,941	2,630
Below Normal (13%)	2,270	1,488	1,237	761	0	0	0	0	2,837	3,813	2,575	2,221
Dry (24%)	1,914	1,358	1,170	1,012	0	0	0	0	2,332	2,727	1,975	1,919
Critical (15%)	1,624	1,047	1,096	968	0	0	0	0	1,716	1,776	1,643	1,354

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,673	1,943	1,853	1,448	0	0	0	0	3,006	4,466	3,141	2,838
20%	2,573	1,787	1,552	1,160	0	0	0	0	2,654	4,357	3,037	2,735
30%	2,297	1,665	1,422	941	0	0	0	0	2,571	4,228	2,892	2,608
40%	2,123	1,523	1,294	864	0	0	0	0	2,474	3,893	2,818	2,527
50%	1,967	1,388	1,093	746	0	0	0	0	2,354	3,609	2,653	2,463
60%	1,697	1,291	916	0	0	0	0	0	2,265	3,191	2,494	2,287
70%	1,513	1,113	738	0	0	0	0	0	2,000	2,848	2,129	1,840
80%	1,456	961	0	0	0	0	0	0	1,823	2,514	1,765	1,644
90%	1,166	771	0	0	0	0	0	0	1,288	1,902	1,540	1,276
Long Term												
Full Simulation Period[b]	1,946	1,378	989	606	0	0	0	0	2,177	3,402	2,477	2,249
Water Year Types[c]												
Wet (32%)	2,129	1,362	639	174	0	0	0	0	1,925	3,676	2,790	2,693
Above Normal (16%)	1,851	1,499	1,134	419	0	0	0	0	2,551	4,209	3,029	2,633
Below Normal (13%)	2,167	1,743	1,242	756	0	0	0	0	2,450	4,191	2,977	2,426
Dry (24%)	1,894	1,350	1,164	1,005	0	0	0	0	2,378	3,031	1,956	1,878
Critical (15%)	1,537	993	1,066	945	0	0	0	0	1,731	1,830	1,611	1,331

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-8	63	-3	89	0	0	0	0	-51	197	62	47
20%	-25	74	14	6	0	0	0	0	-248	347	90	22
30%	-90	20	0	6	0	0	0	0	-108	456	48	-9
40%	4	14	38	-4	0	0	0	0	-21	308	88	-55
50%	-21	-3	-1	7	0	0	0	0	4	224	106	-19
60%	-142	22	-20	0	0	0	0	0	174	123	284	75
70%	-129	5	-44	0	0	0	0	0	22	168	127	14
80%	-12	-1	0	0	0	0	0	0	-18	157	-26	54
90%	-25	3	0	0	0	0	0	0	-81	24	-25	-30
Long Term												
Full Simulation Period[b]	-46	27	0	12	0	0	0	0	-19	210	62	3
Water Year Types[c]												
Wet (32%)	-34	-9	0	0	0	0	0	0	105	149	11	-37
Above Normal (16%)	-26	38	30	110	0	0	0	0	-89	189	87	3
Below Normal (13%)	-103	255	5	-4	0	0	0	0	-388	378	402	205
Dry (24%)	-20	-8	-6	-7	0	0	0	0	46	305	-19	-41
Critical (15%)	-87	-54	-30	-24	0	0	0	0	16	54	-32	-23

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-31-6. Delta Cross Channel, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,682	1,880	1,855	1,359	0	0	0	0	3,057	4,269	3,079	2,792
20%	2,598	1,713	1,538	1,154	0	0	0	0	2,903	4,011	2,947	2,714
30%	2,387	1,645	1,421	935	0	0	0	0	2,679	3,772	2,844	2,617
40%	2,119	1,509	1,256	868	0	0	0	0	2,495	3,585	2,731	2,582
50%	1,987	1,391	1,094	739	0	0	0	0	2,350	3,385	2,547	2,483
60%	1,839	1,269	936	0	0	0	0	0	2,091	3,068	2,210	2,212
70%	1,642	1,108	781	0	0	0	0	0	1,978	2,681	2,003	1,826
80%	1,468	962	0	0	0	0	0	0	1,840	2,356	1,791	1,591
90%	1,192	768	0	0	0	0	0	0	1,369	1,878	1,565	1,305
Long Term												
Full Simulation Period[b]	1,992	1,350	989	595	0	0	0	0	2,196	3,192	2,415	2,246
Water Year Types[c]												
Wet (32%)	2,162	1,371	638	174	0	0	0	0	1,819	3,527	2,779	2,730
Above Normal (16%)	1,877	1,462	1,104	309	0	0	0	0	2,640	4,020	2,941	2,630
Below Normal (13%)	2,270	1,488	1,237	761	0	0	0	0	2,837	3,813	2,575	2,221
Dry (24%)	1,914	1,358	1,170	1,012	0	0	0	0	2,332	2,727	1,975	1,919
Critical (15%)	1,624	1,047	1,096	968	0	0	0	0	1,716	1,776	1,643	1,354

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,136	1,242	913	0	0	0	0	0	2,583	4,560	3,180	3,993
20%	1,977	1,034	823	0	0	0	0	0	2,241	4,446	3,116	3,329
30%	1,719	952	725	0	0	0	0	0	2,134	4,301	3,000	2,471
40%	1,585	813	639	0	0	0	0	0	2,085	3,897	2,950	1,922
50%	1,491	769	376	0	0	0	0	0	2,010	3,644	2,859	1,673
60%	1,451	386	0	0	0	0	0	0	1,952	3,387	2,687	1,472
70%	1,261	228	0	0	0	0	0	0	1,723	3,219	2,184	1,169
80%	1,161	0	0	0	0	0	0	0	1,606	2,875	1,796	0
90%	988	0	0	0	0	0	0	0	1,186	2,173	1,651	0
Long Term												
Full Simulation Period[b]	1,511	620	410	0	0	0	0	0	1,883	3,547	2,575	1,798
Water Year Types[c]												
Wet (32%)	1,380	487	99	0	0	0	0	0	1,702	3,828	2,981	661
Above Normal (16%)	1,521	407	338	0	0	0	0	0	2,167	4,275	3,120	3,917
Below Normal (13%)	1,628	567	597	0	0	0	0	0	2,026	4,141	2,908	2,312
Dry (24%)	1,690	807	679	0	0	0	0	0	2,057	3,261	2,033	1,899
Critical (15%)	1,379	872	545	0	0	0	0	0	1,548	2,083	1,706	1,327

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-546	-637	-942	-1,359	0	0	0	0	-474	291	100	1,201
20%	-621	-679	-715	-1,154	0	0	0	0	-662	435	169	615
30%	-668	-694	-697	-935	0	0	0	0	-545	529	156	-146
40%	-533	-696	-617	-868	0	0	0	0	-410	312	220	-660
50%	-496	-623	-718	-739	0	0	0	0	-339	259	312	-810
60%	-388	-883	-936	0	0	0	0	0	-139	319	477	-740
70%	-381	-880	-781	0	0	0	0	0	-254	539	181	-657
80%	-307	-962	0	0	0	0	0	0	-234	518	5	-1,591
90%	-204	-768	0	0	0	0	0	0	-182	296	86	-1,305
Long Term												
Full Simulation Period[b]	-481	-731	-579	-595	0	0	0	0	-313	355	160	-448
Water Year Types[c]												
Wet (32%)	-783	-884	-540	-174	0	0	0	0	-117	301	202	-2,069
Above Normal (16%)	-356	-1,054	-766	-309	0	0	0	0	-473	254	178	1,287
Below Normal (13%)	-642	-921	-640	-761	0	0	0	0	-811	328	332	91
Dry (24%)	-224	-551	-491	-1,012	0	0	0	0	-275	535	58	-19
Critical (15%)	-245	-175	-552	-968	0	0	0	0	-168	307	64	-26

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

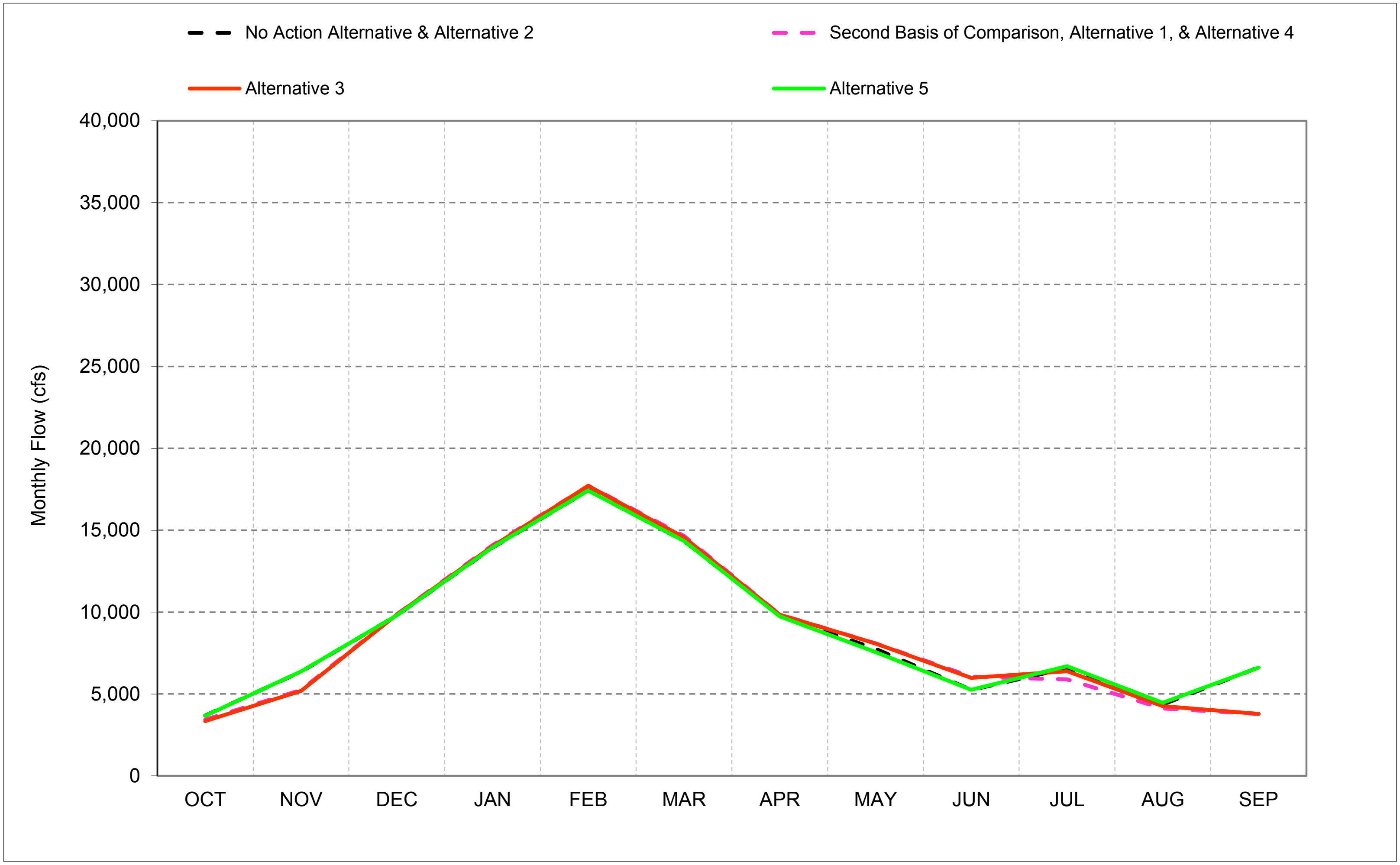
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.32. Sutter and Steamboat Slough Flows

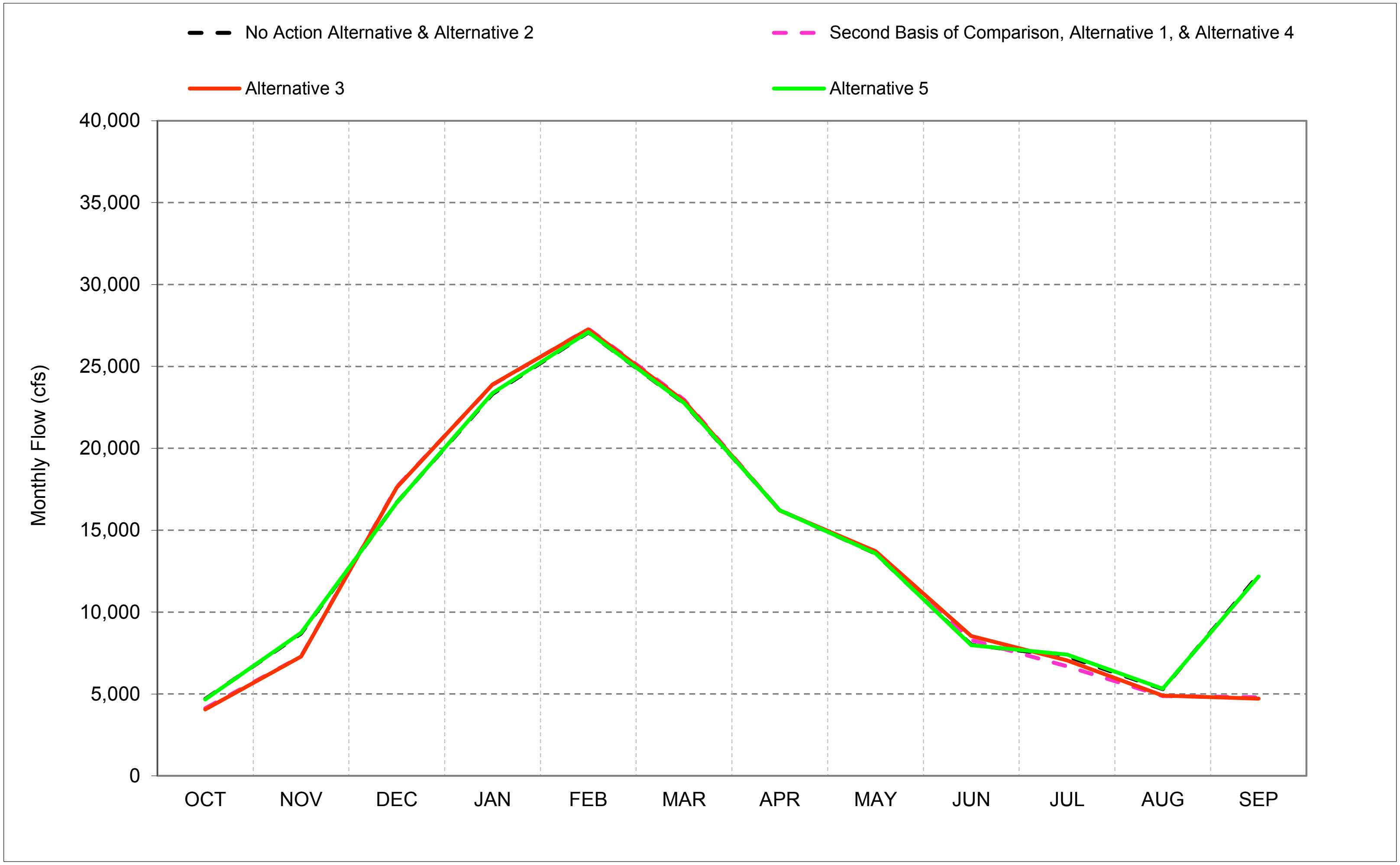
Figure C-32-1. Sutter and Steamboat Slough, Long-Term* Average Flow



*Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-32-2. Sutter and Steamboat Slough, Wet Year* Long-Term Average Flow**

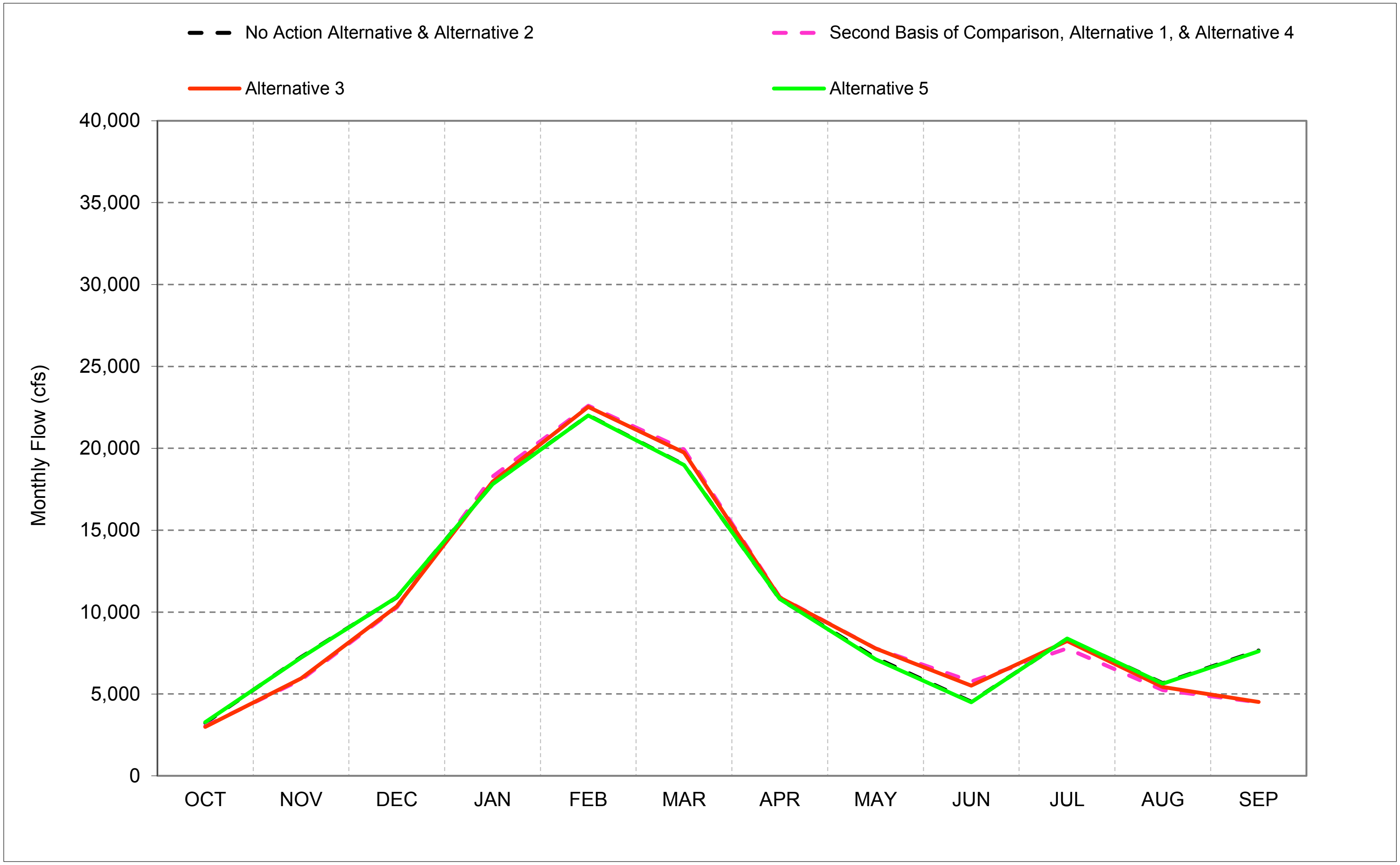


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-32-3. Sutter and Steamboat Slough, Above Normal Year* Long-Term Average Flow**

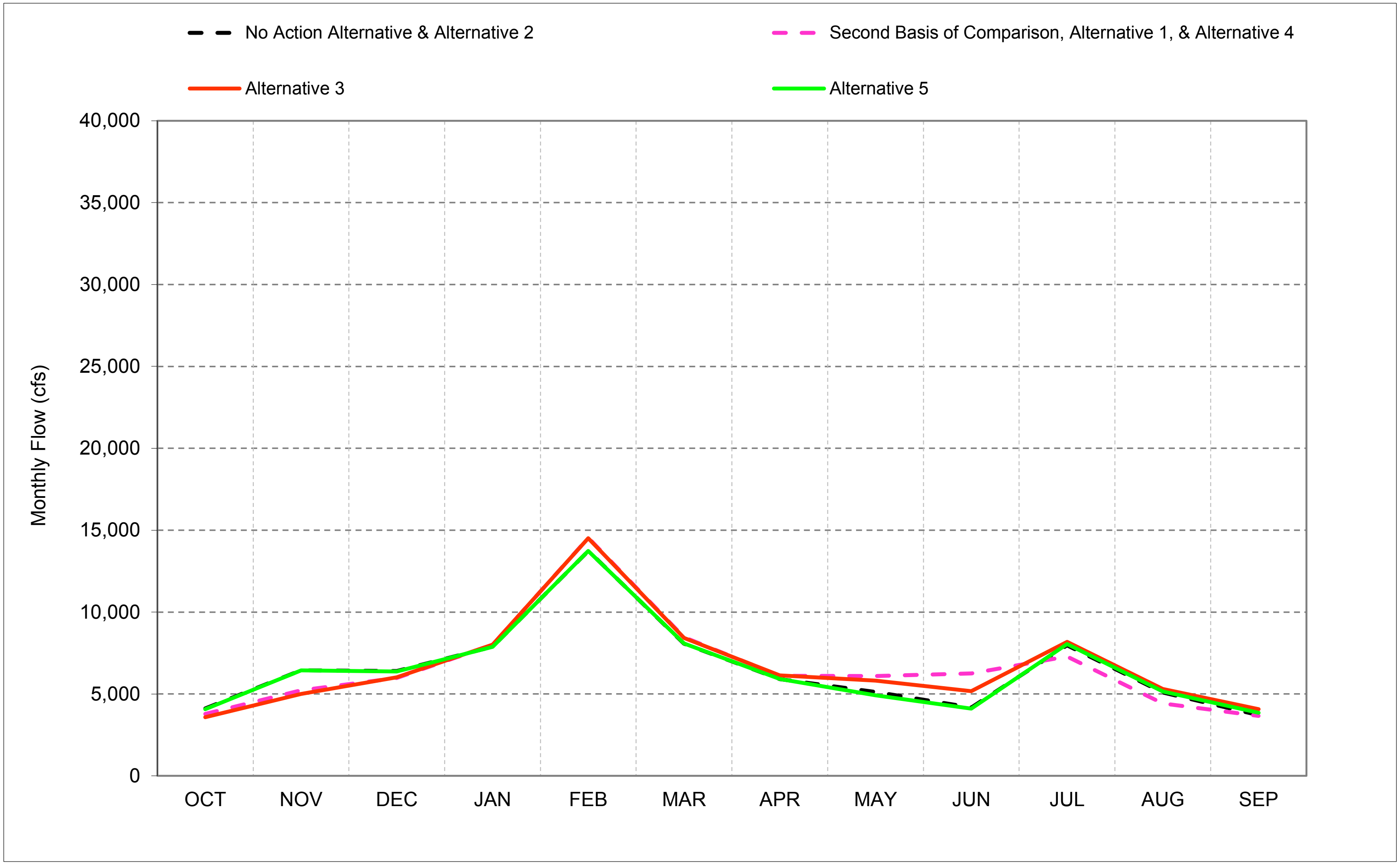


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-32-4. Sutter and Steamboat Slough, Below Normal Year* Long-Term Average Flow**

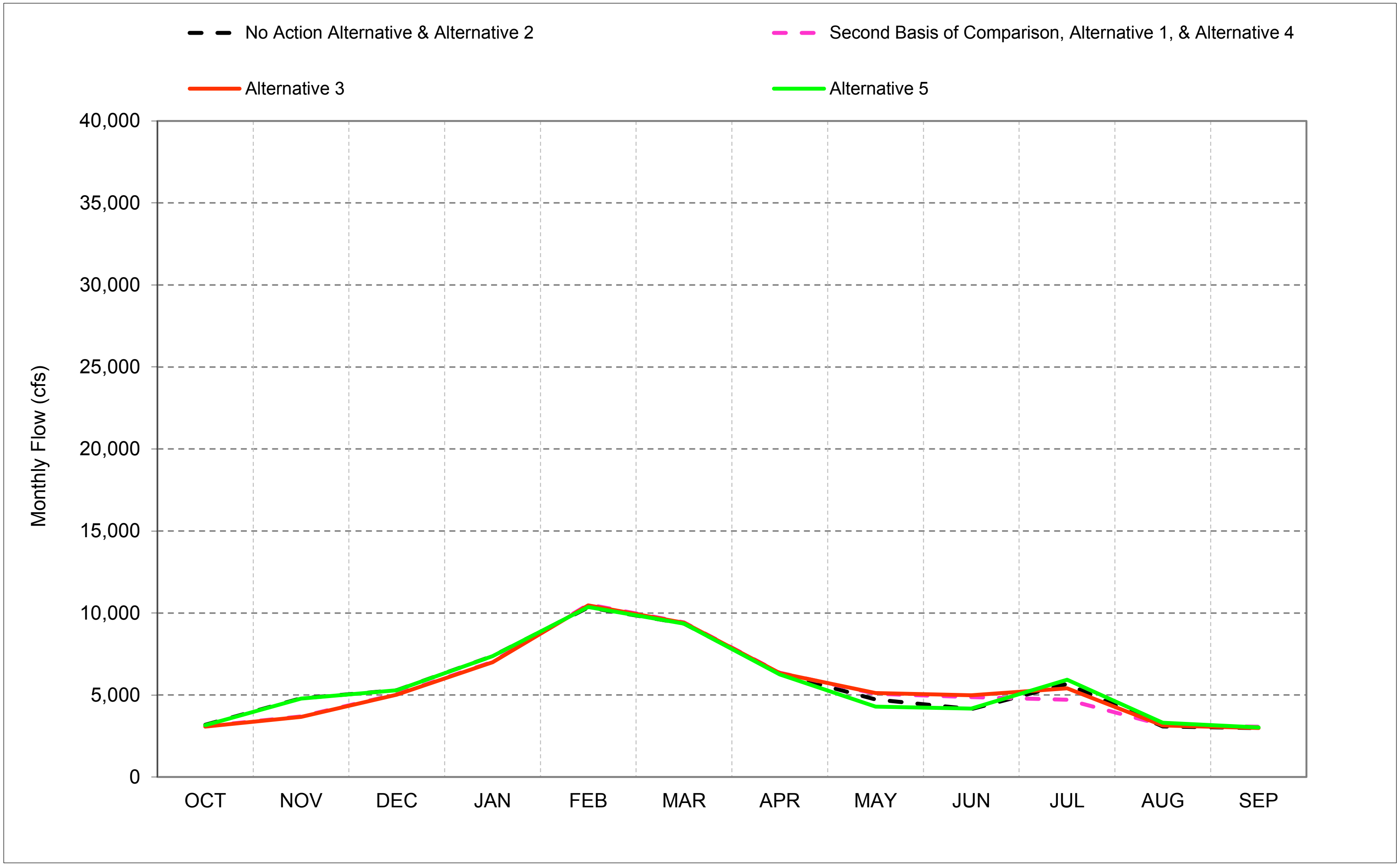


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-32-5. Sutter and Steamboat Slough, Dry Year* Long-Term Average Flow**

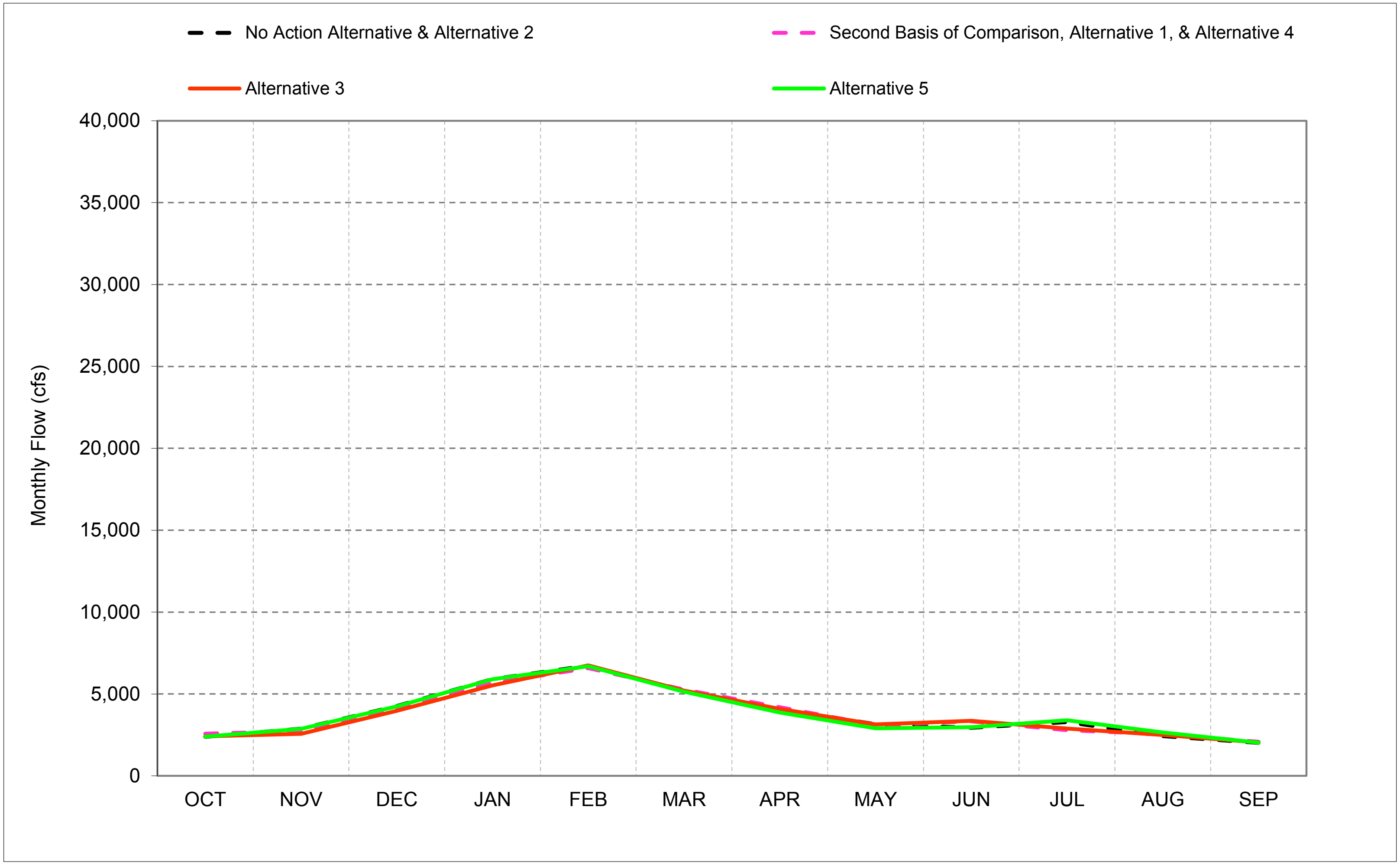


*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure C-32-6. Sutter and Steamboat Slough, Critical Year* Long-Term Average Flow**



*As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

**Based on the 82-year simulation period.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-32-1. Sutter and Steamboat Slough, Monthly Flow

No Action Alternative & Alternative 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5,638	9,919	22,841	30,715	34,265	29,738	21,623	17,660	7,388	9,072	5,798	13,044
20%	5,118	8,100	14,561	24,952	29,584	24,030	14,768	11,502	5,656	8,823	5,613	12,752
30%	4,445	7,825	9,289	17,508	23,047	16,979	10,185	7,102	4,575	8,224	5,352	8,255
40%	3,969	6,762	7,709	10,939	19,729	13,223	8,773	5,574	4,298	7,420	5,249	7,773
50%	3,370	5,910	6,296	9,129	14,750	10,865	6,774	4,994	4,232	6,552	4,790	4,655
60%	2,635	4,713	5,846	7,832	10,867	9,111	5,302	4,528	4,067	6,086	4,392	3,813
70%	2,379	3,412	5,350	6,231	8,435	8,001	4,678	4,374	3,812	5,689	3,357	2,914
80%	2,250	2,743	3,796	5,556	6,943	6,224	4,254	4,044	3,359	4,870	2,687	2,371
90%	1,805	2,331	3,187	4,712	5,838	4,541	3,788	3,408	3,114	3,427	2,335	1,940
Long Term												
Full Simulation Period[b]	3,683	6,361	9,793	13,944	17,426	14,344	9,777	7,750	5,259	6,577	4,367	6,623
Water Year Types[c]												
Wet (32%)	4,698	8,688	16,691	23,326	27,078	22,752	16,223	13,578	7,999	7,304	5,292	12,260
Above Normal (16%)	3,238	7,246	10,898	17,822	22,015	19,003	10,799	7,201	4,525	8,363	5,657	7,657
Below Normal (13%)	4,119	6,441	6,401	7,889	13,734	8,070	5,902	5,121	4,183	7,975	5,088	3,714
Dry (24%)	3,189	4,806	5,295	7,376	10,343	9,354	6,297	4,734	4,153	5,670	3,092	2,985
Critical (15%)	2,392	2,881	4,260	5,913	6,733	5,150	4,058	3,153	2,947	3,294	2,430	2,020

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,649	8,840	25,683	31,237	34,303	30,702	21,643	17,648	7,769	8,400	5,588	4,885
20%	4,462	5,375	15,531	26,676	29,803	24,242	14,740	12,352	6,848	7,765	5,301	4,690
30%	4,036	4,788	8,986	19,028	24,301	19,273	10,157	7,389	6,374	7,223	5,023	4,489
40%	3,478	4,540	7,230	11,878	21,140	13,509	8,783	6,343	5,760	6,752	4,743	4,405
50%	3,213	4,085	5,858	9,554	15,013	11,030	6,949	5,561	5,277	6,271	4,326	4,186
60%	2,961	3,716	5,257	7,428	10,947	9,190	5,286	5,226	4,945	5,615	3,628	3,595
70%	2,608	3,328	4,481	5,870	8,705	8,062	4,739	4,793	4,229	4,603	3,209	2,840
80%	2,277	2,840	3,740	5,110	7,084	6,387	4,461	4,306	4,016	3,932	2,803	2,441
90%	1,891	2,345	3,143	4,381	5,968	4,614	4,053	3,378	3,595	2,947	2,385	1,997
Long Term												
Full Simulation Period[b]	3,435	5,243	9,859	14,083	17,717	14,650	9,854	8,085	6,059	5,895	4,116	3,779
Water Year Types[c]												
Wet (32%)	4,134	7,289	17,643	23,870	27,298	22,969	16,213	13,686	8,296	6,695	4,872	4,797
Above Normal (16%)	3,037	5,861	10,293	18,272	22,598	19,927	10,909	7,780	5,769	7,790	5,239	4,495
Below Normal (13%)	3,787	5,220	5,987	8,000	14,534	8,463	6,113	6,100	6,251	7,289	4,427	3,664
Dry (24%)	3,103	3,694	5,048	7,023	10,521	9,433	6,359	5,082	4,871	4,713	3,171	3,069
Critical (15%)	2,582	2,741	4,090	5,680	6,582	5,275	4,189	3,102	3,328	2,799	2,552	2,083

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-989	-1,080	2,841	522	38	964	20	-12	381	-672	-210	-8,159
20%	-656	-2,725	970	1,724	220	212	-28	849	1,192	-1,059	-312	-8,062
30%	-409	-3,037	-303	1,520	1,254	2,293	-28	287	1,799	-1,001	-329	-3,766
40%	-491	-2,222	-479	938	1,411	286	10	769	1,462	-668	-507	-3,368
50%	-156	-1,825	-437	425	263	165	175	567	1,045	-280	-464	-469
60%	326	-997	-589	-404	80	80	-16	697	878	-470	-764	-218
70%	229	-85	-869	-360	270	62	60	420	417	-1,085	-148	-74
80%	26	97	-56	-446	141	163	207	262	657	-938	115	70
90%	86	14	-44	-331	130	74	265	-31	481	-480	50	57
Long Term												
Full Simulation Period[b]	-249	-1,118	65	138	291	306	77	335	799	-682	-251	-2,844
Water Year Types[c]												
Wet (32%)	-564	-1,398	952	544	219	217	-10	108	297	-609	-420	-7,462
Above Normal (16%)	-201	-1,385	-605	450	583	924	111	579	1,244	-572	-418	-3,162
Below Normal (13%)	-332	-1,221	-414	111	800	393	211	978	2,068	-685	-661	-50
Dry (24%)	-86	-1,111	-247	-353	178	79	62	348	717	-957	79	84
Critical (15%)	189	-140	-169	-233	-151	125	131	-51	381	-495	122	64

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-32-2. Sutter and Steamboat Slough, Monthly Flow

No Action Alternative & Alternative 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5,638	9,919	22,841	30,715	34,265	29,738	21,623	17,660	7,388	9,072	5,798	13,044
20%	5,118	8,100	14,561	24,952	29,584	24,030	14,768	11,502	5,656	8,823	5,613	12,752
30%	4,445	7,825	9,289	17,508	23,047	16,979	10,185	7,102	4,575	8,224	5,352	8,255
40%	3,969	6,762	7,709	10,939	19,729	13,223	8,773	5,574	4,298	7,420	5,249	7,773
50%	3,370	5,910	6,296	9,129	14,750	10,865	6,774	4,994	4,232	6,552	4,790	4,655
60%	2,635	4,713	5,846	7,832	10,867	9,111	5,302	4,528	4,067	6,086	4,392	3,813
70%	2,379	3,412	5,350	6,231	8,435	8,001	4,678	4,374	3,812	5,689	3,357	2,914
80%	2,250	2,743	3,796	5,556	6,943	6,224	4,254	4,044	3,359	4,870	2,687	2,371
90%	1,805	2,331	3,187	4,712	5,838	4,541	3,788	3,408	3,114	3,427	2,335	1,940
Long Term												
Full Simulation Period[b]	3,683	6,361	9,793	13,944	17,426	14,344	9,777	7,750	5,259	6,577	4,367	6,623
Water Year Types[c]												
Wet (32%)	4,698	8,688	16,691	23,326	27,078	22,752	16,223	13,578	7,999	7,304	5,292	12,260
Above Normal (16%)	3,238	7,246	10,898	17,822	22,015	19,003	10,799	7,201	4,525	8,363	5,657	7,657
Below Normal (13%)	4,119	6,441	6,401	7,889	13,734	8,070	5,902	5,121	4,183	7,975	5,088	3,714
Dry (24%)	3,189	4,806	5,295	7,376	10,343	9,354	6,297	4,734	4,153	5,670	3,092	2,985
Critical (15%)	2,392	2,881	4,260	5,913	6,733	5,150	4,058	3,153	2,947	3,294	2,430	2,020

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,655	8,981	25,614	31,086	34,292	30,700	21,619	17,642	7,301	8,858	5,700	4,979
20%	4,421	5,559	15,854	26,457	29,791	24,240	14,741	11,882	6,721	8,591	5,460	4,771
30%	3,987	4,855	9,051	19,041	24,281	18,210	10,159	7,348	5,733	8,316	5,118	4,459
40%	3,479	4,405	7,191	11,812	20,933	13,506	8,757	6,313	5,545	7,487	4,917	4,257
50%	3,160	4,087	5,828	9,280	15,030	11,028	6,954	5,489	5,237	6,799	4,586	4,171
60%	2,671	3,707	5,172	7,323	10,944	9,183	5,259	4,982	4,866	6,018	4,198	3,755
70%	2,363	3,356	4,611	5,757	8,923	8,175	4,870	4,670	4,636	4,952	3,458	2,880
80%	2,252	2,811	3,783	5,111	6,950	6,390	4,327	4,406	3,987	4,296	2,763	2,528
90%	1,806	2,339	3,122	4,359	5,955	4,566	4,038	3,499	3,589	2,985	2,378	1,943
Long Term												
Full Simulation Period[b]	3,348	5,199	9,841	14,017	17,709	14,570	9,835	8,077	5,988	6,384	4,261	3,789
Water Year Types[c]												
Wet (32%)	4,062	7,287	17,615	23,896	27,272	22,880	16,209	13,724	8,547	7,056	4,904	4,720
Above Normal (16%)	2,990	5,960	10,354	17,956	22,528	19,733	10,885	7,780	5,512	8,240	5,425	4,511
Below Normal (13%)	3,591	5,007	6,025	8,024	14,513	8,425	6,131	5,817	5,182	8,181	5,314	4,079
Dry (24%)	3,075	3,671	5,021	6,996	10,476	9,410	6,344	5,131	4,986	5,414	3,147	2,994
Critical (15%)	2,418	2,576	3,971	5,537	6,755	5,204	4,098	3,146	3,368	2,888	2,500	2,047

Alternative 3 minus No Action Alternative & Alternative 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-983	-938	2,773	371	27	962	-4	-18	-87	-214	-98	-8,065
20%	-697	-2,541	1,293	1,505	207	210	-27	380	1,064	-233	-153	-7,981
30%	-458	-2,970	-238	1,533	1,234	1,231	-26	245	1,158	92	-234	-3,796
40%	-490	-2,358	-518	872	1,204	283	-17	739	1,247	67	-332	-3,517
50%	-209	-1,823	-468	151	280	163	180	494	1,005	248	-204	-485
60%	35	-1,007	-674	-509	77	72	-44	454	799	-67	-194	-59
70%	-16	-56	-739	-473	488	174	192	296	824	-737	101	-33
80%	1	68	-13	-445	7	166	73	363	628	-573	75	157
90%	1	8	-65	-353	116	26	250	91	474	-442	43	3
Long Term												
Full Simulation Period[b]	-336	-1,162	48	72	283	226	57	327	729	-192	-106	-2,834
Water Year Types[c]												
Wet (32%)	-635	-1,401	924	570	193	128	-14	146	547	-248	-389	-7,540
Above Normal (16%)	-248	-1,286	-543	134	513	730	87	579	987	-122	-233	-3,146
Below Normal (13%)	-527	-1,434	-376	135	779	355	229	695	999	206	226	365
Dry (24%)	-114	-1,134	-274	-380	133	56	47	397	833	-257	55	9
Critical (15%)	26	-305	-288	-376	22	54	40	-8	421	-406	70	28

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-32-3. Sutter and Steamboat Slough, Monthly Flow

No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	5,638	9,919	22,841	30,715	34,265	29,738	21,623	17,660	7,388	9,072	5,798	13,044
20%	5,118	8,100	14,561	24,952	29,584	24,030	14,768	11,502	5,656	8,823	5,613	12,752
30%	4,445	7,825	9,289	17,508	23,047	16,979	10,185	7,102	4,575	8,224	5,352	8,255
40%	3,969	6,762	7,709	10,939	19,729	13,223	8,773	5,574	4,298	7,420	5,249	7,773
50%	3,370	5,910	6,296	9,129	14,750	10,865	6,774	4,994	4,232	6,552	4,790	4,655
60%	2,635	4,713	5,846	7,832	10,867	9,111	5,302	4,528	4,067	6,086	4,392	3,813
70%	2,379	3,412	5,350	6,231	8,435	8,001	4,678	4,374	3,812	5,689	3,357	2,914
80%	2,250	2,743	3,796	5,556	6,943	6,224	4,254	4,044	3,359	4,870	2,687	2,371
90%	1,805	2,331	3,187	4,712	5,838	4,541	3,788	3,408	3,114	3,427	2,335	1,940
Long Term												
Full Simulation Period[b]	3,683	6,361	9,793	13,944	17,426	14,344	9,777	7,750	5,259	6,577	4,367	6,623
Water Year Types[c]												
Wet (32%)	4,698	8,688	16,691	23,326	27,078	22,752	16,223	13,578	7,999	7,304	5,292	12,260
Above Normal (16%)	3,238	7,246	10,898	17,822	22,015	19,003	10,799	7,201	4,525	8,363	5,657	7,657
Below Normal (13%)	4,119	6,441	6,401	7,889	13,734	8,070	5,902	5,121	4,183	7,975	5,088	3,714
Dry (24%)	3,189	4,806	5,295	7,376	10,343	9,354	6,297	4,734	4,153	5,670	3,092	2,985
Critical (15%)	2,392	2,881	4,260	5,913	6,733	5,150	4,058	3,153	2,947	3,294	2,430	2,020

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	5,626	9,905	22,792	30,588	34,257	29,735	21,624	17,663	7,422	9,036	5,798	13,038
20%	4,926	8,064	14,561	24,919	29,567	24,035	14,767	11,460	5,622	8,816	5,637	12,659
30%	4,384	7,838	9,295	17,508	23,186	17,024	10,189	7,100	4,590	8,434	5,396	8,258
40%	3,981	6,857	7,720	10,911	19,737	13,224	8,781	5,314	4,324	7,483	5,249	7,767
50%	3,389	5,901	6,295	9,140	14,814	10,820	6,789	4,834	4,212	6,792	5,044	4,773
60%	2,635	4,723	5,839	7,807	10,869	9,110	5,156	4,448	4,061	6,246	4,650	4,065
70%	2,416	3,424	5,412	6,225	8,436	7,959	4,761	3,942	3,881	5,959	3,524	2,956
80%	2,249	2,744	3,795	5,556	6,943	6,223	4,081	3,599	3,269	5,075	2,826	2,449
90%	1,805	2,334	3,173	4,689	5,828	4,536	3,731	2,973	3,110	3,529	2,566	2,075
Long Term												
Full Simulation Period[b]	3,669	6,373	9,787	13,951	17,428	14,342	9,745	7,565	5,251	6,703	4,471	6,620
Water Year Types[c]												
Wet (32%)	4,660	8,749	16,681	23,370	27,094	22,759	16,223	13,576	7,984	7,406	5,330	12,175
Above Normal (16%)	3,288	7,225	10,908	17,816	22,010	18,979	10,801	7,113	4,505	8,386	5,631	7,617
Below Normal (13%)	4,077	6,437	6,377	7,873	13,732	8,078	5,925	4,919	4,113	8,055	5,154	3,851
Dry (24%)	3,166	4,793	5,295	7,373	10,362	9,351	6,264	4,299	4,171	5,939	3,312	3,028
Critical (15%)	2,401	2,879	4,250	5,893	6,689	5,141	3,866	2,902	2,978	3,393	2,656	2,030

Alternative 5 minus No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-12	-15	-50	-127	-8	-3	1	3	34	-36	1	-6
20%	-192	-36	0	-34	-16	5	-1	-43	-34	-8	24	-93
30%	-61	13	6	0	139	44	3	-2	15	210	44	3
40%	12	95	11	-29	8	0	8	-260	27	62	-1	-6
50%	19	-9	-1	11	64	-45	15	-161	-20	240	254	118
60%	0	10	-7	-25	2	-1	-147	-80	-6	161	258	252
70%	37	11	62	-5	1	-41	82	-432	69	270	167	42
80%	-2	1	-1	0	0	-2	-174	-445	-91	205	139	78
90%	0	3	-14	-23	-11	-5	-56	-436	-4	102	231	135
Long Term												
Full Simulation Period[b]	-14	12	-6	7	2	-2	-33	-185	-8	127	104	-3
Water Year Types[c]												
Wet (32%)	-37	61	-10	44	16	7	0	-2	-15	102	38	-84
Above Normal (16%)	50	-21	10	-6	-5	-24	2	-88	-20	23	-26	-40
Below Normal (13%)	-42	-5	-24	-16	-2	8	23	-202	-70	80	66	137
Dry (24%)	-23	-12	1	-3	19	-2	-33	-436	18	268	220	42
Critical (15%)	9	-2	-10	-20	-44	-9	-192	-251	31	99	226	10

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-32-4. Sutter and Steamboat Slough, Monthly Flow

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	4,649	8,840	25,683	31,237	34,303	30,702	21,643	17,648	7,769	8,400	5,588	4,885
20%	4,462	5,375	15,531	26,676	29,803	24,242	14,740	12,352	6,848	7,765	5,301	4,690
30%	4,036	4,788	8,986	19,028	24,301	19,273	10,157	7,389	6,374	7,223	5,023	4,489
40%	3,478	4,540	7,230	11,878	21,140	13,509	8,783	6,343	5,760	6,752	4,743	4,405
50%	3,213	4,085	5,858	9,554	15,013	11,030	6,949	5,561	5,277	6,271	4,326	4,186
60%	2,961	3,716	5,257	7,428	10,947	9,190	5,286	5,226	4,945	5,615	3,628	3,595
70%	2,608	3,328	4,481	5,870	8,705	8,062	4,739	4,793	4,229	4,603	3,209	2,840
80%	2,277	2,840	3,740	5,110	7,084	6,387	4,461	4,306	4,016	3,932	2,803	2,441
90%	1,891	2,345	3,143	4,381	5,968	4,614	4,053	3,378	3,595	2,947	2,385	1,997
Long Term												
Full Simulation Period[b]	3,435	5,243	9,859	14,083	17,717	14,650	9,854	8,085	6,059	5,895	4,116	3,779
Water Year Types[c]												
Wet (32%)	4,134	7,289	17,643	23,870	27,298	22,969	16,213	13,686	8,296	6,695	4,872	4,797
Above Normal (16%)	3,037	5,861	10,293	18,272	22,598	19,927	10,909	7,780	5,769	7,790	5,239	4,495
Below Normal (13%)	3,787	5,220	5,987	8,000	14,534	8,463	6,113	6,100	6,251	7,289	4,427	3,664
Dry (24%)	3,103	3,694	5,048	7,023	10,521	9,433	6,359	5,082	4,871	4,713	3,171	3,069
Critical (15%)	2,582	2,741	4,090	5,680	6,582	5,275	4,189	3,102	3,328	2,799	2,552	2,083

No Action Alternative & Alternative 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	5,638	9,919	22,841	30,715	34,265	29,738	21,623	17,660	7,388	9,072	5,798	13,044
20%	5,118	8,100	14,561	24,952	29,584	24,030	14,768	11,502	5,656	8,823	5,613	12,752
30%	4,445	7,825	9,289	17,508	23,047	16,979	10,185	7,102	4,575	8,224	5,352	8,255
40%	3,969	6,762	7,709	10,939	19,729	13,223	8,773	5,574	4,298	7,420	5,249	7,773
50%	3,370	5,910	6,296	9,129	14,750	10,865	6,774	4,994	4,232	6,552	4,790	4,655
60%	2,635	4,713	5,846	7,832	10,867	9,111	5,302	4,528	4,067	6,086	4,392	3,813
70%	2,379	3,412	5,350	6,231	8,435	8,001	4,678	4,374	3,812	5,689	3,357	2,914
80%	2,250	2,743	3,796	5,556	6,943	6,224	4,254	4,044	3,359	4,870	2,687	2,371
90%	1,805	2,331	3,187	4,712	5,838	4,541	3,788	3,408	3,114	3,427	2,335	1,940
Long Term												
Full Simulation Period[b]	3,683	6,361	9,793	13,944	17,426	14,344	9,777	7,750	5,259	6,577	4,367	6,623
Water Year Types[c]												
Wet (32%)	4,698	8,688	16,691	23,326	27,078	22,752	16,223	13,578	7,999	7,304	5,292	12,260
Above Normal (16%)	3,238	7,246	10,898	17,822	22,015	19,003	10,799	7,201	4,525	8,363	5,657	7,657
Below Normal (13%)	4,119	6,441	6,401	7,889	13,734	8,070	5,902	5,121	4,183	7,975	5,088	3,714
Dry (24%)	3,189	4,806	5,295	7,376	10,343	9,354	6,297	4,734	4,153	5,670	3,092	2,985
Critical (15%)	2,392	2,881	4,260	5,913	6,733	5,150	4,058	3,153	2,947	3,294	2,430	2,020

No Action Alternative & Alternative 2 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	989	1,080	-2,841	-522	-38	-964	-20	12	-381	672	210	8,159
20%	656	2,725	-970	-1,724	-220	-212	28	-849	-1,192	1,059	312	8,062
30%	409	3,037	303	-1,520	-1,254	-2,293	28	-287	-1,799	1,001	329	3,766
40%	491	2,222	479	-938	-1,411	-286	-10	-769	-1,462	668	507	3,368
50%	156	1,825	437	-425	-263	-165	-175	-567	-1,045	280	464	469
60%	-326	997	589	404	-80	-80	16	-697	-878	470	764	218
70%	-229	85	869	360	-270	-62	-60	-420	-417	1,085	148	74
80%	-26	-97	56	446	-141	-163	-207	-262	-657	938	-115	-70
90%	-86	-14	44	331	-130	-74	-265	31	-481	480	-50	-57
Long Term												
Full Simulation Period[b]	249	1,118	-65	-138	-291	-306	-77	-335	-799	682	251	2,844
Water Year Types[c]												
Wet (32%)	564	1,398	-952	-544	-219	-217	10	-108	-297	609	420	7,462
Above Normal (16%)	201	1,385	605	-450	-583	-924	-111	-579	-1,244	572	418	3,162
Below Normal (13%)	332	1,221	414	-111	-800	-393	-211	-978	-2,068	685	661	50
Dry (24%)	86	1,111	247	353	-178	-79	-62	-348	-717	957	-79	-84
Critical (15%)	-189	140	169	233	151	-125	-131	51	-381	495	-122	-64

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-32-5. Sutter and Steamboat Slough, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,649	8,840	25,683	31,237	34,303	30,702	21,643	17,648	7,769	8,400	5,588	4,885
20%	4,462	5,375	15,531	26,676	29,803	24,242	14,740	12,352	6,848	7,765	5,301	4,690
30%	4,036	4,788	8,986	19,028	24,301	19,273	10,157	7,389	6,374	7,223	5,023	4,489
40%	3,478	4,540	7,230	11,878	21,140	13,509	8,783	6,343	5,760	6,752	4,743	4,405
50%	3,213	4,085	5,858	9,554	15,013	11,030	6,949	5,561	5,277	6,271	4,326	4,186
60%	2,961	3,716	5,257	7,428	10,947	9,190	5,286	5,226	4,945	5,615	3,628	3,595
70%	2,608	3,328	4,481	5,870	8,705	8,062	4,739	4,793	4,229	4,603	3,209	2,840
80%	2,277	2,840	3,740	5,110	7,084	6,387	4,461	4,306	4,016	3,932	2,803	2,441
90%	1,891	2,345	3,143	4,381	5,968	4,614	4,053	3,378	3,595	2,947	2,385	1,997
Long Term												
Full Simulation Period[b]	3,435	5,243	9,859	14,083	17,717	14,650	9,854	8,085	6,059	5,895	4,116	3,779
Water Year Types[c]												
Wet (32%)	4,134	7,289	17,643	23,870	27,298	22,969	16,213	13,686	8,296	6,695	4,872	4,797
Above Normal (16%)	3,037	5,861	10,293	18,272	22,598	19,927	10,909	7,780	5,769	7,790	5,239	4,495
Below Normal (13%)	3,787	5,220	5,987	8,000	14,534	8,463	6,113	6,100	6,251	7,289	4,427	3,664
Dry (24%)	3,103	3,694	5,048	7,023	10,521	9,433	6,359	5,082	4,871	4,713	3,171	3,069
Critical (15%)	2,582	2,741	4,090	5,680	6,582	5,275	4,189	3,102	3,328	2,799	2,552	2,083

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,655	8,981	25,614	31,086	34,292	30,700	21,619	17,642	7,301	8,858	5,700	4,979
20%	4,421	5,559	15,854	26,457	29,791	24,240	14,741	11,882	6,721	8,591	5,460	4,771
30%	3,987	4,855	9,051	19,041	24,281	18,210	10,159	7,348	5,733	8,316	5,118	4,459
40%	3,479	4,405	7,191	11,812	20,933	13,506	8,757	6,313	5,545	7,487	4,917	4,257
50%	3,160	4,087	5,828	9,280	15,030	11,028	6,954	5,489	5,237	6,799	4,586	4,171
60%	2,671	3,707	5,172	7,323	10,944	9,183	5,259	4,982	4,866	6,018	4,198	3,755
70%	2,363	3,356	4,611	5,757	8,923	8,175	4,870	4,670	4,636	4,952	3,458	2,880
80%	2,252	2,811	3,783	5,111	6,950	6,390	4,327	4,406	3,987	4,296	2,763	2,528
90%	1,806	2,339	3,122	4,359	5,955	4,566	4,038	3,499	3,589	2,985	2,378	1,943
Long Term												
Full Simulation Period[b]	3,348	5,199	9,841	14,017	17,709	14,570	9,835	8,077	5,988	6,384	4,261	3,789
Water Year Types[c]												
Wet (32%)	4,062	7,287	17,615	23,896	27,272	22,880	16,209	13,724	8,547	7,056	4,904	4,720
Above Normal (16%)	2,990	5,960	10,354	17,956	22,528	19,733	10,885	7,780	5,512	8,240	5,425	4,511
Below Normal (13%)	3,591	5,007	6,025	8,024	14,513	8,425	6,131	5,817	5,182	8,181	5,314	4,079
Dry (24%)	3,075	3,671	5,021	6,996	10,476	9,410	6,344	5,131	4,986	5,414	3,147	2,994
Critical (15%)	2,418	2,576	3,971	5,537	6,755	5,204	4,098	3,146	3,368	2,888	2,500	2,047

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	141	-69	-151	-11	-3	-24	-6	-469	458	112	94
20%	-41	184	324	-219	-12	-3	1	-470	-128	826	159	80
30%	-49	67	65	13	-20	-1,063	2	-42	-641	1,093	95	-30
40%	1	-136	-39	-66	-207	-3	-26	-31	-215	735	175	-149
50%	-53	3	-30	-274	18	-2	5	-72	-40	528	260	-16
60%	-290	-9	-85	-105	-3	-8	-28	-244	-79	403	570	159
70%	-245	28	129	-113	218	112	131	-124	407	348	248	40
80%	-25	-29	43	1	-134	3	-133	101	-29	365	-40	87
90%	-85	-6	-21	-21	-13	-48	-15	122	-7	37	-7	-55
Long Term												
Full Simulation Period[b]	-87	-43	-18	-66	-8	-80	-20	-8	-71	489	145	10
Water Year Types[c]												
Wet (32%)	-71	-2	-28	26	-26	-89	-4	38	251	361	31	-78
Above Normal (16%)	-48	99	62	-316	-69	-194	-24	0	-257	450	185	16
Below Normal (13%)	-195	-213	38	24	-21	-38	18	-283	-1,070	892	887	415
Dry (24%)	-28	-23	-27	-26	-45	-23	-15	49	116	701	-24	-75
Critical (15%)	-164	-165	-119	-143	172	-71	-91	43	40	88	-52	-36

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-32-6. Sutter and Steamboat Slough, Monthly Flow

Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,649	8,840	25,683	31,237	34,303	30,702	21,643	17,648	7,769	8,400	5,588	4,885
20%	4,462	5,375	15,531	26,676	29,803	24,242	14,740	12,352	6,848	7,765	5,301	4,690
30%	4,036	4,788	8,986	19,028	24,301	19,273	10,157	7,389	6,374	7,223	5,023	4,489
40%	3,478	4,540	7,230	11,878	21,140	13,509	8,783	6,343	5,760	6,752	4,743	4,405
50%	3,213	4,085	5,858	9,554	15,013	11,030	6,949	5,561	5,277	6,271	4,326	4,186
60%	2,961	3,716	5,257	7,428	10,947	9,190	5,286	5,226	4,945	5,615	3,628	3,595
70%	2,608	3,328	4,481	5,870	8,705	8,062	4,739	4,793	4,229	4,603	3,209	2,840
80%	2,277	2,840	3,740	5,110	7,084	6,387	4,461	4,306	4,016	3,932	2,803	2,441
90%	1,891	2,345	3,143	4,381	5,968	4,614	4,053	3,378	3,595	2,947	2,385	1,997
Long Term												
Full Simulation Period[b]	3,435	5,243	9,859	14,083	17,717	14,650	9,854	8,085	6,059	5,895	4,116	3,779
Water Year Types[c]												
Wet (32%)	4,134	7,289	17,643	23,870	27,298	22,969	16,213	13,686	8,296	6,695	4,872	4,797
Above Normal (16%)	3,037	5,861	10,293	18,272	22,598	19,927	10,909	7,780	5,769	7,790	5,239	4,495
Below Normal (13%)	3,787	5,220	5,987	8,000	14,534	8,463	6,113	6,100	6,251	7,289	4,427	3,664
Dry (24%)	3,103	3,694	5,048	7,023	10,521	9,433	6,359	5,082	4,871	4,713	3,171	3,069
Critical (15%)	2,582	2,741	4,090	5,680	6,582	5,275	4,189	3,102	3,328	2,799	2,552	2,083

Alternative 5

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5,626	9,905	22,792	30,588	34,257	29,735	21,624	17,663	7,422	9,036	5,798	13,038
20%	4,926	8,064	14,561	24,919	29,567	24,035	14,767	11,460	5,622	8,816	5,637	12,659
30%	4,384	7,838	9,295	17,508	23,186	17,024	10,189	7,100	4,590	8,434	5,396	8,258
40%	3,981	6,857	7,720	10,911	19,737	13,224	8,781	5,314	4,324	7,483	5,249	7,767
50%	3,389	5,901	6,295	9,140	14,814	10,820	6,789	4,834	4,212	6,792	5,044	4,773
60%	2,635	4,723	5,839	7,807	10,869	9,110	5,156	4,448	4,061	6,246	4,650	4,065
70%	2,416	3,424	5,412	6,225	8,436	7,959	4,761	3,942	3,881	5,959	3,524	2,956
80%	2,249	2,744	3,795	5,556	6,943	6,223	4,081	3,599	3,269	5,075	2,826	2,449
90%	1,805	2,334	3,173	4,689	5,828	4,536	3,731	2,973	3,110	3,529	2,566	2,075
Long Term												
Full Simulation Period[b]	3,669	6,373	9,787	13,951	17,428	14,342	9,745	7,565	5,251	6,703	4,471	6,620
Water Year Types[c]												
Wet (32%)	4,660	8,749	16,681	23,370	27,094	22,759	16,223	13,576	7,984	7,406	5,330	12,175
Above Normal (16%)	3,288	7,225	10,908	17,816	22,010	18,979	10,801	7,113	4,505	8,386	5,631	7,617
Below Normal (13%)	4,077	6,437	6,377	7,873	13,732	8,078	5,925	4,919	4,113	8,055	5,154	3,851
Dry (24%)	3,166	4,793	5,295	7,373	10,362	9,351	6,264	4,299	4,171	5,939	3,312	3,028
Critical (15%)	2,401	2,879	4,250	5,893	6,689	5,141	3,866	2,902	2,978	3,393	2,656	2,030

Alternative 5 minus Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	977	1,065	-2,891	-649	-46	-967	-19	15	-348	636	211	8,153
20%	464	2,689	-970	-1,757	-236	-207	27	-892	-1,227	1,051	337	7,968
30%	348	3,050	309	-1,520	-1,115	-2,249	32	-289	-1,784	1,211	373	3,770
40%	502	2,317	490	-967	-1,403	-286	-2	-1,030	-1,436	730	506	3,361
50%	176	1,816	437	-414	-198	-210	-160	-727	-1,065	521	717	587
60%	-326	1,007	582	380	-78	-81	-131	-777	-884	631	1,023	470
70%	-192	96	930	355	-269	-103	22	-851	-348	1,355	314	116
80%	-28	-96	55	446	-141	-164	-380	-707	-747	1,143	23	8
90%	-86	-10	30	308	-140	-78	-322	-405	-485	582	181	78
Long Term												
Full Simulation Period[b]	235	1,131	-72	-131	-289	-308	-110	-519	-808	808	354	2,841
Water Year Types[c]												
Wet (32%)	527	1,459	-962	-500	-204	-210	10	-110	-312	711	458	7,378
Above Normal (16%)	250	1,364	616	-456	-588	-947	-108	-667	-1,264	595	392	3,122
Below Normal (13%)	290	1,217	390	-127	-802	-385	-188	-1,180	-2,138	766	727	187
Dry (24%)	63	1,099	247	350	-159	-81	-95	-783	-700	1,226	141	-42
Critical (15%)	-180	138	159	213	107	-134	-323	-201	-350	594	104	-54

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

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Appendix 5B

Sensitivity Analysis on Representation of EID's Warren Act and EDCWA's Water Service Contracts with Reclamation in Alternatives 3 and 5

During internal review of the CalSim II models, it was discovered that the demands for the El Dorado Irrigation District (EID) and El Dorado County Water Agency (EDCWA) contracts were not included in Alternatives 3 and 5, as intended. In an effort to address this oversight, this appendix provides information on and findings from a sensitivity analysis of potential effects of including EID's Warren Act contract and EDCWA's water service contract with Reclamation. The sensitivity analysis includes system operations (CalSim II) and temperature (HEC-5Q) model runs with inclusion of these demands at Folsom Lake. It is apparent from this analysis that inclusion of these contracts would not change the previous conclusions in Chapters 5 through 21.

The following summary focuses on the differences seen within Folsom Lake and the American River. As will be discussed further in this appendix, addition of these demands did not show sensitivity to the rest of the CVP and SWP system and no further model simulations were necessary to capture potential effects.

5B.1 Background

This section provides brief background on EID and EDCWA's Warren Act contracts with Reclamation.

EID Power to Consumptive Use Transfer and Warren Act Contract

EID has requested to execute a Warren Act contract with Reclamation for use of Folsom Reservoir to convey 17,000 acre-feet annually of non-Central Valley Project (CVP) water from EID's El Dorado Hydroelectric Project (FERC Project 184); a 20 megawatt power project with four small storage reservoirs providing flows to the South Fork of the American River. The Contract was originally negotiated and completed in 2005, but was not executed because of potential operational impacts and difficulties in securing concurrence from the National Marine Fisheries Service (NMFS) that this action is "not likely to adversely affect" threatened and endangered species. In 2014, the Section 7 consultation for the EID Warren Act contract was completed with NMFS. The Section 7 consultation allowed EID to transfer up to 7,500 AF without a temperature control device (to target warmer diversions) and could transfer the full volume of 17,000 AF after construction and implementation of a temperature control device.

Execution of the contract will result in the diversion of flow out of Folsom Reservoir. Due to the anticipated effect of this reduction in historical inflow, the depletion of Folsom inflow was accounted for in the 2008 Biological Assessment future conditions modeling, but not referenced in the proposed action.

El Dorado County Water Agency Water Service Contract

Public Law 101-514, Section 206(b) (1) (B) directed the Secretary to enter into a M&I water supply contract with EDCWA for up to 15,000 AF of CVP water diverted from Folsom Reservoir.

5B.2 Methodology

CalSim II model simulations of Alternatives 3 and 5 were rerun with inclusion of these Warren Act contracts (specifically CalSim II parameters: dem_dsa70_pmi, np_dr70_imi, prj_dr70_imi, DEM_D8F_WR_ANN, DEM_D8I_PMI_ANN, ElDorIDPL table values) as diversions from Folsom Lake. Subsequently, HEC-5Q temperature model was rerun for the American River. The results of Alternatives 3 and 5 are compared with and without representation of the Warren Act and water service contracts. The comparisons represent the changes solely due to inclusion of these diversions at the Folsom Lake.

5B.3 Results

This section presents select CalSim II model results and American River temperature model results.

Results for Shasta, Trinity and Oroville show that changes in reservoir storage were less than 2% by month and when averaged by water year types. This minor change was considered minor and not substantial to the system outside of the American River basin. These results were consistent for both Alternative 3 and Alternative 5.

Folsom Storage showed a less than 3% difference when averaged by water year types, but larger differences between 3-6% were seen in month to month comparisons. Although this is slightly higher than the differences seen elsewhere in the system, the new values do not change any of the conclusions presented in Chapters 5 through 21. Results at Folsom were similar for both Alternative 3 and Alternative 5.

American River flows showed the most difference with reductions in the drier water years. Alternative 3 shows more differences than Alternative 5 with differences as high as 6% in August of critical years. Although these results show some differences with inclusion of the contracts, these new values do not change any of the conclusions presented in Chapters 5 through 21.

American River temperatures below Nimbus Dam and at Watt Avenue for Alternative 5 showed a slight decrease in October of the drier years, but was within 5% when averaged by water year type. Although these results show some improvement in temperature with inclusion of the contracts, these new values do not change any of the conclusions presented in Chapters 5 through 21.

Alternative 3 did not show any differences above 1% with the inclusion of these contracts.

Temperature threshold exceedances in the American River show 1 to 2% differences in Alternatives 3 and 5 with and without inclusion of the EID and ECWA diversions; which is considered similar in this EIS.

These results confirm that inclusion of EID's Warren Act contract and ECWA's water service contract that result in increased diversions from Folsom Lake do not cause many changes greater than 5% in model results and hence do not change any of the conclusions presented in Chapters 5 through 21.

The following results for Alternatives 3 and 5 are presented:

- 5B.3.1 Trinity Storage
- 5B.3.2. Shasta Storage
- 5B.3.3. Oroville Storage
- 5B.3.4. Folsom Storage
- 5B.3.5. Folsom Elevation
- 5B.3.6. American River below Nimbus Flow
- 5B.3.7. Sacramento River at Freeport Flow
- 5B.3.8. Delta Outflow
- 5B.3.9. Jones and Banks Export Volume
- 5B.3.10. American River below Nimbus Temperature
- 5B.3.11. American River at Watt Temperature
- 5B.3.12. American River at Mouth Temperature
- 5B.3.13 Temperature Threshold Exceedances – American River

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5B.3.1. Trinity Storage

Table 5B.3.1.1. Trinity Lake, End of Month Storage

Alternative 3

	End of Month Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,351	2,298	2,211	2,100	1,975
20%	1,815	1,831	1,849	1,900	2,000	2,100	2,259	2,246	2,204	2,064	1,903	1,818
30%	1,583	1,614	1,719	1,803	1,968	2,069	2,222	2,159	2,064	1,925	1,794	1,649
40%	1,365	1,400	1,572	1,671	1,858	1,995	2,104	2,046	1,937	1,759	1,581	1,419
50%	1,257	1,259	1,420	1,588	1,700	1,823	1,990	1,895	1,784	1,599	1,418	1,307
60%	1,169	1,205	1,233	1,318	1,536	1,721	1,787	1,748	1,674	1,495	1,334	1,221
70%	1,100	1,095	1,187	1,200	1,344	1,472	1,629	1,579	1,525	1,385	1,223	1,100
80%	909	956	961	1,041	1,155	1,250	1,429	1,407	1,322	1,160	1,019	937
90%	628	630	623	681	790	921	1,065	1,023	965	843	690	628
Long Term												
Full Simulation Period[b]	1,266	1,283	1,347	1,427	1,550	1,674	1,816	1,793	1,724	1,580	1,432	1,318
Water Year Types[c]												
Wet (32%)	1,502	1,537	1,643	1,766	1,928	2,053	2,224	2,248	2,192	2,067	1,936	1,805
Above Normal (16%)	1,197	1,230	1,349	1,511	1,707	1,891	2,071	2,045	1,949	1,806	1,646	1,513
Below Normal (13%)	1,434	1,457	1,477	1,542	1,629	1,717	1,858	1,786	1,680	1,509	1,334	1,199
Dry (24%)	1,173	1,179	1,206	1,226	1,318	1,450	1,585	1,537	1,468	1,301	1,152	1,056
Critical (15%)	829	803	817	829	871	952	1,003	968	936	813	664	600

Alternative 3_WA

	End of Month Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,353	2,298	2,210	2,100	1,975
20%	1,815	1,832	1,849	1,900	2,000	2,100	2,259	2,246	2,209	2,070	1,905	1,819
30%	1,583	1,614	1,719	1,805	1,964	2,074	2,222	2,159	2,064	1,925	1,794	1,649
40%	1,352	1,402	1,572	1,676	1,849	1,997	2,104	2,053	1,950	1,751	1,577	1,407
50%	1,265	1,285	1,424	1,590	1,707	1,827	2,002	1,901	1,789	1,604	1,420	1,319
60%	1,170	1,208	1,247	1,335	1,545	1,721	1,789	1,750	1,675	1,497	1,340	1,222
70%	1,101	1,084	1,189	1,202	1,354	1,473	1,629	1,588	1,532	1,387	1,222	1,097
80%	916	961	972	1,053	1,157	1,252	1,433	1,416	1,325	1,160	1,030	948
90%	629	630	624	683	796	921	1,066	1,024	967	844	690	629
Long Term												
Full Simulation Period[b]	1,268	1,286	1,349	1,429	1,552	1,677	1,818	1,795	1,727	1,583	1,436	1,321
Water Year Types[c]												
Wet (32%)	1,501	1,536	1,642	1,766	1,929	2,054	2,224	2,249	2,194	2,069	1,939	1,806
Above Normal (16%)	1,201	1,234	1,352	1,514	1,710	1,894	2,075	2,049	1,954	1,805	1,651	1,520
Below Normal (13%)	1,436	1,459	1,478	1,543	1,631	1,719	1,860	1,788	1,681	1,510	1,337	1,202
Dry (24%)	1,177	1,183	1,209	1,230	1,322	1,454	1,588	1,540	1,472	1,305	1,157	1,059
Critical (15%)	833	811	823	834	876	957	1,006	970	938	815	668	600

Alternative 3_WA minus Alternative 3

	End of Month Storage (Percent Change)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	-1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	-1%
50%	1%	2%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%
60%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%
70%	0%	-1%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%
80%	1%	0%	1%	1%	0%	0%	0%	1%	0%	0%	1%	1%
90%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.1.2. Trinity Lake, End of Month Storage

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,828	1,850	1,900	2,000	2,100	2,283	2,344	2,306	2,262	2,143	1,932
20%	1,764	1,735	1,803	1,889	2,000	2,100	2,250	2,276	2,207	2,064	1,893	1,743
30%	1,542	1,577	1,694	1,779	1,954	2,084	2,220	2,159	2,055	1,913	1,776	1,631
40%	1,427	1,373	1,560	1,683	1,770	1,994	2,131	2,029	1,921	1,779	1,600	1,453
50%	1,231	1,253	1,376	1,518	1,671	1,771	1,895	1,842	1,728	1,563	1,420	1,309
60%	1,127	1,172	1,247	1,279	1,493	1,669	1,798	1,720	1,634	1,479	1,271	1,148
70%	1,051	1,037	1,098	1,146	1,250	1,378	1,484	1,460	1,390	1,268	1,139	1,067
80%	834	850	879	977	1,036	1,141	1,321	1,259	1,209	1,066	941	830
90%	537	589	594	628	733	908	983	967	922	811	607	553
Long Term												
Full Simulation Period[b]	1,235	1,244	1,309	1,387	1,512	1,638	1,779	1,756	1,688	1,553	1,411	1,288
Water Year Types[c]												
Wet (32%)	1,494	1,520	1,635	1,759	1,926	2,056	2,222	2,246	2,191	2,068	1,940	1,781
Above Normal (16%)	1,155	1,180	1,290	1,459	1,662	1,850	2,030	2,004	1,912	1,778	1,627	1,503
Below Normal (13%)	1,398	1,405	1,422	1,493	1,580	1,667	1,813	1,741	1,637	1,474	1,311	1,190
Dry (24%)	1,155	1,150	1,175	1,183	1,275	1,404	1,540	1,492	1,415	1,259	1,110	1,012
Critical (15%)	744	726	741	743	784	866	913	878	856	755	622	539

Alternative 5_WA

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,828	1,850	1,900	2,000	2,100	2,283	2,344	2,306	2,262	2,144	1,932
20%	1,764	1,735	1,799	1,889	2,000	2,100	2,251	2,271	2,202	2,064	1,893	1,744
30%	1,546	1,594	1,681	1,779	1,961	2,085	2,217	2,159	2,061	1,913	1,776	1,631
40%	1,427	1,381	1,558	1,680	1,767	1,988	2,136	2,029	1,925	1,778	1,612	1,455
50%	1,233	1,254	1,379	1,534	1,672	1,769	1,903	1,839	1,723	1,568	1,417	1,314
60%	1,138	1,167	1,246	1,268	1,491	1,667	1,790	1,730	1,637	1,440	1,256	1,149
70%	1,046	1,036	1,102	1,151	1,276	1,390	1,495	1,479	1,395	1,284	1,153	1,075
80%	818	847	882	977	1,050	1,142	1,327	1,271	1,205	1,056	938	840
90%	534	589	618	624	732	908	998	967	922	812	617	549
Long Term												
Full Simulation Period[b]	1,236	1,245	1,310	1,387	1,513	1,639	1,781	1,757	1,689	1,553	1,411	1,290
Water Year Types[c]												
Wet (32%)	1,492	1,517	1,633	1,758	1,924	2,055	2,221	2,245	2,190	2,067	1,940	1,783
Above Normal (16%)	1,156	1,182	1,291	1,460	1,663	1,851	2,031	2,005	1,913	1,780	1,629	1,505
Below Normal (13%)	1,400	1,408	1,425	1,495	1,582	1,669	1,820	1,748	1,644	1,481	1,318	1,199
Dry (24%)	1,159	1,153	1,179	1,186	1,278	1,407	1,543	1,494	1,418	1,255	1,106	1,011
Critical (15%)	745	726	742	744	787	868	915	880	854	754	623	536

Alternative 5_WA minus Alternative 5

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
50%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
60%	1%	0%	0%	-1%	0%	0%	0%	1%	0%	-3%	-1%	0%
70%	0%	0%	0%	0%	2%	1%	1%	1%	0%	1%	1%	1%
80%	-2%	0%	0%	0%	1%	0%	0%	1%	0%	-1%	0%	1%
90%	-1%	0%	4%	-1%	0%	0%	2%	0%	0%	0%	2%	-1%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.2. Shasta Storage

Table 5B.3.2.1. Shasta Lake, End of Month Storage

Alternative 3

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,349	3,639	3,910	4,225	4,481	4,552	4,434	3,884	3,579	3,400
20%	3,200	3,251	3,321	3,552	3,771	4,127	4,435	4,552	4,276	3,764	3,421	3,358
30%	3,094	3,161	3,292	3,513	3,675	4,020	4,382	4,515	4,155	3,528	3,171	3,106
40%	2,918	3,066	3,257	3,370	3,592	3,975	4,281	4,367	3,917	3,296	2,999	2,933
50%	2,680	2,774	3,085	3,277	3,484	3,866	4,177	4,228	3,736	3,148	2,761	2,735
60%	2,475	2,593	2,921	3,173	3,330	3,751	4,078	3,987	3,504	2,992	2,668	2,579
70%	2,379	2,412	2,634	2,889	3,252	3,513	3,895	3,731	3,375	2,802	2,547	2,448
80%	2,107	2,114	2,239	2,610	2,981	3,387	3,636	3,552	2,996	2,475	2,188	2,146
90%	1,527	1,514	1,581	2,107	2,371	2,814	2,706	2,899	2,628	2,089	1,752	1,621
Long Term												
Full Simulation Period[b]	2,525	2,578	2,750	3,019	3,284	3,636	3,914	3,908	3,543	3,013	2,687	2,605
Water Year Types[c]												
Wet (32%)	2,816	2,932	3,161	3,408	3,597	3,841	4,301	4,453	4,221	3,720	3,370	3,244
Above Normal (16%)	2,475	2,555	2,783	3,303	3,509	4,023	4,403	4,401	3,975	3,350	2,998	2,946
Below Normal (13%)	2,818	2,851	2,983	3,302	3,650	3,971	4,176	4,056	3,631	3,036	2,669	2,562
Dry (24%)	2,431	2,451	2,590	2,770	3,189	3,662	3,885	3,798	3,359	2,826	2,542	2,500
Critical (15%)	1,833	1,793	1,877	2,024	2,184	2,424	2,354	2,237	1,836	1,406	1,129	1,066

Alternative 3_WA

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,349	3,639	3,911	4,225	4,480	4,552	4,434	3,886	3,577	3,400
20%	3,196	3,250	3,321	3,552	3,771	4,125	4,435	4,552	4,275	3,764	3,416	3,347
30%	3,091	3,171	3,298	3,514	3,675	4,020	4,384	4,509	4,154	3,528	3,167	3,136
40%	2,919	3,055	3,252	3,370	3,596	3,975	4,280	4,363	3,915	3,295	2,999	2,934
50%	2,680	2,772	3,099	3,270	3,477	3,865	4,175	4,227	3,732	3,155	2,759	2,732
60%	2,469	2,598	2,921	3,189	3,329	3,746	4,076	3,986	3,502	3,001	2,673	2,599
70%	2,380	2,401	2,629	2,891	3,252	3,513	3,890	3,732	3,370	2,796	2,548	2,466
80%	2,109	2,117	2,249	2,597	2,987	3,377	3,638	3,559	2,989	2,461	2,176	2,140
90%	1,515	1,502	1,569	2,110	2,372	2,815	2,708	2,913	2,639	2,096	1,749	1,608
Long Term												
Full Simulation Period[b]	2,525	2,577	2,750	3,019	3,284	3,636	3,914	3,908	3,543	3,013	2,686	2,606
Water Year Types[c]												
Wet (32%)	2,818	2,934	3,161	3,409	3,597	3,841	4,301	4,454	4,220	3,718	3,367	3,246
Above Normal (16%)	2,471	2,549	2,782	3,302	3,508	4,024	4,404	4,401	3,972	3,353	2,996	2,948
Below Normal (13%)	2,817	2,849	2,981	3,301	3,648	3,969	4,173	4,053	3,629	3,034	2,668	2,562
Dry (24%)	2,432	2,452	2,592	2,771	3,190	3,662	3,885	3,799	3,358	2,826	2,543	2,502
Critical (15%)	1,834	1,791	1,875	2,024	2,183	2,424	2,356	2,240	1,840	1,412	1,128	1,067

Alternative 3_WA minus Alternative 3

	End of Month Storage (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	1%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	0%
90%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.2.2. Shasta Lake, End of Month Storage

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,200	3,242	3,322	3,615	3,812	4,217	4,486	4,552	4,451	3,905	3,580	3,188
20%	3,018	2,911	3,293	3,525	3,704	4,114	4,434	4,552	4,282	3,762	3,471	3,041
30%	2,878	2,770	3,252	3,370	3,616	3,998	4,371	4,542	4,196	3,578	3,239	2,971
40%	2,735	2,684	3,037	3,270	3,496	3,944	4,260	4,435	3,973	3,313	3,027	2,866
50%	2,615	2,540	2,771	3,188	3,391	3,756	4,139	4,223	3,785	3,196	2,859	2,722
60%	2,495	2,452	2,537	2,971	3,284	3,590	3,989	3,967	3,595	3,020	2,738	2,605
70%	2,246	2,250	2,355	2,639	3,163	3,417	3,748	3,615	3,292	2,728	2,489	2,330
80%	1,912	1,958	2,146	2,447	2,766	3,151	3,485	3,251	2,855	2,356	2,051	1,979
90%	1,216	1,196	1,281	1,929	2,246	2,565	2,672	2,777	2,423	1,794	1,341	1,308
Long Term												
Full Simulation Period[b]	2,399	2,377	2,593	2,900	3,185	3,552	3,838	3,859	3,534	2,991	2,675	2,483
Water Year Types[c]												
Wet (32%)	2,704	2,716	3,078	3,385	3,590	3,836	4,299	4,461	4,243	3,736	3,410	2,989
Above Normal (16%)	2,369	2,388	2,598	3,164	3,454	4,019	4,401	4,430	4,042	3,409	3,071	2,842
Below Normal (13%)	2,603	2,565	2,704	3,077	3,450	3,820	4,039	3,970	3,602	3,012	2,663	2,620
Dry (24%)	2,344	2,287	2,433	2,627	3,039	3,509	3,745	3,699	3,315	2,787	2,497	2,459
Critical (15%)	1,676	1,611	1,700	1,856	2,015	2,258	2,203	2,104	1,749	1,246	958	910

Alternative 5_WA

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,200	3,249	3,322	3,615	3,812	4,217	4,486	4,552	4,451	3,905	3,578	3,186
20%	3,004	2,911	3,293	3,525	3,700	4,114	4,434	4,552	4,282	3,762	3,471	3,039
30%	2,876	2,772	3,252	3,367	3,616	3,998	4,371	4,543	4,197	3,580	3,239	2,968
40%	2,723	2,681	3,033	3,270	3,488	3,940	4,258	4,434	3,979	3,313	3,027	2,854
50%	2,609	2,534	2,762	3,187	3,382	3,756	4,136	4,222	3,785	3,197	2,855	2,727
60%	2,499	2,453	2,532	2,958	3,284	3,590	3,992	3,971	3,591	3,037	2,739	2,607
70%	2,242	2,237	2,357	2,632	3,155	3,417	3,743	3,608	3,282	2,774	2,493	2,333
80%	1,911	1,952	2,141	2,447	2,764	3,145	3,450	3,221	2,839	2,346	2,084	1,980
90%	1,218	1,197	1,283	1,927	2,253	2,534	2,686	2,778	2,423	1,797	1,345	1,309
Long Term												
Full Simulation Period[b]	2,398	2,376	2,591	2,899	3,183	3,551	3,836	3,858	3,532	2,990	2,674	2,480
Water Year Types[c]												
Wet (32%)	2,704	2,718	3,077	3,385	3,590	3,836	4,299	4,461	4,243	3,733	3,408	2,984
Above Normal (16%)	2,368	2,388	2,600	3,165	3,453	4,019	4,402	4,431	4,043	3,409	3,070	2,837
Below Normal (13%)	2,597	2,559	2,698	3,072	3,445	3,816	4,029	3,962	3,593	3,005	2,656	2,611
Dry (24%)	2,343	2,284	2,430	2,624	3,036	3,507	3,742	3,697	3,313	2,793	2,504	2,463
Critical (15%)	1,679	1,612	1,701	1,857	2,014	2,256	2,201	2,102	1,749	1,245	954	911

Alternative 5_WA minus Alternative 5

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
70%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%
80%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%	0%	2%	0%
90%	0%	0%	0%	0%	0%	-1%	1%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.3. Oroville Storage

Table 5B.3.3.1. Lake Oroville, End of Month Storage

Alternative 3

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,639	2,548	2,788	2,807	2,943	3,052	3,352	3,538	3,538	3,046	2,791	2,727
20%	2,094	2,155	2,500	2,788	2,802	2,983	3,298	3,538	3,522	2,898	2,518	2,283
30%	1,905	1,889	2,078	2,450	2,788	2,938	3,268	3,454	3,177	2,562	2,273	2,045
40%	1,641	1,686	1,860	2,278	2,724	2,839	3,208	3,295	2,954	2,317	1,982	1,701
50%	1,264	1,293	1,647	2,109	2,565	2,788	3,081	3,061	2,744	2,106	1,708	1,470
60%	1,195	1,126	1,375	1,678	2,130	2,642	2,884	2,819	2,450	1,867	1,429	1,251
70%	1,103	1,056	1,110	1,356	1,827	2,179	2,527	2,549	2,185	1,605	1,309	1,244
80%	1,023	964	999	1,157	1,459	1,739	2,034	2,029	1,743	1,344	1,242	1,136
90%	918	905	907	1,016	1,239	1,461	1,663	1,666	1,294	1,167	1,050	974
Long Term												
Full Simulation Period[b]	1,560	1,554	1,717	1,961	2,248	2,472	2,733	2,798	2,580	2,108	1,823	1,674
Water Year Types[c]												
Wet (32%)	1,893	1,931	2,315	2,608	2,854	2,942	3,300	3,473	3,375	2,902	2,630	2,499
Above Normal (16%)	1,405	1,448	1,623	2,109	2,623	2,945	3,280	3,371	3,129	2,494	2,039	1,778
Below Normal (13%)	1,839	1,801	1,846	2,054	2,370	2,636	2,879	2,883	2,610	1,971	1,520	1,354
Dry (24%)	1,332	1,288	1,322	1,454	1,733	2,088	2,329	2,319	1,980	1,548	1,343	1,198
Critical (15%)	1,129	1,067	1,067	1,156	1,275	1,429	1,449	1,437	1,236	1,029	918	862

Alternative 3_WA

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,642	2,557	2,788	2,807	2,939	3,052	3,352	3,538	3,538	3,045	2,784	2,720
20%	2,098	2,155	2,508	2,788	2,802	2,983	3,298	3,538	3,522	2,897	2,519	2,282
30%	1,910	1,890	2,118	2,452	2,788	2,940	3,268	3,454	3,174	2,559	2,268	2,051
40%	1,647	1,673	1,860	2,284	2,751	2,841	3,208	3,294	2,954	2,318	1,982	1,705
50%	1,267	1,293	1,645	2,119	2,569	2,788	3,085	3,064	2,746	2,109	1,708	1,479
60%	1,192	1,128	1,358	1,670	2,132	2,643	2,880	2,822	2,451	1,865	1,423	1,250
70%	1,103	1,052	1,108	1,354	1,833	2,194	2,526	2,548	2,183	1,602	1,307	1,244
80%	1,023	964	997	1,157	1,458	1,723	2,037	2,029	1,739	1,347	1,242	1,136
90%	909	906	907	1,013	1,239	1,454	1,661	1,664	1,284	1,137	1,018	942
Long Term												
Full Simulation Period[b]	1,560	1,553	1,718	1,961	2,248	2,471	2,732	2,797	2,579	2,106	1,822	1,674
Water Year Types[c]												
Wet (32%)	1,892	1,931	2,315	2,608	2,854	2,942	3,300	3,472	3,374	2,901	2,630	2,499
Above Normal (16%)	1,406	1,448	1,631	2,115	2,627	2,945	3,280	3,371	3,130	2,494	2,039	1,775
Below Normal (13%)	1,841	1,802	1,847	2,056	2,372	2,638	2,880	2,885	2,611	1,971	1,520	1,356
Dry (24%)	1,330	1,287	1,321	1,454	1,733	2,088	2,328	2,317	1,978	1,546	1,341	1,201
Critical (15%)	1,129	1,064	1,063	1,152	1,271	1,425	1,445	1,434	1,232	1,024	913	857

Alternative 3_WA minus Alternative 3

	End of Month Storage (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	-1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
60%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%
90%	-1%	0%	0%	0%	0%	0%	0%	0%	-1%	-3%	-3%	-3%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.3.2. Lake Oroville, End of Month Storage

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,047	2,116	2,763	2,788	2,921	3,035	3,352	3,538	3,538	3,017	2,704	2,150
20%	1,778	1,801	2,036	2,655	2,788	2,964	3,298	3,538	3,538	2,951	2,508	1,961
30%	1,614	1,653	1,810	2,267	2,788	2,898	3,268	3,475	3,367	2,759	2,317	1,829
40%	1,402	1,371	1,559	1,931	2,557	2,788	3,208	3,336	3,132	2,493	2,005	1,562
50%	1,248	1,251	1,433	1,709	2,177	2,642	2,928	3,020	2,849	2,218	1,753	1,349
60%	1,170	1,145	1,252	1,595	1,940	2,279	2,607	2,720	2,516	1,870	1,438	1,245
70%	1,101	1,050	1,095	1,309	1,693	2,044	2,225	2,340	2,049	1,478	1,243	1,176
80%	1,011	974	1,004	1,166	1,440	1,710	1,910	1,894	1,717	1,241	1,135	1,051
90%	894	895	903	1,030	1,250	1,489	1,661	1,579	1,306	1,167	1,050	954
Long Term												
Full Simulation Period[b]	1,403	1,394	1,568	1,836	2,151	2,393	2,660	2,770	2,622	2,134	1,821	1,514
Water Year Types[c]												
Wet (32%)	1,681	1,723	2,179	2,556	2,833	2,942	3,300	3,488	3,447	2,961	2,613	2,103
Above Normal (16%)	1,275	1,310	1,471	1,948	2,512	2,892	3,247	3,401	3,241	2,608	2,125	1,668
Below Normal (13%)	1,552	1,507	1,517	1,728	2,132	2,406	2,663	2,746	2,569	1,959	1,521	1,305
Dry (24%)	1,223	1,173	1,190	1,319	1,595	1,952	2,193	2,255	1,992	1,502	1,295	1,150
Critical (15%)	1,102	1,037	1,025	1,114	1,229	1,383	1,415	1,411	1,266	1,045	929	873

Alternative 5_WA

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,045	2,110	2,745	2,788	2,916	3,035	3,352	3,538	3,538	3,015	2,706	2,152
20%	1,777	1,803	2,035	2,653	2,788	2,964	3,298	3,538	3,537	2,951	2,501	1,960
30%	1,615	1,652	1,804	2,266	2,788	2,898	3,268	3,475	3,367	2,756	2,321	1,832
40%	1,403	1,377	1,559	1,932	2,557	2,788	3,208	3,336	3,133	2,492	2,004	1,560
50%	1,248	1,251	1,432	1,709	2,176	2,641	2,928	3,021	2,852	2,218	1,754	1,348
60%	1,171	1,147	1,252	1,598	1,938	2,290	2,607	2,720	2,514	1,868	1,440	1,247
70%	1,102	1,051	1,094	1,309	1,693	2,048	2,226	2,339	2,043	1,488	1,242	1,175
80%	1,011	974	1,004	1,167	1,440	1,710	1,911	1,893	1,711	1,241	1,133	1,052
90%	893	895	902	1,030	1,246	1,489	1,665	1,578	1,300	1,166	1,049	953
Long Term												
Full Simulation Period[b]	1,403	1,394	1,568	1,836	2,151	2,393	2,661	2,770	2,622	2,133	1,820	1,515
Water Year Types[c]												
Wet (32%)	1,682	1,724	2,180	2,556	2,833	2,942	3,300	3,488	3,445	2,958	2,611	2,104
Above Normal (16%)	1,274	1,309	1,470	1,946	2,511	2,892	3,247	3,401	3,240	2,608	2,124	1,667
Below Normal (13%)	1,554	1,510	1,519	1,731	2,135	2,409	2,666	2,748	2,572	1,961	1,520	1,304
Dry (24%)	1,222	1,173	1,190	1,319	1,595	1,951	2,193	2,255	1,991	1,500	1,295	1,150
Critical (15%)	1,100	1,036	1,025	1,113	1,228	1,382	1,414	1,411	1,263	1,044	929	873

Alternative 5_WA minus Alternative 5

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.4. Folsom Storage

Table 5B.3.4.1. Folsom Lake, End of Month Storage

Alternative 3

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	688	567	567	567	567	661	792	967	967	921	792	751
20%	592	563	567	567	567	656	792	967	967	814	709	648
30%	548	537	564	564	560	652	792	967	958	726	647	605
40%	483	495	523	556	556	646	792	967	899	636	567	522
50%	396	432	502	520	545	633	792	957	793	546	465	429
60%	348	387	450	469	499	621	790	859	749	485	434	397
70%	329	358	405	431	457	603	734	758	655	431	381	366
80%	304	329	342	389	438	563	649	656	547	392	346	331
90%	259	260	251	297	384	446	484	479	428	312	285	290
Long Term												
Full Simulation Period[b]	432	424	456	474	493	591	714	822	755	580	508	473
Water Year Types[c]												
Wet (32%)	486	473	525	524	515	632	785	951	929	790	690	645
Above Normal (16%)	388	404	454	537	539	640	787	946	851	580	516	479
Below Normal (13%)	513	496	505	514	542	627	764	844	766	506	436	407
Dry (24%)	405	398	420	434	482	580	692	761	654	491	436	411
Critical (15%)	331	314	322	325	370	436	474	485	431	343	291	257

Alternative 3_WA

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	679	567	567	567	567	661	792	967	967	915	792	742
20%	591	562	567	567	567	656	792	967	967	810	707	641
30%	533	534	557	563	560	652	792	967	952	722	636	599
40%	468	480	523	554	556	645	792	967	895	627	557	507
50%	382	427	499	524	545	633	792	952	791	540	468	423
60%	338	381	437	461	496	621	792	853	747	482	425	390
70%	315	349	401	432	457	598	730	760	655	434	372	354
80%	295	328	339	384	433	549	643	646	543	379	333	318
90%	257	257	238	292	377	443	489	484	422	299	277	280
Long Term												
Full Simulation Period[b]	425	418	452	471	492	590	712	819	751	575	501	465
Water Year Types[c]												
Wet (32%)	481	469	524	524	515	632	784	950	927	787	686	639
Above Normal (16%)	381	398	450	537	539	640	786	944	848	573	505	466
Below Normal (13%)	506	490	503	513	542	626	762	841	764	500	427	396
Dry (24%)	395	389	411	426	477	575	688	756	649	486	430	403
Critical (15%)	325	310	319	323	368	434	471	480	425	336	286	254

Alternative 3_WA minus Alternative 3

	End of Month Storage (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%
30%	-3%	0%	-1%	0%	0%	0%	0%	0%	-1%	-1%	-2%	-1%
40%	-3%	-3%	0%	0%	0%	0%	0%	0%	0%	-1%	-2%	-3%
50%	-4%	-1%	-1%	1%	0%	0%	0%	-1%	0%	-1%	1%	-2%
60%	-3%	-2%	-3%	-2%	-1%	0%	0%	-1%	0%	-1%	-2%	-2%
70%	-4%	-2%	-1%	0%	0%	-1%	0%	0%	0%	1%	-3%	-3%
80%	-3%	0%	-1%	-1%	-1%	-2%	-1%	-2%	-1%	-3%	-4%	-4%
90%	-1%	-1%	-5%	-2%	-2%	-1%	1%	1%	-1%	-4%	-3%	-3%
Long Term												
Full Simulation Period[b]	-2%	-1%	-1%	-1%	0%	0%	0%	0%	0%	-1%	-1%	-2%
Water Year Types[c]												
Wet (32%)	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%
Above Normal (16%)	-2%	-1%	-1%	0%	0%	0%	0%	0%	0%	-1%	-2%	-3%
Below Normal (13%)	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	-1%	-2%	-3%
Dry (24%)	-3%	-2%	-2%	-2%	-1%	-1%	-1%	-1%	-1%	-1%	-2%	-2%
Critical (15%)	-2%	-1%	-1%	-1%	0%	0%	-1%	-1%	-1%	-2%	-2%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.4.2. Folsom Lake, End of Month Storage

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	592	533	567	567	567	661	792	967	967	869	792	665
20%	538	489	567	565	566	656	792	967	967	818	733	604
30%	503	463	537	557	558	652	792	967	967	738	664	559
40%	455	429	503	541	553	646	792	967	933	665	608	521
50%	412	409	444	479	530	633	792	965	874	595	514	449
60%	353	392	417	448	496	621	790	861	773	524	460	401
70%	329	353	400	422	450	593	736	756	682	432	386	364
80%	294	314	350	370	412	542	626	665	552	383	349	333
90%	227	249	239	299	381	432	484	498	430	331	285	248
Long Term												
Full Simulation Period[b]	407	394	439	461	490	590	715	825	766	587	520	453
Water Year Types[c]												
Wet (32%)	454	435	515	518	515	632	785	952	941	794	710	577
Above Normal (16%)	375	379	428	513	532	640	787	946	888	622	554	478
Below Normal (13%)	440	425	461	483	534	620	758	845	783	523	469	450
Dry (24%)	397	386	411	426	479	579	691	766	664	489	435	410
Critical (15%)	325	304	314	320	367	433	483	499	411	324	257	231

Alternative 5_WA

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	590	530	567	567	567	661	792	967	967	888	786	664
20%	533	485	567	565	566	656	792	967	967	819	728	602
30%	501	463	535	557	558	652	792	967	966	732	654	557
40%	448	419	501	539	553	644	792	967	928	653	599	512
50%	402	404	442	479	530	633	792	960	862	586	513	438
60%	345	387	410	443	495	621	792	855	765	522	454	396
70%	322	350	398	420	451	592	732	758	672	423	376	359
80%	286	302	347	366	407	540	628	652	550	369	336	314
90%	229	242	228	296	377	425	475	488	427	337	292	248
Long Term												
Full Simulation Period[b]	401	389	436	459	488	588	712	821	762	582	513	447
Water Year Types[c]												
Wet (32%)	449	432	514	518	515	632	785	950	938	791	704	573
Above Normal (16%)	372	377	427	513	531	640	786	945	884	614	544	472
Below Normal (13%)	433	419	458	481	533	619	756	842	777	515	460	439
Dry (24%)	389	380	405	421	477	576	688	762	659	485	429	403
Critical (15%)	317	299	309	314	360	427	475	489	403	319	253	228

Alternative 5_WA minus Alternative 5

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	2%	-1%	0%
20%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-2%	0%
40%	-1%	-2%	0%	0%	0%	0%	0%	0%	-1%	-2%	-1%	-2%
50%	-3%	-1%	0%	0%	0%	0%	0%	0%	-1%	-2%	0%	-3%
60%	-2%	-1%	-2%	-1%	0%	0%	0%	-1%	-1%	0%	-1%	-1%
70%	-2%	-1%	0%	0%	0%	0%	0%	0%	-1%	-2%	-3%	-2%
80%	-3%	-4%	-1%	-1%	-1%	0%	0%	-2%	0%	-4%	-4%	-5%
90%	1%	-3%	-5%	-1%	-1%	-2%	-2%	-2%	-1%	2%	2%	0%
Long Term												
Full Simulation Period[b]	-1%	-1%	-1%	-1%	0%	0%	0%	0%	-1%	-1%	-1%	-1%
Water Year Types[c]												
Wet (32%)	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%
Above Normal (16%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-2%	-1%
Below Normal (13%)	-2%	-1%	-1%	0%	0%	0%	0%	0%	-1%	-2%	-2%	-2%
Dry (24%)	-2%	-2%	-1%	-1%	-1%	-1%	0%	-1%	-1%	-1%	-1%	-2%
Critical (15%)	-2%	-2%	-2%	-2%	-2%	-1%	-2%	-2%	-2%	-2%	-1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.5. Folsom Elevation

Table 5B.3.5.1. Folsom Lake, End of Month Elevation

Alternative 3

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	462	449	445
20%	427	424	424	424	424	435	449	467	467	451	441	434
30%	422	421	424	424	423	435	449	467	465	443	434	429
40%	414	415	419	423	423	434	449	467	459	433	424	419
50%	403	408	416	418	422	433	449	465	449	422	412	407
60%	396	402	410	412	416	431	449	455	445	414	408	403
70%	393	397	404	407	411	429	443	446	435	407	401	399
80%	389	393	395	402	408	424	435	435	422	403	395	393
90%	380	381	379	387	402	409	414	413	407	390	385	386
Long Term												
Full Simulation Period[b]	404	404	409	412	415	427	440	451	444	423	414	409
Water Year Types[c]												
Wet (32%)	413	412	419	419	418	432	448	465	463	448	438	433
Above Normal (16%)	395	397	408	421	421	433	448	465	455	425	418	413
Below Normal (13%)	416	415	416	417	421	432	446	454	446	415	404	401
Dry (24%)	401	401	405	407	414	426	438	445	434	414	407	404
Critical (15%)	388	386	390	390	396	406	411	411	403	389	379	372

Alternative 3_WA

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	438	424	424	424	424	436	449	467	467	461	449	444
20%	427	424	424	424	424	435	449	467	467	451	441	434
30%	420	420	423	424	423	435	449	467	465	442	433	428
40%	412	414	419	423	423	434	449	467	459	432	423	417
50%	401	407	416	419	422	433	449	465	449	421	412	406
60%	394	401	408	411	415	431	449	455	445	414	407	402
70%	390	396	404	408	411	428	443	446	435	408	400	397
80%	387	392	394	402	408	422	434	434	421	401	393	391
90%	380	380	376	387	401	409	415	414	406	388	384	384
Long Term												
Full Simulation Period[b]	403	403	409	411	414	427	440	451	443	422	413	408
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	463	448	437	432
Above Normal (16%)	393	396	407	421	421	433	448	464	455	425	417	412
Below Normal (13%)	415	414	416	417	421	432	446	454	446	414	403	399
Dry (24%)	400	400	404	406	413	425	438	445	433	413	406	402
Critical (15%)	387	385	389	390	396	406	410	410	402	388	378	371

Alternative 3_WA minus Alternative 3

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%
90%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.5.2. Folsom Lake, End of Month Elevation

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	466	466	457	449	437
20%	421	415	424	424	424	435	449	466	466	452	443	429
30%	416	411	421	423	423	435	449	466	466	444	436	423
40%	410	407	416	421	423	434	449	466	463	437	429	419
50%	405	405	409	413	420	433	449	466	457	428	418	410
60%	397	403	406	410	415	431	449	456	447	419	411	404
70%	393	397	404	406	410	428	444	446	438	408	402	398
80%	387	390	396	399	405	421	432	437	423	401	396	393
90%	374	378	376	388	401	407	414	416	407	393	385	378
Long Term												
Full Simulation Period[b]	401	400	407	410	414	427	440	451	444	424	415	407
Water Year Types[c]												
Wet (32%)	409	407	418	418	418	432	448	465	464	449	440	425
Above Normal (16%)	394	395	405	418	420	433	449	464	458	431	423	413
Below Normal (13%)	406	405	410	413	420	431	445	454	447	417	411	408
Dry (24%)	400	400	404	406	413	426	438	446	435	413	406	403
Critical (15%)	386	384	389	390	396	406	412	414	400	385	370	365

Alternative 5_WA

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	427	420	424	424	424	436	449	467	467	458	448	436
20%	420	414	424	424	424	435	449	467	467	452	443	429
30%	416	411	420	423	423	435	449	467	467	443	435	423
40%	410	406	416	421	423	434	449	467	462	435	428	417
50%	404	404	409	413	420	433	449	465	456	427	418	408
60%	395	402	405	409	415	431	449	455	446	419	410	403
70%	392	396	403	406	410	427	443	446	437	406	400	398
80%	385	388	396	399	404	421	432	435	422	399	394	390
90%	374	377	374	387	401	407	413	414	407	394	386	378
Long Term												
Full Simulation Period[b]	400	399	407	410	414	427	440	451	444	423	414	406
Water Year Types[c]												
Wet (32%)	408	407	418	418	418	432	448	465	464	448	439	424
Above Normal (16%)	394	395	405	418	420	433	448	464	458	430	421	412
Below Normal (13%)	404	404	409	413	420	431	445	454	447	416	409	407
Dry (24%)	399	399	403	405	413	425	438	445	434	412	405	402
Critical (15%)	385	383	388	389	395	405	410	411	398	383	369	365

Alternative 5_WA minus Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
90%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.6. American River below Nimbus Flow

Table 5B.3.6.1. American River d/s of Nimbus Dam, Monthly Flow

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,022	3,873	9,622	12,160	14,655	9,756	6,737	7,450	4,944	5,000	3,092	1,949
20%	1,714	3,207	4,325	7,873	10,797	6,816	5,085	4,486	4,005	5,000	2,542	1,687
30%	1,500	2,069	2,733	5,563	7,391	5,044	4,484	3,543	3,661	4,999	2,018	1,533
40%	1,500	1,925	2,000	3,579	5,756	4,172	3,491	2,838	3,200	3,840	1,875	1,533
50%	1,500	1,893	2,000	1,890	3,718	3,047	2,548	2,240	2,664	3,535	1,750	1,533
60%	1,500	1,683	1,960	1,700	2,605	2,017	2,152	1,750	2,230	2,900	1,750	1,533
70%	1,425	1,448	1,596	1,700	1,445	1,747	1,747	1,616	1,851	2,579	1,648	1,493
80%	1,150	1,150	1,244	1,374	1,264	1,059	1,073	1,112	1,598	2,013	1,081	800
90%	800	800	800	825	982	800	800	804	1,011	1,250	800	800
Long Term												
Full Simulation Period[b]	1,496	2,397	3,855	5,095	6,027	4,288	3,390	3,100	2,999	3,396	1,849	1,449
Water Year Types[c]												
Wet (32%)	1,696	3,301	7,254	10,565	10,615	7,210	5,522	5,541	4,361	3,511	2,516	1,815
Above Normal (16%)	1,323	2,651	3,693	5,447	7,960	6,141	3,574	2,529	2,982	4,854	1,863	1,539
Below Normal (13%)	1,622	2,285	2,711	2,417	5,174	2,188	2,454	2,009	2,380	4,514	1,728	1,354
Dry (24%)	1,374	1,704	1,661	1,593	2,327	2,389	2,262	1,942	2,453	2,792	1,476	1,229
Critical (15%)	1,336	1,419	1,371	1,153	938	1,041	1,313	1,362	1,542	1,546	1,125	1,012

Alternative 3_WA

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,939	3,832	9,575	12,142	14,637	9,738	6,685	7,387	4,863	5,000	2,989	1,909
20%	1,655	3,147	4,215	7,854	10,809	6,798	5,028	4,418	3,960	5,000	2,449	1,632
30%	1,500	1,964	2,610	5,547	7,335	5,026	4,424	3,523	3,638	4,979	2,017	1,533
40%	1,500	1,925	2,000	3,549	5,740	4,151	3,391	2,779	3,170	3,777	1,851	1,533
50%	1,500	1,862	2,000	1,799	3,664	3,029	2,480	2,156	2,588	3,425	1,750	1,533
60%	1,500	1,644	1,927	1,700	2,586	1,996	2,051	1,750	2,175	2,788	1,750	1,533
70%	1,372	1,385	1,490	1,700	1,445	1,747	1,747	1,601	1,787	2,527	1,609	1,480
80%	1,081	1,081	1,151	1,216	1,241	1,001	976	1,032	1,498	2,002	1,062	800
90%	800	800	800	819	960	800	800	800	914	1,151	800	590
Long Term												
Full Simulation Period[b]	1,461	2,351	3,809	5,057	5,989	4,272	3,344	3,059	2,936	3,344	1,811	1,431
Water Year Types[c]												
Wet (32%)	1,664	3,256	7,197	10,526	10,590	7,191	5,483	5,490	4,293	3,443	2,464	1,796
Above Normal (16%)	1,288	2,614	3,646	5,382	7,929	6,124	3,527	2,488	2,922	4,841	1,850	1,533
Below Normal (13%)	1,589	2,232	2,635	2,391	5,137	2,176	2,408	1,969	2,299	4,491	1,714	1,368
Dry (24%)	1,346	1,666	1,631	1,573	2,259	2,371	2,196	1,897	2,386	2,712	1,447	1,209
Critical (15%)	1,281	1,357	1,353	1,106	919	1,030	1,282	1,347	1,511	1,512	1,053	961

Alternative 3_WA minus Alternative 3

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4%	-1%	0%	0%	0%	0%	-1%	-1%	-2%	0%	-3%	-2%
20%	-3%	-2%	-3%	0%	0%	0%	-1%	-2%	-1%	0%	-4%	-3%
30%	0%	**-5%**	-4%	0%	-1%	0%	-1%	-1%	-1%	0%	0%	0%
40%	0%	0%	0%	-1%	0%	-1%	-3%	-2%	-1%	-2%	-1%	0%
50%	0%	-2%	0%	-5%	-1%	-1%	-3%	-4%	-3%	-3%	0%	0%
60%	0%	-2%	-2%	0%	-1%	-1%	-5%	0%	-3%	-4%	0%	0%
70%	-4%	-4%	**-7%**	0%	0%	0%	0%	-1%	-3%	-2%	-2%	-1%
80%	**-6%**	**-6%**	**-7%**	**-11%**	-2%	**-5%**	**-9%**	**-7%**	**-6%**	-1%	-2%	0%
90%	0%	0%	0%	-1%	-2%	0%	0%	0%	**-10%**	**-8%**	0%	**-26%**
Long Term												
Full Simulation Period[b]	-2%	-2%	-1%	-1%	-1%	0%	-1%	-1%	-2%	-2%	-2%	-1%
Water Year Types[c]												
Wet (32%)	-2%	-1%	-1%	0%	0%	0%	-1%	-1%	-2%	-2%	-2%	-1%
Above Normal (16%)	-3%	-1%	-1%	-1%	0%	0%	-1%	-2%	-2%	0%	-1%	0%
Below Normal (13%)	-2%	-2%	-3%	-1%	-1%	-1%	-2%	-2%	-3%	-1%	-1%	1%
Dry (24%)	-2%	-2%	-2%	-1%	-3%	-1%	-3%	-2%	-3%	-3%	-2%	-2%
Critical (15%)	-4%	-4%	-1%	-4%	-2%	-1%	-2%	-1%	-2%	-2%	**-6%**	**-5%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.6.2. American River d/s of Nimbus Dam, Monthly Flow

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,591	3,790	8,385	12,160	14,655	9,756	6,737	7,450	4,997	5,000	2,981	3,872
20%	1,858	3,384	3,894	7,653	10,889	6,820	5,085	4,492	3,883	5,000	2,354	3,145
30%	1,544	2,539	2,092	5,303	7,315	5,044	4,490	3,543	3,613	4,903	1,895	2,423
40%	1,500	1,961	2,000	3,582	5,758	4,175	3,491	2,733	2,886	4,084	1,750	1,910
50%	1,500	1,925	2,000	1,750	3,095	3,057	2,524	2,009	2,330	3,616	1,750	1,533
60%	1,500	1,683	1,823	1,700	1,796	2,022	2,038	1,750	1,965	2,944	1,750	1,533
70%	1,437	1,498	1,608	1,700	1,445	1,747	1,634	1,609	1,750	2,671	1,631	1,356
80%	1,188	1,219	1,262	1,356	1,264	845	1,024	992	1,508	2,392	965	800
90%	800	800	800	992	906	800	800	800	1,006	1,133	800	800
Long Term												
Full Simulation Period[b]	1,596	2,484	3,644	5,034	5,866	4,263	3,364	3,060	2,878	3,473	1,789	1,998
Water Year Types[c]												
Wet (32%)	1,728	3,416	6,805	10,493	10,513	7,212	5,524	5,544	4,165	3,654	2,242	3,306
Above Normal (16%)	1,588	2,861	3,698	5,425	7,666	6,024	3,580	2,535	2,374	4,775	1,927	2,204
Below Normal (13%)	1,768	2,251	2,282	2,218	4,766	2,184	2,450	1,916	2,151	4,524	1,499	1,222
Dry (24%)	1,550	1,768	1,619	1,587	2,233	2,363	2,267	1,867	2,384	2,983	1,485	1,239
Critical (15%)	1,239	1,462	1,358	1,111	912	1,041	1,117	1,285	2,121	1,523	1,430	919

Alternative 5_WA

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	2,556	3,768	8,365	12,142	14,637	9,738	6,685	7,387	4,989	5,000	2,907	3,767
20%	1,819	3,380	3,841	7,630	10,889	6,803	5,028	4,425	3,790	5,000	2,346	2,981
30%	1,500	2,512	2,000	5,274	7,128	5,027	4,437	3,523	3,604	4,823	1,803	2,323
40%	1,500	1,925	2,000	3,551	5,742	4,154	3,391	2,715	2,808	4,020	1,750	1,802
50%	1,500	1,860	2,000	1,738	3,072	3,040	2,464	1,931	2,246	3,557	1,750	1,533
60%	1,500	1,682	1,809	1,700	1,858	2,001	1,997	1,750	1,907	2,839	1,750	1,533
70%	1,401	1,431	1,475	1,682	1,445	1,747	1,609	1,609	1,750	2,539	1,630	1,263
80%	1,100	1,115	1,181	1,308	1,264	823	955	959	1,498	2,105	860	804
90%	782	800	800	945	865	800	800	800	890	1,070	800	800
Long Term												
Full Simulation Period[b]	1,567	2,440	3,604	5,008	5,838	4,245	3,325	3,024	2,826	3,411	1,754	1,944
Water Year Types[c]												
Wet (32%)	1,702	3,367	6,746	10,469	10,491	7,194	5,486	5,492	4,110	3,577	2,232	3,219
Above Normal (16%)	1,550	2,824	3,678	5,403	7,648	5,995	3,534	2,495	2,335	4,759	1,892	2,095
Below Normal (13%)	1,726	2,216	2,216	2,175	4,735	2,164	2,415	1,891	2,114	4,489	1,453	1,211
Dry (24%)	1,524	1,723	1,589	1,558	2,181	2,357	2,210	1,836	2,331	2,906	1,446	1,226
Critical (15%)	1,221	1,415	1,343	1,099	901	1,012	1,110	1,270	2,050	1,445	1,359	889

Alternative 5_WA minus Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (Percent Change)											
Probability of Exceedance[a]												
10%	-1%	-1%	0%	0%	0%	0%	-1%	-1%	0%	0%	-2%	-3%
20%	-2%	0%	-1%	0%	0%	0%	-1%	-1%	-2%	0%	0%	**-5%**
30%	-3%	-1%	-4%	-1%	-3%	0%	-1%	-1%	0%	-2%	-5%	-4%
40%	0%	-2%	0%	-1%	0%	-1%	-3%	-1%	-3%	-2%	0%	**-6%**
50%	0%	-3%	0%	-1%	-1%	-1%	-2%	-4%	-4%	-2%	0%	0%
60%	0%	0%	-1%	0%	3%	-1%	-2%	0%	-3%	-4%	0%	0%
70%	-3%	-4%	**-8%**	-1%	0%	0%	-2%	0%	0%	-5%	0%	**-7%**
80%	**-7%**	**-9%**	**-6%**	-4%	0%	-3%	**-7%**	-3%	-1%	**-12%**	**-11%**	0%
90%	-2%	0%	0%	-5%	-5%	0%	0%	0%	**-12%**	**-6%**	0%	0%
Long Term												
Full Simulation Period[b]	-2%	-2%	-1%	-1%	0%	0%	-1%	-1%	-2%	-2%	-2%	-3%
Water Year Types[c]												
Wet (32%)	-1%	-1%	-1%	0%	0%	0%	-1%	-1%	-1%	-2%	0%	-3%
Above Normal (16%)	-2%	-1%	-1%	0%	0%	0%	-1%	-2%	-2%	0%	-2%	-5%
Below Normal (13%)	-2%	-2%	-3%	-2%	-1%	-1%	-1%	-1%	-2%	-1%	-3%	-1%
Dry (24%)	-2%	-3%	-2%	-2%	-2%	0%	-3%	-2%	-2%	-3%	-3%	-1%
Critical (15%)	-1%	-3%	-1%	-1%	-1%	-3%	-1%	-1%	-3%	**-5%**	-5%	-3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.7. Sacramento River at Freeport Flow

Table 5B.3.7.1. Sacramento River at Freeport, Monthly Flow

Alternative 3

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	14,522	22,777	54,349	64,547	70,425	63,650	46,194	38,572	19,618	24,124	16,982	15,306
20%	14,016	15,433	35,012	55,813	62,015	51,429	32,554	26,881	18,690	23,538	16,423	14,750
30%	12,928	13,874	22,439	41,575	51,558	39,917	22,941	17,225	16,622	22,859	15,633	14,073
40%	11,616	12,936	18,500	26,437	45,279	29,972	19,998	15,149	16,079	21,097	15,244	13,635
50%	10,659	12,079	15,589	22,431	33,014	24,758	16,406	13,375	15,441	19,572	14,373	13,300
60%	9,263	11,153	13,999	18,180	24,733	20,947	12,825	12,360	14,633	17,322	13,505	12,363
70%	8,269	10,294	12,891	14,734	20,406	18,647	11,997	11,712	14,169	15,486	11,575	9,959
80%	7,912	8,827	11,039	13,490	16,256	15,202	10,876	11,076	12,499	13,687	9,625	8,924
90%	6,450	7,533	9,307	11,790	14,187	11,426	10,192	9,200	11,354	10,481	8,411	6,941
Long Term												
Full Simulation Period[b]	10,882	14,066	23,134	31,069	37,948	31,691	22,137	18,659	16,634	18,450	13,425	12,156
Water Year Types[c]												
Wet (32%)	12,631	18,451	38,620	50,401	56,918	48,277	35,056	30,274	21,422	19,904	15,099	14,529
Above Normal (16%)	10,011	15,687	24,282	39,084	47,607	42,363	24,359	18,074	15,986	22,756	16,372	14,207
Below Normal (13%)	11,703	14,058	15,668	19,267	31,751	19,354	14,632	14,094	15,368	22,662	16,099	13,094
Dry (24%)	10,247	10,917	13,572	17,315	23,665	21,407	15,052	12,639	14,931	16,466	10,640	10,168
Critical (15%)	8,345	8,067	11,116	14,242	15,868	12,641	10,425	8,341	10,959	10,077	8,799	7,248

Alternative 3_WA

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	14,522	22,597	54,573	64,595	70,440	63,652	46,204	38,551	19,576	24,059	16,983	15,302
20%	14,001	15,342	34,852	55,792	62,055	51,434	32,551	26,873	18,685	23,519	16,453	14,786
30%	12,914	13,898	22,398	41,583	51,560	40,594	22,928	17,225	16,611	22,903	15,661	14,073
40%	11,693	12,952	18,395	26,428	45,289	29,973	19,889	15,154	16,060	21,039	15,298	13,660
50%	10,717	12,046	15,530	22,279	32,969	24,754	16,407	13,378	15,457	19,538	14,357	13,322
60%	9,353	11,121	13,811	18,195	24,732	20,972	12,917	12,390	14,631	17,346	13,441	12,299
70%	8,214	10,221	12,802	14,746	20,413	18,634	11,988	11,714	14,181	15,374	11,535	9,914
80%	7,912	8,717	11,043	13,550	16,276	15,231	10,916	11,076	12,409	13,629	9,639	8,918
90%	6,450	7,551	9,303	11,820	14,220	11,459	10,235	9,201	11,355	10,430	8,552	6,963
Long Term												
Full Simulation Period[b]	10,892	14,051	23,085	31,051	37,940	31,702	22,126	18,660	16,618	18,429	13,421	12,151
Water Year Types[c]												
Wet (32%)	12,647	18,424	38,609	50,384	56,924	48,279	35,051	30,261	21,403	19,893	15,068	14,530
Above Normal (16%)	10,014	15,687	24,067	39,036	47,615	42,396	24,345	18,080	15,983	22,762	16,378	14,189
Below Normal (13%)	11,739	14,031	15,607	19,256	31,751	19,364	14,631	14,089	15,347	22,693	16,100	13,093
Dry (24%)	10,262	10,905	13,568	17,315	23,614	21,416	15,028	12,651	14,911	16,390	10,614	10,162
Critical (15%)	8,314	8,064	11,100	14,217	15,877	12,652	10,420	8,355	10,948	10,056	8,870	7,240

Alternative 3_WA minus Alternative 3

	Monthly Flow (Percent Change)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
40%	1%	0%	-1%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
50%	1%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%
60%	1%	0%	-1%	0%	0%	0%	1%	0%	0%	0%	0%	-1%
70%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
80%	0%	-1%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.7.2. Sacramento River at Freeport, Monthly Flow

Alternative 5

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,940	22,403	48,958	63,738	70,363	62,025	46,178	38,574	19,953	24,625	17,185	29,151
20%	13,753	18,981	32,387	52,655	61,599	51,038	32,559	25,815	16,141	24,012	16,842	28,386
30%	13,111	18,329	21,304	38,363	49,567	37,212	22,950	16,490	13,942	23,249	16,214	22,293
40%	11,971	16,727	17,992	24,503	42,844	29,460	20,004	12,900	13,403	21,099	15,960	21,312
50%	10,996	15,185	15,541	20,791	32,715	24,379	15,901	11,905	13,055	19,737	15,468	14,746
60%	9,175	13,119	15,099	18,100	24,483	20,700	12,517	11,096	12,619	18,365	14,543	13,155
70%	8,302	10,026	13,584	14,777	19,202	18,200	11,777	10,131	12,094	17,451	11,864	10,306
80%	7,912	8,595	10,753	13,467	16,241	14,863	10,304	9,401	10,762	15,630	9,789	8,689
90%	6,444	7,512	9,293	11,701	13,900	11,364	9,585	8,003	10,127	11,885	8,975	7,378
Long Term												
Full Simulation Period[b]	11,003	15,715	22,497	30,404	37,388	31,223	21,901	17,523	14,824	19,224	13,951	17,409
Water Year Types[c]												
Wet (32%)	12,973	20,552	36,278	49,232	56,574	48,034	35,045	29,921	20,050	20,717	16,120	27,839
Above Normal (16%)	10,196	17,255	24,677	38,449	46,580	40,841	24,141	16,617	13,618	23,104	16,859	21,070
Below Normal (13%)	12,003	15,829	15,766	18,240	30,181	18,617	14,146	12,152	12,755	22,395	15,727	12,486
Dry (24%)	10,157	12,669	13,658	17,178	23,432	21,280	14,835	10,813	12,951	17,695	11,049	10,285
Critical (15%)	8,100	8,542	11,179	14,090	15,730	12,507	9,883	7,752	9,826	11,428	9,309	7,230

Alternative 5_WA

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,939	22,317	49,006	63,715	70,379	62,013	46,174	38,552	19,936	24,654	17,184	29,026
20%	13,754	18,988	32,533	52,689	61,606	51,039	32,558	25,656	16,092	24,038	16,866	28,236
30%	13,072	18,328	21,226	38,367	49,249	37,198	22,936	16,518	13,940	23,268	16,214	22,324
40%	11,951	16,821	17,967	24,529	42,874	29,426	19,897	12,902	13,400	21,094	15,951	21,304
50%	11,010	15,177	15,551	20,785	32,688	24,390	15,905	11,894	13,107	19,751	15,453	14,728
60%	9,173	13,106	15,119	18,061	24,509	20,711	12,491	11,125	12,679	18,366	14,626	13,076
70%	8,292	10,039	13,535	14,786	19,204	18,221	11,812	10,128	12,071	17,551	11,851	10,308
80%	7,912	8,609	10,772	13,485	16,261	14,895	10,336	9,396	10,762	15,578	9,756	8,589
90%	6,444	7,525	9,274	11,723	13,914	11,394	9,606	8,001	10,117	11,784	8,969	7,372
Long Term												
Full Simulation Period[b]	10,992	15,703	22,482	30,398	37,387	31,226	21,894	17,524	14,835	19,215	13,932	17,385
Water Year Types[c]												
Wet (32%)	12,942	20,520	36,264	49,222	56,587	48,038	35,042	29,908	20,086	20,718	16,108	27,764
Above Normal (16%)	10,181	17,223	24,671	38,454	46,578	40,822	24,125	16,618	13,613	23,142	16,852	21,065
Below Normal (13%)	12,007	15,813	15,724	18,216	30,172	18,608	14,142	12,148	12,760	22,380	15,781	12,497
Dry (24%)	10,165	12,686	13,646	17,171	23,407	21,294	14,812	10,821	12,949	17,661	10,998	10,288
Critical (15%)	8,094	8,546	11,171	14,098	15,742	12,520	9,903	7,772	9,830	11,392	9,249	7,221

Alternative 5_WA minus Alternative 5

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	-1%
30%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%
40%	0%	1%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	-1%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.8. Delta Outflow

Table 5B.3.8.1. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Alternative 3

	Monthly Outflow Volume (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	298	902	4,155	6,646	7,924	5,788	3,812	2,471	1,066	729	265	261
20%	266	389	2,140	4,462	4,802	4,293	2,584	1,383	630	659	246	245
30%	257	319	1,154	3,104	3,795	2,714	1,525	913	572	575	246	235
40%	246	290	722	1,875	3,031	2,137	1,238	750	502	492	246	229
50%	246	268	480	1,398	2,079	1,678	867	704	477	492	246	222
60%	246	268	398	1,061	1,416	1,185	754	630	436	428	246	191
70%	246	268	336	768	1,078	1,032	601	579	422	307	246	179
80%	246	268	277	599	821	789	566	493	409	307	241	179
90%	185	208	277	497	634	654	512	437	351	246	222	179
Long Term												
Full Simulation Period[b]	277	506	1,465	2,772	3,236	2,711	1,617	1,122	656	490	252	240
Water Year Types[c]												
Wet (32%)	333	791	3,116	5,609	5,812	5,020	2,996	2,109	1,118	649	271	319
Above Normal (16%)	242	568	1,461	3,096	3,903	3,292	1,636	960	514	645	246	228
Below Normal (13%)	281	422	564	1,156	2,186	1,120	856	699	457	507	254	221
Dry (24%)	250	297	457	992	1,459	1,384	882	612	445	321	245	191
Critical (15%)	234	243	397	721	859	752	528	397	346	246	230	179

Alternative 3_WA

	Monthly Outflow Volume (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	313	890	4,169	6,646	7,923	5,788	3,820	2,470	1,064	724	266	261
20%	266	376	2,137	4,462	4,818	4,300	2,584	1,382	629	660	246	245
30%	255	317	1,154	3,104	3,795	2,775	1,524	912	572	578	246	235
40%	246	291	721	1,876	3,031	2,138	1,225	750	502	492	246	228
50%	246	268	479	1,384	2,072	1,680	865	704	475	492	246	223
60%	246	268	399	1,058	1,414	1,186	752	631	436	428	246	187
70%	246	268	319	767	1,081	1,027	598	577	422	307	246	179
80%	246	268	277	603	822	791	568	492	409	307	239	179
90%	185	208	277	498	636	655	514	437	350	246	222	179
Long Term												
Full Simulation Period[b]	277	505	1,464	2,771	3,237	2,713	1,616	1,122	656	490	252	240
Water Year Types[c]												
Wet (32%)	335	788	3,116	5,608	5,811	5,019	2,996	2,108	1,117	649	271	319
Above Normal (16%)	243	568	1,455	3,093	3,909	3,297	1,635	960	514	645	246	227
Below Normal (13%)	280	421	560	1,155	2,186	1,120	855	699	455	508	254	221
Dry (24%)	250	297	457	992	1,456	1,385	881	611	445	321	244	191
Critical (15%)	234	243	397	721	861	753	529	398	346	246	228	179

Alternative 3_WA minus Alternative 3

	Monthly Outflow Volume (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5%	-1%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
20%	0%	-3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	-1%	-1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
50%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	1%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%
70%	0%	0%	-5%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.8.2. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Alternative 5

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	623	960	4,115	6,339	7,831	5,439	4,160	2,849	1,180	767	284	1,161
20%	594	874	2,112	4,319	4,907	4,174	2,807	1,763	606	688	256	1,134
30%	576	830	1,008	3,149	3,653	2,835	1,798	1,237	524	593	246	910
40%	423	660	762	1,785	2,869	2,092	1,542	1,002	453	501	246	651
50%	257	586	616	1,301	2,053	1,666	1,234	873	423	492	246	255
60%	246	369	359	1,048	1,406	1,203	1,028	776	422	400	246	204
70%	246	268	310	800	1,025	1,057	817	629	401	308	246	179
80%	246	268	286	585	823	783	712	561	370	307	246	179
90%	184	211	277	486	633	662	623	462	330	246	230	179
Long Term												
Full Simulation Period[b]	401	690	1,413	2,714	3,184	2,695	1,848	1,312	642	500	257	565
Water Year Types[c]												
Wet (32%)	517	1,020	2,905	5,499	5,773	4,996	3,288	2,411	1,117	667	273	1,132
Above Normal (16%)	334	767	1,505	3,048	3,795	3,232	1,947	1,223	482	668	251	661
Below Normal (13%)	471	650	582	1,075	2,047	1,110	1,061	821	434	513	254	214
Dry (24%)	342	471	467	980	1,444	1,396	1,081	720	423	316	256	191
Critical (15%)	254	296	418	714	856	747	621	462	346	249	233	179

Alternative 5_WA

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	614	893	4,109	6,332	7,834	5,439	4,159	2,847	1,178	767	284	1,161
20%	594	874	2,123	4,318	4,907	4,176	2,807	1,762	605	701	258	1,134
30%	576	819	1,007	3,149	3,645	2,833	1,797	1,235	525	593	246	910
40%	423	660	763	1,785	2,870	2,092	1,538	1,001	449	502	246	651
50%	256	586	616	1,301	2,054	1,667	1,226	873	422	492	246	256
60%	246	369	360	1,048	1,407	1,204	1,027	777	422	400	246	205
70%	246	268	310	801	1,023	1,061	816	630	401	308	246	179
80%	246	268	286	587	824	785	709	561	370	307	246	179
90%	184	211	277	488	633	664	627	464	330	246	230	179
Long Term												
Full Simulation Period[b]	400	685	1,413	2,714	3,185	2,695	1,848	1,312	642	500	257	565
Water Year Types[c]												
Wet (32%)	516	1,018	2,906	5,498	5,775	4,995	3,288	2,410	1,115	668	272	1,132
Above Normal (16%)	333	736	1,504	3,048	3,797	3,229	1,946	1,223	482	669	251	661
Below Normal (13%)	471	649	579	1,073	2,046	1,111	1,061	821	434	513	254	214
Dry (24%)	342	471	468	980	1,443	1,396	1,079	721	422	316	256	192
Critical (15%)	254	296	417	714	856	747	622	463	346	248	233	179

Alternative 5_WA minus Alternative 5

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1%	-7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	1%	0%	0%	0%	0%	0%	0%	2%	1%	0%
30%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	-4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.9. Jones and Banks Export Volume

Table 5B.3.9.1. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Alternative 3

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	718	653	725	722	547	563	667	694	694	671
20%	673	671	691	565	603	622	510	496	461	694	694	671
30%	627	652	628	440	524	577	465	452	399	694	694	671
40%	552	627	583	422	449	532	437	386	373	680	694	657
50%	476	571	546	411	393	460	369	329	355	628	624	640
60%	382	501	523	395	365	351	320	281	338	566	502	572
70%	322	467	505	377	320	316	255	230	311	448	396	417
80%	265	346	479	328	264	288	187	124	252	382	268	344
90%	218	276	378	304	202	159	124	102	138	190	170	228
Long Term												
Full Simulation Period[b]	465	520	549	442	426	445	353	330	362	533	513	529
Water Year Types[c]												
Wet (32%)	544	615	601	559	594	589	494	490	519	648	667	654
Above Normal (16%)	430	533	574	414	469	566	441	413	397	586	680	647
Below Normal (13%)	524	587	607	394	373	448	312	266	330	683	650	588
Dry (24%)	440	471	523	389	314	337	270	242	292	492	318	426
Critical (15%)	321	319	401	355	251	180	127	100	131	158	196	245

Alternative 3_WA

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	718	653	726	722	542	563	667	696	694	671
20%	672	671	690	565	603	622	512	496	461	694	694	671
30%	628	660	620	440	524	576	465	451	399	694	694	671
40%	552	624	582	422	449	532	438	386	373	680	694	657
50%	475	571	545	411	393	460	369	329	355	630	619	640
60%	397	501	521	395	365	351	320	280	339	566	498	555
70%	316	467	505	373	320	316	256	231	311	448	392	420
80%	265	344	479	328	264	288	186	124	252	379	269	343
90%	219	276	378	304	202	159	124	102	136	189	189	230
Long Term												
Full Simulation Period[b]	465	520	548	442	426	444	353	330	362	532	513	528
Water Year Types[c]												
Wet (32%)	544	616	601	558	594	589	493	491	519	648	665	654
Above Normal (16%)	430	534	567	414	469	562	442	413	397	586	680	647
Below Normal (13%)	526	586	608	394	373	448	313	266	330	684	650	588
Dry (24%)	441	471	523	390	314	337	270	243	290	488	317	426
Critical (15%)	319	320	401	354	249	180	126	100	131	157	202	245

Alternative 3_WA minus Alternative 3

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
60%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-3%
70%	-2%	0%	0%	-1%	0%	0%	0%	1%	0%	0%	-1%	1%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	**11%**	1%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	-1%	0%	0%	-1%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%
Critical (15%)	0%	0%	0%	0%	-1%	0%	-1%	0%	-1%	-1%	3%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.9.2. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Alternative 5

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	514	671	721	604	613	677	223	218	509	714	724	671
20%	454	553	717	490	528	612	165	127	359	709	724	662
30%	429	479	685	427	448	528	134	91	340	696	715	648
40%	378	443	558	419	416	479	122	83	318	678	705	626
50%	360	408	496	405	380	424	111	71	251	646	693	598
60%	334	375	481	396	363	349	97	50	207	606	571	508
70%	311	347	452	377	323	312	80	38	193	568	401	415
80%	289	302	387	319	267	283	45	23	178	445	278	347
90%	245	250	337	280	165	159	30	7	42	271	192	254
Long Term												
Full Simulation Period[b]	376	427	528	427	394	423	122	99	279	570	538	514
Water Year Types[c]												
Wet (32%)	408	505	564	514	532	592	202	202	444	667	718	627
Above Normal (16%)	376	423	561	407	405	496	127	92	315	590	705	625
Below Normal (13%)	381	456	588	387	359	397	103	55	208	663	632	561
Dry (24%)	370	394	513	392	315	318	80	41	205	577	333	433
Critical (15%)	313	293	382	355	249	179	34	20	69	239	222	243

Alternative 5_WA

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	513	671	721	604	607	678	223	218	509	714	724	671
20%	454	567	717	490	529	611	165	127	359	709	724	661
30%	432	493	685	427	448	517	134	91	340	695	715	647
40%	377	447	558	419	412	479	122	83	319	679	700	616
50%	360	415	497	405	380	424	111	71	268	647	693	590
60%	334	375	477	396	363	349	97	50	207	606	586	518
70%	312	349	453	377	323	312	80	38	193	566	390	416
80%	288	306	389	319	267	283	45	23	178	445	276	349
90%	247	251	337	280	165	160	30	7	42	266	193	254
Long Term												
Full Simulation Period[b]	376	432	527	427	394	423	122	99	280	569	537	513
Water Year Types[c]												
Wet (32%)	407	504	564	514	532	592	202	202	448	667	717	622
Above Normal (16%)	376	451	562	407	404	496	127	92	315	591	705	625
Below Normal (13%)	381	456	588	387	359	396	103	55	208	662	635	561
Dry (24%)	370	395	512	391	315	318	80	41	205	575	331	433
Critical (15%)	312	293	382	356	250	179	33	20	69	237	219	243

Alternative 5_WA minus Alternative 5

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%
20%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	1%	3%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%
40%	0%	1%	0%	0%	-1%	0%	0%	0%	0%	0%	-1%	-2%
50%	0%	2%	0%	0%	0%	0%	0%	0%	7%	0%	0%	-1%
60%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	3%	2%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-3%	0%
80%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	1%
90%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	1%	0%
Long Term												
Full Simulation Period[b]	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	-1%
Above Normal (16%)	0%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.10. American River below Nimbus Temperature

Table 5B.3.10.1. American River below Nimbus Dam, Monthly Temperature

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.2	58.1	53.3	48.3	48.8	52.2	58.0	63.2	67.8	68.7	67.3	68.0
20%	65.2	57.9	52.0	47.6	47.8	51.3	56.9	62.0	65.3	66.7	66.3	67.4
30%	64.4	57.6	51.7	47.2	47.5	50.7	56.2	60.7	64.6	65.3	65.6	66.5
40%	63.6	57.3	50.7	46.9	47.0	49.9	55.3	59.6	63.1	64.8	64.9	65.9
50%	63.3	57.1	50.5	46.3	46.7	49.4	54.5	58.3	62.4	64.5	64.2	65.3
60%	63.1	56.9	49.4	45.8	46.3	49.0	54.0	57.8	60.8	64.4	64.0	64.9
70%	62.8	56.6	48.9	45.6	46.0	48.7	53.4	57.0	59.8	64.1	63.2	64.6
80%	62.6	56.1	48.3	45.0	45.8	48.3	52.4	56.5	59.3	63.7	62.7	64.0
90%	59.2	55.7	47.1	44.5	45.4	48.0	51.9	54.9	59.0	63.4	62.2	63.4
Long Term												
Full Simulation Period[b]	63.4	57.0	50.2	46.4	46.9	49.8	54.8	59.1	62.5	65.3	64.5	65.6
Water Year Types[c]												
Wet (32%)	60.1	54.4	47.6	45.7	46.1	48.6	52.8	56.6	60.0	63.9	62.6	64.0
Above Normal (16%)	63.7	56.8	49.8	46.4	46.6	49.0	54.2	58.3	62.1	64.2	64.3	65.1
Below Normal (13%)	62.4	56.9	51.1	47.0	46.9	50.0	56.0	60.6	63.4	65.0	64.9	66.0
Dry (24%)	63.9	57.3	50.7	46.7	47.3	50.6	55.5	60.5	63.7	65.9	65.6	66.3
Critical (15%)	64.9	57.7	50.7	46.8	48.1	52.1	57.2	61.5	65.6	69.0	67.0	68.0

Alternative 3_WA

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.3	58.1	53.2	48.2	48.6	52.3	57.9	63.3	67.5	68.8	67.3	68.1
20%	65.1	57.8	51.8	47.4	47.8	51.4	57.0	61.8	65.5	66.9	66.4	67.5
30%	64.3	57.6	51.5	47.2	47.5	50.7	56.2	61.0	64.9	65.2	65.7	66.6
40%	63.5	57.4	50.7	46.9	47.0	49.9	55.2	59.6	63.2	64.8	65.0	65.9
50%	63.2	57.1	50.4	46.2	46.7	49.4	54.6	58.4	62.4	64.6	64.4	65.4
60%	62.9	56.8	49.4	45.8	46.3	49.0	54.0	57.8	60.8	64.4	63.9	64.9
70%	62.7	56.5	48.9	45.5	46.0	48.7	53.4	57.0	59.8	64.1	63.1	64.6
80%	62.5	56.0	48.2	45.0	45.8	48.3	52.4	56.5	59.3	63.6	62.8	64.1
90%	59.1	55.6	46.9	44.5	45.4	48.0	51.9	54.9	59.0	63.4	62.2	63.5
Long Term												
Full Simulation Period[b]	63.4	56.9	50.1	46.3	46.8	49.8	54.7	59.0	62.6	65.3	64.6	65.6
Water Year Types[c]												
Wet (32%)	60.1	54.4	47.5	45.7	46.1	48.6	52.8	56.6	60.0	63.8	62.7	64.0
Above Normal (16%)	63.7	56.8	49.7	46.4	46.6	49.0	54.2	58.3	62.1	64.2	64.4	65.1
Below Normal (13%)	62.0	56.5	51.0	46.9	46.9	50.0	56.1	60.4	63.5	65.0	64.8	65.9
Dry (24%)	63.9	57.3	50.6	46.6	47.3	50.6	55.5	60.6	63.9	65.9	65.6	66.4
Critical (15%)	65.0	57.7	50.7	46.7	48.1	52.1	57.1	61.3	65.5	69.0	67.2	68.1

Alternative 3_WA minus Alternative 3

Statistic	Monthly Temperature (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.10.2. American River below Nimbus Dam, Monthly Temperature

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.3	58.0	53.3	47.9	48.6	52.4	57.8	62.8	67.6	68.4	67.3	68.3
20%	65.3	57.8	51.9	47.3	47.8	51.7	56.9	61.7	65.9	66.7	66.7	67.5
30%	64.4	57.6	51.2	46.9	47.4	50.6	56.0	60.7	64.6	65.3	65.7	66.5
40%	63.5	57.3	50.7	46.8	46.9	49.8	55.3	59.5	63.1	64.9	65.0	65.7
50%	63.3	57.1	50.4	46.3	46.6	49.4	54.5	58.3	61.9	64.6	64.2	65.3
60%	63.1	56.8	49.2	45.8	46.3	49.0	54.0	57.8	60.6	64.5	63.8	64.8
70%	62.8	56.5	48.5	45.4	46.0	48.7	53.4	57.0	59.7	64.3	63.4	64.4
80%	62.6	56.1	48.0	44.9	45.8	48.3	52.4	56.5	59.3	63.7	63.1	64.1
90%	59.2	55.6	46.9	44.5	45.4	48.0	51.9	54.9	59.0	63.5	62.6	63.0
Long Term												
Full Simulation Period[b]	63.4	57.0	50.0	46.2	46.8	49.9	54.7	59.0	62.5	65.2	64.7	65.5
Water Year Types[c]												
Wet (32%)	60.1	54.5	47.3	45.6	46.0	48.6	52.8	56.6	59.9	63.8	62.9	63.7
Above Normal (16%)	63.9	56.8	49.8	46.2	46.5	49.0	54.2	58.3	61.8	64.5	64.1	65.0
Below Normal (13%)	62.3	56.6	50.6	46.5	46.7	50.0	56.1	60.2	63.6	65.1	65.3	65.7
Dry (24%)	63.9	57.3	50.5	46.6	47.3	50.6	55.4	60.2	63.8	65.8	65.6	66.4
Critical (15%)	64.8	57.5	50.6	46.7	48.1	52.3	57.0	61.8	65.8	68.3	67.1	68.2

Alternative 5_WA

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.4	58.1	54.0	48.2	48.6	52.5	57.7	62.8	67.3	68.6	67.3	68.0
20%	65.0	57.6	52.6	47.5	47.8	51.8	56.9	61.8	65.5	66.1	66.5	67.1
30%	63.4	57.4	51.6	47.2	47.5	50.7	56.0	60.7	64.7	65.0	65.3	65.8
40%	63.1	57.0	51.2	46.9	46.9	49.7	55.2	59.5	63.1	64.3	64.7	65.2
50%	62.8	56.8	50.6	46.3	46.7	49.4	54.5	58.3	61.8	63.9	63.6	64.3
60%	62.5	56.5	49.5	45.8	46.3	49.0	54.0	57.8	60.5	63.7	63.1	63.5
70%	59.4	56.4	48.7	45.5	46.0	48.7	53.4	56.9	59.8	63.4	62.8	63.1
80%	58.9	56.2	48.2	44.9	45.8	48.3	52.4	56.3	59.3	62.9	62.3	62.5
90%	58.5	55.7	46.9	44.5	45.4	48.0	51.9	54.9	59.0	62.4	61.0	61.3
Long Term												
Full Simulation Period[b]	62.2	56.9	50.4	46.4	46.8	49.9	54.7	59.0	62.4	64.7	64.1	64.5
Water Year Types[c]												
Wet (32%)	59.4	54.6	47.5	45.7	46.0	48.5	52.7	56.6	59.8	62.9	61.8	62.1
Above Normal (16%)	62.1	57.0	50.5	46.5	46.6	49.0	54.2	58.3	61.8	63.8	63.4	63.9
Below Normal (13%)	60.4	56.1	51.2	46.7	46.7	50.0	56.0	59.9	63.3	64.6	64.8	64.9
Dry (24%)	62.8	57.1	50.9	46.7	47.3	50.7	55.5	60.3	63.7	65.5	65.3	65.9
Critical (15%)	63.9	57.3	50.8	46.8	48.1	52.4	57.1	61.9	65.9	68.1	67.4	68.0

Alternative 5_WA minus Alternative 5

Statistic	Monthly Temperature (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	-1%	0%	-1%
30%	-1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%
40%	-1%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
50%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
60%	-1%	-1%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
70%	**-5%**	0%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
80%	**-6%**	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
90%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-2%	-3%
Long Term												
Full Simulation Period[b]	-2%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
Water Year Types[c]												
Wet (32%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-2%	-3%
Above Normal (16%)	-3%	0%	1%	1%	0%	0%	0%	0%	0%	-1%	-1%	-2%
Below Normal (13%)	-3%	-1%	1%	0%	0%	0%	0%	0%	-1%	-1%	-1%	-1%
Dry (24%)	-2%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Critical (15%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.11. American River at Watt Temperature

Table 5B.3.11.1. American River at Watt Avenue, Monthly Temperature

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	67.1	58.3	52.6	48.7	50.1	56.4	62.7	67.9	72.5	73.0	73.4	71.4
20%	65.7	57.9	51.7	48.0	49.5	54.7	60.2	66.4	69.2	70.0	71.6	70.2
30%	64.9	57.6	51.3	47.6	48.7	53.0	59.2	65.3	68.2	68.7	69.8	69.1
40%	64.5	57.3	50.4	47.4	48.3	51.9	57.7	63.8	66.8	68.2	69.0	68.6
50%	64.1	57.0	50.3	46.7	47.8	51.3	57.0	62.3	65.9	67.8	68.5	67.9
60%	63.7	56.7	49.5	46.4	47.3	50.5	56.5	61.0	64.5	67.5	67.9	67.6
70%	63.4	56.5	48.8	45.9	46.9	50.0	55.0	59.8	63.6	67.1	67.4	67.3
80%	63.0	56.1	48.2	45.3	46.5	49.7	54.2	59.1	62.9	67.0	66.2	66.7
90%	60.7	55.8	47.3	44.9	46.1	49.2	53.4	57.1	61.9	66.4	65.6	65.8
Long Term												
Full Simulation Period[b]	64.1	57.0	50.0	46.8	48.1	52.0	57.4	62.7	66.3	68.9	69.0	68.4
Water Year Types[c]												
Wet (32%)	60.8	54.5	47.5	46.0	46.8	49.9	54.7	59.3	63.2	67.4	66.5	66.7
Above Normal (16%)	64.6	57.0	49.8	46.8	47.5	50.4	56.3	62.0	65.8	67.0	68.4	67.7
Below Normal (13%)	63.2	56.7	50.7	47.3	47.9	52.5	59.1	64.1	67.4	67.7	69.3	68.8
Dry (24%)	64.5	57.2	50.3	47.2	48.8	53.2	58.6	64.4	67.7	69.5	70.2	69.2
Critical (15%)	65.6	57.7	50.3	47.4	50.5	55.5	61.3	66.3	70.5	74.4	72.6	71.3

Alternative 3_WA

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	67.2	58.2	52.5	48.7	50.1	56.4	62.5	68.0	72.7	73.3	73.4	71.5
20%	65.7	57.9	51.6	48.0	49.5	54.7	60.6	66.3	69.5	70.4	71.6	70.1
30%	64.9	57.6	51.1	47.6	48.7	53.0	59.1	65.5	68.5	68.7	70.1	69.4
40%	64.5	57.2	50.4	47.4	48.2	51.9	57.9	63.9	66.8	68.3	69.1	68.8
50%	64.2	57.0	50.1	46.7	47.7	51.3	57.0	62.2	65.9	68.0	68.4	67.9
60%	63.7	56.7	49.4	46.4	47.3	50.5	56.5	61.0	64.5	67.5	68.0	67.6
70%	63.3	56.5	48.8	45.9	46.9	50.0	55.0	59.8	63.7	67.1	67.3	67.3
80%	63.0	56.0	48.1	45.3	46.5	49.7	54.2	59.1	63.0	66.9	66.3	66.7
90%	60.7	55.6	47.3	44.9	46.2	49.2	53.4	57.1	62.0	66.4	65.9	65.9
Long Term												
Full Simulation Period[b]	64.1	57.0	49.9	46.8	48.1	52.0	57.5	62.7	66.5	69.0	69.1	68.5
Water Year Types[c]												
Wet (32%)	60.9	54.5	47.4	46.0	46.8	49.9	54.7	59.3	63.3	67.5	66.6	66.7
Above Normal (16%)	64.6	57.0	49.8	46.8	47.5	50.4	56.4	62.0	65.8	67.0	68.5	67.7
Below Normal (13%)	63.0	56.4	50.6	47.3	47.9	52.5	59.2	64.1	67.6	67.8	69.3	68.8
Dry (24%)	64.5	57.2	50.2	47.1	48.8	53.2	58.6	64.6	67.9	69.6	70.3	69.3
Critical (15%)	65.7	57.7	50.2	47.4	50.5	55.5	61.3	66.3	70.6	74.4	73.0	71.5

Alternative 3_WA minus Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.11.2. American River at Watt Avenue, Monthly Temperature

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66.3	58.0	53.3	47.9	48.6	52.4	57.8	62.8	67.6	68.4	67.3	68.3
20%	65.3	57.8	51.9	47.3	47.8	51.7	56.9	61.7	65.9	66.7	66.7	67.5
30%	64.4	57.6	51.2	46.9	47.4	50.6	56.0	60.7	64.6	65.3	65.7	66.5
40%	63.5	57.3	50.7	46.8	46.9	49.8	55.3	59.5	63.1	64.9	65.0	65.7
50%	63.3	57.1	50.4	46.3	46.6	49.4	54.5	58.3	61.9	64.6	64.2	65.3
60%	63.1	56.8	49.2	45.8	46.3	49.0	54.0	57.8	60.6	64.5	63.8	64.8
70%	62.8	56.5	48.5	45.4	46.0	48.7	53.4	57.0	59.7	64.3	63.4	64.4
80%	62.6	56.1	48.0	44.9	45.8	48.3	52.4	56.5	59.3	63.7	63.1	64.1
90%	59.2	55.6	46.9	44.5	45.4	48.0	51.9	54.9	59.0	63.5	62.6	63.0
Long Term												
Full Simulation Period[b]	63.4	57.0	50.0	46.2	46.8	49.9	54.7	59.0	62.5	65.2	64.7	65.5
Water Year Types[c]												
Wet (32%)	60.1	54.5	47.3	45.6	46.0	48.6	52.8	56.6	59.9	63.8	62.9	63.7
Above Normal (16%)	63.9	56.8	49.8	46.2	46.5	49.0	54.2	58.3	61.8	64.5	64.1	65.0
Below Normal (13%)	62.3	56.6	50.6	46.5	46.7	50.0	56.1	60.2	63.6	65.1	65.3	65.7
Dry (24%)	63.9	57.3	50.5	46.6	47.3	50.6	55.4	60.2	63.8	65.8	65.6	66.4
Critical (15%)	64.8	57.5	50.6	46.7	48.1	52.3	57.0	61.8	65.8	68.3	67.1	68.2

Alternative 5_WA

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66.4	58.1	54.0	48.2	48.6	52.5	57.7	62.8	67.3	68.6	67.3	68.0
20%	65.0	57.6	52.6	47.5	47.8	51.8	56.9	61.8	65.5	66.1	66.5	67.1
30%	63.4	57.4	51.6	47.2	47.5	50.7	56.0	60.7	64.7	65.0	65.3	65.8
40%	63.1	57.0	51.2	46.9	46.9	49.7	55.2	59.5	63.1	64.3	64.7	65.2
50%	62.8	56.8	50.6	46.3	46.7	49.4	54.5	58.3	61.8	63.9	63.6	64.3
60%	62.5	56.5	49.5	45.8	46.3	49.0	54.0	57.8	60.5	63.7	63.1	63.5
70%	59.4	56.4	48.7	45.5	46.0	48.7	53.4	56.9	59.8	63.4	62.8	63.1
80%	58.9	56.2	48.2	44.9	45.8	48.3	52.4	56.3	59.3	62.9	62.3	62.5
90%	58.5	55.7	46.9	44.5	45.4	48.0	51.9	54.9	59.0	62.4	61.0	61.3
Long Term												
Full Simulation Period[b]	62.2	56.9	50.4	46.4	46.8	49.9	54.7	59.0	62.4	64.7	64.1	64.5
Water Year Types[c]												
Wet (32%)	59.4	54.6	47.5	45.7	46.0	48.5	52.7	56.6	59.8	62.9	61.8	62.1
Above Normal (16%)	62.1	57.0	50.5	46.5	46.6	49.0	54.2	58.3	61.8	63.8	63.4	63.9
Below Normal (13%)	60.4	56.1	51.2	46.7	46.7	50.0	56.0	59.9	63.3	64.6	64.8	64.9
Dry (24%)	62.8	57.1	50.9	46.7	47.3	50.7	55.5	60.3	63.7	65.5	65.3	65.9
Critical (15%)	63.9	57.3	50.8	46.8	48.1	52.4	57.1	61.9	65.9	68.1	67.4	68.0

Alternative 5_WA minus Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	1%	0%	0%	0%	0%	0%	-1%	-1%	0%	-1%
30%	-1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%
40%	-1%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
50%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
60%	-1%	-1%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
70%	-5%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
80%	-6%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
90%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-2%	-3%
Long Term												
Full Simulation Period[b]	-2%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
Water Year Types[c]												
Wet (32%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-2%	-3%
Above Normal (16%)	-3%	0%	1%	1%	0%	0%	0%	0%	0%	-1%	-1%	-2%
Below Normal (13%)	-3%	-1%	1%	0%	0%	0%	0%	0%	-1%	-1%	-1%	-1%
Dry (24%)	-2%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Critical (15%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.12. American River at Mouth Temperature

Table 5B.3.12.1. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67.9	58.5	52.2	49.0	51.6	59.0	65.8	71.1	75.8	75.9	77.5	74.3
20%	66.2	58.1	51.4	48.4	50.6	56.9	62.4	70.0	72.2	72.4	75.2	72.6
30%	65.7	57.7	50.9	47.8	49.7	55.1	61.0	68.3	71.1	71.5	73.1	71.3
40%	65.1	57.3	50.3	47.7	49.1	53.3	60.0	66.6	69.6	71.1	72.1	70.7
50%	64.7	57.0	50.0	47.2	48.4	52.6	58.6	64.6	68.1	70.3	71.5	69.8
60%	64.4	56.7	49.5	46.5	48.0	51.3	58.2	63.1	67.0	69.6	71.0	69.6
70%	64.0	56.5	48.8	46.2	47.3	50.9	56.5	61.8	66.3	69.3	70.4	69.3
80%	63.3	56.1	48.2	45.5	46.9	50.5	55.2	60.7	65.3	68.8	69.0	68.7
90%	62.1	55.9	47.4	45.1	46.5	49.8	54.2	58.4	63.9	68.3	68.3	67.6
Long Term												
Full Simulation Period[b]	64.8	57.1	49.9	47.1	48.9	53.4	59.3	65.1	69.0	71.5	72.2	70.7
Water Year Types[c]												
Wet (32%)	61.5	54.6	47.5	46.2	47.2	50.8	55.9	61.1	65.5	70.1	69.4	68.8
Above Normal (16%)	65.3	57.2	49.9	47.1	48.0	51.3	57.9	64.6	68.3	68.9	71.4	69.7
Below Normal (13%)	63.9	56.5	50.4	47.5	48.6	54.3	61.3	66.7	70.2	69.7	72.7	71.1
Dry (24%)	65.1	57.3	50.1	47.5	49.8	55.0	60.7	67.2	70.5	72.1	73.5	71.5
Critical (15%)	66.3	57.8	50.0	47.9	52.2	57.9	64.2	69.4	73.6	77.8	76.4	73.9

Alternative 3_WA

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67.9	58.5	52.2	49.0	51.5	59.0	65.9	71.5	76.2	76.4	77.9	75.4
20%	66.4	58.0	51.3	48.4	50.6	57.0	63.5	69.9	72.8	72.7	75.4	72.5
30%	65.7	57.7	50.8	47.8	49.8	55.1	61.0	68.5	71.1	71.6	73.3	71.4
40%	65.0	57.4	50.2	47.6	49.1	53.3	60.1	66.6	69.7	71.1	72.1	70.9
50%	64.8	57.0	49.9	47.1	48.4	52.6	58.7	64.7	68.1	70.7	71.6	69.9
60%	64.2	56.7	49.5	46.5	48.0	51.3	58.2	63.2	67.2	69.7	70.9	69.6
70%	64.0	56.5	48.7	46.2	47.3	50.9	56.5	61.8	66.3	69.3	70.5	69.3
80%	63.4	56.0	48.1	45.5	46.9	50.5	55.2	60.8	65.4	68.9	69.1	68.9
90%	62.1	55.5	47.3	45.1	46.5	49.8	54.2	58.4	64.0	68.3	68.4	67.7
Long Term												
Full Simulation Period[b]	64.8	57.0	49.8	47.1	48.9	53.4	59.4	65.2	69.1	71.5	72.3	70.8
Water Year Types[c]												
Wet (32%)	61.5	54.6	47.4	46.1	47.2	50.8	55.9	61.1	65.5	70.2	69.5	68.9
Above Normal (16%)	65.3	57.2	49.9	47.1	48.0	51.3	57.9	64.6	68.4	68.9	71.5	69.7
Below Normal (13%)	63.8	56.3	50.3	47.5	48.6	54.3	61.4	66.7	70.5	69.8	72.7	71.0
Dry (24%)	65.1	57.2	50.0	47.5	49.8	55.0	60.8	67.4	70.8	72.3	73.7	71.7
Critical (15%)	66.3	57.8	49.9	47.9	52.2	57.9	64.3	69.5	73.8	77.8	76.8	74.2

Alternative 3_WA minus Alternative 3

Statistic	Monthly Temperature (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	1%
20%	0%	0%	0%	0%	0%	0%	2%	0%	1%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

Table 5B.3.12.2. American River at the Mouth, Monthly Temperature (above the confluence with the Sacramento River)

Alternative 5

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67.8	58.4	52.3	48.7	51.5	59.2	66.2	71.4	76.7	75.8	77.4	74.4
20%	66.4	58.0	51.4	48.3	50.7	57.0	62.9	70.3	73.1	72.2	75.4	72.5
30%	65.5	57.6	50.8	47.7	49.8	55.1	61.0	68.2	71.1	71.5	73.0	71.2
40%	65.0	57.3	50.4	47.5	49.3	53.3	60.0	66.8	69.6	70.8	72.1	70.3
50%	64.6	56.9	49.9	47.2	48.5	52.6	58.6	64.9	68.3	70.1	71.4	69.7
60%	64.3	56.7	49.0	46.5	47.9	51.4	58.1	63.3	67.7	69.6	71.0	69.0
70%	63.8	56.5	48.6	46.0	47.3	50.9	56.4	61.7	66.2	69.2	70.6	68.2
80%	63.5	56.1	48.0	45.5	46.9	50.4	55.2	60.7	65.4	68.9	70.0	67.3
90%	62.5	55.8	47.3	45.0	46.5	49.8	54.2	58.4	63.9	68.5	68.6	66.7
Long Term												
Full Simulation Period[b]	64.7	57.0	49.7	47.0	48.9	53.4	59.4	65.2	69.2	71.3	72.4	70.1
Water Year Types[c]												
Wet (32%)	61.5	54.6	47.2	46.1	47.2	50.8	55.9	61.1	65.7	69.8	70.0	67.2
Above Normal (16%)	65.3	57.1	49.9	47.0	48.1	51.4	57.8	64.5	69.0	69.1	71.1	68.8
Below Normal (13%)	63.7	56.4	50.0	47.3	48.6	54.3	61.5	66.9	71.1	69.8	73.5	71.3
Dry (24%)	65.0	57.3	50.0	47.4	49.8	55.0	60.7	67.4	70.8	71.8	73.5	71.5
Critical (15%)	66.3	57.7	49.9	47.8	52.2	58.0	64.6	69.6	72.7	77.5	75.8	74.2

Alternative 5_WA

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67.8	58.4	52.7	48.9	51.5	59.2	66.2	71.5	76.8	76.3	77.9	74.2
20%	66.0	57.9	51.7	48.3	50.9	57.2	63.1	70.1	73.1	72.3	75.8	72.8
30%	65.0	57.5	51.2	48.0	49.9	55.1	61.1	68.4	71.1	71.4	72.9	70.8
40%	64.5	57.0	50.5	47.6	49.2	53.3	60.1	66.8	69.7	70.5	71.9	69.9
50%	63.8	56.7	50.3	47.3	48.5	52.6	58.7	65.0	68.2	69.6	71.3	69.1
60%	63.3	56.6	49.2	46.5	48.0	51.5	58.2	63.3	67.7	69.2	70.6	68.2
70%	62.5	56.4	48.7	46.1	47.3	50.9	56.5	61.8	66.5	68.8	70.1	67.2
80%	61.4	56.1	47.9	45.5	46.9	50.5	55.2	60.8	65.4	68.4	69.6	66.3
90%	60.6	55.5	47.2	45.1	46.5	49.8	54.1	58.4	63.5	67.9	67.8	65.3
Long Term												
Full Simulation Period[b]	63.9	56.9	50.0	47.1	48.9	53.5	59.4	65.2	69.3	71.0	72.1	69.5
Water Year Types[c]												
Wet (32%)	61.0	54.7	47.4	46.1	47.2	50.8	55.9	61.1	65.7	69.3	69.3	66.0
Above Normal (16%)	64.1	57.1	50.4	47.2	48.2	51.4	57.9	64.6	69.0	68.6	70.8	68.2
Below Normal (13%)	62.5	55.9	50.4	47.4	48.6	54.3	61.5	66.8	71.0	69.5	73.4	70.8
Dry (24%)	64.3	57.1	50.3	47.6	49.9	55.0	60.8	67.4	70.9	71.8	73.5	71.3
Critical (15%)	65.7	57.6	50.1	47.9	52.3	58.1	64.7	69.7	73.1	77.6	76.1	74.2

Alternative 5_WA minus Alternative 5

	Monthly Temperature (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	1%	0%
20%	-1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	-1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
50%	-1%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%
60%	-2%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
70%	-2%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
80%	-3%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
90%	-3%	-1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%	-2%
Long Term												
Full Simulation Period[b]	-1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Water Year Types[c]												
Wet (32%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
Above Normal (16%)	-2%	0%	1%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%
Below Normal (13%)	-2%	-1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Dry (24%)	-1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Note: All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

5B.3.13. Temperature Threshold Exceedances - American River

Table 5B.3.13.1. Temperature Threshold Exceedances - American River

Species	Lifestage	River	Reach	Water Year Type	Month	Temperature Objective (Degree F)	Temperature Objective Reference[1]	Alternative 3	Alternative 5	Alternative 3 _WA	Alternative 5_WA	Alternative 3_WA minus Alternative 3	Alternative 5_WA minus Alternative 5
Juvenile steelhead	Rearing	American	Watt Ave Bridge	All	May	65	BDCP 2013	33%	32%	33%	33%	-1%	1%
Juvenile steelhead	Rearing	American	Watt Ave Bridge	All	June	65	BDCP 2013	55%	56%	55%	57%	0%	2%
Juvenile steelhead	Rearing	American	Watt Ave Bridge	All	July	65	BDCP 2013	99%	99%	99%	99%	0%	0%
Juvenile steelhead	Rearing	American	Watt Ave Bridge	All	August	65	BDCP 2013	93%	94%	94%	94%	0%	0%
Juvenile steelhead	Rearing	American	Watt Ave Bridge	All	eptembe	65	BDCP 2013	96%	90%	96%	91%	0%	1%
Juvenile steelhead	Rearing	American	Watt Ave Bridge	All	October	65	BDCP 2013	30%	28%	28%	27%	-2%	-1%

[1]See section 9N.C for the full reference

Appendix 5C

Revised Second Basis of Comparison

A CalSim II model error was identified in New Melones operations in the Second Basis of Comparison simulation. The model error is due to use of an incorrect lookup table for one month and causes New Melones to release increased fishery flows in May. This appendix provides findings from an analysis of potential effects of this model error.

5C.1 Methodology

CalSim II model simulation representing the Second Basis of Comparison is rerun with the corrected New Melones Operations. The results are analyzed in two different sections. First, the Revised Second Basis of Comparison (SBC_R) is compared against the Second Basis of Comparison (SBC) to identify the extent of the effects of this model error. As presented in the next section, the results show that the effects of this model error is contained within the Stanislaus River. Secondly, the No Action Alternative (model results same as Alternative 2), Alternative 3, and Alternative 5 are compared against the Revised Second Basis of Comparison (SBC_R) and the Alternative 1 (same as Revised Second Basis of Comparison (SBC_R) is compared against the No Action Alternative. Results analysis in this appendix identifies between similar results (less than 5%) and results with noticeable changes (greater than 5%).

5C.2 Analysis

5C.2.1 Revised Second Basis of Comparison Compared to the Second Basis of Comparison

Model results comparing Revised Second Basis of Comparison (SBC_R) to the Second Basis of Comparison (SBC) presented in Section 5C.3.1 of this document show that the effect of the CalSim II model error is confined to Stanislaus River basin and do not cause any significant change in the overall system operations.

5C.2.2 Revised Second Basis of Comparison Compared to the Alternatives

This section provides analysis of effects of the identified CalSim II model error on the Stanislaus River Basin. The section is organized by alternative comparison and by each parameter that is likely to change.

The changes described in this section are due to increased storage in New Melones and decrease and change in patter of flows in Stanislaus River downstream of New Melones under the Revised Second Basis of Comparison (Revised Alternative 1) compared to the Second Basis of Comparison (Alternative 1).

5C.2.2.1 Revised Alternative 1 Compared to the No Action Alternative

5C.2.2.1.1 New Melones Storage

Alternative 1 showed increased storage in October and November of above normal years (up to 6%), October and April of below normal years (slightly above 5%), October of dry years (slightly above 5%), and October through June of critically dry years (up to 7%) when compared to the No Action Alternative. Revised Alternative 1 shows increased storage in all months of all water year types when compared to the No Action Alternative (from approximately 6 to 44%).

5C.2.2.1.2 New Melones Elevation

Alternative 1 showed similar elevation (within 5% change) in all months of all water year types when compared to the No Action Alternative. Revised Alternative 1 shows increased reservoir elevation in all months of all water year types (from approximately 8 to 13%) when compared to the No Action Alternative.

5C.2.2.1.3 Stanislaus River Flow below Goodwin

Flow patterns are different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in patterns.

- In wet years, Alternative 1 showed lower flows (from approximately 5 to 54%) in October, March, May, July, and August, higher flows (from approximately 6 to 103%) in November, December, January, June, and September), and similar flows (within 5% change) in February and April when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 8 to 57%) in October, March, and May, higher flows (from approximately 12 to 59%) in November, December, February, June, July, August, and September, and similar flows (within 5% change) in January and April when compared to the No Action Alternative.

- In above normal years, Alternative 1 showed lower flows (from approximately 19 to 58%) in October, March, and April months, higher flows (from approximately 7 to 54%) in November, December, January, February, May, and June), and similar flows (within 5% change) in July through September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 7 to 65%) in October, March, April, and May, higher flows (from approximately 5 to 25%) in November, December, and February, and similar flows (within 5% change) in January and June through September when compared to the No Action Alternative.

- In below normal years, Alternative 1 showed lower flows (from approximately 14 to 61%) in October, March, and April months, higher flows (from approximately 5 to 66%) in November through February, May, June, and September), and similar flows (within 5% change) in July and August when compared to the No Action Alternative.

Revised Alternative 1 shows lower flows (from approximately 13 to 66%) in October, March, April, May, and June, higher flows (from approximately 19 to 54%) in November through February, and similar flows (within 5% change) in July through September when compared to the No Action Alternative.

- In dry years, Alternative 1 showed lower flows (approximately 61 and 44%) in October and April months, higher flows (from approximately 7 to 56%) in November through March, May, and June), and similar flows (within 5% change) in July through September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 7 to 65%) in October, March, April, May, and June, higher flows (from approximately 8 to 36%) in November through February, and similar flows (within 5% change) in July through September when compared to the No Action Alternative.

- In critically dry years, Alternative 1 showed lower flows (approximately 66 and 37%) in October and April months, higher flows (from approximately 5 to 41%) in November through March, May, and July), and similar flows (within 5% change) in June, August, and September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 10 to 74%) in October, January, March, April, and May, higher flows (from approximately 6 to 18%) in November, December, July, and August, and similar flows (within 5% change) in February, June, and September when compared to the No Action Alternative.

5C.2.2.1.4 Stanislaus River Flow at Mouth

- In wet years, Alternative 1 showed higher flows (from approximately 5 to 81%) in November, December, January, and June, lower flows (from approximately 7 to 44%) in October, March, May, and August, and similar flows (within 5% change) in February, April, July, and September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 7 to 47%) in October, March, and May, higher flows (from approximately 11 to 46%) in November, December, February, June, July, August, and September, and similar flows (within 5% change) in January and April when compared to the No Action Alternative.

- In above normal years, Alternative 1 showed higher flows (from approximately 6 to 33%) in November through February, May, and June, lower flows (from approximately 15 to 46%) in October, March, and April, and similar flows (within 5% change) in July through September when compared to the No Action Alternative.

Revised Alternative 1 shows lower flows (from approximately 7 to 51%) in October, March, April, and May, higher flows (from approximately 14 to 15%) in November and December, and similar flows (within 5% change) in January, February, and June through September when compared to the No Action Alternative.

- In below normal years, Alternative 1 showed higher flows (from approximately 5 to 42%) in November through February and June, lower flows (from approximately 9 to 49%) in October, March, and April, and similar flows (within 5% change) in May, July, August, and September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 9 to 52%) in October and March through June, higher flows (from approximately 13 to 36%) in November through February, and similar flows (within 5% change) in July through September when compared to the No Action Alternative.

- In dry years, Alternative 1 showed higher flows (approximately 14 and 38%) in November through March and May, lower flows (approximately 47% and 42%) in October and April, and similar flows (within 5% change) in June through September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 5 to 50%) in October, April, May, and June, higher flows (from approximately 5 to 25%) in November through February, and similar flows (within 5% change) in March and July through September when compared to the No Action Alternative.

- In critically dry years, Alternative 1 showed higher flows (approximately 8 and 30%) in November through March and May, lower flows (approximately 54% and 37%) in October and April, and similar flows (within 5% change) in June through September when compared to the No Action Alternative.

  Revised Alternative 1 shows lower flows (from approximately 7 to 60%) in October, January, March, April, and May, higher flows (from approximately 7 to 14%) in November, December, and July, and similar flows (within 5% change) in February, June, August, and September when compared to the No Action Alternative.

5C.2.2.1.5 Stanislaus River Water Temperature below Goodwin Dam

Alternative 1 showed similar temperatures at Goodwin except for higher temperatures in November of critically dry years (average increase of 0.7 °F) and lower temperatures in June and September of critically dry years (up to 1.3 °F) when compared to the No Action Alternative. Difference in temperature threshold exceedances were all within 5% (varied from 2% less to 3% more exceedances in January through May).

Revised Alternative 1 shows similar temperatures at Goodwin except for lower temperatures (from approximately 0.5 to 1.1 °F) in October and September of above normal years, August and September of dry years, and October, June, July, and September of critically dry years. Difference in temperature threshold exceedances are mostly within 5% (3% to 4% more in January through April) and 5% more in May.

In general, Revised Alternative 1 shows higher temperatures for Steelhead smolts in Stanislaus when compared to the No Action Alternative.

5C.2.2.1.6 Stanislaus River Water Temperature at Orange Blossom Bridge

Alternative 1 showed similar temperatures at Orange Blossom Bridge except for higher temperatures in October of wet years, October and April of above normal, below normal, dry, and critically dry years (from approximately 0.6 to 1.9°F) and lower temperatures in June of wet years, March and June of below normal years, and May and July of critically dry years (approximately from 0.6 to 0.7°F) when compared to the No Action Alternative. Difference in temperature threshold exceedances showed 28% more exceedance in October (adult migration threshold), 6% more exceedance in April (smoltification threshold), 17% more exceedance in April (spawning threshold), 8% less exceedance in May (smoltification threshold), and 5% less in November (adult migration threshold) and March and May (spawning threshold).

Revised Alternative 1 shows similar temperatures at Orange Blossom Bridge except for higher temperatures (from approximately 0.5 to 2.1°F) in October and March of wet years, October and April of above normal years, October and June of below normal years, October, April, and May of dry years, and October, March, and April of critically dry years; and lower temperatures (from approximately 0.5 to 1.2°F) in September of wet years, August and September of dry years, and July, August, and September of critically dry years when compared to the No Action Alternative. Difference in temperature threshold exceedances showed 29% more exceedance in October (adult migration threshold), 10% more exceedance in March (smoltification threshold), 5% more exceedance in April (smoltification threshold), 14% more exceedance in March and April (spawning threshold), 9% more exceedance in May (spawning threshold), and 6% less in November (adult migration threshold) , 8% less in August (rearing threshold).

In general, Revised Alternative 1 shows higher temperatures for Steelhead lifestages in Stanislaus when compared to the No Action Alternative.

5C.2.2.1.7 CVP Stanislaus Deliveries

Under Alternative 1, annual CVP service contract deliveries were increased by 4.5 TAF and annual water rights deliveries were increased by 2.3 TAF when compared to the No Action Alternative.

Under Revised Alternative 1, annual CVP service contract deliveries are increased by 14.8 TAF and annual water rights deliveries are increased by 6.2 TAF when compared to the No Action Alternative.

In general, Revised Alternative 1 shows increased CVP Stanislaus deliveries when compared to the No Action Alternative.

5C.2.2.1.8 CVP Power Generation

Long-term average power capacity and energy generation under Alternative 1 were 3% and 1% higher than the No Action Alternative. The energy use at the CVP pumping facilities was 16% higher than the No Action Alternative; which resulted in a 4% lower net generation.

In dry and critical years, long-term average power capacity and energy generation under Alternative 1 were 6% and 3% higher than the No Action Alternative. The energy use at the CVP pumping facilities was 11% higher than the No Action Alternative; which resulted in similar net generation.

Under the revised Alternative 1, long-term average power capacity and energy generation are 4% and 1% higher than the No Action Alternative. The energy use at the CVP pumping facilities is 15% higher than the No Action Alternative; which results in a 3% lower net generation.

In dry and critical years, long-term average power capacity and energy generation under Revised Alternative 1 are 10% and 5% higher than the No Action Alternative. The energy use at the CVP pumping facilities is 15% higher than the No Action Alternative; which results 3% higher net generation.

5C.2.2.1.9 New Melones Large Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 1 showed lower percentage of nest survival in June (approximately 13%), higher percentage of nest survival (48% and 11%) in October and April when compared to the No Action Alternative.

  The Revised Alternative 1 shows lower percentage of nest survival (from approximately 7 to 14%) in July through September, higher percentage of nest survival (approximately 49 and 10%) in October and April when compared to the No Action Alternative.

- In above normal years, Alternative 1 showed lower percentage of nest survival in June (approximately 5%), higher percentage of nest survival (29% and 9%) in October and April when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 6 to 31%) in October, April, July, and August when compared to the No Action Alternative.

- In below normal years, Alternative 1 showed lower percentage of nest survival (approximately 9%) in June; and higher percentage of nest survival (from approximately 5% and 55%) in October, March, April, and July when compared to the No Action Alternative.

The Revised Alternative 1 shows higher percentage of nest survival (from approximately 5 to 59%) in October and March through August when compared to the No Action Alternative.

- In dry years, Alternative 1 showed lower percentage of nest survival (approximately 9%) in May; and higher percentage of nest survival (from approximately 12% and 44%) in October, April, and July when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 7 to 51%) in October and April through September when compared to the No Action Alternative.

- In critically dry years, Alternative 1 showed lower percentage of nest survival (from approximately 12 to 23%) in May, July, and August; and higher percentage of nest survival (from approximately 7% and 53%) in October, April, and September when compared to the No Action Alternative.

  The Revised Alternative 1 shows lower percentage of nest survival (from approximately 7 to 45%) in June through August; and higher percentage of nest survival (from approximately 34 to 53%) in October, April, and May when compared to the No Action Alternative.

In general, Revised Alternative 1 shows higher percentage of nest survival for the New Melones Large Mouth Bass when compared to the No Action Alternative.

5C.2.2.1.10 New Melones Small Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 1 showed lower percentage of nest survival in June (approximately 15%), higher percentage of nest survival (59% and 9%) in October and April when compared to the No Action Alternative.

  The Revised Alternative 1 shows lower percentage of nest survival (from approximately 6 to 14%) in July through September, higher percentage of nest survival (approximately 61 and 9%) in October and April when compared to the No Action Alternative.

- In above normal years, Alternative 1 showed higher percentage of nest survival (41% and 10%) in October and April when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 8 to 44%) in October, April, July, and August when compared to the No Action Alternative.

- In below normal years, Alternative 1 showed lower percentage of nest survival (approximately 10 and 14%) in June and July; and higher percentage of nest survival (from approximately 6% to 57%) in October, March, and April when compared to the No Action Alternative.

The Revised Alternative 1 shows higher percentage of nest survival (from approximately 5 to 61%) in October and March through August when compared to the No Action Alternative.

- In dry years, Alternative 1 showed lower percentage of nest survival (approximately 8% and 5%) in May and November; and higher percentage of nest survival (from approximately 11% to 52%) in October, April, and July when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 6 to 59%) in October and April through September when compared to the No Action Alternative.

- In critically dry years, Alternative 1 showed lower percentage of nest survival (from approximately 5 to 22%) in November, May, July, and August; and higher percentage of nest survival (from approximately 6% to 58%) in October, April, and September when compared to the No Action Alternative.

  The Revised Alternative 1 shows lower percentage of nest survival (from approximately 7 to 50%) in June through September; and higher percentage of nest survival (from approximately 44 to 69%) in October, and April when compared to the No Action Alternative.

In general, Revised Alternative 1 shows higher percentage of nest survival for the New Melones Small Mouth Bass when compared to the No Action Alternative except for the summer months of critically dry years.

5C.2.2.1.11 New Melones Spotted Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 1 showed higher percentage of nest survival (from approximately 6% to 13%) in October, April, July and August when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 11% to 13%) in October, April, and July when compared to the No Action Alternative.

- In above normal years, Alternative 1 showed similar percentage of nest survival when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 6% to 8%) in July and August when compared to the No Action Alternative.

- In below normal years, Alternative 1 showed higher percentage of nest survival (from approximately 5% to 11%) in October, April, and July when compared to the No Action Alternative.

The Revised Alternative 1 shows higher percentage of nest survival (from approximately 6 to 10%) in October, April, and August when compared to the No Action Alternative.

- In dry years, Alternative 1 showed lower percentage of nest survival (approximately 5%) in May when compared to the No Action Alternative.

  The Revised Alternative 1 shows higher percentage of nest survival (from approximately 5% to 13%) in May, July and August when compared to the No Action Alternative.

- In critically dry years, Alternative 1 showed lower percentage of nest survival (from approximately 10% to 17%) in May and July; and higher percentage of nest survival (approximately 20% to 9%) in April and June when compared to the No Action Alternative.

  The Revised Alternative 1 shows lower percentage of nest survival (approximately 7%) in July; and higher percentage of nest survival (from approximately 5% to 21%) in April through June, and September when compared to the No Action Alternative.

In general, Revised Alternative 1 shows higher percentage of nest survival for the New Melones Spotted Bass when compared to the No Action Alternative.

5C.2.2.2 No Action Alternative Compared to the Revised Second Basis of Comparison

5C.2.2.2.1 New Melones Storage

No Action Alternative showed decreased storage in October and November of above normal years (up to 6%), October and April of below normal years (slightly above 5%), October of dry years (slightly above 5%), and October through June of critically dry years (up to 7%) when compared to the Second Basis of Comparison. When compared to the Revised Second Basis of Comparison, the No Action Alternative shows decreased storage (from approximately 6 to 44%) in all months of all water year types.

5C.2.2.2.2 New Melones Elevation

No Action Alternative showed similar reservoir elevation (within 5% change) in all months of all water year types when compared to the Second Basis of Comparison. When compared to the Revised Second Basis of Comparison, the No Action Alternative shows decreased reservoir elevation in all months of all water year types (from approximately 8 to 13%).

5C.2.2.2.3 Stanislaus River Flow below Goodwin

Flow patterns are different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in patterns.

- In wet years, the No Action Alternative showed lower flows (from approximately 5 to 51%) in November, December, January, June, and

September months, higher flows (from approximately 10 to 117%) in October, March, May, July, and August, and similar flows (within 5% change) in February and April when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower flows (from approximately 11 to 37%) in November, December, February, June, July, August, and September, higher flows (from approximately 9 to 134%) in October, March, and May, and similar flows (within 5% change) in January and April when compared to the No Action Alternative.

- In above normal years, the No Action Alternative showed lower flows (from approximately 6 to 35%) in November, December, January, February, May, and June months, higher flows (from approximately 23 to 137%) in October, March, and April, and similar flows (within 5% change) in July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower flows (from approximately 5 to 20%) in November, December, and February, higher flows (from approximately 8 to 188%) in October, March, April, and May, and similar flows (within 5% change) in January and June through September when compared to the No Action Alternative.

- In below normal years, the No Action Alternative showed lower flows (from approximately 5 to 40%) in November through February, May, June, and September) months, higher flows (from approximately 16 to 157%) in October, March, and April, and similar flows (within 5% change) in July and August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower flows (from approximately 16 to 35%) in November through February, higher flows (from approximately 15 to 192%) in October, March, April, May, and June, and similar flows (within 5% change) in July through September.

- In dry years, the No Action Alternative showed lower flows (approximately 6 to 36%) in November through March, May, and June, higher flows (from approximately 154 and 77%) in October and April months, and similar flows (within 5% change) in July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower flows (from approximately 8 to 26%) in November through February, higher flows (from approximately 8 to 189%) in October, March, April, May, and June, and similar flows (within 5% change) in July through September.

- In critically dry years, the No Action Alternative showed lower flows (approximately 9 to 29%) in November through March, and May, higher flows (approximately 197 and 60%) in October and April months, and similar flows (within 5% change) in June through September when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower flows (from approximately 6 to 15%) in November, December, July, and August, higher flows (from approximately 12 to 277%) in October, January, March, April, and May, and similar flows (within 5% change) in February, June, and September.

5C.2.2.2.4 Stanislaus River Flow at Mouth

Flow patterns are different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in patterns.

- In wet years, No Action Alternative showed lower flows (from approximately 5 to 45%) in November, December, January, and June, higher flows (from approximately 8 to 79%) in October, March, May, and August, and similar flows (within 5% change) in February, April, July, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, No Action Alternative shows lower flows (from approximately 10 to 32%) in November, December, February, and June through September, higher flows (from approximately 8 to 88%) in October, March, and May, and similar flows (within 5% change) in January and April when compared to No Action Alternative.

- In above normal years, No Action Alternative showed lower flows (from approximately 6 to 25%) in November through February and May and June, higher flows (from approximately 18 to 84%) in October, March, and April, and similar flows (within 5% change) in July, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, No Action Alternative shows lower flows (approximately 13 and 12%) in November and December, higher flows (from approximately 7 to 106%) in October, March, April, and May, and similar flows (within 5% change) in January, February, and June through September when compared to the No Action Alternative.

- In below normal years, No Action Alternative showed lower flows (from approximately 12 to 29%) in November through February and June, higher flows (from approximately 10 to 94%) in October, March, and April, and similar flows (within 5% change) in May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, No Action Alternative shows lower flows (from approximately 11 to 26%) in November through February, higher flows (from approximately 10 to 109%) in October and March through June, and similar flows (within 5% change) in July through September.

- In dry years, No Action Alternative showed lower flows (approximately 5 to 28%) in, November through March and May and June, higher flows (approximately 88% and 73%) in October and April, and similar flows (within 5% change) in June through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, No Action Alternative shows lower flows (approximately 5 to 20%) in November through February, higher flows (from approximately 6 to 102%) in October, April, May, and June, and similar flows (within 5% change) in March and July through September.

- In critically dry years, No Action Alternative showed lower flows (approximately 7 to 23%) in November through March, and May, higher flows (approximately 118 and 58%) in October and April and similar flows (within 5% change) in June through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, No Action Alternative shows lower flows (from approximately 6 to 12%) in November, December, and July, higher flows (from approximately 27 to 149%) in October, January, March, April, May, and July, and similar flows (within 5% change) in February, June, August, and September.

5C.2.2.2.5 Stanislaus River Water Temperature below Goodwin Dam

No Action Alternative showed similar temperatures at Goodwin except for higher temperatures in June and September critically dry years (average increase of 0.8 and 1.3°F) and lower temperatures in November of critically dry years (up to 0.7°F) when compared to the Second Basis of Comparison. Difference in temperature threshold exceedances were all within 5% (varied from 3% less to 2% more exceedances in January through May).

No Action Alternative shows similar temperatures at Goodwin except for higher temperatures (from approximately 0.5 to 1.1 °F) in October and September of above normal years, August and September of dry years, and October, June, July, and September of critically dry years when compared to the Revised Second Basis of Comparison. Difference in temperature threshold exceedances are mostly within 5% (2% to 4% less in January through April) and 5% less in May.

In general, No Action Alternative shows lower temperatures for Steelhead smolts in Stanislaus when compared to the Revised Second Basis of Comparison.

5C.2.2.2.6 Stanislaus River Water Temperature at Orange Blossom Bridge

No Action Alternative showed similar temperatures at Orange Blossom Bridge except for lower temperatures in October of wet years, October and April of above normal, below normal, dry, and critically dry years (from approximately 0.6 to 1.9°F) and higher temperatures in June of wet years, March and June of below normal years, and May and July of critically dry years (approximately from 0.6 to 0.7°F) when compared to the Second Basis of Comparison. Difference in temperature threshold exceedances showed 28% less exceedance in October (adult migration threshold), 6% less exceedance in April (smoltification threshold), 17% less exceedance in April (spawning threshold), 8% more exceedance in May (smoltification threshold), and 5% more in November (adult migration threshold) and March and May (spawning threshold).

No Action Alternative shows similar temperatures at Orange Blossom Bridge except for lower temperatures (from approximately 0.5 to 2.1°F) in October and March of wet years, October and April of above normal years, October and June of below normal years, October, April, and May of dry years, and October, March, and April of critically dry years; and higher temperatures (from approximately 0.5 to 1.2°F) in September of wet years, August and September of dry years, and July, August, and September of critically dry years when compared to the Revised Second Basis of Comparison. Difference in temperature threshold exceedances showed 29% less exceedance in October (adult migration threshold), 10% less exceedance in March (smoltification threshold), 5% less exceedance in April (smoltification threshold), 14% less exceedance in March and April (spawning threshold), 9% less exceedance in May (spawning threshold), and 6% more in November (adult migration threshold) , 8% more in August (rearing threshold).

In general, No Action Alternative shows lower temperatures for Steelhead lifestages in Stanislaus when compared to the Revised Second Basis of Comparison.

5C.2.2.2.7 CVP Stanislaus Deliveries

Under the No Action Alternative, annual CVP service contract deliveries were decreased by 4.5 TAF and annual water rights deliveries were decreased by 2.3 TAF when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, annual CVP service contract deliveries are decreased by 14.8 TAF and annual water rights deliveries are decreased by 6.2 TAF under the No Action Alternative.

In general, the No Action Alternative shows decreased CVP Stanislaus deliveries when compared to the Revised Second Basis of Comparison.

5C.2.2.2.8 CVP Power Generation

Long-term average power capacity and energy generation under the No Action Alternative were 3% and 1% lower than the Second Basis of Comparison. The energy use at the CVP pumping facilities was 14% lower than the Second Basis of Comparison; which resulted in a 4% higher net generation.

In dry and critical years, long-term average power capacity and energy generation under the No Action Alternative were 6% and 3% lower than the Second Basis of Comparison. The energy use at the CVP pumping facilities was 10% lower than the Second Basis of Comparison; which resulted in similar net generation.

When compares to the Revised Second Basis of Comparison, long-term average power capacity and energy generation are 4% and 1% lower under the No Action

Alternative. The energy use at the CVP pumping facilities is 13% lower than the Revised Second Basis of Comparison; which results in a 3% higher net generation.

In dry and critical years, long-term average power capacity and energy generation under the No Action Alternative are 9% and 4% lower than the Revised Second Basis of Comparison. The energy use at the CVP pumping facilities is 9% lower than the Revised Second Basis of Comparison; which results 3% lower net generation.

5C.2.2.2.9 New Melones Large Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, the No Action Alternative showed higher percentage of nest survival in June (approximately 16%); and lower percentage of nest survival (32% and 10%) in October and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows higher percentage of nest survival (from approximately 8 to 16%) in July through September; and lower percentage of nest survival (approximately 33 and 9%) in October and April.

- In above normal years, the No Action Alternative showed higher percentage of nest survival in June (approximately 5%); and lower percentage of nest survival (22% and 8%) in October and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 6 to 23%) in October, April, July, and August.

- In below normal years, the No Action Alternative showed higher percentage of nest survival (approximately 10%) in June; and lower percentage of nest survival (from approximately 5% and 35%) in October, March, April, and July when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 5 to 37%) in October and March through August.

- In dry years, the No Action Alternative showed higher percentage of nest survival (approximately 10%) in May; and lower percentage of nest survival (from approximately 11% and 31%) in October, April, May, July and August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 7 to 34%) in October and April through September.

- In critically dry years, the No Action Alternative showed higher percentage of nest survival (from approximately 13 to 30%) in May, July, and August; and lower percentage of nest survival (from approximately 6% and 35%) in October, April, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows higher percentage of nest survival (from approximately 7 to 81%) in June through August; and lower percentage of nest survival (from approximately 25 to 35%) in October, April, and May.

In general, the No Action Alternative shows lower percentage of nest survival for the New Melones Large Mouth Bass when compared to the Revised Second Basis of Comparison.

5C.2.2.2.10 New Melones Small Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, the No Action Alternative showed higher percentage of nest survival in June (approximately 17%); and lower percentage of nest survival (37% and 9%) in October and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows higher percentage of nest survival (from approximately 8 to 16%) in July through September; and lower percentage of nest survival (approximately 38 and 8%) in October and April.

- In above normal years, the No Action Alternative showed lower percentage of nest survival (29% and 9%) in October and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 7 to 30%) in October, April, July, and August.

- In below normal years, the No Action Alternative showed higher percentage of nest survival (approximately 11%) in June; and lower percentage of nest survival (from approximately 6% to 37%) in October, March, April, and July when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 6 to 38%) in October, March through May, July, and August.

- In dry years, the No Action Alternative showed higher percentage of nest survival (approximately 5% and 8%) in November and May; and lower percentage of nest survival (from approximately 10% to 34%) in October, April, and July when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 6 to 37%) in October and April through.

- In critically dry years, the No Action Alternative showed higher percentage of nest survival (from approximately 5 to 28%) in November, May, July, and August; and lower percentage of nest survival (from approximately 6% to 37%) in October, April, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows higher percentage of nest survival (from approximately 8 to 100%) in June through September; and lower percentage of nest survival (from approximately 23 to 41%) in October, April, and May.

In general, the No Action Alternative shows lower percentage of nest survival for the New Melones Small Mouth Bass when compared to the Revised Second Basis of Comparison except for the summer months of critically dry years.

5C.2.2.2.11 New Melones Spotted Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, the No Action Alternative showed lower percentage of nest survival (from approximately 5% to 12%) in October, April, July, and August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 10% to 12%) in October, April, and July.

- In above normal years, the No Action Alternative showed similar percentage of nest survival when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 5 to 7%) in July and August.

- In below normal years, the No Action Alternative showed lower percentage of nest survival (from approximately 5% to 10%) in October, April, and July when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 5 to 9%) in October, April, and August.

- In dry years, the No Action Alternative showed higher percentage of nest survival (approximately 5%) in May when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, the No Action Alternative shows lower percentage of nest survival (from approximately 8% to 12%) in July and August.

- In critically dry years, the No Action Alternative showed higher percentage of nest survival (from approximately 11% to 21%) in May and July; and lower percentage of nest survival (from approximately 8% to 17%) in April and June when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the No Action Alternative shows higher percentage of nest survival (from approximately 5% to 8%) in July and August; and lower percentage of nest survival (from approximately 5% to 18%) in April through June, and September.

In general, the No Action Alternative shows lower percentage of nest survival for the New Melones Spotted Bass when compared to the Revised Second Basis of Comparison.

5C.2.2.3 Alternative 3 Compared to the Revised Second Basis of Comparison

5C.2.2.3.1 New Melones Storage

Alternative 3 showed increased storage (from approximately 8 to 32%) almost all months of all water year types except for February through May of wet years (less than 5% increase). When compared to the Revised Second Basis of Comparison, Alternative 3 shows similar storage in all months of all water year types (changes within 5%).

5C.2.2.3.2 New Melones Elevation

Alternative 3 showed similar reservoir elevation in all months of all water year types (changes within 5%). When compared to the Revised Second Basis of Comparison, Alternative 3 still shows similar reservoir elevation in all months of all water year types (changes within 5%).

5C.2.2.3.3 Stanislaus River Flow below Goodwin

Flow patterns are different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in patterns.

- In wet years, Alternative 3 showed lower flows (from approximately 40 to 45%) in May and June, higher flows (from approximately 9 to 67%) in December, February, March, July, August, and September, and similar flows (within 5% change) in October, November, January, and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 17 to 30%) in May and June, higher flows (from approximately 5 to 19%) in October, December, February, and

July, and similar flows (within 5% change) in November, January, March, April, August, and September when compared to Alternative 3.

- In above normal years, Alternative 3 showed lower flows (from approximately 14 to 79%) in November, May, June, and July months, higher flows (from approximately 5 to 23%) in October, March, and April, and similar flows (within 5% change) in December, January, February, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 10 to 74%) in May through July, higher flows (from approximately 6 to 30%) in October through January, March, and April, and similar flows (within 5% change) in February, August, and September when compared to Alternative 3.

- In below normal years, Alternative 3 showed lower flows (from approximately 7 to 58%) in October, November, December, March, May, June, and September, higher flows (from approximately 18 to 32%) in January, February, and April, and similar flows (within 5% change) in August and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 7 to 38%) in November, December, March, May, and June, higher flows (from approximately 6 to 44%) in October and January, and similar flows (within 5% change) in February, April, July, August, and September.

- In dry years, Alternative 3 showed lower flows (approximately 5 to 36%) in, November through March, May, and June, higher flows (approximately 40%) in April, and similar flows (within 5% change) in October and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (approximately 26%) in June, higher flows (from approximately 8 to 19%) in October, March, and April, and similar flows (within 5% change) in November through February, May, and July through September.

- In critically dry years, Alternative 3 showed lower flows (approximately 8 to 31%) in November through March and May through July, higher flows (approximately 5 to 47%) in October, April, and September, and similar flows (within 5% change) in August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 6 to 19%) in January, February, June, and July, higher flows (from approximately 9 to 36%) in October, November, December, March, April, and May, and similar flows (within 5% change) in August and September.

5C.2.2.3.4 Stanislaus River Flow at Mouth

- In wet years, Alternative 3 showed lower flows (from approximately 12 to 39%) in May and June, higher flows (from approximately 8 to 58%) in December, February, March, July, August, and September, and similar flows (within 5% change) in October, November, January, and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 15 to 25%) in May and June, higher flows (from approximately 6 to 17%) in October, December, February, and July, and similar flows (within 5% change) in November, January, March, April, August, and September when compared to Alternative 3.

- In above normal years, Alternative 3 showed lower flows (from approximately 10 to 63%) in November, May, June, and July, higher flows (approximately 19%) in April, and similar flows (within 5% change) in October, December, January, February, March, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 9 to 57%) in May through July, higher flows (from approximately 8 to 17%) in October, December, March, and April, and similar flows (within 5% change) in November, February, August, and September when compared to Alternative 3.

- In below normal years, Alternative 3 showed lower flows (from approximately 9 to 44%) in November, December, March, May, June, and September, higher flows (from approximately 16 to 23%) in January, February, and April, and similar flows (within 5% change) in July, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 7 to 26%) in November, December, May, and June, higher flows (approximately 30%) in January, and similar flows (within 5% change) in October, February, March, April, July, August, and September.

- In dry years, Alternative 3 showed lower flows (approximately 9 to 26%) in, November December, January, March, May, and June, higher flows (approximately 38%) in April, and similar flows (within 5% change) in October, February, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (approximately 18%) in June, higher flows (from approximately 9 to 18%) in October and April, and similar flows (within 5% change) in November through March, May, and July through September.

- In critically dry years, Alternative 3 showed lower flows (approximately 6 to 28%) in November through March and May through July, higher flows (approximately 45%) in April, and similar flows (within 5% change) in October, August, and September when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower flows (from approximately 10 to 15%) in February, June, and July, higher flows (from approximately 6 to 32%) in October, November, December, March, April, and May, and similar flows (within 5% change) in January, August, and September.

5C.2.2.3.5 Stanislaus River Water Temperature below Goodwin Dam

Alternative 3 showed similar temperatures at Goodwin except for lower temperatures in October of above normal years, October and November of below normal years, September of dry years, and October, November, May, and July through September of critically dry years (varied from 0.5 to 1.5°F)when compared to the Second Basis of Comparison. Difference in temperature threshold exceedances were all within 5% (varied from 3% less to 3% more exceedances in March through May).

Alternative 3 shows similar temperatures at Goodwin except for higher temperatures in June (approximately 0.6°F) and lower temperatures in September (approximately 0.6°F) of critically dry years when compared to the Revised Second Basis of Comparison. Difference in temperature threshold exceedances are mostly within 5% (1% to 4% less in January, February, and April) and 5% less in May.

In general, Alternative 3 shows lower temperatures for Steelhead smolts in Stanislaus when compared to the Revised Second Basis of Comparison.

5C.2.2.3.6 Stanislaus River Water Temperature at Orange Blossom Bridge

Alternative 3 showed similar temperatures at Orange Blossom Bridge except for higher temperatures in June of wet years, May through July of above normal, March and June of below normal years, March, May, and June of dry years, and February and June of critically dry years (from approximately 0.5 to 4.3°F) and lower temperatures in August wet years, April of below normal and dry years, and October, November, April, August, and September of critically dry years (approximately from 0.5 to 1.2°F) when compared to the Second Basis of Comparison. Difference in temperature threshold exceedances showed 16% less exceedance in April (spawning threshold), 7% more exceedance in May (smoltification threshold), and 8% more in March (spawning threshold) and 10% more in May (spawning threshold).

Alternative 3 showed similar temperatures at Orange Blossom Bridge except for higher temperatures in June of wet years, June and July of above normal, June of below normal and dry years, and June and July of critically dry years (from approximately 0.6 to 5.1°F) and lower temperatures in October of wet and above normal years, October and April of dry years, and October, March, April, and September of critically dry years (approximately from 0.5 to 1.2°F) when compared to the Revised Second Basis of Comparison. Difference in temperature threshold exceedances showed 10% less exceedance in March (smoltification threshold), 5% less exceedance in May (smoltification threshold), 11 and 12% less in March and April (spawning threshold), and 5% more exceedance in July (rearing threshold).

In general, Alternative 3 shows lower temperatures for Steelhead lifestages in Stanislaus when compared to the Revised Second Basis of Comparison.

5C.2.2.3.7 CVP Stanislaus Deliveries

Under Alternative 3, annual CVP service contract deliveries were increased by 15.1 TAF and annual water rights deliveries were increased by 2.6 TAF when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, annual CVP service contract deliveries are increased by 4.8 TAF; however annual water rights deliveries are decreased by 1.2 TAF under Alternative 3.

In general, the Alternative 3 shows increased Stanislaus deliveries to CVP service contractors and similar (slightly decreased) deliveries to water right holders when compared to the Revised Second Basis of Comparison.

5C.2.2.3.8 CVP Power Generation

Under Alternative 3, long-term average power capacity was 1% higher and energy generation was similar when compared to the Second Basis of Comparison. The energy use at the CVP pumping facilities was 4% lower than the Second Basis of Comparison; which resulted in a 1% higher net generation.

In dry and critical years, long-term average power capacity and energy generation under Alternative 3 were both 1% lower than the Second Basis of Comparison. The energy use at the CVP pumping facilities was 8% lower than the Second Basis of Comparison; which resulted in 4% higher net generation.

When compared to the Revised Second Basis of Comparison, long-term average power capacity and energy generation are both 1% lower under Alternative 3. The energy use at the CVP pumping facilities is 4% lower than the Revised Second Basis of Comparison; which results in similar net generation.

In dry and critical years, long-term average power capacity and energy generation under Alternative 3 are 3% and 1% lower than the Revised Second Basis of Comparison. The energy use at the CVP pumping facilities is 7% lower than the Revised Second Basis of Comparison; which results 1% higher net generation.

5C.2.2.3.9 New Melones Large Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 3 showed higher percentage of nest survival in July through September (from approximately 5% and 45%); and lower percentage of nest survival (7% and 6%) in May and June when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, Alternative 3 shows higher percentage of nest survival (from approximately 12 to 62%) in July through September; and lower percentage of nest survival (approximately 7 and 20%) in May and June.

- In above normal years, Alternative 3 showed higher percentage of nest survival in June through August (from approximately 10% to 38 when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower percentage of nest survival in June (approximately 6 %) in August; and higher percentage of nest survival (approximately 24% and 17%) in June and July.

- In below normal years, Alternative 3 showed higher percentage of nest survival (approximately 15%) in May and June; and lower percentage of nest survival (from approximately 9% and 21%) in December, April, and July when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower percentage of nest survival (from approximately 7 to 18%) in December, April, July, and August.

- In dry years, Alternative 3 showed higher percentage of nest survival (from approximately 5% to 21%) in February, June, and August; and lower percentage of nest survival (approximately 20% and 17%) in April and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower percentage of nest survival (from approximately 7 to 23%) in October, April, May, July, and September.

- In critically dry years, Alternative 3 showed higher percentage of nest survival (approximately 7% to 56%) in February and May; and lower percentage of nest survival (from approximately 5% and 37%) in, April, and June through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows higher percentage of nest survival (approximately 25%) in August; and lower percentage of nest survival (from approximately 10 to 28%) in April, May, July, and September.

In general, the Alternative 3 shows lower percentage of nest survival for the New Melones Large Mouth Bass when compared to the Revised Second Basis of Comparison except for summer months of wet years.

5C.2.2.3.10 New Melones Small Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 3 showed higher percentage of nest survival in July and August (approximately 53% and 24%); and lower percentage of nest survival (approximately 7%) in May when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows higher percentage of nest survival (from approximately 12 to 72%) in July through September; and lower percentage of nest survival (approximately 8 and 18%) in May and June.

- In above normal years, Alternative 3 showed higher percentage of nest survival in June through August (from approximately 8% to 35%) when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower percentage of nest survival (approximately 7%) in August; and higher percentage of nest survival (approximately 28% and 16%) in June and July.

- In below normal years, the Alternative 3 showed higher percentage of nest survival (from approximately 7% to 16%) in November, May, and June; and lower percentage of nest survival (from approximately 9% to 23%) in December, April, and July when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 3 shows lower percentage of nest survival (from approximately 8 to 18%) in December, April, July, and August.

- In dry years, the Alternative 3 showed higher percentage of nest survival (from approximately 5% to 19%) in February, June, and August; and lower percentage of nest survival (approximately 20% and 16%) in April, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 3 shows lower percentage of nest survival (from approximately 7 to 22%) in October, April, May, July, and September.

- In critically dry years, the Alternative 3 showed higher percentage of nest survival (from approximately 8 to 51%) in February and May; and lower percentage of nest survival (from approximately 8% to 40%) in April, and June through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 3 shows higher percentage of nest survival (from approximately 5 to 31%) in February and August; and lower percentage of nest survival (from approximately 8% to 27%) in October, April, May, July, and September.

In general, the Alternative 3 shows lower percentage of nest survival for the New Melones Small Mouth Bass when compared to the Revised Second Basis of Comparison.

5C.2.2.3.11 New Melones Spotted Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 3 showed lower percentage of nest survival (from approximately 8% to 22%) in May and June when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows higher percentage of nest survival (from approximately 5% to 8%) in August and September; and lower percentage of nest survival (approximately 8% and 23%) in May and June.

- In above normal years, Alternative 3 showed lower percentage of nest survival (from approximately 8% to 35%) in August and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 3 shows lower percentage of nest survival (from approximately 8% to 18%) in August and September.

- In below normal years, the Alternative 3 showed higher percentage of nest survival (from approximately 5% to 6%) in May and June; and lower percentage of nest survival (from approximately 9% to 18%) in December, April, July, and August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 3 shows lower percentage of nest survival (from approximately 9% to 18%) in December, April, July, and August.

- In dry years, the Alternative 3 showed lower percentage of nest survival (from approximately 6% to 21%) in April, May, July and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 3 shows lower percentage of nest survival (from approximately 7 to 24%) in April, May, and July through September.

- In critically dry years, the Alternative 3 showed higher percentage of nest survival (from approximately 5% to 26%) in May and June; and lower percentage of nest survival (from approximately 7% to 10%) in March, April, and September when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, the Alternative 3 shows lower percentage of nest survival (from approximately 6% to 10%) in March through May, July, and September.

In general, the Alternative 3 shows lower percentage of nest survival for the New Melones Spotted Bass when compared to the Revised Second Basis of Comparison.

5C.2.2.4 Alternative 5 Compared to the Revised Second Basis of Comparison

5C.2.2.4.1 New Melones Storage

Alternative 5 showed decreased storage (from approximately 6 to 23%) almost all months of all water year types except for June through September of wet years (less than 5% decrease). When compared to the Revised Second Basis of Comparison, Alternative 5 shows further decreased storage (from approximately 8 to 43%) in all months of all water year types.

5C.2.2.4.2 New Melones Elevation

Alternative 5 showed similar reservoir elevation (changes within 5%) in all months of all water year types. When compared to the Revised Second Basis of Comparison, Alternative 5 shows decreased storage in all months of all water year types (from approximately 9 to 13%).

5C.2.2.4.3 Stanislaus River Flow below Goodwin

Flow patterns are different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in patterns.

- In wet years, Alternative 5 showed lower flows (from approximately 6 to 53%) in November, December, January, and June through September, higher flows (from approximately 16 to 113%) in October, March, and May, and similar flows (within 5% change) in February and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 14 to 40%) in November, December, February, and June through September, higher flows (from approximately 11 to 129%) in October, March, and May, and similar flows (within 5% change) in January and April when compared to Alternative 5.

- In above normal years, Alternative 5 showed lower flows (from approximately 7 to 37%) in November through February and June, higher flows (from approximately 23 to 134%) in October, March, April, and May, and similar flows (within 5% change) in July, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 7 to 22%) in November, December, and February, higher flows (from approximately 11 to 185%) in October, March, April, and May, and similar flows (within 5% change) in January and June through September when compared to Alternative 5.

- In below normal years, Alternative 5 showed lower flows (from approximately 5 to 40%) in November through February, June, and September, higher flows (from approximately 16 to 155%) in October, March, and April, and similar flows (within 5% change) in May, July, and August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 16 to 35%) in November through February, higher flows (from approximately 11 to 189%) in October and March through June, and similar flows (within 5% change) in July through September.

- In dry years, Alternative 5 showed lower flows (approximately 8 to 36%) in, November through March and June, higher flows (approximately 25 to 148%) in October, April, and May, and similar flows (within 5% change) in July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (approximately 8 to 26%) in November through February, higher flows (from approximately 8 to 182%) in October and March through June, and similar flows (within 5% change) in July through September.

- In critically dry years, Alternative 5 showed lower flows (approximately 8 to 30%) in November through March, Jun, and July, higher flows (approximately 7 to 193%) in October, April, and May, and similar flows (within 5% change) in August and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 5 to 17%) in November, December, February, June, July, and August, higher flows (from approximately 8 to 272%) in October, January, March, April, and May, and similar flows (within 5% change) in September.

5C.2.2.4.4 Stanislaus River Flow at Mouth

Flow patterns are different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in patterns.

- In wet years, Alternative 5 showed lower flows (from approximately 5 to 47%) in November, December, January, and June through September, higher flows (from approximately 14 to 77%) in October, March, and May, and similar flows (within 5% change) in February and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 12 to 34%) in November, December, February, and June through September, higher flows (from approximately 10 to 86%) in October, March, and May, and similar flows (within 5% change) in January and April when compared to Alternative 5.

- In above normal years, Alternative 5 showed lower flows (from approximately 6 to 26%) in November through February and June, higher flows (from approximately 18 to 82%) in October, March, April, and May, and similar flows (within 5% change) in July, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 6 to 15%) in November, December, and February, higher flows (from approximately 8 to 104%) in October, March, April, and May, and similar flows (within 5% change) in January and June through September when compared to Alternative 5.

- In below normal years, Alternative 5 showed lower flows (from approximately 12 to 34%) in November through February and June, higher flows (from approximately 10 to 93%) in October, March, and April, and similar flows (within 5% change) in May, July, August, and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 11 to 27%) in November through February, higher flows (from approximately 8 to 108%) in October and March through June, and similar flows (within 5% change) in July through September.

- In dry years, Alternative 5 showed lower flows (approximately 6 to 28%) in, November through March and June, higher flows (approximately 23 to 142%) in October, April, and May, and similar flows (within 5% change) in July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (approximately 6 to 20%) in November through February, higher flows (from approximately 77 to 107%) in October, April, and May, and similar flows (within 5% change) in March and June through September.

- In critically dry years, Alternative 5 showed lower flows (approximately 7 to 24%) in November through March, Jun, and July, higher flows (approximately 7 to 149%) in October, April, and May, and similar flows (within 5% change) in August and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower flows (from approximately 6 to 13%) in November, December, June, July, and August, higher flows (from approximately 6 to 147%) in October, January, March, April, and May, and similar flows (within 5% change) in February and September.

5C.2.2.4.5 Stanislaus River Water Temperature below Goodwin Dam

Alternative 5 showed similar temperatures at Goodwin except for higher temperatures in October of wet years, October, July, August, and September of below normal years, October, November, July, August, and September of dry years, October, April, May, August, and September of critically dry years (varied from 0.5 to 1.9°F), and lower temperatures in December and February of critically dry years (approximately 0.5°F) when compared to the Second Basis of Comparison. Difference in temperature threshold exceedances were within 5% (varied from 1% less to 2% more exceedances in February, March, and May) and higher (approximately 6%) in April.

Alternative 5 shows similar temperatures at Goodwin except for higher temperatures in October of wet years, October, November, August and September of above normal years, October, August, and September of below normal years, October through December and July through September of dry years, October, November, May, and July through September of critically dry years (varied from 0.5 to 2.5°F) when compared to the Revised Second Basis of Comparison. Difference in temperature threshold exceedances are within 5% (varied from 4% less to 3% more exceedances in January through April).

In general, Alternative 5 shows lower temperatures for Steelhead smolts in Stanislaus when compared to the Revised Second Basis of Comparison.

5C.2.2.4.6 Stanislaus River Water Temperature at Orange Blossom Bridge

Alternative 5 showed similar temperatures at Orange Blossom Bridge except for lower temperatures in October of wet years, October and April of above normal, below normal, dry, and critically dry years (from approximately 0.7 to 1.6°F) and higher temperatures in November and June of wet years, June and September of below normal years, August and September of dry years, and June through September of critically dry years (approximately from 0.5 to 1.3°F) when compared to the Second Basis of Comparison. Difference in temperature threshold exceedances showed 27% less exceedance in October (adult migration threshold), 8% less exceedance in April (smoltification threshold), 26% less exceedance in April (spawning threshold), 8% more exceedance in November (adult migration threshold), 6% more exceedance in April (smoltification threshold), and 6 % more exceedance in July (rearing threshold), and 8% more in August and September (rearing threshold).

Alternative 5 shows similar temperatures at Orange Blossom Bridge except for lower temperatures (from approximately 0.5 to 1.7°F) in October and March of wet years, October, March, and May of above normal years, October of below normal years, October, April, and May of dry years, and October, March, April, and May of critically dry years; and higher temperatures (from approximately 0.6 to 1.7°F) in July through September of wet years, November and September of above normal years, September of below normal years, November, and July through September of dry years, and November and June through September of critically dry years when compared to the Revised Second Basis of Comparison. Difference in temperature threshold exceedances showed 28% less exceedance in

October (adult migration threshold), 10% less exceedance in March (smoltification threshold), 7% less exceedance in April (smoltification threshold), 15% less exceedance in May (smoltification threshold), 15, 23, and 17% less exceedance in March, April, and May respectively (spawning threshold), and 9% more in November (adult migration threshold) , and 7, 13, and 11% more in July, August, and September respectively (rearing threshold).

In general, Alternative 5 shows lower temperatures for Steelhead lifestages in Stanislaus except for higher temperatures when Steelhead is rearing in summer; when compared to the Revised Second Basis of Comparison.

5C.2.2.4.7 CVP Stanislaus Deliveries

Under Alternative 5, annual CVP service contract deliveries were decreased by 8.4 TAF and annual water rights deliveries were decreased by 8.1 TAF when compared to the Second Basis of Comparison.

When compared to the Revised Second Basis of Comparison, annual CVP service contract deliveries are decreased by 18.6 TAF and annual water rights deliveries are decreased by 11.9 TAF under Alternative 5.

In general, the Alternative 5 shows decreased CVP Stanislaus deliveries when compared to the Revised Second Basis of Comparison.

5C.2.2.4.8 CVP Power Generation

Under Alternative 5, long-term average power capacity and energy generation were 4% and 1% lower when compared to the Second Basis of Comparison. The energy use at the CVP pumping facilities was 14% lower than the Second Basis of Comparison; which resulted in a 4% higher net generation.

In dry and critical years, long-term average power capacity and energy generation under Alternative 5 were both 1% lower than the Second Basis of Comparison. The energy use at the CVP pumping facilities was 8% lower than the Second Basis of Comparison; which resulted in 4% higher net generation.

When compared to the Revised Second Basis of Comparison, long-term average power capacity and energy generation are 5% and 1% lower under Alternative 5. The energy use at the CVP pumping facilities is 14% lower than the Revised Second Basis of Comparison; which results in 3% higher net generation.

In dry and critical years, long-term average power capacity and energy generation under Alternative 5 are 12% and 5% lower than the Revised Second Basis of Comparison. The energy use at the CVP pumping facilities is 9% lower than the Revised Second Basis of Comparison; which results 3% lower net generation.

5C.2.2.4.9 New Melones Large Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 5 showed higher percentage of nest survival in June (approximately 19%); and lower percentage of nest survival (from approximately 5% through 28%) in October, April, May, and July through August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower percentage of nest survival (from approximately 5% to 28%) in October, May, and August.

- In above normal years, the Alternative 5 showed lower percentage of nest survival (from 6% to 23%) in October and April through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 5 shows lower percentage of nest survival (from approximately 6 to 29%) in October and April through September.

- In below normal years, the Alternative 5 showed higher percentage of nest survival (approximately 6%) in June; and lower percentage of nest survival (from approximately 5% and 38%) in October, March, April, May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 5 shows lower percentage of nest survival (from approximately 5 to 40%) in October and March through September.

- In dry years, the Alternative 5 showed higher percentage of nest survival (approximately 5%) in February; and lower percentage of nest survival (from approximately 11% and 47%) in October, April, May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower percentage of nest survival (from approximately 9 to 45%) in October and April through September.

- In critically dry years, Alternative 5 showed higher percentage of nest survival (from approximately 5 to 82%) in February, and June through September and lower percentage of nest survival (approximately 21% and 69%) in October, and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows higher percentage of nest survival (from approximately 17 to 148%) in June through September; and lower percentage of nest survival (from approximately 26 to 67%) in October, April, and May.

In general, the Alternative 5 shows lower percentage of nest survival for the New Melones Large Mouth Bass when compared to the Revised Second Basis of Comparison except for summer months of the critically dry years.

5C.2.2.4.10 New Melones Small Mouth Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 5 showed higher percentage of nest survival in June (approximately 19%); and lower percentage of nest survival (from approximately 7% through 34%) in October, May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower percentage of nest survival (from approximately 5% to 35%) in October, May, and August.

- In above normal years, the Alternative 5 showed lower percentage of nest survival (from 7% to 28%) in October and April through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 5 shows lower percentage of nest survival (from approximately 7 to 29%) in October and April through September.

- In below normal years, the Alternative 5 showed higher percentage of nest survival (approximately 8%) in June; and lower percentage of nest survival (from approximately 6% and 39%) in October, March, April, May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 5 shows lower percentage of nest survival (from approximately 6 to 41%) in October and March through September.

- In dry years, the Alternative 5 showed higher percentage of nest survival (approximately 5%) in November and February; and lower percentage of nest survival (from approximately 11% and 45%) in October, April, May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower percentage of nest survival (from approximately 9 to 48%) in October, and April through September.

- In critically dry years, Alternative 5 showed higher percentage of nest survival (from approximately 5 to 92%) in November, February, and May through September and lower percentage of nest survival (approximately 26% and 67%) in October and April when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows higher percentage of nest survival (from approximately 28 to 179%) in June through September; and lower percentage of nest survival (from approximately 31 to 65%) in October, April and May.

In general, the Alternative 5 shows lower percentage of nest survival for the New Melones Small Mouth Bass when compared to the Revised Second Basis of Comparison except for summer months of the critically dry years.

5C.2.2.4.11 New Melones Spotted Bass Nest Survival Percentage

Monthly pattern of reservoir storage is different between the Second Basis of Comparison and the Revised Second Basis of Comparison and the changes between alternatives reflect the change in this pattern.

- In wet years, Alternative 5 showed lower percentage of nest survival (approximately 8%) in August when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower percentage of nest survival (approximately 6%) in August.

- In above normal years, the Alternative 5 showed lower percentage of nest survival (from 8% to 21%) in April, June, July and September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 5 shows lower percentage of nest survival (from approximately 8% to 24%) in April, and June through September.

- In below normal years, the Alternative 5 showed lower percentage of nest survival (from approximately 13% and 22%) in October, April, May, and July through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, the Alternative 5 shows lower percentage of nest survival (from approximately 6% to 22%) in October, and April through September.

- In dry years, the Alternative 5 showed lower percentage of nest survival (from approximately 6% and 22%) in October, and April through September when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows lower percentage of nest survival (from approximately 6% to 28%) in October, and April through September.

- In critically dry years, Alternative 5 showed higher percentage of nest survival (from approximately 13% to 18%) in July and August; and lower percentage of nest survival (approximately 31% and 57%) in April and May when compared to the Second Basis of Comparison.

  When compared to the Revised Second Basis of Comparison, Alternative 5 shows higher percentage of nest survival (from approximately 5% to 13%) in July and August; and lower percentage of nest survival (from approximately 7% to 56%) in April, May, and September.

In general, the Alternative 5 shows lower percentage of nest survival for the New Melones Spotted Bass when compared to the Revised Second Basis of Comparison except for summer months of the critically dry years.

5C.3 Results

5C.3.1 Revised Second Basis of Comparison vs. Second Basis of Comparison Results

5C.3.1.1 Trinity Storage

5C.3.1.2 Shasta Storage

5C.3.1.3 Oroville Storage

5C.3.1.4 Folsom Storage

5C.3.1.5 New Melones Storage

5C.3.1.6 Trinity Elevation

5C.3.1.7 Shasta Elevation

5C.3.1.8 Oroville Elevation

5C.3.1.9 Folsom Elevation

5C.3.1.10 New Melones Elevation

5C.3.1.11 Delta Outflow

5C.3.1.12 Exports through Jones and Banks Pumping Plants

5C.3.1.13 Trinity River below Lewiston Dam

5C.3.1.14 Clear Creek below Whiskeytown Dam

5C.3.1.15 Sacramento River downstream of Keswick Reservoir

5C.3.1.16 Feather River downstream of Thermalito Afterbay

5C.3.1.17 Fremont Weir Spills

5C.3.1.18 American River below Nimbus Dam

5C.3.1.19 Sacramento River at Freeport

5C.3.1.20 Yolo Bypass Flow

5C.3.1.21 San Joaquin River at Vernalis Flow

5C.3.1.22 San Joaquin River at Vernalis Salinity

5C.3.1.23 Stanislaus River below Goodwin Flow

5C.3.1.24 Stanislaus River at Mouth Flow

5C.3.2 Revised Second Basis of Comparison vs. Second Basis of Comparison Results

5C.3.2.1 New Melones Storage

5C.3.2.2 New Melones Elevation

5C.3.2.3 Stanislaus River below Goodwin Flow

5C.3.2.4 Stanislaus River at Mouth Flow

5C.3.2.5 Stanislaus River below New Melones Reservoir Temperature

5C.3.2.6 Stanislaus River below Tulloch Reservoir Temperature

5C.3.2.7 Stanislaus River below Goodwin Dam Temperature

5C.3.2.8 Stanislaus River at Orange Blossom Bridge Temperature

5C.3.2.9 Stanislaus River at Mouth Temperature

5C.3.2.10 San Joaquin River at Vernalis Flow

5C.3.2.11 Delta Outflow

5C.3.2.12 X2 Position

5C.3.2.13 Old and Middle River Flow

5C.3.2.14 Exports through Jones and Banks Pumping Plant

5C.3.2.15 CVP Deliveries

5C.3.2.16 CVP Total Capacity

5C.3.2.17 CVP Total Generation

5C.3.2.18 CVP Total Energy Use

5C.3.2.19 CVP Net Generation

5C.3.2.20 Salmon Mortality

5C.3.2.21 New Melones Large Mouth Bass Nest Survival Percentage

5C.3.2.22 New Melones Small Mouth Bass Nest Survival Percentage

5C.3.2.23 New Melones Spotted Bass Nest Survival Percentage

5C.3.2.24 Temperature Threshold Exceedances

5C.3.2.25 CVP Annual Power Generation Summary

5C.3.3 Second Basis of Comparison vs. No Action Alternative, Alternative 3, and Alternative 5 Results

5C.3.3.1 New Melones Storage

5C.3.3.2 New Melones Elevation

5C.3.3.3 Stanislaus River below Goodwin Flow

5C.3.3.4 Stanislaus River at Mouth Flow

5C.3.3.5 Stanislaus River below New Melones Reservoir Temperature

5C.3.3.6 Stanislaus River below Tulloch Reservoir Temperature

5C.3.3.7 Stanislaus River below Goodwin Dam Temperature

5C.3.3.8 Stanislaus River at Orange Blossom Bridge Temperature

5C.3.3.9 Stanislaus River at Mouth Temperature

5C.3.3.10 San Joaquin River at Vernalis Flow

5C.3.3.11 Delta Outflow

5C.3.3.12 X2 Position

5C.3.3.13 Old and Middle River Flow

5C.3.3.14 Exports through Jones and Banks Pumping Plant

5C.3.3.15 CVP Deliveries

5C.3.3.16 CVP Total Capacity

5C.3.3.17 CVP Total Generation

5C.3.3.18 CVP Total Energy Use

5C.3.3.19 CVP Net Generation

5C.3.3.20 Salmon Mortality

5C.3.3.21 New Melones Large Mouth Bass Nest Survival Percentage

5C.3.3.22 New Melones Small Mouth Bass Nest Survival Percentage

5C.3.3.23 New Melones Spotted Bass Nest Survival Percentage

5C.3.3.24 Temperature Threshold Exceedances

5C.3.3.25 CVP Annual Power Generation Summary

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Table 5C.3.1.1 Trinity Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,302	2,253	2,143	1,975
20%	1,804	1,840	1,850	1,900	2,000	2,100	2,255	2,276	2,193	2,055	1,920	1,822
30%	1,576	1,594	1,740	1,816	1,981	2,091	2,222	2,159	2,074	1,924	1,793	1,645
40%	1,391	1,446	1,568	1,705	1,855	2,019	2,131	2,030	1,918	1,767	1,582	1,426
50%	1,267	1,266	1,396	1,567	1,685	1,818	2,012	1,912	1,773	1,601	1,416	1,304
60%	1,174	1,201	1,230	1,335	1,535	1,709	1,778	1,749	1,677	1,497	1,330	1,218
70%	1,106	1,099	1,179	1,216	1,362	1,484	1,645	1,599	1,537	1,400	1,225	1,111
80%	948	954	983	1,052	1,132	1,274	1,453	1,434	1,338	1,168	1,055	976
90%	634	645	672	724	810	921	1,051	975	917	802	689	651
Long Term												
Full Simulation Period[b]	1,269	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,434	1,319
Water Year Types[c]												
Wet (32%)	1,501	1,535	1,644	1,767	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,805
Above Normal (16%)	1,208	1,245	1,363	1,524	1,718	1,901	2,079	2,053	1,955	1,815	1,647	1,513
Below Normal (13%)	1,451	1,472	1,492	1,554	1,641	1,729	1,872	1,799	1,696	1,515	1,337	1,204
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,453	1,586	1,536	1,466	1,302	1,152	1,055
Critical (15%)	819	803	813	825	868	949	999	962	929	811	667	598

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,303	2,253	2,143	1,975
20%	1,805	1,840	1,850	1,900	2,000	2,100	2,257	2,276	2,199	2,059	1,922	1,822
30%	1,577	1,591	1,725	1,816	1,979	2,084	2,222	2,159	2,074	1,924	1,791	1,643
40%	1,386	1,446	1,567	1,701	1,865	2,023	2,131	2,029	1,919	1,767	1,588	1,422
50%	1,265	1,284	1,398	1,563	1,694	1,820	2,024	1,915	1,777	1,599	1,419	1,307
60%	1,173	1,200	1,226	1,341	1,538	1,709	1,778	1,749	1,671	1,497	1,329	1,218
70%	1,105	1,092	1,183	1,209	1,356	1,483	1,643	1,592	1,533	1,398	1,221	1,106
80%	942	958	979	1,053	1,143	1,267	1,442	1,429	1,332	1,166	1,054	972
90%	633	630	640	720	808	921	1,064	994	939	816	690	640
Long Term												
Full Simulation Period[b]	1,270	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,435	1,319
Water Year Types[c]												
Wet (32%)	1,502	1,536	1,645	1,768	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,804
Above Normal (16%)	1,207	1,245	1,363	1,524	1,718	1,902	2,082	2,056	1,959	1,819	1,650	1,517
Below Normal (13%)	1,446	1,467	1,486	1,551	1,638	1,726	1,868	1,796	1,692	1,510	1,334	1,203
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,452	1,585	1,536	1,466	1,299	1,151	1,055
Critical (15%)	825	806	817	827	870	951	1,002	966	933	814	673	600

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
50%	0%	1%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	-1%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%
80%	-1%	0%	0%	0%	1%	-1%	-1%	0%	0%	0%	0%	0%
90%	0%	-2%	-5%	-1%	0%	0%	1%	2%	2%	2%	0%	-2%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.2 Shasta Lake, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,222	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,767	3,380	3,330
30%	3,127	3,199	3,304	3,513	3,673	4,018	4,384	4,532	4,155	3,546	3,174	3,096
40%	2,924	3,028	3,254	3,382	3,569	3,978	4,290	4,375	3,913	3,291	2,980	2,935
50%	2,689	2,753	3,134	3,314	3,487	3,916	4,175	4,245	3,712	3,139	2,781	2,738
60%	2,520	2,594	2,922	3,170	3,354	3,727	4,064	3,971	3,493	2,942	2,636	2,592
70%	2,345	2,467	2,643	2,891	3,252	3,513	3,886	3,757	3,332	2,790	2,527	2,453
80%	2,099	2,145	2,178	2,609	2,978	3,409	3,640	3,525	2,951	2,410	2,127	2,125
90%	1,414	1,350	1,524	2,050	2,383	2,760	2,722	2,958	2,604	1,986	1,584	1,526
Long Term												
Full Simulation Period[b]	2,530	2,578	2,753	3,020	3,285	3,639	3,913	3,907	3,539	3,007	2,674	2,607
Water Year Types[c]												
Wet (32%)	2,817	2,926	3,154	3,406	3,597	3,841	4,301	4,453	4,228	3,733	3,362	3,252
Above Normal (16%)	2,499	2,578	2,808	3,313	3,515	4,038	4,416	4,417	3,979	3,347	2,975	2,921
Below Normal (13%)	2,826	2,846	2,977	3,299	3,646	3,966	4,164	4,042	3,599	3,010	2,601	2,574
Dry (24%)	2,409	2,431	2,578	2,755	3,168	3,644	3,861	3,774	3,333	2,800	2,539	2,496
Critical (15%)	1,873	1,826	1,911	2,050	2,222	2,460	2,386	2,270	1,861	1,409	1,151	1,086

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,220	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,766	3,379	3,354
30%	3,117	3,191	3,302	3,513	3,674	4,020	4,384	4,532	4,155	3,550	3,183	3,095
40%	2,931	3,015	3,253	3,380	3,569	3,980	4,290	4,364	3,907	3,289	2,969	2,942
50%	2,687	2,782	3,116	3,320	3,492	3,917	4,175	4,238	3,704	3,139	2,777	2,749
60%	2,505	2,583	2,937	3,167	3,356	3,713	4,064	3,961	3,482	2,960	2,646	2,599
70%	2,364	2,479	2,619	2,922	3,252	3,513	3,906	3,729	3,335	2,793	2,536	2,456
80%	2,096	2,142	2,178	2,617	2,973	3,390	3,643	3,536	2,977	2,449	2,139	2,114
90%	1,404	1,374	1,488	2,077	2,347	2,775	2,720	2,950	2,583	1,968	1,590	1,536
Long Term												
Full Simulation Period[b]	2,534	2,582	2,755	3,023	3,287	3,641	3,916	3,907	3,539	3,009	2,677	2,613
Water Year Types[c]												
Wet (32%)	2,819	2,925	3,153	3,405	3,597	3,841	4,301	4,453	4,225	3,732	3,362	3,255
Above Normal (16%)	2,513	2,592	2,819	3,326	3,521	4,038	4,415	4,415	3,977	3,347	2,974	2,926
Below Normal (13%)	2,822	2,840	2,972	3,293	3,642	3,963	4,163	4,042	3,599	3,012	2,604	2,576
Dry (24%)	2,411	2,434	2,579	2,756	3,170	3,647	3,866	3,774	3,333	2,804	2,543	2,501
Critical (15%)	1,881	1,835	1,920	2,065	2,234	2,471	2,397	2,275	1,864	1,418	1,162	1,102

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	-1%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%
70%	1%	0%	-1%	1%	0%	0%	1%	-1%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	-1%	0%	0%	1%	2%	1%	-1%
90%	-1%	2%	-2%	1%	-2%	1%	0%	0%	-1%	-1%	0%	1%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	1%	1%	0%	0%	0%	0%	1%	1%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.3 Lake Oroville, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,616	2,550	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,854	2,707
20%	2,272	2,304	2,464	2,788	2,838	2,990	3,298	3,538	3,531	2,965	2,590	2,473
30%	1,937	2,035	2,166	2,556	2,788	2,937	3,268	3,474	3,285	2,772	2,415	2,135
40%	1,699	1,784	2,024	2,366	2,788	2,841	3,209	3,278	2,983	2,367	2,000	1,795
50%	1,429	1,445	1,715	2,187	2,579	2,788	3,067	3,028	2,658	2,145	1,795	1,609
60%	1,145	1,101	1,402	1,723	2,140	2,641	2,888	2,792	2,438	1,915	1,601	1,365
70%	1,037	1,001	1,079	1,306	1,871	2,230	2,527	2,480	2,064	1,754	1,422	1,239
80%	998	974	999	1,109	1,544	1,806	1,996	2,050	1,769	1,436	1,232	1,052
90%	913	877	889	1,003	1,200	1,472	1,563	1,575	1,325	1,133	995	917
Long Term												
Full Simulation Period[b]	1,588	1,585	1,742	1,978	2,258	2,474	2,735	2,796	2,571	2,160	1,897	1,725
Water Year Types[c]												
Wet (32%)	1,936	1,984	2,354	2,636	2,871	2,942	3,300	3,477	3,402	2,976	2,728	2,569
Above Normal (16%)	1,465	1,523	1,702	2,173	2,648	2,937	3,271	3,357	3,081	2,493	2,087	1,827
Below Normal (13%)	1,823	1,783	1,831	2,037	2,361	2,627	2,875	2,836	2,461	1,930	1,637	1,424
Dry (24%)	1,371	1,324	1,344	1,473	1,764	2,120	2,363	2,357	2,031	1,688	1,427	1,261
Critical (15%)	1,117	1,044	1,041	1,125	1,235	1,406	1,423	1,407	1,219	1,027	911	839

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,613	2,547	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,860	2,729
20%	2,277	2,324	2,490	2,788	2,831	2,990	3,298	3,538	3,532	2,959	2,592	2,458
30%	1,932	1,996	2,165	2,565	2,788	2,937	3,268	3,474	3,274	2,756	2,385	2,112
40%	1,687	1,759	2,023	2,372	2,780	2,844	3,209	3,275	2,945	2,340	1,988	1,789
50%	1,406	1,421	1,705	2,204	2,574	2,788	3,084	3,022	2,634	2,121	1,785	1,601
60%	1,143	1,078	1,383	1,682	2,133	2,621	2,885	2,777	2,418	1,913	1,588	1,376
70%	1,034	1,001	1,047	1,307	1,868	2,209	2,499	2,470	2,053	1,723	1,392	1,228
80%	998	959	985	1,109	1,538	1,789	1,938	2,034	1,805	1,443	1,255	1,097
90%	913	876	851	1,003	1,198	1,471	1,575	1,584	1,335	1,113	994	891
Long Term												
Full Simulation Period[b]	1,584	1,580	1,736	1,972	2,253	2,470	2,732	2,792	2,561	2,152	1,891	1,721
Water Year Types[c]												
Wet (32%)	1,940	1,983	2,353	2,633	2,869	2,942	3,300	3,478	3,392	2,969	2,730	2,571
Above Normal (16%)	1,465	1,521	1,697	2,166	2,644	2,939	3,274	3,359	3,079	2,491	2,085	1,823
Below Normal (13%)	1,831	1,796	1,839	2,046	2,376	2,642	2,892	2,844	2,460	1,933	1,635	1,413
Dry (24%)	1,354	1,306	1,327	1,456	1,745	2,101	2,345	2,339	2,012	1,668	1,409	1,248
Critical (15%)	1,101	1,028	1,032	1,119	1,227	1,398	1,415	1,398	1,210	1,018	904	840

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
20%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
30%	0%	-2%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%
40%	-1%	-1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%	0%
50%	-2%	-2%	-1%	1%	0%	0%	1%	0%	-1%	-1%	-1%	-1%
60%	0%	-2%	-1%	-2%	0%	-1%	0%	-1%	-1%	0%	-1%	1%
70%	0%	0%	-3%	0%	0%	-1%	-1%	0%	-1%	-2%	-2%	-1%
80%	0%	-2%	-1%	0%	0%	-1%	-3%	-1%	2%	0%	2%	4%
90%	0%	0%	-4%	0%	0%	0%	1%	1%	1%	-2%	0%	-3%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	1%	0%	0%	1%	1%	1%	0%	0%	0%	0%	-1%
Dry (24%)	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Critical (15%)	-1%	-2%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.4 Folsom Lake, End of Month Storage

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	689	567	567	567	567	661	792	967	967	906	792	750
20%	582	561	567	567	567	657	792	967	967	817	684	625
30%	552	528	566	563	559	653	792	967	965	728	638	608
40%	469	499	525	556	555	646	792	967	908	641	569	522
50%	400	430	500	523	537	633	792	959	807	546	468	433
60%	351	391	456	470	498	621	790	858	745	504	442	408
70%	336	356	405	430	457	601	733	761	630	433	387	366
80%	291	333	352	388	437	563	634	654	544	371	325	318
90%	253	259	266	311	392	455	489	471	426	309	244	233
Long Term												
Full Simulation Period[b]	431	424	457	475	494	592	715	823	757	579	503	471
Water Year Types[c]												
Wet (32%)	483	470	522	524	515	632	785	951	937	793	688	646
Above Normal (16%)	390	412	467	537	538	640	787	946	857	591	522	485
Below Normal (13%)	506	489	502	514	541	626	761	847	739	475	408	387
Dry (24%)	405	399	423	437	486	585	698	769	664	486	432	408
Critical (15%)	339	317	323	325	369	436	469	482	430	352	288	258

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	692	567	567	567	567	661	792	967	967	903	792	750
20%	580	558	567	567	567	657	792	967	967	816	685	631
30%	548	520	566	563	559	653	792	967	965	725	634	608
40%	472	498	523	554	555	646	792	967	908	639	567	526
50%	396	429	493	523	541	633	792	955	797	546	461	424
60%	349	394	456	470	498	621	790	858	731	497	438	403
70%	329	353	405	428	457	600	733	760	631	432	386	360
80%	285	337	358	388	432	563	635	655	545	376	329	315
90%	253	260	267	304	392	453	484	471	428	311	244	233
Long Term												
Full Simulation Period[b]	430	422	456	474	494	592	715	823	755	577	502	469
Water Year Types[c]												
Wet (32%)	483	469	522	524	515	632	785	951	936	793	687	646
Above Normal (16%)	388	410	465	537	538	640	787	946	851	584	517	479
Below Normal (13%)	505	488	501	514	541	626	762	848	739	476	404	385
Dry (24%)	402	396	421	437	486	585	699	768	662	486	432	407
Critical (15%)	336	315	322	323	367	433	467	479	429	349	290	257

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
30%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
40%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
50%	-1%	0%	-1%	0%	1%	0%	0%	0%	-1%	0%	-1%	-2%
60%	-1%	1%	0%	0%	0%	0%	0%	0%	-2%	-2%	-1%	-1%
70%	-2%	-1%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	-2%
80%	-2%	1%	2%	0%	-1%	0%	0%	0%	0%	1%	1%	-1%
90%	0%	0%	0%	-2%	0%	0%	-1%	0%	0%	1%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	-1%	-1%	0%	0%	0%	0%	0%	0%	-1%	-1%	-1%	-1%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%
Dry (24%)	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	-1%	-1%	-1%	-1%	0%	-1%	0%	-1%	0%	-1%	1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.5 New Melones Reservoir, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (32%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (16%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (13%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (24%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (15%)	845	843	858	869	887	885	837	789	751	682	617	587

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4%	4%	6%	4%	1%	0%	1%	2%	3%	5%	5%	6%
20%	7%	7%	7%	8%	6%	3%	4%	2%	9%	6%	7%	7%
30%	6%	5%	5%	8%	6%	9%	8%	6%	4%	4%	5%	5%
40%	10%	10%	8%	9%	9%	8%	8%	10%	6%	8%	9%	10%
50%	14%	12%	12%	10%	9%	8%	10%	10%	10%	11%	13%	13%
60%	16%	15%	17%	12%	11%	10%	9%	11%	12%	13%	15%	15%
70%	12%	10%	10%	13%	12%	12%	9%	14%	13%	13%	13%	12%
80%	18%	16%	17%	19%	21%	13%	18%	16%	15%	17%	19%	21%
90%	39%	37%	39%	31%	20%	22%	23%	32%	21%	25%	32%	42%
Long Term												
Full Simulation Period[b]	10%	11%	11%	10%	9%	9%	9%	9%	10%	10%	10%	10%
Water Year Types[c]												
Wet (32%)	6%	6%	6%	6%	4%	4%	4%	3%	5%	4%	4%	4%
Above Normal (16%)	12%	12%	12%	11%	10%	10%	9%	9%	10%	10%	11%	11%
Below Normal (13%)	8%	9%	9%	9%	8%	9%	8%	9%	10%	10%	11%	11%
Dry (24%)	12%	12%	12%	12%	12%	12%	12%	14%	14%	15%	16%	17%
Critical (15%)	27%	27%	27%	28%	27%	28%	29%	35%	35%	37%	37%	38%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.6 Trinity Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,358	2,353	2,343
20%	2,328	2,331	2,332	2,337	2,345	2,350	2,359	2,360	2,355	2,348	2,338	2,330
30%	2,309	2,310	2,323	2,329	2,343	2,350	2,357	2,353	2,349	2,339	2,327	2,315
40%	2,293	2,298	2,308	2,320	2,333	2,346	2,352	2,347	2,338	2,325	2,309	2,296
50%	2,283	2,283	2,294	2,308	2,318	2,330	2,346	2,338	2,326	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,289	2,306	2,320	2,326	2,324	2,318	2,302	2,288	2,278
70%	2,267	2,266	2,274	2,278	2,291	2,301	2,315	2,311	2,306	2,294	2,279	2,267
80%	2,249	2,250	2,253	2,261	2,269	2,283	2,299	2,297	2,289	2,273	2,261	2,252
90%	2,207	2,208	2,212	2,220	2,232	2,246	2,261	2,252	2,245	2,230	2,215	2,209
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,325	2,322	2,317	2,305	2,291	2,280
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,270	2,273	2,286	2,303	2,320	2,335	2,347	2,346	2,339	2,329	2,315	2,304
Below Normal (13%)	2,295	2,296	2,298	2,305	2,313	2,320	2,331	2,326	2,318	2,303	2,287	2,274
Dry (24%)	2,266	2,269	2,272	2,274	2,284	2,296	2,309	2,304	2,298	2,284	2,269	2,259
Critical (15%)	2,218	2,216	2,217	2,222	2,229	2,243	2,250	2,246	2,243	2,227	2,204	2,191

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,332	2,332	2,332	2,337	2,345	2,350	2,361	2,364	2,361	2,358	2,353	2,343
20%	2,328	2,331	2,332	2,337	2,345	2,350	2,359	2,360	2,356	2,348	2,338	2,330
30%	2,309	2,310	2,322	2,329	2,343	2,350	2,357	2,353	2,349	2,339	2,327	2,315
40%	2,293	2,298	2,308	2,320	2,334	2,346	2,352	2,347	2,338	2,325	2,310	2,296
50%	2,282	2,284	2,294	2,308	2,319	2,330	2,346	2,338	2,326	2,311	2,296	2,286
60%	2,273	2,276	2,279	2,289	2,306	2,320	2,326	2,324	2,317	2,302	2,288	2,278
70%	2,266	2,265	2,274	2,277	2,290	2,301	2,315	2,310	2,305	2,294	2,278	2,267
80%	2,248	2,250	2,253	2,261	2,270	2,283	2,298	2,297	2,288	2,273	2,261	2,252
90%	2,207	2,206	2,208	2,219	2,231	2,246	2,262	2,254	2,248	2,233	2,215	2,208
Long Term												
Full Simulation Period[b]	2,275	2,277	2,283	2,291	2,303	2,314	2,325	2,323	2,317	2,305	2,291	2,280
Water Year Types[c]												
Wet (32%)	2,301	2,305	2,314	2,325	2,339	2,347	2,357	2,358	2,355	2,347	2,338	2,328
Above Normal (16%)	2,270	2,273	2,286	2,303	2,320	2,335	2,347	2,346	2,339	2,329	2,315	2,304
Below Normal (13%)	2,294	2,296	2,298	2,305	2,313	2,320	2,331	2,326	2,318	2,302	2,286	2,274
Dry (24%)	2,266	2,269	2,272	2,274	2,284	2,296	2,309	2,304	2,298	2,283	2,269	2,259
Critical (15%)	2,221	2,217	2,219	2,223	2,230	2,243	2,251	2,247	2,243	2,228	2,205	2,191

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.7 Shasta Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,017	1,017	1,022	1,033	1,044	1,055	1,065	1,067	1,063	1,044	1,030	1,023
20%	1,017	1,017	1,020	1,030	1,039	1,051	1,063	1,067	1,057	1,039	1,023	1,020
30%	1,012	1,015	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,030	1,014	1,010
40%	1,003	1,007	1,017	1,023	1,031	1,046	1,058	1,061	1,044	1,019	1,005	1,003
50%	993	995	1,012	1,020	1,027	1,044	1,054	1,056	1,037	1,012	997	995
60%	985	988	1,003	1,013	1,021	1,037	1,050	1,046	1,027	1,004	990	988
70%	975	982	991	1,001	1,017	1,028	1,043	1,039	1,020	997	986	982
80%	961	964	966	989	1,005	1,024	1,034	1,029	1,004	979	963	963
90%	918	913	926	959	978	996	994	1,004	989	955	931	926
Long Term												
Full Simulation Period[b]	979	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	986	983
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,037	1,022	1,017
Above Normal (16%)	974	978	992	1,019	1,028	1,048	1,062	1,062	1,046	1,021	1,005	1,003
Below Normal (13%)	997	998	1,004	1,019	1,034	1,046	1,053	1,049	1,031	1,006	987	986
Dry (24%)	972	974	982	992	1,012	1,032	1,041	1,038	1,020	997	984	982
Critical (15%)	938	935	941	950	961	977	974	967	943	910	889	884

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,017	1,017	1,022	1,033	1,044	1,055	1,065	1,067	1,063	1,044	1,030	1,023
20%	1,017	1,017	1,020	1,030	1,039	1,051	1,063	1,067	1,057	1,039	1,022	1,021
30%	1,011	1,014	1,019	1,028	1,035	1,048	1,061	1,066	1,053	1,030	1,014	1,010
40%	1,003	1,007	1,017	1,023	1,031	1,047	1,058	1,060	1,044	1,019	1,005	1,004
50%	992	997	1,011	1,020	1,027	1,044	1,054	1,056	1,037	1,012	996	995
60%	984	988	1,003	1,013	1,021	1,037	1,050	1,046	1,027	1,004	991	989
70%	976	983	989	1,003	1,017	1,028	1,044	1,038	1,021	997	986	982
80%	961	964	966	989	1,005	1,023	1,034	1,029	1,005	981	964	962
90%	917	915	923	960	975	996	994	1,004	988	954	931	927
Long Term												
Full Simulation Period[b]	979	981	990	1,004	1,016	1,031	1,042	1,041	1,026	1,002	986	983
Water Year Types[c]												
Wet (32%)	997	1,002	1,012	1,024	1,032	1,041	1,058	1,063	1,055	1,037	1,022	1,017
Above Normal (16%)	975	979	993	1,020	1,028	1,048	1,062	1,062	1,046	1,021	1,005	1,003
Below Normal (13%)	997	998	1,004	1,019	1,033	1,046	1,053	1,049	1,031	1,006	987	986
Dry (24%)	972	974	982	992	1,012	1,032	1,042	1,038	1,020	997	985	983
Critical (15%)	939	936	942	951	962	978	975	968	943	911	890	885

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.8 Lake Oroville, End of Month Elevation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	837	832	849	850	860	867	887	900	900	866	853	843
20%	811	814	827	849	852	863	884	900	900	861	835	827
30%	776	786	800	833	849	859	882	896	883	848	823	797
40%	752	761	785	820	849	852	877	882	862	820	783	762
50%	719	721	754	802	834	849	868	865	840	798	762	741
60%	685	679	716	754	797	839	856	849	825	774	740	712
70%	672	667	677	704	770	807	831	828	789	758	719	696
80%	666	662	666	680	733	763	782	788	759	720	695	673
90%	651	644	647	667	691	725	736	737	707	683	666	652
Long Term												
Full Simulation Period[b]	730	729	746	771	799	818	838	842	823	788	762	744
Water Year Types[c]												
Wet (32%)	768	773	810	837	854	859	884	896	891	861	844	831
Above Normal (16%)	717	723	745	796	838	859	882	888	869	826	790	763
Below Normal (13%)	757	752	757	779	812	834	854	852	823	775	743	719
Dry (24%)	706	701	705	721	755	791	814	813	784	748	718	698
Critical (15%)	677	668	668	680	694	715	716	714	691	664	647	636

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Feet)											
Probability of Exceedance[a]												
10%	837	832	849	850	860	867	887	900	900	866	854	845
20%	811	816	828	849	852	863	884	900	900	860	835	826
30%	776	782	800	834	849	859	882	896	882	847	821	794
40%	751	758	785	820	848	853	877	882	859	818	782	761
50%	717	718	753	804	834	849	869	865	838	795	761	740
60%	684	676	714	750	797	837	855	848	823	774	739	713
70%	671	667	673	704	769	804	829	827	788	754	715	695
80%	666	659	664	680	733	761	776	786	763	721	698	679
90%	651	644	640	667	691	725	737	738	708	681	666	647
Long Term												
Full Simulation Period[b]	729	728	745	771	798	818	838	842	822	787	762	744
Water Year Types[c]												
Wet (32%)	768	773	809	836	854	859	884	896	890	861	844	831
Above Normal (16%)	717	723	745	796	838	859	882	888	869	826	790	763
Below Normal (13%)	757	753	758	780	814	836	855	853	823	775	743	717
Dry (24%)	704	698	703	719	753	790	812	812	782	746	716	697
Critical (15%)	675	666	666	680	693	714	716	713	690	662	646	636

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Elevation (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
80%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	1%
90%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.9 Folsom Lake, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	460	449	445
20%	426	424	424	424	424	436	449	467	467	451	439	432
30%	423	419	424	424	423	435	449	467	467	443	433	429
40%	412	416	419	423	423	434	449	467	460	434	425	419
50%	404	407	416	419	421	433	449	465	450	422	412	408
60%	396	402	410	412	416	431	449	455	444	417	409	405
70%	394	397	404	407	411	429	443	446	432	408	402	399
80%	386	393	396	402	408	424	433	435	422	400	392	391
90%	379	380	382	390	403	410	415	412	407	389	377	375
Long Term												
Full Simulation Period[b]	404	404	410	412	415	427	440	451	444	423	413	409
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	464	449	438	433
Above Normal (16%)	397	400	410	421	421	433	448	465	456	427	419	414
Below Normal (13%)	415	414	416	417	421	432	446	455	443	410	401	398
Dry (24%)	401	401	405	407	414	427	439	446	435	413	406	403
Critical (15%)	389	386	390	391	397	406	410	411	404	391	378	372

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	439	424	424	424	424	436	449	467	467	460	449	445
20%	426	423	424	424	424	436	449	467	467	451	439	432
30%	422	418	424	424	423	435	449	467	467	443	433	429
40%	413	416	419	423	423	434	449	467	460	433	424	419
50%	403	407	415	419	421	433	449	465	449	422	411	407
60%	396	403	410	412	416	431	449	455	443	416	408	404
70%	393	397	404	407	411	428	443	446	432	408	402	398
80%	385	394	397	402	408	424	433	435	422	400	393	390
90%	379	381	382	389	403	410	414	412	407	390	377	375
Long Term												
Full Simulation Period[b]	404	404	409	412	415	427	440	451	444	423	413	409
Water Year Types[c]												
Wet (32%)	412	412	419	419	418	432	448	465	464	448	437	433
Above Normal (16%)	396	400	410	421	421	433	448	465	455	426	418	413
Below Normal (13%)	415	414	415	417	421	432	446	455	443	410	400	397
Dry (24%)	401	401	405	407	414	427	439	446	435	413	406	403
Critical (15%)	388	386	390	391	396	406	410	411	403	390	378	372

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.10 New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	987
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	966
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	932
80%	892	892	896	901	915	931	929	933	927	918	902	892
90%	851	852	852	860	883	883	871	873	889	873	859	850
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	972
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,040	1,038	1,046	1,048	1,050	1,055	1,056	1,066	1,064	1,059	1,050	1,044
20%	1,030	1,030	1,031	1,035	1,049	1,050	1,048	1,052	1,056	1,047	1,036	1,030
30%	1,019	1,018	1,023	1,029	1,033	1,042	1,041	1,048	1,044	1,034	1,024	1,018
40%	1,003	1,004	1,012	1,022	1,029	1,033	1,031	1,028	1,023	1,016	1,006	1,002
50%	987	987	992	1,000	1,013	1,019	1,015	1,019	1,014	1,003	994	987
60%	974	974	982	986	991	1,000	1,001	1,005	1,000	990	979	972
70%	950	951	959	969	970	970	973	985	979	967	954	947
80%	919	915	921	926	940	946	950	952	945	937	927	922
90%	891	892	893	895	911	912	900	914	919	905	894	894
Long Term												
Full Simulation Period[b]	972	973	977	984	992	998	997	1,001	1,000	990	978	972
Water Year Types[c]												
Wet (32%)	1,001	1,002	1,009	1,020	1,029	1,038	1,041	1,053	1,059	1,051	1,039	1,032
Above Normal (16%)	958	962	970	984	996	1,007	1,010	1,019	1,017	1,007	996	990
Below Normal (13%)	993	993	995	998	1,006	1,010	1,007	1,009	1,006	996	984	979
Dry (24%)	971	971	972	974	978	982	981	980	975	964	952	946
Critical (15%)	905	905	908	911	915	916	907	899	892	878	865	859

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1%	1%	1%	1%	0%	0%	0%	0%	1%	1%	1%	1%
20%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	1%	1%
30%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
40%	2%	2%	1%	1%	1%	1%	1%	2%	1%	1%	1%	1%
50%	2%	2%	2%	1%	1%	1%	1%	2%	2%	2%	2%	2%
60%	2%	2%	3%	2%	2%	2%	1%	2%	2%	2%	2%	2%
70%	2%	1%	1%	2%	2%	2%	1%	2%	2%	2%	2%	2%
80%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	3%	3%
90%	5%	5%	5%	4%	3%	3%	3%	5%	3%	4%	4%	**5%**
Long Term												
Full Simulation Period[b]	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Water Year Types[c]												
Wet (32%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Above Normal (16%)	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%
Below Normal (13%)	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	2%
Dry (24%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Critical (15%)	4%	5%	4%	4%	4%	4%	4%	**5%**	5%	**5%**	**5%**	**5%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.11 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260	30,938
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240	24,148
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234	18,780
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227	14,389
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219	9,739
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181	8,033
70%	246	268	314	673	908	901	597	563	433	307	246	179	6,520
80%	246	268	277	518	698	752	567	535	422	307	232	179	5,882
90%	211	208	277	405	562	601	528	437	377	246	215	179	4,991
Long Term													
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237	15,027
Water Year Types[c]													
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319	28,046
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224	16,467
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206	8,251
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191	7,026
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179	4,802

Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259	30,929
20%	286	384	2,029	4,469	4,884	4,375	2,589	1,579	658	581	247	240	24,158
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234	18,772
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229	14,349
50%	246	269	464	1,078	1,898	1,614	859	715	512	461	246	221	9,721
60%	246	268	371	829	1,168	1,103	726	675	495	400	246	184	8,015
70%	246	268	312	665	918	899	599	560	439	307	246	179	6,505
80%	246	268	277	501	720	751	565	533	422	307	236	179	5,871
90%	232	208	277	405	596	601	528	437	369	246	215	179	5,025
Long Term													
Full Simulation Period[b]	289	508	1,407	2,590	3,140	2,678	1,609	1,159	704	457	252	238	15,030
Water Year Types[c]													
Wet (32%)	345	794	3,009	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321	28,075
Above Normal (16%)	252	566	1,394	2,837	3,821	3,313	1,620	1,021	569	599	250	223	16,464
Below Normal (13%)	294	433	540	878	2,078	1,075	812	715	532	429	254	208	8,248
Dry (24%)	267	297	433	821	1,268	1,232	879	627	455	310	244	191	7,025
Critical (15%)	241	244	367	640	692	680	525	385	346	247	229	179	4,774

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	5%	0%	0%	0%	1%	0%	0%	0%	-2%	0%	1%	-1%	0%
20%	1%	0%	1%	0%	-1%	0%	0%	0%	-3%	-2%	-2%	0%	0%
30%	2%	1%	0%	0%	0%	1%	-2%	0%	0%	-1%	0%	0%	0%
40%	2%	0%	0%	0%	0%	0%	0%	-1%	1%	0%	0%	1%	0%
50%	0%	0%	-3%	0%	0%	0%	0%	-3%	1%	-3%	0%	1%	0%
60%	0%	0%	-3%	0%	-1%	0%	0%	0%	2%	0%	0%	2%	0%
70%	0%	0%	-1%	-1%	1%	0%	0%	0%	1%	0%	0%	0%	0%
80%	0%	0%	0%	-3%	3%	0%	0%	0%	0%	0%	2%	0%	0%
90%	**10%**	0%	0%	0%	**6%**	0%	0%	0%	-2%	0%	0%	0%	1%
Long Term													
Full Simulation Period[b]	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]													
Wet (32%)	1%	0%	0%	0%	1%	0%	0%	0%	-1%	0%	0%	1%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	-1%	0%
Below Normal (13%)	1%	0%	-1%	0%	1%	0%	0%	-1%	0%	-2%	0%	1%	0%
Dry (24%)	3%	0%	-1%	1%	0%	0%	0%	-1%	0%	0%	1%	0%	0%
Critical (15%)	1%	0%	1%	-4%	0%	0%	0%	0%	0%	0%	-1%	0%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.12 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	694	671	739	803	727	703	526	515	555	694	694	671	7,362
20%	680	671	724	769	686	608	503	420	455	694	694	671	6,940
30%	627	652	719	747	668	560	477	387	425	680	694	671	6,751
40%	553	623	718	741	614	542	427	351	412	624	634	669	6,572
50%	489	591	683	730	552	509	390	319	389	551	515	635	6,309
60%	433	513	601	635	519	486	321	281	361	474	446	545	5,942
70%	318	464	553	565	465	461	258	242	320	404	369	420	5,012
80%	273	352	500	499	416	374	188	181	176	300	281	340	4,594
90%	209	288	378	391	335	304	109	80	128	160	161	226	3,470
Long Term													
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528	5,793
Water Year Types[c]													
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660	7,068
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651	6,560
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539	6,176
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438	4,971
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249	3,222

Revised Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	694	671	738	803	722	707	530	515	526	694	694	671	7,327
20%	681	671	723	769	684	619	508	417	450	694	694	671	6,944
30%	626	659	719	746	666	563	481	369	429	691	694	671	6,761
40%	551	622	717	738	602	542	433	351	408	609	621	668	6,571
50%	488	590	683	724	552	512	391	314	392	555	529	628	6,266
60%	426	502	609	645	512	489	336	277	353	474	468	549	5,943
70%	327	460	554	562	461	459	264	228	316	390	364	408	5,000
80%	249	349	492	499	393	373	189	169	176	306	281	338	4,572
90%	196	286	382	371	309	301	109	81	128	146	183	228	3,458
Long Term													
Full Simulation Period[b]	467	524	613	638	528	491	355	302	349	494	487	526	5,775
Water Year Types[c]													
Wet (32%)	544	620	717	724	587	554	485	428	451	632	653	660	7,055
Above Normal (16%)	419	520	641	719	590	568	455	359	411	574	647	648	6,553
Below Normal (13%)	544	595	629	670	471	498	342	296	413	631	525	543	6,156
Dry (24%)	434	472	550	567	516	491	262	221	273	401	323	431	4,941
Critical (15%)	336	340	444	451	405	264	135	110	132	138	195	249	3,199

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	0%	0%	0%	0%	-1%	1%	1%	0%	**-5%**	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	2%	1%	-1%	-1%	0%	0%	0%	0%
30%	0%	1%	0%	0%	0%	1%	1%	-5%	1%	2%	0%	0%	0%
40%	0%	0%	0%	0%	-2%	0%	1%	0%	-1%	-2%	-2%	0%	0%
50%	0%	0%	0%	-1%	0%	0%	0%	-1%	1%	1%	3%	-1%	-1%
60%	-2%	-2%	1%	2%	-1%	1%	5%	-1%	-2%	0%	5%	1%	0%
70%	3%	-1%	0%	-1%	-1%	0%	2%	**-6%**	-1%	-3%	-1%	-3%	0%
80%	**-9%**	-1%	-2%	0%	**-6%**	-1%	1%	**-7%**	0%	2%	0%	-1%	0%
90%	**-6%**	-1%	1%	**-5%**	**-8%**	-1%	0%	1%	0%	**-8%**	**14%**	1%	0%
Long Term													
Full Simulation Period[b]	-1%	0%	0%	0%	-2%	0%	1%	-2%	-1%	0%	0%	0%	0%
Water Year Types[c]													
Wet (32%)	-1%	0%	0%	0%	-4%	2%	2%	0%	-1%	0%	0%	0%	0%
Above Normal (16%)	-2%	0%	0%	0%	1%	0%	1%	-1%	-1%	0%	0%	0%	0%
Below Normal (13%)	-1%	0%	1%	-1%	**-5%**	0%	1%	-2%	0%	0%	1%	1%	0%
Dry (24%)	0%	-1%	1%	-2%	0%	0%	1%	-3%	0%	-1%	-1%	-2%	-1%
Critical (15%)	-1%	-1%	-2%	4%	0%	-1%	1%	**-8%**	0%	-1%	-4%	0%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.13 Trinity River below Lewiston Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,106	527	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	367	358	660	739	741	670	557	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,437	1,646	1,300	1,386	639	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	364	257	300	300	300	300	575	2,092	783	450	450	413

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,151	387	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	366	361	659	738	747	668	555	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,432	1,645	1,319	1,380	632	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	357	275	300	300	300	300	575	2,092	783	450	450	413

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	2%	-26%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	1%	0%	-1%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	-2%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.14 Clear Creek below Whiskeytown, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.15 Sacramento River d/s of Keswick Reservoir, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,576	19,509	20,146	30,874	18,571	10,177	10,192	14,534	15,000	12,723	8,971
20%	7,890	6,794	11,462	15,160	21,412	12,718	8,220	9,232	13,041	15,000	11,885	6,409
30%	7,356	5,587	6,088	8,978	13,139	8,359	6,971	8,471	12,242	15,000	11,209	6,029
40%	6,136	5,210	4,329	4,737	5,375	4,500	6,320	7,928	11,433	14,639	10,726	5,666
50%	5,715	4,858	4,000	4,333	4,500	4,500	5,731	7,458	11,014	14,084	10,347	5,475
60%	5,257	4,364	3,949	3,798	3,735	3,668	5,202	7,098	10,374	13,509	9,891	5,246
70%	4,871	4,181	3,674	3,251	3,250	3,250	4,500	6,497	9,974	13,051	9,282	4,637
80%	4,389	4,000	3,275	3,250	3,250	3,250	4,500	6,095	9,209	11,861	8,985	4,312
90%	4,000	3,501	3,250	3,250	3,250	3,250	3,713	5,503	8,402	10,691	8,150	4,147
Long Term												
Full Simulation Period[b]	6,028	5,615	7,660	9,366	11,718	8,569	6,754	7,708	11,203	13,462	10,417	5,836
Water Year Types[c]												
Wet (32%)	6,391	6,705	14,039	18,191	20,773	16,037	8,687	8,398	10,243	13,254	11,143	7,306
Above Normal (16%)	5,940	5,801	7,417	9,024	17,709	8,800	6,317	7,789	12,028	14,804	11,351	6,065
Below Normal (13%)	6,491	5,680	4,134	4,805	7,156	5,076	6,127	8,129	12,334	14,533	11,988	5,429
Dry (24%)	6,092	4,768	3,855	4,123	3,591	3,716	5,107	7,240	11,737	13,465	8,939	4,794
Critical (15%)	4,806	4,404	3,675	3,533	3,335	3,431	6,355	6,519	10,465	11,474	8,854	4,513

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,567	19,509	20,470	31,560	18,571	10,172	10,229	14,458	15,000	12,700	8,243
20%	7,898	6,796	11,485	15,018	21,412	12,718	8,215	9,227	13,000	15,000	11,702	6,412
30%	7,349	5,700	6,189	8,978	12,892	8,359	6,962	8,481	12,266	15,000	11,187	5,953
40%	6,205	5,230	4,374	4,500	5,302	4,500	6,305	8,011	11,426	14,606	10,732	5,680
50%	5,651	4,873	4,016	4,184	4,500	4,500	5,732	7,437	11,089	14,001	10,234	5,500
60%	5,260	4,407	3,976	3,798	3,656	3,872	5,144	7,099	10,345	13,365	9,823	5,180
70%	4,873	4,180	3,680	3,251	3,250	3,250	4,500	6,543	9,975	12,759	9,256	4,650
80%	4,295	4,000	3,274	3,250	3,250	3,250	4,500	6,091	9,205	11,861	9,034	4,318
90%	4,000	3,502	3,250	3,250	3,250	3,250	3,713	5,573	8,400	10,741	8,139	4,013
Long Term												
Full Simulation Period[b]	6,057	5,625	7,681	9,345	11,729	8,578	6,745	7,749	11,210	13,425	10,387	5,801
Water Year Types[c]												
Wet (32%)	6,381	6,742	14,046	18,182	20,764	16,037	8,702	8,399	10,291	13,215	11,128	7,264
Above Normal (16%)	5,874	5,793	7,473	8,992	17,811	8,881	6,317	7,819	11,981	14,792	11,359	5,970
Below Normal (13%)	6,540	5,702	4,124	4,784	7,119	5,064	6,094	8,130	12,326	14,507	11,942	5,416
Dry (24%)	6,237	4,756	3,898	4,123	3,573	3,701	5,074	7,334	11,725	13,439	8,903	4,782
Critical (15%)	4,808	4,399	3,682	3,463	3,382	3,440	6,347	6,608	10,486	11,383	8,776	4,501

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	2%	2%	0%	0%	0%	-1%	0%	0%	-8%
20%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	-2%	0%
30%	0%	2%	2%	0%	-2%	0%	0%	0%	0%	0%	0%	-1%
40%	1%	0%	1%	-5%	-1%	0%	0%	1%	0%	0%	0%	0%
50%	-1%	0%	0%	-3%	0%	0%	0%	0%	1%	-1%	-1%	0%
60%	0%	1%	1%	0%	-2%	6%	-1%	0%	0%	-1%	-1%	-1%
70%	0%	0%	0%	0%	0%	0%	0%	1%	0%	-2%	0%	0%
80%	-2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
90%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-3%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-1%
Water Year Types[c]												
Wet (32%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Above Normal (16%)	-1%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	-2%
Below Normal (13%)	1%	0%	0%	0%	-1%	0%	-1%	0%	0%	0%	0%	0%
Dry (24%)	2%	0%	1%	0%	-1%	0%	-1%	1%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	-2%	1%	0%	0%	1%	0%	-1%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.16 Feather River d/s of Thermalito, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,000	2,500	5,073	13,890	19,393	14,789	8,389	8,275	7,910	9,420	7,729	5,580
20%	4,000	2,500	3,420	2,988	11,501	11,022	3,686	6,352	6,635	9,054	6,656	5,247
30%	4,000	2,054	2,218	1,700	6,252	7,843	2,757	5,334	6,248	8,621	5,681	4,554
40%	3,974	1,700	1,700	1,700	2,379	5,528	1,853	3,369	5,222	8,022	4,745	3,796
50%	3,439	1,700	1,700	1,700	1,700	2,535	1,254	2,495	4,272	6,164	3,646	2,481
60%	2,492	1,700	1,700	1,700	1,700	1,700	1,000	1,956	3,834	4,837	2,691	1,904
70%	1,846	1,700	1,700	1,200	1,700	1,700	1,000	1,334	3,356	3,641	2,363	1,244
80%	1,700	1,200	1,374	1,200	1,200	1,000	1,000	1,000	2,525	3,030	1,955	1,051
90%	1,200	900	948	900	900	800	968	1,000	1,714	2,044	1,223	1,000
Long Term												
Full Simulation Period[b]	2,883	1,956	3,113	4,812	5,841	6,488	3,136	4,013	4,637	6,050	4,145	3,045
Water Year Types[c]												
Wet (32%)	3,068	2,585	5,476	11,696	12,740	13,784	6,587	7,101	4,333	6,920	4,346	3,254
Above Normal (16%)	2,660	1,600	2,519	2,477	5,166	8,173	2,259	3,058	4,823	8,866	6,433	4,449
Below Normal (13%)	3,311	1,913	1,687	1,582	3,161	2,066	1,405	3,388	6,145	7,681	4,260	3,333
Dry (24%)	2,736	1,615	1,966	1,360	1,497	1,321	1,203	2,431	4,961	4,326	3,639	2,574
Critical (15%)	2,577	1,582	1,853	1,139	1,317	1,520	1,414	1,569	3,170	2,495	1,969	1,595

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,000	2,500	4,835	14,314	19,368	14,789	8,396	8,275	7,856	9,422	7,708	5,582
20%	4,000	2,500	3,418	3,405	11,381	11,022	3,686	6,274	6,941	9,008	6,567	5,294
30%	4,000	2,154	2,155	1,700	6,094	7,843	2,757	5,155	6,254	8,564	5,571	4,549
40%	3,846	1,700	1,700	1,700	2,096	5,528	1,853	3,512	5,303	7,944	4,680	3,736
50%	3,257	1,700	1,700	1,700	1,700	2,556	1,251	2,546	4,170	6,005	3,576	2,541
60%	2,524	1,700	1,700	1,700	1,700	1,700	1,000	2,029	3,830	4,794	2,735	1,630
70%	1,907	1,700	1,700	1,200	1,700	1,700	1,000	1,368	3,414	3,703	2,365	1,194
80%	1,700	1,200	1,233	960	1,200	1,000	1,000	1,000	2,670	3,289	1,809	1,044
90%	1,200	900	947	900	900	800	853	1,000	1,896	2,030	1,206	1,000
Long Term												
Full Simulation Period[b]	2,883	1,975	3,118	4,822	5,809	6,464	3,131	4,034	4,728	6,028	4,104	3,030
Water Year Types[c]												
Wet (32%)	3,088	2,647	5,483	11,721	12,717	13,752	6,587	7,095	4,508	6,870	4,216	3,247
Above Normal (16%)	2,619	1,600	2,558	2,517	5,107	8,076	2,259	3,064	4,892	8,869	6,442	4,473
Below Normal (13%)	3,268	1,918	1,782	1,582	3,049	2,066	1,394	3,522	6,283	7,619	4,328	3,469
Dry (24%)	2,761	1,611	1,960	1,360	1,497	1,323	1,191	2,421	4,994	4,330	3,640	2,475
Critical (15%)	2,572	1,582	1,754	1,108	1,317	1,523	1,410	1,609	3,159	2,495	1,898	1,521

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	-5%	3%	0%	0%	0%	0%	-1%	0%	0%	0%
20%	0%	0%	0%	**14%**	-1%	0%	0%	-1%	5%	-1%	-1%	1%
30%	0%	5%	-3%	0%	-3%	0%	0%	-3%	0%	-1%	-2%	0%
40%	-3%	0%	0%	0%	**-12%**	0%	0%	4%	2%	-1%	-1%	-2%
50%	**-5%**	0%	0%	0%	0%	1%	0%	2%	-2%	-3%	-2%	2%
60%	1%	0%	0%	0%	0%	0%	0%	4%	0%	-1%	2%	**-14%**
70%	3%	0%	0%	0%	0%	0%	0%	3%	2%	2%	0%	-4%
80%	0%	0%	**-10%**	**-20%**	0%	0%	0%	0%	**6%**	**9%**	**-7%**	-1%
90%	0%	0%	0%	0%	0%	0%	**-12%**	0%	**11%**	-1%	-1%	0%
Long Term												
Full Simulation Period[b]	0%	1%	0%	0%	-1%	0%	0%	1%	2%	0%	-1%	0%
Water Year Types[c]												
Wet (32%)	1%	2%	0%	0%	0%	0%	0%	0%	4%	-1%	-3%	0%
Above Normal (16%)	-2%	0%	2%	2%	-1%	-1%	0%	0%	1%	0%	0%	1%
Below Normal (13%)	-1%	0%	**6%**	0%	-4%	0%	-1%	4%	2%	-1%	2%	4%
Dry (24%)	1%	0%	0%	0%	0%	0%	-1%	0%	1%	0%	0%	-4%
Critical (15%)	0%	0%	**-5%**	-3%	0%	0%	0%	3%	0%	0%	-4%	-5%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.17 Fremont Weir, Monthly Spills

Second Basis of Comparison

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	10,543	30,193	44,709	18,331	5,859	100	100	0	0	100
20%	100	100	3,673	10,516	13,894	7,379	4,169	100	100	0	0	100
30%	100	100	1,561	5,231	8,342	5,266	966	100	100	0	0	100
40%	100	100	533	2,826	5,470	3,433	341	100	100	0	0	100
50%	100	100	186	1,630	3,269	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,101	100	100	100	0	0	100
70%	100	100	100	153	1,008	481	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	115	384	3,697	9,549	13,200	7,942	2,211	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	147	996	9,888	25,442	30,547	18,997	5,602	289	113	0	0	100
Above Normal (16%)	100	100	2,659	6,349	15,114	8,566	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,256	4,057	1,166	292	100	100	0	0	100
Dry (24%)	100	100	342	932	2,032	1,411	411	100	100	0	0	100
Critical (15%)	100	100	149	542	533	408	106	100	100	0	0	100

Revised Second Basis of Comparison

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	10,536	30,202	45,235	18,332	5,859	100	100	0	0	100
20%	100	100	3,758	10,563	13,794	7,393	4,170	100	100	0	0	100
30%	100	100	1,561	5,232	8,155	5,246	957	100	100	0	0	100
40%	100	100	532	2,826	5,590	3,433	341	100	100	0	0	100
50%	100	100	188	1,638	3,268	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,093	100	100	100	0	0	100
70%	100	100	100	153	1,142	482	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	113	386	3,702	9,547	13,182	7,929	2,213	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	142	1,002	9,898	25,426	30,534	18,973	5,611	289	113	0	0	100
Above Normal (16%)	100	100	2,664	6,376	15,112	8,541	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,251	3,971	1,167	292	100	100	0	0	100
Dry (24%)	100	100	346	931	2,024	1,405	410	100	100	0	0	100
Critical (15%)	100	100	149	542	536	407	106	100	100	0	0	100

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	2%	0%	-1%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	-2%	0%	-1%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	13%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	-1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	-3%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.18 American River d/s of Nimbus Dam, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	3,834	9,336	12,160	14,655	9,754	6,737	7,450	4,650	5,000	3,236	1,837
20%	1,500	3,218	4,325	7,873	10,806	6,805	5,083	4,486	3,799	5,000	2,678	1,604
30%	1,500	2,070	2,528	5,813	7,391	5,044	4,483	3,543	3,623	4,957	2,299	1,533
40%	1,500	1,925	2,000	3,587	5,755	4,172	3,491	2,836	3,223	4,250	1,912	1,533
50%	1,500	1,818	2,000	1,776	3,753	3,039	2,499	2,021	2,835	3,591	1,750	1,533
60%	1,500	1,683	1,936	1,700	2,602	2,015	2,089	1,750	2,245	2,935	1,750	1,533
70%	1,449	1,500	1,701	1,700	1,445	1,747	1,750	1,625	1,832	2,589	1,681	1,493
80%	991	1,136	1,146	1,440	1,264	921	1,162	1,074	1,727	2,373	957	800
90%	800	800	800	819	1,032	800	800	800	1,061	1,327	800	780
Long Term												
Full Simulation Period[b]	1,461	2,386	3,826	5,109	6,030	4,279	3,395	3,077	2,987	3,454	1,899	1,404
Water Year Types[c]												
Wet (32%)	1,664	3,300	7,242	10,514	10,615	7,209	5,521	5,541	4,226	3,591	2,597	1,756
Above Normal (16%)	1,274	2,549	3,614	5,670	7,969	6,116	3,572	2,527	2,860	4,782	1,913	1,553
Below Normal (13%)	1,661	2,262	2,660	2,370	5,181	2,187	2,477	1,907	2,881	4,610	1,666	1,236
Dry (24%)	1,329	1,698	1,619	1,587	2,322	2,377	2,222	1,925	2,413	3,028	1,446	1,222
Critical (15%)	1,263	1,492	1,400	1,171	951	1,027	1,391	1,327	1,496	1,368	1,336	935

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	3,951	9,359	12,160	14,655	9,754	6,737	7,450	4,652	5,000	3,200	1,766
20%	1,500	3,208	4,325	7,873	10,804	6,804	5,084	4,486	3,799	5,000	2,779	1,546
30%	1,500	2,078	2,528	5,706	7,391	5,044	4,483	3,543	3,623	4,965	2,299	1,533
40%	1,500	1,925	2,000	3,592	5,756	4,172	3,491	2,851	3,235	4,227	1,968	1,533
50%	1,500	1,827	2,000	1,750	3,739	3,042	2,499	2,060	2,954	3,616	1,750	1,533
60%	1,500	1,683	1,921	1,700	2,602	2,015	2,084	1,750	2,267	2,923	1,750	1,533
70%	1,389	1,438	1,676	1,700	1,445	1,747	1,750	1,614	1,916	2,515	1,659	1,493
80%	994	1,116	1,172	1,359	1,264	1,012	1,146	1,079	1,715	2,373	1,003	800
90%	800	800	800	819	978	800	800	800	1,070	1,377	800	800
Long Term												
Full Simulation Period[b]	1,461	2,384	3,819	5,098	6,026	4,282	3,390	3,085	3,012	3,445	1,905	1,407
Water Year Types[c]												
Wet (32%)	1,666	3,308	7,234	10,515	10,615	7,209	5,522	5,541	4,239	3,582	2,611	1,749
Above Normal (16%)	1,269	2,552	3,616	5,637	7,965	6,117	3,572	2,527	2,973	4,780	1,902	1,553
Below Normal (13%)	1,656	2,274	2,654	2,356	5,177	2,187	2,471	1,914	2,895	4,586	1,752	1,205
Dry (24%)	1,321	1,682	1,603	1,572	2,313	2,377	2,209	1,947	2,426	3,001	1,466	1,223
Critical (15%)	1,279	1,469	1,400	1,171	950	1,047	1,383	1,340	1,479	1,395	1,249	1,002

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-4%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	-4%
30%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	1%	0%	-1%	3%	0%
50%	0%	1%	0%	-1%	0%	0%	0%	2%	4%	1%	0%	0%
60%	0%	0%	-1%	0%	0%	0%	0%	0%	1%	0%	0%	0%
70%	-4%	-4%	-1%	0%	0%	0%	0%	-1%	5%	-3%	-1%	0%
80%	0%	-2%	2%	**-6%**	0%	**10%**	-1%	0%	-1%	0%	5%	0%
90%	0%	0%	0%	0%	**-5%**	0%	0%	0%	1%	4%	0%	3%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Above Normal (16%)	0%	0%	0%	-1%	0%	0%	0%	0%	4%	0%	-1%	0%
Below Normal (13%)	0%	1%	0%	-1%	0%	0%	0%	0%	0%	-1%	**5%**	-3%
Dry (24%)	-1%	-1%	-1%	-1%	0%	0%	-1%	1%	1%	-1%	1%	0%
Critical (15%)	1%	-1%	0%	0%	0%	2%	-1%	1%	-1%	2%	**-7%**	**7%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.19 Sacramento River at Freeport, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,535	22,483	54,532	64,835	70,451	63,654	46,241	38,579	21,089	23,075	16,647	15,053
20%	14,097	14,990	34,381	56,263	62,040	51,425	32,543	27,633	18,924	21,676	15,939	14,645
30%	13,025	13,727	22,366	41,579	51,549	41,505	22,929	17,142	17,961	20,420	15,394	14,129
40%	11,580	13,241	18,580	26,629	45,721	29,974	20,054	15,174	16,521	19,429	14,779	13,931
50%	10,818	12,087	15,606	23,009	33,290	24,771	16,394	13,624	15,588	18,340	13,795	13,397
60%	10,029	11,225	14,369	18,466	24,734	20,966	12,916	12,737	14,567	16,653	12,006	11,957
70%	9,019	10,194	12,581	15,005	19,838	18,448	11,708	11,915	13,085	14,599	10,893	9,897
80%	8,009	8,857	10,799	13,486	16,580	15,217	11,229	10,874	12,353	12,878	9,767	8,646
90%	6,709	7,537	9,360	11,871	14,217	11,487	10,200	8,922	11,289	10,339	8,546	7,115
Long Term												
Full Simulation Period[b]	11,135	14,147	23,180	31,236	37,980	31,862	22,179	18,663	16,752	17,326	13,094	12,141
Water Year Types[c]												
Wet (32%)	12,828	18,463	38,689	50,375	56,977	48,450	35,060	30,181	20,772	19,106	15,038	14,726
Above Normal (16%)	10,150	15,450	24,122	39,692	47,763	42,758	24,410	18,064	16,533	21,746	15,907	14,192
Below Normal (13%)	12,254	14,318	15,586	19,280	31,808	19,442	14,599	14,690	17,758	20,643	13,951	12,000
Dry (24%)	10,354	10,984	13,633	17,418	23,789	21,475	15,084	12,519	14,646	14,838	10,740	10,387
Critical (15%)	8,809	8,499	11,430	14,601	15,535	12,818	10,626	8,240	10,863	9,787	8,969	7,370

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,551	22,359	54,045	64,879	70,451	63,654	46,240	38,579	20,776	23,195	16,663	15,098
20%	14,090	15,039	34,473	56,266	61,709	51,427	32,544	27,639	18,975	21,635	15,939	14,531
30%	13,193	13,786	22,326	41,578	51,524	41,506	22,932	17,452	18,150	20,277	15,193	14,129
40%	11,535	13,341	18,577	26,629	45,616	29,974	19,982	15,203	16,964	19,565	14,570	13,918
50%	10,865	12,102	15,606	23,009	33,290	24,772	16,394	13,797	15,808	18,216	13,980	13,211
60%	10,117	11,213	14,404	18,460	24,623	20,971	12,918	12,876	14,539	16,370	12,432	12,035
70%	9,064	10,188	12,929	15,002	19,808	18,571	11,683	12,087	13,047	14,608	10,714	9,785
80%	8,007	8,873	10,823	13,487	16,579	15,219	11,109	11,037	12,359	13,049	9,752	8,533
90%	7,029	7,552	9,350	11,866	14,216	11,491	10,200	9,036	11,481	9,999	8,703	7,301
Long Term												
Full Simulation Period[b]	11,166	14,169	23,197	31,223	37,970	31,864	22,160	18,740	16,877	17,261	13,039	12,099
Water Year Types[c]												
Wet (32%)	12,847	18,563	38,684	50,414	56,964	48,443	35,068	30,178	21,009	19,004	14,907	14,667
Above Normal (16%)	10,044	15,450	24,213	39,681	47,790	42,769	24,411	18,103	16,671	21,742	15,918	14,124
Below Normal (13%)	12,260	14,350	15,660	19,252	31,672	19,432	14,555	14,839	17,909	20,529	14,052	12,119
Dry (24%)	10,515	10,941	13,654	17,397	23,786	21,469	15,030	12,638	14,681	14,800	10,736	10,279
Critical (15%)	8,820	8,470	11,351	14,500	15,588	12,846	10,613	8,393	10,858	9,733	8,780	7,353

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	-1%	-1%	0%	0%	0%	0%	0%	-1%	1%	0%	0%
20%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	-1%
30%	1%	0%	0%	0%	0%	0%	0%	2%	1%	-1%	-1%	0%
40%	0%	1%	0%	0%	0%	0%	0%	0%	3%	1%	-1%	0%
50%	0%	0%	0%	0%	0%	0%	0%	1%	1%	-1%	1%	-1%
60%	1%	0%	0%	0%	0%	0%	0%	1%	0%	-2%	4%	1%
70%	1%	0%	3%	0%	0%	1%	0%	1%	0%	0%	-2%	-1%
80%	0%	0%	0%	0%	0%	0%	-1%	1%	0%	1%	0%	-1%
90%	5%	0%	0%	0%	0%	0%	0%	1%	2%	-3%	2%	3%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	1%	0%	0%	0%	0%	0%	0%	1%	-1%	-1%	0%
Above Normal (16%)	-1%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	-1%	1%	1%
Dry (24%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	-1%
Critical (15%)	0%	0%	-1%	-1%	0%	0%	0%	2%	0%	-1%	-2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.20 Yolo Bypass, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	164	575	15,113	37,297	53,013	25,747	10,346	335	168	48	183	240
20%	162	245	6,239	16,046	22,314	11,069	7,372	178	168	48	55	159
30%	160	146	2,510	8,216	12,519	8,557	2,043	173	168	48	55	159
40%	154	110	802	5,019	10,224	5,190	498	170	168	48	55	159
50%	147	108	495	2,405	5,513	2,987	272	168	167	48	55	159
60%	142	105	259	970	3,258	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,068	754	211	163	166	48	55	157
80%	116	100	109	167	332	225	186	159	164	48	55	155
90%	106	100	100	122	152	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	187	572	5,169	12,745	17,130	10,720	3,653	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	231	1,348	13,405	32,933	38,563	25,293	8,874	560	227	48	147	173
Above Normal (16%)	137	344	4,156	9,639	19,777	11,623	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,973	5,998	1,664	546	169	166	48	130	192
Dry (24%)	156	131	583	1,579	3,404	2,190	910	175	167	48	61	170
Critical (15%)	145	124	376	856	905	687	210	167	165	48	55	188

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	164	575	15,106	37,291	53,011	25,260	10,346	335	168	48	183	240
20%	162	245	6,371	16,098	21,931	11,070	7,372	178	168	48	55	159
30%	160	146	2,509	8,217	12,355	8,556	2,043	173	168	48	55	159
40%	154	110	803	5,020	10,223	5,190	499	170	168	48	55	159
50%	147	108	496	2,405	5,513	2,988	272	168	167	48	55	159
60%	142	105	259	970	3,254	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,202	754	211	163	166	48	55	157
80%	116	100	107	167	345	225	186	159	164	48	55	155
90%	106	100	100	123	129	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	186	574	5,171	12,736	17,111	10,707	3,656	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	227	1,354	13,411	32,911	38,549	25,268	8,882	560	227	48	147	173
Above Normal (16%)	137	345	4,161	9,622	19,789	11,595	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,969	5,903	1,665	546	169	166	48	130	192
Dry (24%)	156	131	585	1,582	3,393	2,185	908	175	167	48	61	170
Critical (15%)	145	124	365	857	900	687	210	167	165	48	55	188

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%
20%	0%	0%	2%	0%	-2%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	**12%**	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	-3%	0%	4%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	1%	**-16%**	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	-2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	-3%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.1.21 San Joaquin River at Vernalis, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,015	3,156	4,932	11,157	14,594	15,467	14,666	14,360	10,139	5,612	2,740	3,146
20%	2,692	2,843	2,953	4,819	10,200	9,482	10,169	8,291	5,696	2,636	2,600	2,658
30%	2,520	2,663	2,541	3,655	6,300	7,933	8,421	5,676	3,488	1,990	1,897	2,503
40%	2,331	2,500	2,341	2,692	4,268	5,393	7,435	4,617	3,188	1,742	1,676	2,142
50%	2,157	2,386	2,257	2,544	3,420	3,883	6,016	4,043	2,349	1,506	1,500	1,944
60%	1,952	2,244	2,165	2,343	2,774	3,511	4,349	3,276	1,895	1,379	1,415	1,842
70%	1,752	2,141	2,027	2,153	2,443	2,963	3,119	2,891	1,485	1,170	1,321	1,743
80%	1,597	1,984	1,903	1,923	2,174	2,414	2,442	2,362	1,274	1,088	1,211	1,611
90%	1,411	1,793	1,699	1,733	1,945	2,230	1,779	1,890	1,085	941	1,071	1,478
Long Term												
Full Simulation Period[b]	2,241	2,721	3,492	5,136	6,700	7,131	7,255	6,101	4,547	2,625	1,838	2,238
Water Year Types[c]												
Wet (23%)	2,497	3,627	6,644	11,506	15,763	16,308	15,374	14,433	12,512	6,641	3,078	3,456
Above Normal (24%)	2,288	2,532	2,757	4,947	6,946	7,415	8,260	5,348	3,525	1,999	1,977	2,352
Below Normal (10%)	2,086	2,397	3,810	3,608	3,723	4,101	5,842	4,213	2,225	1,481	1,457	1,856
Dry (16%)	2,339	2,684	2,347	2,487	2,628	3,304	3,551	2,976	1,714	1,267	1,362	1,789
Critical (27%)	1,974	2,251	1,998	1,927	2,138	2,311	2,031	2,122	1,116	943	1,059	1,485

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,384	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,170	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1%	-2%	0%	-1%	**18%**	0%	1%	-2%	-4%	**8%**	**9%**	**5%**
20%	0%	-1%	-1%	1%	1%	-1%	2%	-1%	**-16%**	0%	0%	0%
30%	-2%	-1%	-3%	-1%	-1%	-1%	1%	-4%	-4%	0%	0%	-1%
40%	0%	-2%	-2%	-3%	0%	-1%	1%	-3%	**-8%**	0%	0%	0%
50%	-3%	-2%	-1%	-2%	0%	-1%	0%	-3%	**-6%**	0%	0%	0%
60%	-3%	-1%	-3%	-4%	-3%	-1%	2%	**-11%**	-4%	0%	0%	0%
70%	-3%	-2%	-2%	-4%	-3%	-3%	3%	**-14%**	-4%	0%	0%	0%
80%	**-5%**	-1%	-2%	-5%	-1%	-4%	0%	**-16%**	0%	0%	0%	0%
90%	**-5%**	-2%	-2%	**-5%**	-1%	**-5%**	2%	**-17%**	0%	0%	3%	2%
Long Term												
Full Simulation Period[b]	-2%	-2%	-1%	-1%	2%	0%	1%	-3%	-4%	2%	2%	1%
Water Year Types[c]												
Wet (23%)	-1%	-1%	0%	0%	3%	1%	0%	0%	-4%	3%	5%	4%
Above Normal (24%)	-2%	-2%	-2%	-1%	0%	-1%	1%	-3%	**-6%**	0%	0%	0%
Below Normal (10%)	-2%	-3%	-2%	-1%	3%	-1%	2%	**-6%**	**-9%**	0%	0%	0%
Dry (16%)	-1%	-2%	-2%	-3%	0%	-2%	3%	**-12%**	-3%	0%	0%	0%
Critical (27%)	-2%	-2%	-2%	-4%	-2%	-4%	2%	**-16%**	0%	1%	2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.1.22 San Joaquin River at Vernalis, Monthly Salinity

Second Basis of Comparison

Statistic	Monthly Salinity (EC)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	715	631	791	775	938	836	584	539	649	649	635	603
20%	685	599	772	749	882	796	528	527	644	648	603	586
30%	657	576	756	725	831	722	455	486	619	648	580	568
40%	626	563	740	713	789	679	387	431	568	640	571	550
50%	592	546	729	688	693	606	331	374	540	629	556	537
60%	571	527	716	676	624	493	308	358	490	617	542	519
70%	542	512	704	642	468	350	282	346	437	607	526	489
80%	522	487	676	569	321	307	261	294	384	587	451	478
90%	477	456	613	380	281	258	202	192	334	503	433	435
Long Term												
Full Simulation Period[b]	598	537	700	644	636	561	377	392	509	600	540	525
Water Year Types[c]												
Wet (23%)	576	511	616	516	362	307	220	229	343	496	419	416
Above Normal (24%)	588	534	713	614	481	417	304	357	474	616	515	506
Below Normal (10%)	605	553	670	654	684	599	319	359	524	610	562	549
Dry (16%)	585	519	731	705	812	682	424	456	577	634	579	557
Critical (27%)	630	566	755	743	892	827	573	537	640	652	635	607

Revised Second Basis of Comparison

Statistic	Monthly Salinity (EC)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	752	643	807	807	948	865	577	597	649	649	622	603
20%	714	611	784	781	911	824	524	572	645	648	603	584
30%	677	584	770	754	840	744	436	528	631	647	580	568
40%	642	572	758	723	790	686	383	493	606	638	571	552
50%	609	555	740	704	693	612	324	395	572	628	557	539
60%	570	538	730	691	631	499	303	363	500	617	543	520
70%	551	522	716	643	469	352	282	346	464	607	526	489
80%	522	495	691	572	316	306	261	294	420	587	451	478
90%	477	467	611	380	261	255	201	192	366	487	410	418
Long Term												
Full Simulation Period[b]	613	547	714	661	642	573	372	419	526	597	533	522
Water Year Types[c]												
Wet (23%)	585	518	623	520	357	306	220	229	365	489	405	405
Above Normal (24%)	608	548	728	628	485	421	301	365	494	617	515	506
Below Normal (10%)	618	566	688	673	692	606	313	388	555	611	563	551
Dry (16%)	597	526	742	725	818	698	413	502	593	635	579	559
Critical (27%)	648	577	772	772	909	854	563	594	643	645	623	607

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Salinity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**5%**	2%	2%	4%	1%	3%	-1%	**11%**	0%	0%	-2%	0%
20%	4%	2%	2%	4%	3%	4%	-1%	**8%**	0%	0%	0%	0%
30%	3%	1%	2%	4%	1%	3%	-4%	**9%**	2%	0%	0%	0%
40%	3%	2%	3%	1%	0%	1%	-1%	**14%**	**7%**	0%	0%	0%
50%	3%	2%	1%	2%	0%	1%	-2%	**5%**	**6%**	0%	0%	0%
60%	0%	2%	2%	2%	1%	1%	-2%	1%	2%	0%	0%	0%
70%	2%	2%	2%	0%	0%	0%	0%	0%	**6%**	0%	0%	0%
80%	0%	2%	2%	1%	-2%	0%	0%	0%	**9%**	0%	0%	0%
90%	0%	2%	0%	0%	**-7%**	-1%	0%	0%	**10%**	-3%	**-5%**	-4%
Long Term												
Full Simulation Period[b]	2%	2%	2%	3%	1%	2%	-1%	**7%**	3%	-1%	-1%	0%
Water Year Types[c]												
Wet (23%)	2%	1%	1%	1%	-1%	0%	0%	0%	**6%**	-1%	-3%	-3%
Above Normal (24%)	3%	3%	2%	2%	1%	1%	-1%	2%	4%	0%	0%	0%
Below Normal (10%)	2%	2%	3%	3%	1%	1%	-2%	**8%**	**6%**	0%	0%	0%
Dry (16%)	2%	1%	2%	3%	1%	2%	-3%	**10%**	3%	0%	0%	0%
Critical (27%)	3%	2%	2%	4%	2%	3%	-2%	**10%**	0%	-1%	-2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.1.23 Stanislaus River below Goodwin, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	499	508	508	907	709	1,500	1,500	2,887	360	300	300
20%	350	415	415	415	503	415	1,462	1,500	1,709	306	300	300
30%	331	386	415	408	415	415	1,337	1,434	1,571	300	296	268
40%	286	318	326	318	415	318	991	1,303	845	300	283	268
50%	286	318	318	318	318	318	664	1,303	450	284	283	268
60%	194	247	275	242	318	275	512	1,112	398	268	283	249
70%	194	247	247	242	260	242	461	920	289	268	283	249
80%	173	233	247	242	242	242	424	848	257	265	283	249
90%	164	230	230	200	239	200	378	760	255	265	283	249
Long Term												
Full Simulation Period[b]	291	388	466	584	642	607	884	1,181	1,028	390	347	363
Water Year Types[c]												
Wet (23%)	360	612	886	1,060	1,196	1,462	1,488	1,497	2,316	678	580	731
Above Normal (24%)	301	332	376	726	742	523	940	1,225	1,200	354	288	271
Below Normal (10%)	288	373	373	383	418	316	955	1,266	613	272	285	270
Dry (16%)	278	323	331	318	392	262	581	1,094	399	276	283	255
Critical (27%)	230	287	298	275	303	256	464	890	280	283	259	228

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	-20%	-21%	-21%	101%	41%	0%	0%	-48%	37%	6%	0%
20%	0%	-14%	-14%	-13%	72%	-4%	3%	0%	-27%	2%	0%	0%
30%	-4%	-14%	-18%	-18%	-4%	-17%	7%	-4%	-40%	0%	-4%	5%
40%	-9%	-4%	-1%	0%	-12%	-2%	25%	-13%	-16%	-1%	0%	-7%
50%	-33%	-23%	-12%	-21%	6%	-16%	32%	-34%	-11%	0%	0%	-7%
60%	-25%	-12%	-16%	-24%	-5%	-27%	27%	-35%	-25%	1%	0%	0%
70%	-37%	-16%	-13%	-37%	-8%	-34%	12%	-33%	-9%	-1%	0%	0%
80%	-34%	-13%	-17%	-44%	-27%	-42%	9%	-40%	0%	0%	0%	0%
90%	-37%	-18%	-18%	-39%	-45%	-39%	7%	-42%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	-14%	-12%	-8%	-9%	16%	-2%	8%	-17%	-19%	11%	11%	8%
Water Year Types[c]												
Wet (23%)	-7%	-5%	0%	-2%	41%	9%	2%	4%	-22%	27%	26%	17%
Above Normal (24%)	-18%	-19%	-12%	-8%	-4%	-7%	12%	-13%	-18%	0%	-1%	-1%
Below Normal (10%)	-12%	-18%	-18%	-12%	27%	-8%	14%	-19%	-33%	-1%	-1%	-3%
Dry (16%)	-12%	-13%	-12%	-20%	-1%	-29%	18%	-32%	-13%	0%	0%	-2%
Critical (27%)	-21%	-16%	-15%	-26%	-15%	-32%	10%	-38%	-1%	3%	7%	2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.1.24 Stanislaus River at Mouth, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	662	653	656	688	1,117	1,153	1,804	1,679	3,009	661	569	673
20%	582	548	522	557	694	613	1,608	1,592	2,016	555	485	508
30%	507	492	464	518	562	562	1,489	1,533	1,772	502	461	481
40%	471	459	427	473	512	522	1,040	1,423	1,092	444	445	457
50%	405	421	378	412	484	446	821	1,331	694	412	443	439
60%	377	388	341	364	423	394	637	1,049	572	386	416	431
70%	346	355	329	339	331	361	529	972	402	378	395	396
80%	327	312	311	318	296	295	440	865	352	350	373	373
90%	249	280	269	283	257	233	406	787	312	318	331	316
Long Term												
Full Simulation Period[b]	471	507	549	696	766	756	1,004	1,265	1,231	542	491	545
Water Year Types[c]												
Wet (23%)	530	737	980	1,176	1,407	1,704	1,731	1,634	2,632	939	772	985
Above Normal (24%)	494	463	451	840	852	680	1,126	1,323	1,495	535	463	484
Below Normal (10%)	480	503	506	532	589	489	1,057	1,443	807	452	440	443
Dry (16%)	487	437	415	433	484	407	616	1,166	555	377	404	408
Critical (27%)	384	393	360	366	367	309	476	887	334	335	343	338

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

Revised Second Basis of Comparison minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1%	-13%	-10%	-9%	118%	8%	1%	0%	-40%	41%	3%	5%
20%	-1%	-12%	-8%	-9%	42%	0%	1%	0%	-23%	2%	1%	0%
30%	-3%	-10%	-7%	-11%	0%	-6%	0%	-1%	-29%	-1%	-1%	-2%
40%	-10%	-11%	-11%	-8%	-3%	-12%	25%	-10%	-5%	0%	0%	-2%
50%	-7%	-9%	-11%	-5%	-9%	-9%	24%	-32%	5%	0%	0%	0%
60%	-17%	-11%	-8%	-23%	-6%	-21%	12%	-28%	-27%	1%	1%	0%
70%	-18%	-12%	-12%	-27%	-4%	-23%	10%	-38%	-7%	-1%	0%	0%
80%	-24%	-13%	-13%	-28%	-22%	-23%	7%	-37%	-1%	0%	0%	-1%
90%	-26%	-13%	-24%	-30%	-31%	-37%	4%	-40%	0%	0%	5%	1%
Long Term												
Full Simulation Period[b]	-9%	-9%	-7%	-8%	14%	-2%	7%	-16%	-16%	8%	8%	5%
Water Year Types[c]												
Wet (23%)	-5%	-4%	0%	-2%	35%	8%	1%	4%	-19%	19%	19%	13%
Above Normal (24%)	-11%	-14%	-10%	-7%	-3%	-6%	10%	-12%	-14%	0%	0%	-1%
Below Normal (10%)	-7%	-13%	-13%	-9%	19%	-5%	13%	-17%	-25%	-1%	0%	-2%
Dry (16%)	-7%	-9%	-10%	-15%	-1%	-19%	17%	-30%	-10%	0%	0%	-1%
Critical (27%)	-13%	-12%	-13%	-20%	-13%	-27%	10%	-39%	-1%	2%	5%	2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.1 New Melones Storage

Table 5C.3.2.1.1 New Melones Reservoir, End of Month Storage

No Action Alternative

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (23%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (24%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (10%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (16%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (27%)	624	623	638	645	661	656	602	554	526	476	431	408

Revised Alternative 1

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (23%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (24%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (10%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (16%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (27%)	845	843	858	869	887	885	837	789	751	682	617	587

Revised Alternative 1 minus No Action Alternative

Statistic	End of Month Storage (Percent Change) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6%	6%	6%	4%	2%	3%	5%	6%	3%	5%	5%	6%
20%	10%	9%	9%	8%	11%	10%	7%	5%	9%	8%	9%	9%
30%	9%	8%	9%	10%	7%	10%	12%	12%	7%	6%	7%	7%
40%	19%	19%	11%	12%	11%	11%	12%	15%	11%	14%	16%	18%
50%	22%	21%	21%	13%	12%	9%	11%	15%	16%	18%	19%	18%
60%	23%	21%	22%	18%	16%	16%	17%	15%	15%	15%	18%	18%
70%	22%	19%	16%	21%	18%	16%	16%	23%	19%	21%	22%	21%
80%	31%	25%	25%	31%	36%	30%	29%	25%	19%	21%	23%	24%
90%	64%	63%	63%	48%	48%	42%	30%	39%	34%	37%	42%	52%
Long Term												
Full Simulation Period[b]	16%	16%	15%	14%	13%	13%	14%	14%	13%	13%	14%	14%
Water Year Types[c]												
Wet (23%)	11%	11%	10%	9%	7%	8%	8%	8%	6%	6%	6%	6%
Above Normal (24%)	19%	18%	17%	16%	14%	13%	14%	14%	13%	14%	15%	15%
Below Normal (10%)	14%	14%	13%	13%	12%	12%	14%	14%	14%	15%	16%	16%
Dry (16%)	17%	17%	16%	16%	15%	15%	17%	18%	19%	20%	22%	23%
Critical (27%)	36%	35%	35%	35%	34%	35%	39%	43%	43%	43%	43%	44%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.1.2 New Melones Reservoir, End of Month Storage

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (23%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (24%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (10%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (16%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (27%)	845	843	858	869	887	885	837	789	751	682	617	587

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (23%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (24%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (10%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (16%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (27%)	624	623	638	645	661	656	602	554	526	476	431	408

No Action Alternative minus Revised Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-6%	-5%	-6%	-4%	-2%	-2%	-5%	-5%	-3%	-5%	-5%	-6%
20%	-9%	-8%	-8%	-7%	-10%	-9%	-6%	-5%	-8%	-8%	-8%	-8%
30%	-8%	-8%	-9%	-9%	-7%	-9%	-11%	-11%	-7%	-6%	-6%	-6%
40%	-16%	-16%	-10%	-11%	-10%	-10%	-11%	-13%	-10%	-12%	-14%	-15%
50%	-18%	-17%	-17%	-12%	-11%	-8%	-10%	-13%	-14%	-15%	-16%	-15%
60%	-19%	-17%	-18%	-15%	-14%	-14%	-14%	-13%	-13%	-13%	-15%	-16%
70%	-18%	-16%	-14%	-17%	-16%	-14%	-14%	-19%	-16%	-17%	-18%	-18%
80%	-23%	-20%	-20%	-23%	-26%	-23%	-23%	-20%	-16%	-17%	-19%	-20%
90%	-39%	-39%	-39%	-33%	-33%	-29%	-23%	-28%	-25%	-27%	-30%	-34%
Long Term												
Full Simulation Period[b]	-14%	-14%	-13%	-12%	-11%	-11%	-12%	-12%	-11%	-12%	-12%	-12%
Water Year Types[c]												
Wet (23%)	-10%	-10%	-9%	-8%	-7%	-8%	-8%	-7%	-6%	-6%	-6%	-5%
Above Normal (24%)	-16%	-15%	-14%	-14%	-12%	-12%	-12%	-12%	-12%	-12%	-13%	-13%
Below Normal (10%)	-12%	-12%	-12%	-11%	-10%	-10%	-12%	-13%	-13%	-13%	-14%	-14%
Dry (16%)	-15%	-15%	-14%	-14%	-13%	-13%	-15%	-15%	-16%	-17%	-18%	-18%
Critical (27%)	-26%	-26%	-26%	-26%	-25%	-26%	-28%	-30%	-30%	-30%	-30%	-30%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.1.3 New Melones Reservoir, End of Month Storage

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (23%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (24%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (10%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (16%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (27%)	845	843	858	869	887	885	837	789	751	682	617	587

Alternative 3

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	1,954	1,970	1,970	1,970	2,030	2,062	2,198	2,284	2,209	2,103	2,000
20%	1,901	1,905	1,913	1,911	1,970	2,026	1,988	2,021	2,154	2,055	1,955	1,902
30%	1,729	1,727	1,790	1,857	1,925	1,975	1,910	1,972	1,983	1,877	1,785	1,736
40%	1,582	1,596	1,668	1,775	1,851	1,884	1,838	1,826	1,796	1,697	1,601	1,546
50%	1,427	1,416	1,439	1,556	1,660	1,719	1,674	1,721	1,675	1,561	1,460	1,409
60%	1,308	1,316	1,318	1,366	1,426	1,494	1,488	1,529	1,525	1,432	1,335	1,289
70%	1,049	1,073	1,187	1,210	1,289	1,269	1,265	1,343	1,276	1,180	1,092	1,043
80%	875	862	919	957	1,020	1,099	1,056	1,121	1,071	1,001	938	907
90%	635	646	646	681	779	803	734	731	835	756	682	639
Long Term												
Full Simulation Period[b]	1,347	1,351	1,382	1,436	1,491	1,541	1,534	1,580	1,595	1,506	1,408	1,353
Water Year Types[c]												
Wet (23%)	1,562	1,567	1,618	1,720	1,792	1,871	1,906	2,049	2,146	2,057	1,934	1,855
Above Normal (24%)	1,269	1,295	1,356	1,442	1,530	1,620	1,634	1,713	1,720	1,627	1,529	1,481
Below Normal (10%)	1,530	1,536	1,550	1,570	1,620	1,650	1,614	1,617	1,599	1,501	1,403	1,357
Dry (16%)	1,327	1,320	1,326	1,342	1,378	1,409	1,380	1,360	1,319	1,224	1,137	1,091
Critical (27%)	828	824	836	846	866	860	803	751	719	653	593	563

Alternative 3 minus Revised Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5%	5%	2%	1%	0%	0%	1%	1%	7%	6%	7%	5%
20%	7%	7%	7%	5%	0%	2%	2%	1%	5%	6%	6%	7%
30%	4%	4%	5%	5%	7%	4%	1%	1%	4%	3%	4%	5%
40%	5%	5%	5%	5%	5%	5%	3%	4%	5%	4%	4%	3%
50%	5%	4%	3%	5%	3%	3%	3%	3%	3%	3%	3%	4%
60%	4%	4%	0%	1%	2%	1%	0%	0%	4%	4%	3%	3%
70%	-2%	-1%	4%	-1%	5%	3%	1%	0%	-2%	-2%	-2%	-1%
80%	4%	5%	8%	7%	2%	5%	-2%	2%	3%	3%	4%	5%
90%	-10%	-9%	-10%	-6%	-3%	0%	-2%	-11%	-1%	-2%	-6%	-11%
Long Term												
Full Simulation Period[b]	2%	2%	2%	2%	1%	1%	1%	1%	2%	2%	3%	3%
Water Year Types[c]												
Wet (23%)	2%	2%	1%	1%	0%	0%	0%	1%	3%	3%	3%	3%
Above Normal (24%)	4%	3%	3%	3%	2%	2%	1%	2%	3%	4%	4%	4%
Below Normal (10%)	3%	4%	3%	3%	3%	3%	2%	2%	3%	3%	3%	3%
Dry (16%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Critical (27%)	-2%	-2%	-3%	-3%	-2%	-3%	-4%	-5%	-4%	-4%	-4%	-4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.1.4 New Melones Reservoir, End of Month Storage

Revised Second Basis of Comparison

	End of Month Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (23%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (24%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (10%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (16%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (27%)	845	843	858	869	887	885	837	789	751	682	617	587

Alternative 5

	End of Month Storage (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	1,765	1,759	1,831	1,881	1,949	1,969	1,908	2,012	2,117	2,013	1,900	1,826
20%	1,588	1,587	1,601	1,626	1,782	1,794	1,752	1,844	1,816	1,740	1,631	1,571
30%	1,468	1,459	1,490	1,544	1,630	1,672	1,679	1,693	1,721	1,633	1,531	1,489
40%	1,249	1,252	1,347	1,437	1,522	1,573	1,512	1,494	1,505	1,405	1,297	1,242
50%	1,040	1,058	1,142	1,227	1,437	1,455	1,393	1,357	1,289	1,190	1,100	1,074
60%	976	997	1,023	1,072	1,134	1,161	1,159	1,246	1,218	1,130	1,032	983
70%	766	802	855	907	938	973	1,006	978	991	900	821	783
80%	554	553	620	621	623	697	651	721	761	686	617	587
90%	285	298	299	377	429	449	386	452	492	423	349	308
Long Term												
Full Simulation Period[b]	1,063	1,073	1,112	1,169	1,239	1,284	1,265	1,287	1,299	1,221	1,134	1,086
Water Year Types[c]												
Wet (23%)	1,309	1,321	1,388	1,496	1,602	1,668	1,704	1,812	1,906	1,833	1,722	1,653
Above Normal (24%)	983	1,014	1,079	1,168	1,271	1,361	1,363	1,413	1,396	1,302	1,207	1,162
Below Normal (10%)	1,210	1,220	1,242	1,267	1,329	1,354	1,298	1,276	1,254	1,163	1,071	1,028
Dry (16%)	1,018	1,018	1,030	1,045	1,081	1,114	1,066	1,031	990	903	823	781
Critical (27%)	558	559	570	578	597	591	506	449	433	391	355	336

Alternative 5 minus Revised Second Basis of Comparison

	End of Month Storage (Percent Change)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	**-6%**	**-5%**	**-5%**	-4%	-1%	-3%	**-7%**	**-7%**	-1%	-3%	-4%	-4%
20%	**-11%**	**-11%**	**-10%**	**-11%**	**-9%**	**-9%**	**-10%**	**-8%**	**-11%**	**-11%**	**-11%**	**-12%**
30%	**-12%**	**-12%**	**-12%**	**-12%**	**-10%**	**-12%**	**-11%**	**-13%**	**-10%**	**-10%**	**-11%**	**-10%**
40%	**-17%**	**-17%**	**-16%**	**-15%**	**-14%**	**-13%**	**-15%**	**-15%**	**-12%**	**-14%**	**-16%**	**-17%**
50%	**-24%**	**-22%**	**-18%**	**-17%**	**-11%**	**-13%**	**-14%**	**-19%**	**-21%**	**-21%**	**-22%**	**-21%**
60%	**-22%**	**-21%**	**-23%**	**-21%**	**-19%**	**-21%**	**-22%**	**-19%**	**-17%**	**-18%**	**-21%**	**-21%**
70%	**-29%**	**-26%**	**-25%**	**-26%**	**-24%**	**-21%**	**-20%**	**-27%**	**-24%**	**-25%**	**-26%**	**-26%**
80%	**-34%**	**-33%**	**-27%**	**-31%**	**-38%**	**-34%**	**-40%**	**-34%**	**-27%**	**-30%**	**-32%**	**-32%**
90%	**-60%**	**-58%**	**-58%**	**-48%**	**-47%**	**-44%**	**-48%**	**-45%**	**-42%**	**-45%**	**-52%**	**-57%**
Long Term												
Full Simulation Period[b]	**-19%**	**-19%**	**-18%**	**-17%**	**-16%**	**-16%**	**-17%**	**-18%**	**-17%**	**-17%**	**-17%**	**-18%**
Water Year Types[c]												
Wet (23%)	**-15%**	**-14%**	**-13%**	**-12%**	**-10%**	**-11%**	**-10%**	**-11%**	**-9%**	**-8%**	**-8%**	**-8%**
Above Normal (24%)	**-20%**	**-19%**	**-18%**	**-17%**	**-15%**	**-15%**	**-16%**	**-16%**	**-16%**	**-17%**	**-18%**	**-18%**
Below Normal (10%)	**-18%**	**-18%**	**-17%**	**-17%**	**-16%**	**-16%**	**-18%**	**-19%**	**-19%**	**-20%**	**-21%**	**-22%**
Dry (16%)	**-21%**	**-20%**	**-20%**	**-20%**	**-19%**	**-19%**	**-21%**	**-23%**	**-23%**	**-25%**	**-26%**	**-27%**
Critical (27%)	**-34%**	**-34%**	**-34%**	**-33%**	**-33%**	**-33%**	**-39%**	**-43%**	**-42%**	**-43%**	**-43%**	**-43%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.2 New Melones Elevation

Table 5C.3.2.2.1 New Melones Reservoir, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,089	1,047	1,094	1,095	1,085	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	960
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	923
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	946	953	962	972	979	976	981	981	969	957	950
Water Year Types[c]												
Wet (23%)	983	986	998	1,014	1,027	1,037	1,036	1,054	1,062	1,052	1,038	1,030
Above Normal (24%)	932	937	945	960	974	986	988	997	996	985	973	967
Below Normal (10%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (16%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (27%)	856	856	862	864	870	871	860	848	840	828	818	812

Revised Alternative 1

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,158	1,156	1,164	1,166	1,167	1,171	1,172	1,177	1,177	1,175	1,167	1,161
20%	1,147	1,147	1,149	1,152	1,167	1,168	1,166	1,168	1,165	1,165	1,154	1,148
30%	1,136	1,135	1,140	1,146	1,151	1,160	1,159	1,154	1,153	1,152	1,141	1,135
40%	1,119	1,120	1,128	1,139	1,147	1,150	1,149	1,143	1,135	1,132	1,123	1,118
50%	1,060	1,060	1,086	1,116	1,130	1,136	1,131	1,135	1,131	1,120	1,109	1,060
60%	1,046	1,046	1,054	1,059	1,064	1,116	1,117	1,122	1,115	1,062	1,052	1,045
70%	1,022	1,024	1,031	1,042	1,043	1,042	1,045	1,057	1,052	1,039	1,027	1,019
80%	933	930	993	998	1,012	1,019	1,022	1,025	1,017	1,009	999	994
90%	891	892	893	895	911	912	900	914	926	905	894	894
Long Term												
Full Simulation Period[b]	1,050	1,051	1,058	1,069	1,079	1,090	1,090	1,092	1,090	1,077	1,061	1,050
Water Year Types[c]												
Wet (23%)	1,098	1,098	1,110	1,128	1,139	1,151	1,155	1,162	1,162	1,165	1,154	1,148
Above Normal (24%)	1,037	1,037	1,049	1,075	1,090	1,105	1,111	1,123	1,127	1,111	1,090	1,081
Below Normal (10%)	1,081	1,085	1,087	1,090	1,105	1,115	1,112	1,113	1,111	1,092	1,081	1,064
Dry (16%)	1,052	1,051	1,053	1,055	1,061	1,075	1,074	1,069	1,060	1,035	1,013	1,000
Critical (27%)	933	933	936	939	943	943	935	927	922	908	889	877

Revised Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	13%	12%	12%	12%	12%	8%	12%	8%	8%	8%	12%	12%
20%	13%	13%	13%	13%	13%	13%	13%	12%	12%	13%	13%	13%
30%	13%	13%	13%	13%	13%	13%	13%	12%	12%	13%	13%	13%
40%	15%	15%	13%	13%	13%	13%	14%	14%	13%	14%	14%	15%
50%	11%	11%	13%	14%	13%	13%	13%	14%	14%	15%	15%	10%
60%	11%	11%	11%	10%	10%	14%	14%	14%	14%	10%	10%	10%
70%	11%	10%	10%	11%	10%	10%	10%	11%	11%	11%	11%	10%
80%	6%	6%	12%	13%	13%	12%	11%	11%	10%	11%	11%	12%
90%	7%	7%	7%	6%	6%	6%	4%	5%	6%	5%	5%	6%
Long Term												
Full Simulation Period[b]	11%	11%	11%	11%	11%	11%	12%	11%	11%	11%	11%	11%
Water Year Types[c]												
Wet (23%)	12%	11%	11%	11%	11%	11%	11%	10%	9%	11%	11%	11%
Above Normal (24%)	11%	11%	11%	12%	12%	12%	12%	13%	13%	13%	12%	12%
Below Normal (10%)	12%	12%	12%	12%	12%	13%	13%	13%	13%	12%	13%	12%
Dry (16%)	12%	12%	11%	11%	12%	12%	12%	12%	12%	11%	10%	9%
Critical (27%)	9%	9%	9%	9%	8%	8%	9%	9%	10%	10%	9%	8%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.2.2 New Melones Reservoir, End of Month Elevation

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,158	1,156	1,164	1,166	1,167	1,171	1,172	1,177	1,177	1,175	1,167	1,161
20%	1,147	1,147	1,149	1,152	1,167	1,168	1,166	1,168	1,165	1,165	1,154	1,148
30%	1,136	1,135	1,140	1,146	1,151	1,160	1,159	1,154	1,153	1,152	1,141	1,135
40%	1,119	1,120	1,128	1,139	1,147	1,150	1,149	1,143	1,135	1,132	1,123	1,118
50%	1,060	1,060	1,086	1,116	1,130	1,136	1,131	1,135	1,131	1,120	1,109	1,060
60%	1,046	1,046	1,054	1,059	1,064	1,116	1,117	1,122	1,115	1,062	1,052	1,045
70%	1,022	1,024	1,031	1,042	1,043	1,042	1,045	1,057	1,052	1,039	1,027	1,019
80%	933	930	993	998	1,012	1,019	1,022	1,025	1,017	1,009	999	994
90%	891	892	893	895	911	912	900	914	926	905	894	894
Long Term												
Full Simulation Period[b]	1,050	1,051	1,058	1,069	1,079	1,090	1,090	1,092	1,090	1,077	1,061	1,050
Water Year Types[c]												
Wet (23%)	1,098	1,098	1,110	1,128	1,139	1,151	1,155	1,162	1,162	1,165	1,154	1,148
Above Normal (24%)	1,037	1,037	1,049	1,075	1,090	1,105	1,111	1,123	1,127	1,111	1,090	1,081
Below Normal (10%)	1,081	1,085	1,087	1,090	1,105	1,115	1,112	1,113	1,111	1,092	1,081	1,064
Dry (16%)	1,052	1,051	1,053	1,055	1,061	1,075	1,074	1,069	1,060	1,035	1,013	1,000
Critical (27%)	933	933	936	939	943	943	935	927	922	908	889	877

No Action Alternative

Statistic	End of Month Elevation (Feet) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,089	1,047	1,094	1,095	1,085	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	960
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	923
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	946	953	962	972	979	976	981	981	969	957	950
Water Year Types[c]												
Wet (23%)	983	986	998	1,014	1,027	1,037	1,036	1,054	1,062	1,052	1,038	1,030
Above Normal (24%)	932	937	945	960	974	986	988	997	996	985	973	967
Below Normal (10%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (16%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (27%)	856	856	862	864	870	871	860	848	840	828	818	812

No Action Alternative minus Revised Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-11%	-11%	-11%	-11%	-10%	-7%	-11%	-7%	-7%	-8%	-11%	-11%
20%	-12%	-12%	-11%	-11%	-12%	-12%	-11%	-11%	-11%	-11%	-11%	-12%
30%	-11%	-11%	-12%	-12%	-11%	-12%	-12%	-11%	-11%	-11%	-11%	-11%
40%	-13%	-13%	-12%	-12%	-12%	-12%	-12%	-12%	-11%	-12%	-12%	-13%
50%	-10%	-10%	-12%	-12%	-12%	-11%	-12%	-12%	-12%	-13%	-13%	-9%
60%	-10%	-10%	-10%	-9%	-9%	-13%	-13%	-12%	-12%	-9%	-9%	-9%
70%	-10%	-9%	-9%	-10%	-9%	-9%	-9%	-10%	-10%	-10%	-10%	-9%
80%	-6%	-5%	-11%	-11%	-11%	-11%	-10%	-10%	-9%	-10%	-10%	-11%
90%	-6%	-6%	-6%	-5%	-6%	-5%	-4%	-5%	-5%	-5%	-5%	-6%
Long Term												
Full Simulation Period[b]	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%
Water Year Types[c]												
Wet (23%)	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-9%	-9%	-10%	-10%	-10%
Above Normal (24%)	-10%	-10%	-10%	-11%	-11%	-11%	-11%	-11%	-12%	-11%	-11%	-11%
Below Normal (10%)	-10%	-11%	-11%	-11%	-11%	-11%	-11%	-12%	-11%	-11%	-11%	-10%
Dry (16%)	-10%	-10%	-10%	-10%	-10%	-11%	-11%	-11%	-11%	-10%	-9%	-9%
Critical (27%)	-8%	-8%	-8%	-8%	-8%	-8%	-8%	-9%	-9%	-9%	-8%	-7%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.2.3 New Melones Reservoir, End of Month Elevation

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,158	1,156	1,164	1,166	1,167	1,171	1,172	1,177	1,177	1,175	1,167	1,161
20%	1,147	1,147	1,149	1,152	1,167	1,168	1,166	1,168	1,165	1,165	1,154	1,148
30%	1,136	1,135	1,140	1,146	1,151	1,160	1,159	1,154	1,153	1,152	1,141	1,135
40%	1,119	1,120	1,128	1,139	1,147	1,150	1,149	1,143	1,135	1,132	1,123	1,118
50%	1,060	1,060	1,086	1,116	1,130	1,136	1,131	1,135	1,131	1,120	1,109	1,060
60%	1,046	1,046	1,054	1,059	1,064	1,116	1,117	1,122	1,115	1,062	1,052	1,045
70%	1,022	1,024	1,031	1,042	1,043	1,042	1,045	1,057	1,052	1,039	1,027	1,019
80%	933	930	993	998	1,012	1,019	1,022	1,025	1,017	1,009	999	994
90%	891	892	893	895	911	912	900	914	926	905	894	894
Long Term												
Full Simulation Period[b]	1,050	1,051	1,058	1,069	1,079	1,090	1,090	1,092	1,090	1,077	1,061	1,050
Water Year Types[c]												
Wet (23%)	1,098	1,098	1,110	1,128	1,139	1,151	1,155	1,162	1,162	1,165	1,154	1,148
Above Normal (24%)	1,037	1,037	1,049	1,075	1,090	1,105	1,111	1,123	1,127	1,111	1,090	1,081
Below Normal (10%)	1,081	1,085	1,087	1,090	1,105	1,115	1,112	1,113	1,111	1,092	1,081	1,064
Dry (16%)	1,052	1,051	1,053	1,055	1,061	1,075	1,074	1,069	1,060	1,035	1,013	1,000
Critical (27%)	933	933	936	939	943	943	935	927	922	908	889	877

Alternative 3

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,167	1,166	1,167	1,167	1,167	1,171	1,174	1,182	1,180	1,184	1,176	1,169
20%	1,160	1,161	1,162	1,161	1,167	1,171	1,168	1,170	1,168	1,173	1,166	1,161
30%	1,142	1,142	1,149	1,156	1,163	1,168	1,161	1,159	1,149	1,158	1,148	1,143
40%	1,127	1,128	1,136	1,147	1,155	1,159	1,154	1,150	1,137	1,139	1,129	1,123
50%	1,111	1,109	1,112	1,124	1,135	1,141	1,137	1,136	1,135	1,125	1,114	1,109
60%	1,053	1,054	1,054	1,060	1,111	1,118	1,117	1,121	1,121	1,111	1,056	1,050
70%	1,019	1,022	1,037	1,040	1,050	1,048	1,047	1,057	1,049	1,036	1,024	1,018
80%	996	994	1,002	1,007	1,015	1,025	1,020	1,028	1,022	1,012	1,004	1,000
90%	877	879	879	886	906	911	897	896	925	901	886	878
Long Term												
Full Simulation Period[b]	1,056	1,057	1,061	1,070	1,083	1,091	1,090	1,092	1,089	1,082	1,065	1,056
Water Year Types[c]												
Wet (23%)	1,101	1,102	1,111	1,125	1,140	1,152	1,155	1,164	1,157	1,169	1,159	1,153
Above Normal (24%)	1,051	1,058	1,065	1,082	1,096	1,107	1,113	1,125	1,132	1,119	1,096	1,088
Below Normal (10%)	1,093	1,094	1,092	1,094	1,109	1,116	1,110	1,121	1,119	1,101	1,079	1,073
Dry (16%)	1,055	1,054	1,055	1,062	1,072	1,079	1,077	1,065	1,061	1,041	1,026	1,011
Critical (27%)	927	927	930	932	943	937	927	917	916	900	882	870

Alternative 3 minus Revised Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
20%	1%	1%	1%	1%	0%	0%	0%	0%	0%	1%	1%	1%
30%	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
40%	1%	1%	1%	1%	1%	1%	0%	1%	0%	1%	1%	0%
50%	5%	5%	2%	1%	0%	0%	0%	0%	0%	0%	0%	5%
60%	1%	1%	0%	0%	4%	0%	0%	0%	0%	5%	0%	1%
70%	0%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%
80%	**7%**	**7%**	1%	1%	0%	1%	0%	0%	0%	0%	0%	1%
90%	-2%	-1%	-2%	-1%	0%	0%	0%	-2%	0%	0%	-1%	-2%
Long Term												
Full Simulation Period[b]	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (24%)	1%	2%	2%	1%	1%	0%	0%	0%	0%	1%	1%	1%
Below Normal (10%)	1%	1%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%
Dry (16%)	0%	0%	0%	1%	1%	0%	0%	0%	0%	1%	1%	1%
Critical (27%)	-1%	-1%	-1%	-1%	0%	-1%	-1%	-1%	-1%	-1%	-1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.2.4 New Melones Reservoir, End of Month Elevation

Revised Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,158	1,156	1,164	1,166	1,167	1,171	1,172	1,177	1,177	1,175	1,167	1,161
20%	1,147	1,147	1,149	1,152	1,167	1,168	1,166	1,168	1,165	1,165	1,154	1,148
30%	1,136	1,135	1,140	1,146	1,151	1,160	1,159	1,154	1,153	1,152	1,141	1,135
40%	1,119	1,120	1,128	1,139	1,147	1,150	1,149	1,143	1,135	1,132	1,123	1,118
50%	1,060	1,060	1,086	1,116	1,130	1,136	1,131	1,135	1,131	1,120	1,109	1,060
60%	1,046	1,046	1,054	1,059	1,064	1,116	1,117	1,122	1,115	1,062	1,052	1,045
70%	1,022	1,024	1,031	1,042	1,043	1,042	1,045	1,057	1,052	1,039	1,027	1,019
80%	933	930	993	998	1,012	1,019	1,022	1,025	1,017	1,009	999	994
90%	891	892	893	895	911	912	900	914	926	905	894	894
Long Term												
Full Simulation Period[b]	1,050	1,051	1,058	1,069	1,079	1,090	1,090	1,092	1,090	1,077	1,061	1,050
Water Year Types[c]												
Wet (23%)	1,098	1,098	1,110	1,128	1,139	1,151	1,155	1,162	1,162	1,165	1,154	1,148
Above Normal (24%)	1,037	1,037	1,049	1,075	1,090	1,105	1,111	1,123	1,127	1,111	1,090	1,081
Below Normal (10%)	1,081	1,085	1,087	1,090	1,105	1,115	1,112	1,113	1,111	1,092	1,081	1,064
Dry (16%)	1,052	1,051	1,053	1,055	1,061	1,075	1,074	1,069	1,060	1,035	1,013	1,000
Critical (27%)	933	933	936	939	943	943	935	927	922	908	889	877

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,036	1,041	1,047	1,049	1,043	1,053	1,062	1,053	1,043	1,035
20%	1,011	1,011	1,012	1,015	1,031	1,032	1,028	1,037	1,034	1,026	1,015	1,009
30%	999	998	1,001	1,007	1,015	1,019	1,020	1,022	1,024	1,016	1,005	1,001
40%	973	973	985	996	1,004	1,010	1,003	1,002	1,003	992	979	972
50%	945	948	959	970	996	998	991	987	978	965	953	950
60%	937	940	943	949	957	961	961	972	968	957	944	938
70%	904	911	921	928	932	936	941	937	939	927	915	907
80%	860	860	874	874	874	889	880	894	902	887	873	867
90%	803	807	808	824	834	838	826	839	847	833	818	810
Long Term												
Full Simulation Period[b]	931	933	939	947	957	964	961	962	963	952	941	934
Water Year Types[c]												
Wet (23%)	969	971	980	995	1,007	1,016	1,020	1,031	1,040	1,033	1,022	1,015
Above Normal (24%)	924	930	939	954	968	980	982	988	987	975	963	958
Below Normal (10%)	954	956	959	962	973	977	972	970	968	957	944	938
Dry (16%)	930	930	932	934	939	945	940	936	931	918	905	898
Critical (27%)	837	838	842	845	853	855	834	818	815	804	796	791

Alternative 5 minus Revised Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-11%	-11%	-11%	-11%	-10%	-10%	-11%	-11%	-10%	-10%	-11%	-11%
20%	-12%	-12%	-12%	-12%	-12%	-12%	-12%	-11%	-11%	-12%	-12%	-12%
30%	-12%	-12%	-12%	-12%	-12%	-12%	-12%	-11%	-11%	-12%	-12%	-12%
40%	-13%	-13%	-13%	-13%	-12%	-12%	-13%	-12%	-12%	-12%	-13%	-13%
50%	-11%	-11%	-12%	-13%	-12%	-12%	-12%	-13%	-14%	-14%	-14%	-10%
60%	-10%	-10%	-11%	-10%	-10%	-14%	-14%	-13%	-13%	-10%	-10%	-10%
70%	-12%	-11%	-11%	-11%	-11%	-10%	-10%	-11%	-11%	-11%	-11%	-11%
80%	-8%	-8%	-12%	-12%	-14%	-13%	-14%	-13%	-11%	-12%	-13%	-13%
90%	-10%	-9%	-10%	-8%	-8%	-8%	-8%	-8%	-8%	-8%	-9%	-9%
Long Term												
Full Simulation Period[b]	-11%	-11%	-11%	-11%	-11%	-12%	-12%	-12%	-12%	-12%	-11%	-11%
Water Year Types[c]												
Wet (23%)	-12%	-12%	-12%	-12%	-12%	-12%	-12%	-11%	-10%	-11%	-11%	-12%
Above Normal (24%)	-11%	-10%	-10%	-11%	-11%	-11%	-12%	-12%	-12%	-12%	-12%	-11%
Below Normal (10%)	-12%	-12%	-12%	-12%	-12%	-12%	-13%	-13%	-13%	-12%	-13%	-12%
Dry (16%)	-12%	-12%	-11%	-11%	-11%	-12%	-12%	-12%	-12%	-11%	-11%	-10%
Critical (27%)	-10%	-10%	-10%	-10%	-10%	-9%	-11%	-12%	-12%	-11%	-10%	-10%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.3 Stanislaus River below Goodwin Dam Flow

Table 5C.3.2.3.1 Stanislaus River below Goodwin, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	290	306	358	897	1,648	1,633	1,929	1,103	429	390	390
20%	797	200	218	232	409	1,521	1,553	1,555	1,090	310	300	300
30%	774	200	200	232	290	440	1,553	1,296	940	300	284	250
40%	774	200	200	226	236	200	1,400	1,242	855	300	283	250
50%	774	200	200	226	236	200	1,400	1,242	363	271	283	250
60%	636	200	200	219	229	200	812	918	363	265	283	249
70%	636	200	200	219	229	200	767	705	297	265	283	249
80%	578	200	200	214	221	200	767	631	261	265	283	249
90%	577	200	200	213	215	200	505	546	255	265	283	249
Long Term												
Full Simulation Period[b]	723	278	365	518	595	754	1,158	1,123	680	394	361	351
Water Year Types[c]												
Wet (23%)	781	499	787	999	1,201	2,016	1,536	1,691	1,140	715	639	692
Above Normal (24%)	714	216	282	663	676	645	1,224	1,146	962	353	292	267
Below Normal (10%)	740	225	225	282	346	365	1,454	1,201	476	269	285	256
Dry (16%)	707	208	216	234	313	200	1,030	930	374	275	277	245
Critical (27%)	683	205	215	227	255	234	741	699	281	269	262	231

Revised Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-58%	38%	31%	12%	103%	-39%	-8%	-22%	36%	14%	-18%	-23%
20%	-56%	78%	64%	55%	111%	-74%	-3%	-4%	14%	1%	0%	0%
30%	-59%	67%	70%	44%	38%	-22%	-8%	7%	1%	0%	0%	12%
40%	-66%	53%	61%	41%	54%	56%	-11%	-9%	-17%	-1%	0%	0%
50%	-75%	23%	40%	11%	44%	34%	-37%	-31%	10%	4%	0%	-1%
60%	-77%	9%	15%	-16%	33%	0%	-20%	-21%	-17%	2%	0%	0%
70%	-81%	3%	7%	-31%	5%	-21%	-33%	-13%	-11%	0%	0%	0%
80%	-80%	1%	3%	-36%	-21%	-30%	-40%	-20%	-2%	0%	0%	0%
90%	-82%	-6%	-6%	-43%	-38%	-39%	-20%	-20%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	-65%	22%	18%	2%	26%	-21%	-17%	-12%	22%	10%	7%	11%
Water Year Types[c]												
Wet (23%)	-57%	17%	12%	4%	41%	-21%	-2%	-8%	59%	20%	14%	24%
Above Normal (24%)	-65%	25%	17%	0%	5%	-25%	-14%	-7%	2%	0%	-2%	0%
Below Normal (10%)	-66%	36%	36%	19%	54%	-20%	-25%	-15%	-13%	0%	-1%	2%
Dry (16%)	-65%	36%	35%	8%	23%	-7%	-33%	-20%	-7%	0%	2%	1%
Critical (27%)	-73%	18%	17%	-10%	0%	-26%	-31%	-22%	-1%	8%	6%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.3.2 Stanislaus River below Goodwin, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	290	306	358	897	1,648	1,633	1,929	1,103	429	390	390
20%	797	200	218	232	409	1,521	1,553	1,555	1,090	310	300	300
30%	774	200	200	232	290	440	1,553	1,296	940	300	284	250
40%	774	200	200	226	236	200	1,400	1,242	855	300	283	250
50%	774	200	200	226	236	200	1,400	1,242	363	271	283	250
60%	636	200	200	219	229	200	812	918	363	265	283	249
70%	636	200	200	219	229	200	767	705	297	265	283	249
80%	578	200	200	214	221	200	767	631	261	265	283	249
90%	577	200	200	213	215	200	505	546	255	265	283	249
Long Term												
Full Simulation Period[b]	723	278	365	518	595	754	1,158	1,123	680	394	361	351
Water Year Types[c]												
Wet (23%)	781	499	787	999	1,201	2,016	1,536	1,691	1,140	715	639	692
Above Normal (24%)	714	216	282	663	676	645	1,224	1,146	962	353	292	267
Below Normal (10%)	740	225	225	282	346	365	1,454	1,201	476	269	285	256
Dry (16%)	707	208	216	234	313	200	1,030	930	374	275	277	245
Critical (27%)	683	205	215	227	255	234	741	699	281	269	262	231

No Action Alternative minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	139%	-27%	-24%	-11%	-51%	65%	9%	29%	-27%	-13%	22%	30%
20%	128%	-44%	-39%	-35%	-53%	280%	4%	4%	-12%	-1%	0%	0%
30%	144%	-40%	-41%	-31%	-28%	28%	9%	-6%	-1%	0%	0%	-11%
40%	197%	-34%	-38%	-29%	-35%	-36%	13%	10%	20%	1%	0%	0%
50%	302%	-19%	-29%	-10%	-30%	-25%	59%	45%	-9%	-4%	0%	1%
60%	337%	-8%	-13%	20%	-25%	0%	25%	27%	21%	-2%	0%	0%
70%	417%	-3%	-6%	44%	-4%	26%	48%	15%	12%	0%	0%	0%
80%	403%	-1%	-3%	57%	26%	43%	66%	24%	2%	0%	0%	0%
90%	458%	6%	6%	75%	62%	63%	25%	24%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	189%	-18%	-15%	-2%	-20%	27%	21%	14%	-18%	-9%	-6%	-10%
Water Year Types[c]												
Wet (23%)	134%	-14%	-11%	-4%	-29%	26%	2%	9%	-37%	-17%	-12%	-19%
Above Normal (24%)	188%	-20%	-15%	0%	-5%	33%	17%	8%	-2%	0%	2%	0%
Below Normal (10%)	192%	-26%	-26%	-16%	-35%	25%	34%	18%	15%	0%	1%	-2%
Dry (16%)	189%	-26%	-26%	-8%	-19%	8%	50%	25%	8%	0%	-2%	-1%
Critical (27%)	277%	-15%	-15%	12%	0%	35%	45%	28%	1%	-7%	-5%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.3.3 Stanislaus River below Goodwin, Monthly Flow

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	300	300	609	1,135	2,548	1,189	1,500	1,165	255	265	283	952
20%	300	300	305	300	1,157	344	1,500	1,165	255	265	283	249
30%	300	300	300	300	333	300	1,500	1,165	255	265	283	249
40%	252	300	300	300	300	300	1,034	963	255	265	283	249
50%	252	300	300	150	176	200	893	829	255	265	283	249
60%	252	300	300	150	173	200	893	829	255	265	283	249
70%	252	300	300	150	173	200	893	829	255	265	283	249
80%	200	200	220	150	173	200	528	466	255	265	283	249
90%	200	200	200	150	173	200	493	466	255	265	283	249
Long Term												
Full Simulation Period[b]	302	349	475	557	814	622	1,060	911	490	421	391	397
Water Year Types[c]												
Wet (23%)	368	589	1,001	1,066	2,016	1,599	1,538	1,300	1,279	952	768	885
Above Normal (24%)	323	287	394	705	732	552	1,155	955	255	265	283	260
Below Normal (10%)	269	275	275	483	552	272	1,128	909	255	265	283	249
Dry (16%)	285	285	293	251	371	200	815	730	255	265	283	249
Critical (27%)	246	264	274	191	208	218	680	643	245	254	268	240

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (Percent Change)											
Probability of Exceedance[a]												
10%	-14%	-25%	52%	184%	40%	19%	0%	-22%	-83%	-46%	-11%	217%
20%	-14%	-16%	-15%	-17%	34%	-14%	0%	-22%	-79%	-15%	-6%	-17%
30%	-6%	-10%	-12%	-11%	-17%	-13%	5%	-16%	-73%	-12%	-1%	-11%
40%	-3%	-2%	-7%	-6%	-18%	-4%	-17%	-15%	-64%	-10%	0%	0%
50%	31%	22%	7%	-40%	-48%	-25%	2%	-3%	-36%	-6%	0%	0%
60%	73%	38%	30%	-18%	-43%	0%	38%	14%	-15%	-2%	0%	0%
70%	105%	45%	40%	-1%	-28%	26%	73%	36%	-3%	0%	0%	0%
80%	74%	-1%	7%	10%	-2%	43%	14%	-8%	0%	0%	0%	0%
90%	93%	6%	6%	23%	30%	63%	22%	6%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	21%	3%	11%	5%	9%	5%	11%	-7%	-41%	-3%	1%	1%
Water Year Types[c]												
Wet (23%)	10%	1%	13%	3%	19%	0%	2%	-16%	-29%	11%	5%	3%
Above Normal (24%)	30%	7%	19%	6%	3%	14%	10%	-10%	-74%	-25%	-1%	-3%
Below Normal (10%)	6%	-10%	-10%	44%	4%	-7%	4%	-11%	-38%	-1%	0%	-5%
Dry (16%)	17%	1%	1%	-1%	-4%	8%	19%	-2%	-26%	-4%	0%	0%
Critical (27%)	36%	9%	9%	-6%	-19%	26%	33%	17%	-12%	-13%	-3%	3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.3.4 Stanislaus River below Goodwin, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	797	200	306	358	885	1,636	1,717	1,958	1,103	423	300	300
20%	797	200	211	232	415	1,521	1,633	1,815	979	307	300	300
30%	774	200	200	232	274	343	1,553	1,595	940	300	283	250
40%	774	200	200	226	236	200	1,487	1,555	759	297	283	250
50%	636	200	200	226	236	200	1,400	1,341	363	265	283	249
60%	636	200	200	219	229	200	1,324	1,242	342	265	283	249
70%	636	200	200	219	222	200	1,134	1,068	270	265	283	249
80%	577	200	200	213	221	200	825	887	255	265	283	249
90%	577	200	200	213	214	200	767	798	255	265	283	249
Long Term												
Full Simulation Period[b]	711	276	345	520	580	712	1,317	1,375	660	369	332	341
Water Year Types[c]												
Wet (23%)	766	499	690	998	1,169	1,831	1,502	1,730	1,093	619	523	655
Above Normal (24%)	705	211	298	676	659	645	1,170	1,553	962	353	292	267
Below Normal (10%)	733	225	225	281	345	365	1,416	1,267	462	269	285	256
Dry (16%)	690	208	216	233	312	200	1,454	1,370	366	275	277	245
Critical (27%)	674	200	210	221	242	234	1,175	948	257	260	253	224

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	128%	-50%	-24%	-11%	-52%	64%	14%	31%	-27%	-14%	-6%	0%
20%	128%	-44%	-41%	-35%	-52%	280%	9%	21%	-21%	-2%	0%	0%
30%	144%	-40%	-41%	-31%	-31%	0%	9%	16%	-1%	0%	-1%	-11%
40%	197%	-34%	-38%	-29%	-35%	-36%	20%	37%	6%	0%	0%	0%
50%	230%	-19%	-29%	-10%	-30%	-25%	59%	57%	-9%	-6%	0%	0%
60%	337%	-8%	-13%	20%	-25%	0%	104%	71%	14%	-2%	0%	0%
70%	417%	-3%	-6%	44%	-7%	26%	120%	74%	2%	0%	0%	0%
80%	402%	-1%	-3%	56%	26%	43%	79%	75%	0%	0%	0%	0%
90%	458%	6%	6%	75%	61%	63%	90%	82%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	185%	-19%	-20%	-2%	-22%	20%	37%	40%	-21%	-15%	-14%	-13%
Water Year Types[c]												
Wet (23%)	129%	-14%	-22%	-4%	-31%	15%	-1%	11%	-40%	-28%	-28%	-24%
Above Normal (24%)	185%	-22%	-10%	2%	-7%	33%	11%	46%	-2%	0%	2%	0%
Below Normal (10%)	189%	-26%	-26%	-16%	-35%	25%	30%	24%	12%	0%	1%	-2%
Dry (16%)	182%	-26%	-26%	-8%	-19%	8%	112%	84%	6%	0%	-2%	-1%
Critical (27%)	272%	-17%	-16%	9%	-5%	35%	130%	73%	-8%	-11%	-9%	-4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.4 Stanislaus River at Mouth Flow

Table 5C.3.2.4.1 Stanislaus River at Mouth, Monthly Flow

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	1,122	463	442	576	1,084	1,969	1,886	1,989	1,536	751	587	646
20%	1,029	384	368	427	643	1,708	1,769	1,647	1,334	606	488	507
30%	982	348	319	368	472	520	1,696	1,536	1,221	502	462	473
40%	958	337	304	347	406	433	1,610	1,362	1,053	442	445	443
50%	879	319	290	337	369	367	1,485	1,289	635	412	445	439
60%	826	292	281	326	331	336	936	873	510	383	416	428
70%	772	267	262	312	279	314	806	755	406	372	395	389
80%	755	260	241	295	253	241	686	646	358	341	371	360
90%	676	248	224	273	230	207	572	576	311	308	331	318
Long Term												
Full Simulation Period[b]	903	398	448	630	719	903	1,279	1,207	883	546	505	533
Water Year Types[c]												
Wet (23%)	952	624	881	1,115	1,412	2,258	1,779	1,828	1,456	976	831	946
Above Normal (24%)	907	347	357	776	786	801	1,410	1,244	1,257	534	467	480
Below Normal (10%)	932	354	358	430	517	539	1,556	1,378	669	449	440	429
Dry (16%)	916	322	300	349	405	345	1,064	1,002	530	375	397	399
Critical (27%)	837	310	277	317	319	286	754	695	335	321	346	342

Revised Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

Revised Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (Percent Change)											
Probability of Exceedance[a]												
10%	-42%	22%	33%	8%	125%	-37%	-3%	-16%	17%	24%	0%	9%
20%	-44%	26%	31%	19%	54%	-64%	-8%	-4%	16%	-7%	0%	0%
30%	-50%	27%	35%	26%	19%	2%	-12%	-1%	3%	-1%	-1%	0%
40%	-56%	21%	25%	25%	23%	6%	-19%	-6%	-1%	0%	0%	1%
50%	-57%	21%	16%	16%	20%	10%	-31%	-30%	14%	0%	-1%	0%
60%	-62%	18%	11%	-14%	21%	-7%	-23%	-13%	-18%	1%	1%	1%
70%	-63%	18%	11%	-20%	14%	-12%	-28%	-20%	-8%	0%	0%	2%
80%	-67%	4%	12%	-22%	-8%	-6%	-32%	-16%	-3%	3%	1%	3%
90%	-73%	-2%	-9%	-27%	-22%	-29%	-26%	-18%	0%	3%	5%	1%
Long Term												
Full Simulation Period[b]	-52%	16%	14%	2%	21%	-18%	-16%	-12%	17%	7%	5%	7%
Water Year Types[c]												
Wet (23%)	-47%	13%	11%	4%	35%	-19%	-1%	-7%	46%	15%	11%	17%
Above Normal (24%)	-51%	15%	14%	0%	5%	-20%	-12%	-7%	2%	0%	-1%	0%
Below Normal (10%)	-52%	23%	23%	13%	36%	-14%	-24%	-13%	-9%	0%	0%	1%
Dry (16%)	-50%	23%	25%	5%	18%	-4%	-32%	-19%	-5%	0%	2%	1%
Critical (27%)	-60%	12%	13%	-7%	0%	-21%	-30%	-22%	-1%	7%	4%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.4.2 Stanislaus River at Mouth, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,122	463	442	576	1,084	1,969	1,886	1,989	1,536	751	587	646
20%	1,029	384	368	427	643	1,708	1,769	1,647	1,334	606	488	507
30%	982	348	319	368	472	520	1,696	1,536	1,221	502	462	473
40%	958	337	304	347	406	433	1,610	1,362	1,053	442	445	443
50%	879	319	290	337	369	367	1,485	1,289	635	412	445	439
60%	826	292	281	326	331	336	936	873	510	383	416	428
70%	772	267	262	312	279	314	806	755	406	372	395	389
80%	755	260	241	295	253	241	686	646	358	341	371	360
90%	676	248	224	273	230	207	572	576	311	308	331	318
Long Term												
Full Simulation Period[b]	903	398	448	630	719	903	1,279	1,207	883	546	505	533
Water Year Types[c]												
Wet (23%)	952	624	881	1,115	1,412	2,258	1,779	1,828	1,456	976	831	946
Above Normal (24%)	907	347	357	776	786	801	1,410	1,244	1,257	534	467	480
Below Normal (10%)	932	354	358	430	517	539	1,556	1,378	669	449	440	429
Dry (16%)	916	322	300	349	405	345	1,064	1,002	530	375	397	399
Critical (27%)	837	310	277	317	319	286	754	695	335	321	346	342

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	72%	-18%	-25%	-8%	-56%	58%	3%	18%	-14%	-19%	0%	-9%
20%	78%	-20%	-23%	-16%	-35%	178%	9%	4%	-14%	7%	0%	0%
30%	100%	-21%	-26%	-20%	-16%	-2%	13%	1%	-3%	1%	1%	0%
40%	126%	-18%	-20%	-20%	-19%	-5%	24%	6%	1%	0%	0%	-1%
50%	133%	-17%	-14%	-14%	-16%	-9%	45%	43%	-13%	0%	1%	0%
60%	163%	-15%	-10%	17%	-17%	8%	31%	15%	22%	-1%	-1%	-1%
70%	171%	-15%	-10%	26%	-13%	13%	38%	26%	8%	0%	0%	-2%
80%	204%	-4%	-11%	29%	9%	7%	46%	19%	3%	-2%	-1%	-3%
90%	265%	2%	10%	37%	29%	42%	35%	22%	0%	-3%	-5%	-1%
Long Term												
Full Simulation Period[b]	110%	-13%	-13%	-2%	-18%	22%	19%	13%	-15%	-7%	-5%	-7%
Water Year Types[c]												
Wet (23%)	88%	-12%	-10%	-3%	-26%	23%	1%	8%	-32%	-13%	-10%	-15%
Above Normal (24%)	106%	-13%	-12%	0%	-4%	25%	14%	7%	-2%	0%	1%	0%
Below Normal (10%)	109%	-19%	-18%	-11%	-26%	16%	31%	15%	10%	0%	0%	-1%
Dry (16%)	102%	-19%	-20%	-5%	-15%	4%	48%	23%	6%	0%	-2%	-1%
Critical (27%)	149%	-11%	-12%	8%	0%	27%	44%	28%	1%	-6%	-4%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.4.3 Stanislaus River at Mouth, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	679	485	722	1,267	2,628	1,444	1,865	1,414	950	885	571	1,146
20%	557	456	438	518	1,301	734	1,634	1,306	679	535	480	489
30%	482	441	411	410	502	486	1,552	1,233	558	476	457	450
40%	448	424	400	374	416	419	1,240	1,043	428	424	445	439
50%	435	402	381	311	366	367	1,064	920	413	382	440	435
60%	392	372	362	275	308	334	996	882	374	374	410	415
70%	377	359	325	251	238	312	893	829	352	350	390	384
80%	360	333	300	232	201	238	575	550	304	327	367	360
90%	293	260	239	198	180	203	493	489	273	290	347	320
Long Term												
Full Simulation Period[b]	482	469	558	669	938	770	1,180	995	693	573	535	578
Water Year Types[c]												
Wet (23%)	539	714	1,096	1,183	2,227	1,841	1,781	1,437	1,596	1,213	961	1,139
Above Normal (24%)	516	418	468	818	843	708	1,341	1,054	550	446	457	473
Below Normal (10%)	461	404	408	632	723	446	1,230	1,086	449	445	438	422
Dry (16%)	495	399	377	365	463	345	849	803	411	365	404	402
Critical (27%)	401	369	336	282	272	271	692	639	299	305	351	351

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4%	**-14%**	**22%**	**103%**	**8%**	**16%**	2%	**-16%**	**-47%**	**-5%**	-3%	**62%**
20%	-3%	**-5%**	**-9%**	2%	**32%**	**19%**	1%	**-18%**	**-56%**	**-5%**	-2%	-3%
30%	-2%	0%	-5%	**-11%**	**-10%**	**-8%**	4%	**-19%**	**-56%**	-4%	0%	-5%
40%	**6%**	4%	5%	**-14%**	**-16%**	**-8%**	-5%	**-19%**	**-59%**	-4%	0%	-1%
50%	**15%**	4%	**13%**	**-21%**	**-17%**	**-9%**	4%	2%	**-43%**	**-7%**	0%	-1%
60%	**25%**	**8%**	**16%**	-2%	**-23%**	**7%**	**39%**	**17%**	**-11%**	-4%	-2%	-4%
70%	**33%**	**15%**	**12%**	1%	**-25%**	**12%**	**53%**	**38%**	**-6%**	**-6%**	-2%	-3%
80%	**45%**	**23%**	**11%**	1%	**-13%**	**6%**	**23%**	2%	**-13%**	**-6%**	-2%	-3%
90%	**58%**	**7%**	**17%**	0%	1%	**39%**	**16%**	4%	**-13%**	**-9%**	0%	0%
Long Term												
Full Simulation Period[b]	**12%**	2%	**9%**	4%	**8%**	4%	**9%**	**-7%**	**-33%**	-2%	1%	1%
Water Year Types[c]												
Wet (23%)	**7%**	1%	**12%**	2%	**17%**	0%	2%	**-15%**	**-25%**	**8%**	4%	2%
Above Normal (24%)	**17%**	5%	**15%**	5%	3%	**11%**	**8%**	**-9%**	**-57%**	**-16%**	-1%	-2%
Below Normal (10%)	3%	**-7%**	**-7%**	**30%**	3%	-4%	3%	**-9%**	**-26%**	-1%	0%	-3%
Dry (16%)	**9%**	1%	1%	-1%	-3%	4%	**18%**	-2%	**-18%**	-3%	0%	0%
Critical (27%)	**19%**	**6%**	**7%**	-4%	**-15%**	**20%**	**32%**	**17%**	**-10%**	**-11%**	-3%	2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.4.4 Stanislaus River at Mouth, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

Alternative 5

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,121	456	442	570	1,081	1,952	1,950	2,148	1,536	719	571	659
20%	1,029	382	378	416	586	1,708	1,815	1,974	1,319	564	488	501
30%	979	348	319	363	483	495	1,707	1,806	1,139	502	461	473
40%	903	336	304	347	401	415	1,630	1,672	1,034	442	445	443
50%	854	318	290	337	368	365	1,529	1,434	635	407	443	439
60%	818	292	281	326	319	333	1,311	1,290	485	382	413	428
70%	764	267	262	312	272	312	1,168	1,183	383	371	389	389
80%	748	260	241	295	245	241	1,044	962	343	339	367	356
90%	681	248	224	270	230	207	865	752	300	307	305	316
Long Term												
Full Simulation Period[b]	891	396	428	631	704	860	1,437	1,458	863	521	476	522
Water Year Types[c]												
Wet (23%)	937	624	784	1,115	1,380	2,073	1,744	1,866	1,409	880	716	909
Above Normal (24%)	898	342	372	790	770	801	1,356	1,651	1,257	534	467	480
Below Normal (10%)	925	354	358	430	516	539	1,518	1,444	656	449	440	429
Dry (16%)	900	322	300	347	403	345	1,488	1,442	522	375	397	399
Critical (27%)	829	306	272	311	306	286	1,187	944	310	311	337	335

Alternative 5 minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	72%	-20%	-25%	-9%	-56%	57%	7%	28%	-14%	-23%	-3%	-7%
20%	78%	-21%	-21%	-18%	-41%	178%	12%	24%	-15%	0%	0%	-1%
30%	99%	-21%	-26%	-22%	-14%	-7%	14%	19%	-10%	1%	1%	0%
40%	113%	-18%	-20%	-20%	-19%	-9%	25%	30%	-1%	0%	0%	-1%
50%	127%	-18%	-14%	-14%	-17%	-10%	50%	59%	-13%	-1%	0%	0%
60%	160%	-15%	-10%	17%	-20%	7%	83%	71%	16%	-2%	-2%	-1%
70%	169%	-15%	-10%	26%	-15%	12%	100%	97%	2%	-1%	-2%	-2%
80%	201%	-4%	-11%	29%	6%	7%	122%	78%	-1%	-3%	-2%	-4%
90%	268%	2%	10%	36%	29%	42%	104%	60%	-4%	-3%	-12%	-1%
Long Term												
Full Simulation Period[b]	107%	-14%	-16%	-2%	-19%	16%	33%	37%	-17%	-11%	-10%	-9%
Water Year Types[c]												
Wet (23%)	85%	-12%	-20%	-3%	-28%	13%	-1%	10%	-34%	-21%	-22%	-18%
Above Normal (24%)	104%	-15%	-8%	1%	-6%	25%	10%	42%	-2%	0%	1%	0%
Below Normal (10%)	108%	-19%	-18%	-11%	-27%	16%	28%	21%	8%	0%	0%	-1%
Dry (16%)	98%	-19%	-20%	-6%	-16%	4%	107%	77%	4%	0%	-2%	-1%
Critical (27%)	147%	-12%	-13%	6%	-4%	27%	127%	74%	-6%	-9%	-7%	-3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.5 Stanislaus River below New Melones Temperature

Table 5C.3.2.5.1 Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	56.0	53.6	52.1	51.1	50.7	51.0	51.6	52.6	53.7	55.1	57.5
20%	55.6	54.6	52.7	51.5	50.4	49.9	50.2	51.1	51.8	52.5	53.0	54.4
30%	53.4	53.3	52.3	50.9	49.7	49.5	49.9	50.5	51.1	51.8	52.5	53.0
40%	52.9	52.8	51.8	50.6	49.4	49.2	49.7	50.3	50.8	51.4	51.9	52.5
50%	52.4	52.5	51.6	50.2	49.2	49.0	49.3	49.7	50.3	51.1	51.6	52.0
60%	52.0	52.1	51.4	49.9	48.9	48.7	48.9	49.3	49.7	50.4	50.9	51.4
70%	51.4	51.6	51.0	49.6	48.7	48.1	48.4	49.0	49.3	50.0	50.5	51.0
80%	51.1	51.2	50.3	49.2	48.0	47.5	48.0	48.4	48.9	49.6	50.1	50.7
90%	49.9	49.9	49.8	48.3	47.0	46.8	46.9	47.2	47.5	48.5	48.9	49.3
Long Term												
Full Simulation Period[b]	53.4	52.8	51.7	50.2	49.1	48.8	49.2	49.9	50.6	51.3	52.2	53.1
Water Year Types[c]												
Wet (23%)	49.6	49.6	48.7	49.4	48.1	47.9	47.8	48.1	48.5	49.0	49.5	49.9
Above Normal (24%)	53.8	52.7	51.2	49.5	48.2	48.0	48.4	48.9	49.6	50.4	51.4	52.2
Below Normal (10%)	52.6	52.2	51.3	50.2	49.2	48.8	49.1	49.6	50.2	50.9	51.5	52.1
Dry (16%)	52.3	52.4	51.8	50.7	49.8	49.4	49.7	50.3	51.0	51.9	52.9	53.8
Critical (27%)	54.8	53.7	52.5	51.2	50.4	50.0	50.8	52.1	53.1	53.9	54.9	56.8

Revised Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	54.7	54.8	53.5	52.1	51.2	50.7	51.0	51.5	52.1	53.0	53.7	54.1
20%	53.8	53.9	52.7	51.5	50.4	50.1	50.2	50.9	51.5	52.0	52.7	53.1
30%	52.8	52.8	52.3	50.9	50.0	49.6	49.9	50.4	50.9	51.4	52.2	52.5
40%	52.3	52.3	51.7	50.7	49.6	49.3	49.7	50.2	50.6	51.1	51.7	52.0
50%	51.8	51.9	51.4	50.3	49.4	49.1	49.3	49.6	50.1	50.7	51.3	51.6
60%	51.3	51.6	51.3	50.1	49.1	48.7	48.9	49.3	49.8	50.3	50.7	51.1
70%	51.1	51.4	51.0	49.8	48.9	48.4	48.7	49.0	49.4	50.0	50.5	50.8
80%	50.6	50.9	50.6	49.4	48.5	48.0	47.9	48.4	49.1	49.5	50.0	50.4
90%	49.8	50.0	50.1	49.1	47.6	47.1	47.2	47.5	48.0	48.6	49.1	49.4
Long Term												
Full Simulation Period[b]	52.5	52.4	51.6	50.4	49.4	49.0	49.2	49.7	50.2	50.9	51.8	52.2
Water Year Types[c]												
Wet (23%)	48.9	49.0	48.5	49.5	48.2	47.9	48.0	48.3	48.7	49.1	49.6	50.0
Above Normal (24%)	53.1	52.8	51.6	49.9	48.7	48.2	48.4	48.8	49.4	50.0	50.8	51.4
Below Normal (10%)	51.5	51.6	51.1	50.4	49.4	49.0	49.2	49.6	50.1	50.6	51.1	51.6
Dry (16%)	51.5	51.7	51.4	50.6	49.9	49.6	49.8	50.2	50.8	51.3	51.9	52.5
Critical (27%)	53.6	53.4	52.4	51.4	50.7	50.2	50.6	51.4	52.2	53.2	54.8	55.0

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.1	-1.3	-0.2	0.0	0.1	0.0	0.0	-0.1	-0.5	-0.7	-1.4	-3.4
20%	-1.9	-0.7	-0.1	0.0	0.0	0.2	0.0	-0.2	-0.3	-0.5	-0.3	-1.3
30%	-0.6	-0.4	0.0	0.0	0.2	0.1	0.0	-0.1	-0.2	-0.4	-0.3	-0.5
40%	-0.7	-0.5	-0.2	0.1	0.2	0.1	0.0	-0.1	-0.2	-0.3	-0.2	-0.5
50%	-0.6	-0.6	-0.1	0.1	0.2	0.1	0.0	-0.1	-0.2	-0.4	-0.3	-0.4
60%	-0.7	-0.5	0.0	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3
70%	-0.2	-0.2	0.0	0.2	0.2	0.3	0.3	0.1	0.1	-0.1	0.0	-0.2
80%	-0.5	-0.3	0.2	0.2	0.5	0.5	-0.1	0.0	0.2	-0.1	-0.1	-0.4
90%	-0.1	0.1	0.3	0.8	0.6	0.2	0.2	0.3	0.4	0.1	0.2	0.1
Long Term												
Full Simulation Period[b]	-0.9	-0.4	0.0	0.2	0.3	0.2	0.0	-0.2	-0.3	-0.4	-0.4	-0.9
Water Year Types[c]												
Wet (23%)	-0.7	-0.6	-0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.0
Above Normal (24%)	-0.7	0.1	0.4	0.4	0.5	0.2	0.0	-0.1	-0.2	-0.4	-0.6	-0.8
Below Normal (10%)	-1.1	-0.6	-0.2	0.1	0.2	0.2	0.2	0.0	-0.1	-0.3	-0.4	-0.5
Dry (16%)	-0.8	-0.7	-0.4	-0.1	0.1	0.2	0.1	-0.1	-0.2	-0.6	-1.0	-1.3
Critical (27%)	-1.2	-0.2	0.0	0.2	0.3	0.3	-0.2	-0.7	-1.0	-0.7	-0.2	-1.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.5.2 Stanislaus River below New Melones Reservoir, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	54.7	54.8	53.5	52.1	51.2	50.7	51.0	51.5	52.1	53.0	53.7	54.1
20%	53.8	53.9	52.7	51.5	50.4	50.1	50.2	50.9	51.5	52.0	52.7	53.1
30%	52.8	52.8	52.3	50.9	50.0	49.6	49.9	50.4	50.9	51.4	52.2	52.5
40%	52.3	52.3	51.7	50.7	49.6	49.3	49.7	50.2	50.6	51.1	51.7	52.0
50%	51.8	51.9	51.4	50.3	49.4	49.1	49.3	49.6	50.1	50.7	51.3	51.6
60%	51.3	51.6	51.3	50.1	49.1	48.7	48.9	49.3	49.8	50.3	50.7	51.1
70%	51.1	51.4	51.0	49.8	48.9	48.4	48.7	49.0	49.4	50.0	50.5	50.8
80%	50.6	50.9	50.6	49.4	48.5	48.0	47.9	48.4	49.1	49.5	50.0	50.4
90%	49.8	50.0	50.1	49.1	47.6	47.1	47.2	47.5	48.0	48.6	49.1	49.4
Long Term												
Full Simulation Period[b]	52.5	52.4	51.6	50.4	49.4	49.0	49.2	49.7	50.2	50.9	51.8	52.2
Water Year Types[c]												
Wet (23%)	48.9	49.0	48.5	49.5	48.2	47.9	48.0	48.3	48.7	49.1	49.6	50.0
Above Normal (24%)	53.1	52.8	51.6	49.9	48.7	48.2	48.4	48.8	49.4	50.0	50.8	51.4
Below Normal (10%)	51.5	51.6	51.1	50.4	49.4	49.0	49.2	49.6	50.1	50.6	51.1	51.6
Dry (16%)	51.5	51.7	51.4	50.6	49.9	49.6	49.8	50.2	50.8	51.3	51.9	52.5
Critical (27%)	53.6	53.4	52.4	51.4	50.7	50.2	50.6	51.4	52.2	53.2	54.8	55.0

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	56.0	53.6	52.1	51.1	50.7	51.0	51.6	52.6	53.7	55.1	57.5
20%	55.6	54.6	52.7	51.5	50.4	49.9	50.2	51.1	51.8	52.5	53.0	54.4
30%	53.4	53.3	52.3	50.9	49.7	49.5	49.9	50.5	51.1	51.8	52.5	53.0
40%	52.9	52.8	51.8	50.6	49.4	49.2	49.7	50.3	50.8	51.4	51.9	52.5
50%	52.4	52.5	51.6	50.2	49.2	49.0	49.3	49.7	50.3	51.1	51.6	52.0
60%	52.0	52.1	51.4	49.9	48.9	48.7	48.9	49.3	49.7	50.4	50.9	51.4
70%	51.4	51.6	51.0	49.6	48.7	48.1	48.4	49.0	49.3	50.0	50.5	51.0
80%	51.1	51.2	50.3	49.2	48.0	47.5	48.0	48.4	48.9	49.6	50.1	50.7
90%	49.9	49.9	49.8	48.3	47.0	46.8	46.9	47.2	47.5	48.5	48.9	49.3
Long Term												
Full Simulation Period[b]	53.4	52.8	51.7	50.2	49.1	48.8	49.2	49.9	50.6	51.3	52.2	53.1
Water Year Types[c]												
Wet (23%)	49.6	49.6	48.7	49.4	48.1	47.9	47.8	48.1	48.5	49.0	49.5	49.9
Above Normal (24%)	53.8	52.7	51.2	49.5	48.2	48.0	48.4	48.9	49.6	50.4	51.4	52.2
Below Normal (10%)	52.6	52.2	51.3	50.2	49.2	48.8	49.1	49.6	50.2	50.9	51.5	52.1
Dry (16%)	52.3	52.4	51.8	50.7	49.8	49.4	49.7	50.3	51.0	51.9	52.9	53.8
Critical (27%)	54.8	53.7	52.5	51.2	50.4	50.0	50.8	52.1	53.1	53.9	54.9	56.8

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**4.1**	**1.3**	0.2	0.0	-0.1	0.0	0.0	0.1	0.5	**0.7**	**1.4**	**3.4**
20%	**1.9**	**0.7**	0.1	0.0	0.0	-0.2	0.0	0.2	0.3	0.5	0.3	**1.3**
30%	**0.6**	0.4	0.0	0.0	-0.2	-0.1	0.0	0.1	0.2	0.4	0.3	0.5
40%	**0.7**	0.5	0.2	-0.1	-0.2	-0.1	0.0	0.1	0.2	0.3	0.2	0.5
50%	**0.6**	**0.6**	0.1	-0.1	-0.2	-0.1	0.0	0.1	0.2	0.4	0.3	0.4
60%	**0.7**	0.5	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3
70%	0.2	0.2	0.0	-0.2	-0.2	-0.3	-0.3	-0.1	-0.1	0.1	0.0	0.2
80%	0.5	0.3	-0.2	-0.2	-0.5	**-0.5**	0.1	0.0	-0.2	0.1	0.1	0.4
90%	0.1	-0.1	-0.3	**-0.8**	**-0.6**	-0.2	-0.2	-0.3	-0.4	-0.1	-0.2	-0.1
Long Term												
Full Simulation Period[b]	**0.9**	0.4	0.0	-0.2	-0.3	-0.2	0.0	0.2	0.3	0.4	0.4	**0.9**
Water Year Types[c]												
Wet (23%)	**0.7**	**0.6**	0.2	-0.1	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	0.0
Above Normal (24%)	**0.7**	-0.1	-0.4	-0.4	**-0.5**	-0.2	0.0	0.1	0.2	0.4	**0.6**	**0.8**
Below Normal (10%)	**1.1**	**0.6**	0.2	-0.1	-0.2	-0.2	-0.2	0.0	0.1	0.3	0.4	**0.5**
Dry (16%)	**0.8**	**0.7**	0.4	0.1	-0.1	-0.2	-0.1	0.1	0.2	**0.6**	**1.0**	**1.3**
Critical (27%)	**1.2**	0.2	0.0	-0.2	-0.3	-0.3	0.2	**0.7**	**1.0**	**0.7**	0.2	**1.8**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.5.3 Stanislaus River below New Melones Reservoir, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	54.7	54.8	53.5	52.1	51.2	50.7	51.0	51.5	52.1	53.0	53.7	54.1
20%	53.8	53.9	52.7	51.5	50.4	50.1	50.2	50.9	51.5	52.0	52.7	53.1
30%	52.8	52.8	52.3	50.9	50.0	49.6	49.9	50.4	50.9	51.4	52.2	52.5
40%	52.3	52.3	51.7	50.7	49.6	49.3	49.7	50.2	50.6	51.1	51.7	52.0
50%	51.8	51.9	51.4	50.3	49.4	49.1	49.3	49.6	50.1	50.7	51.3	51.6
60%	51.3	51.6	51.3	50.1	49.1	48.7	48.9	49.3	49.8	50.3	50.7	51.1
70%	51.1	51.4	51.0	49.8	48.9	48.4	48.7	49.0	49.4	50.0	50.5	50.8
80%	50.6	50.9	50.6	49.4	48.5	48.0	47.9	48.4	49.1	49.5	50.0	50.4
90%	49.8	50.0	50.1	49.1	47.6	47.1	47.2	47.5	48.0	48.6	49.1	49.4
Long Term												
Full Simulation Period[b]	52.5	52.4	51.6	50.4	49.4	49.0	49.2	49.7	50.2	50.9	51.8	52.2
Water Year Types[c]												
Wet (23%)	48.9	49.0	48.5	49.5	48.2	47.9	48.0	48.3	48.7	49.1	49.6	50.0
Above Normal (24%)	53.1	52.8	51.6	49.9	48.7	48.2	48.4	48.8	49.4	50.0	50.8	51.4
Below Normal (10%)	51.5	51.6	51.1	50.4	49.4	49.0	49.2	49.6	50.1	50.6	51.1	51.6
Dry (16%)	51.5	51.7	51.4	50.6	49.9	49.6	49.8	50.2	50.8	51.3	51.9	52.5
Critical (27%)	53.6	53.4	52.4	51.4	50.7	50.2	50.6	51.4	52.2	53.2	54.8	55.0

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55.7	55.3	53.2	52.3	51.1	50.8	51.1	51.6	52.2	53.0	53.7	54.9
20%	53.6	53.7	52.5	51.4	50.4	50.1	50.3	50.9	51.6	52.1	52.6	53.3
30%	52.6	52.7	52.1	51.0	49.9	49.6	50.0	50.4	50.9	51.5	52.0	52.5
40%	52.1	52.3	51.7	50.6	49.5	49.3	49.7	50.2	50.5	51.2	51.6	52.0
50%	51.7	51.9	51.4	50.3	49.5	49.2	49.3	49.6	50.0	50.6	51.1	51.5
60%	51.3	51.6	51.3	50.0	49.1	48.7	49.0	49.3	49.7	50.2	50.7	51.2
70%	51.1	51.3	51.0	49.7	48.8	48.5	48.7	49.1	49.5	49.9	50.4	50.8
80%	50.6	50.8	50.5	49.3	48.4	48.1	48.2	48.5	48.9	49.3	49.7	50.4
90%	49.7	49.9	50.0	48.4	47.3	47.1	47.3	47.6	48.0	48.5	48.9	49.4
Long Term												
Full Simulation Period[b]	52.5	52.4	51.6	50.3	49.3	49.0	49.3	49.7	50.3	51.1	51.6	52.1
Water Year Types[c]												
Wet (23%)	48.8	49.0	48.5	49.4	48.3	47.9	48.0	48.3	48.6	49.0	49.5	49.9
Above Normal (24%)	53.4	52.8	51.4	49.7	48.4	48.2	48.5	48.8	49.3	50.0	50.7	51.3
Below Normal (10%)	51.5	51.5	51.0	50.4	49.4	49.0	49.2	49.6	50.1	50.6	51.1	51.5
Dry (16%)	51.4	51.6	51.3	50.5	49.8	49.5	49.8	50.2	50.7	51.3	51.9	52.5
Critical (27%)	53.3	53.3	52.4	51.4	50.7	50.3	50.8	51.5	52.6	53.9	54.4	54.7

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.9**	**0.5**	-0.2	0.2	-0.1	0.1	0.1	0.1	0.1	0.0	0.0	**0.8**
20%	-0.1	-0.2	-0.1	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.2
30%	-0.1	-0.1	-0.2	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	-0.2	0.0
40%	-0.2	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.1	-0.1	-0.1
50%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.1
60%	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	0.0
70%	-0.1	-0.1	0.0	-0.1	-0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	0.0
80%	0.0	-0.2	0.0	-0.1	-0.1	0.0	0.3	0.1	-0.1	-0.2	-0.3	0.0
90%	-0.2	-0.1	-0.1	**-0.7**	-0.2	0.1	0.1	0.1	0.1	0.0	-0.2	0.0
Long Term												
Full Simulation Period[b]	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.0	0.1	0.2	-0.1	-0.1
Water Year Types[c]												
Wet (23%)	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
Above Normal (24%)	0.3	0.0	-0.2	-0.2	-0.3	-0.1	0.1	0.0	0.0	-0.1	-0.1	0.0
Below Normal (10%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dry (16%)	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (27%)	-0.3	-0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.4	**0.7**	-0.4	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.5.4 Stanislaus River below New Melones Reservoir, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	54.7	54.8	53.5	52.1	51.2	50.7	51.0	51.5	52.1	53.0	53.7	54.1
20%	53.8	53.9	52.7	51.5	50.4	50.1	50.2	50.9	51.5	52.0	52.7	53.1
30%	52.8	52.8	52.3	50.9	50.0	49.6	49.9	50.4	50.9	51.4	52.2	52.5
40%	52.3	52.3	51.7	50.7	49.6	49.3	49.7	50.2	50.6	51.1	51.7	52.0
50%	51.8	51.9	51.4	50.3	49.4	49.1	49.3	49.6	50.1	50.7	51.3	51.6
60%	51.3	51.6	51.3	50.1	49.1	48.7	48.9	49.3	49.8	50.3	50.7	51.1
70%	51.1	51.4	51.0	49.8	48.9	48.4	48.7	49.0	49.4	50.0	50.5	50.8
80%	50.6	50.9	50.6	49.4	48.5	48.0	47.9	48.4	49.1	49.5	50.0	50.4
90%	49.8	50.0	50.1	49.1	47.6	47.1	47.2	47.5	48.0	48.6	49.1	49.4
Long Term												
Full Simulation Period[b]	52.5	52.4	51.6	50.4	49.4	49.0	49.2	49.7	50.2	50.9	51.8	52.2
Water Year Types[c]												
Wet (23%)	48.9	49.0	48.5	49.5	48.2	47.9	48.0	48.3	48.7	49.1	49.6	50.0
Above Normal (24%)	53.1	52.8	51.6	49.9	48.7	48.2	48.4	48.8	49.4	50.0	50.8	51.4
Below Normal (10%)	51.5	51.6	51.1	50.4	49.4	49.0	49.2	49.6	50.1	50.6	51.1	51.6
Dry (16%)	51.5	51.7	51.4	50.6	49.9	49.6	49.8	50.2	50.8	51.3	51.9	52.5
Critical (27%)	53.6	53.4	52.4	51.4	50.7	50.2	50.6	51.4	52.2	53.2	54.8	55.0

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60.7	57.0	53.9	52.0	51.0	50.7	51.2	52.3	53.1	55.4	59.8	63.1
20%	56.7	55.0	52.8	51.4	50.3	50.0	50.4	51.4	52.0	53.4	54.4	55.9
30%	54.4	53.7	52.3	50.9	49.6	49.5	50.0	50.7	51.3	52.2	53.1	53.8
40%	53.2	53.1	51.9	50.4	49.4	49.1	49.8	50.3	50.8	51.5	52.1	52.8
50%	52.5	52.6	51.6	50.2	49.0	49.0	49.3	49.9	50.3	51.2	51.7	52.1
60%	52.1	52.3	51.2	49.7	48.7	48.6	48.9	49.4	49.7	50.4	50.9	51.5
70%	51.5	51.8	51.0	49.4	48.3	48.0	48.5	48.9	49.3	50.0	50.6	51.1
80%	51.1	51.3	50.2	48.9	47.3	47.3	47.6	48.1	48.5	49.5	50.1	50.7
90%	49.9	50.1	49.5	47.8	46.3	46.3	46.7	47.1	47.4	48.4	48.9	49.5
Long Term												
Full Simulation Period[b]	54.0	53.1	51.7	50.0	48.9	48.7	49.2	50.0	50.4	51.7	52.8	53.9
Water Year Types[c]												
Wet (23%)	50.1	49.7	48.7	49.3	47.9	47.7	47.6	48.0	48.4	48.9	49.4	49.9
Above Normal (24%)	54.7	53.3	51.2	49.3	47.9	47.9	48.3	48.9	49.7	50.6	51.7	52.6
Below Normal (10%)	52.9	51.6	50.7	49.7	48.9	48.6	49.1	49.8	50.4	51.2	52.1	52.9
Dry (16%)	53.0	53.0	52.1	50.7	49.7	49.3	49.7	50.6	51.6	52.9	53.1	54.4
Critical (27%)	55.3	54.0	52.4	50.9	50.0	50.0	51.1	52.6	52.0	54.5	56.8	58.5

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	**6.0**	**2.2**	0.4	-0.1	-0.1	0.0	0.2	**0.7**	**1.0**	**2.4**	**6.1**	**9.0**
20%	**2.9**	**1.1**	0.1	-0.1	-0.1	-0.1	0.2	0.5	**0.5**	**1.3**	**1.7**	**2.8**
30%	**1.6**	**0.9**	0.0	0.0	-0.3	-0.1	0.1	0.3	0.4	**0.8**	**0.8**	**1.3**
40%	**0.9**	**0.7**	0.2	-0.3	-0.2	-0.1	0.1	0.1	0.2	0.4	0.4	**0.8**
50%	**0.7**	**0.7**	0.2	-0.2	-0.4	-0.1	0.0	0.2	0.1	**0.5**	0.4	0.5
60%	**0.8**	**0.6**	-0.1	-0.4	-0.4	-0.1	0.0	0.1	-0.1	0.1	0.2	0.4
70%	0.4	0.4	0.0	-0.3	**-0.5**	-0.4	-0.1	-0.1	-0.1	0.1	0.1	0.3
80%	0.5	0.4	-0.3	-0.5	**-1.2**	**-0.7**	-0.2	-0.3	**-0.5**	0.0	0.1	0.4
90%	0.1	0.1	**-0.6**	**-1.3**	**-1.2**	**-0.7**	-0.5	-0.4	**-0.5**	-0.1	-0.2	0.1
Long Term												
Full Simulation Period[b]	**1.5**	**0.7**	0.0	-0.4	**-0.5**	-0.3	0.0	0.4	0.1	**0.8**	**1.0**	**1.7**
Water Year Types[c]												
Wet (23%)	**1.2**	**0.7**	0.2	-0.1	-0.3	-0.2	-0.4	-0.3	-0.3	-0.2	-0.1	0.0
Above Normal (24%)	**1.6**	**0.5**	-0.4	**-0.7**	**-0.8**	-0.3	-0.1	0.1	0.3	**0.6**	**1.0**	**1.2**
Below Normal (10%)	**1.4**	0.0	-0.4	**-0.7**	**-0.5**	-0.4	-0.1	0.1	0.3	**0.6**	**1.0**	**1.3**
Dry (16%)	**1.5**	**1.3**	**0.7**	0.1	-0.2	-0.3	-0.1	0.4	**0.8**	**1.6**	**1.2**	**2.0**
Critical (27%)	**1.7**	**0.6**	0.0	**-0.6**	**-0.7**	-0.3	**0.6**	**1.2**	-0.1	**1.3**	**2.0**	**3.5**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.6 Stanislaus River below Tulloch Reservoir Temperature

Table 5C.3.2.6.1 Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.5	59.0	54.8	50.7	50.2	51.2	52.6	53.6	54.7	56.5	57.4	59.2
20%	57.4	56.6	53.3	50.3	49.5	50.6	52.1	53.0	54.1	55.0	55.7	56.7
30%	55.6	55.1	52.8	49.6	48.8	50.2	51.7	52.6	53.4	54.3	55.0	55.6
40%	55.1	54.6	52.0	49.1	48.5	49.8	51.3	52.4	52.9	53.9	54.5	55.0
50%	54.5	54.1	51.7	48.7	48.0	49.6	51.0	52.1	52.6	53.7	54.1	54.5
60%	54.1	53.9	51.4	48.3	47.8	49.3	50.6	51.6	52.2	52.8	53.5	54.0
70%	53.6	53.2	50.9	47.8	47.5	48.9	50.1	51.3	51.8	52.4	53.2	53.5
80%	53.2	52.6	50.4	47.1	46.7	48.4	49.7	51.0	51.4	51.8	52.8	53.1
90%	52.0	51.8	49.9	46.3	45.8	47.5	48.8	50.2	50.3	50.8	51.5	51.8
Long Term												
Full Simulation Period[b]	55.6	54.7	51.9	48.6	48.1	49.5	50.9	52.1	52.8	53.7	54.6	55.4
Water Year Types[c]												
Wet (23%)	51.5	51.0	48.7	47.6	47.1	48.8	49.6	50.9	51.0	51.5	52.2	52.4
Above Normal (24%)	56.3	54.9	51.5	48.1	47.4	48.7	50.1	51.4	51.9	52.7	53.7	54.5
Below Normal (10%)	54.6	53.8	51.0	48.3	48.1	49.4	51.0	51.7	52.2	53.3	54.0	54.4
Dry (16%)	54.5	54.1	51.9	49.0	48.6	50.0	51.6	52.3	53.2	54.3	55.2	56.0
Critical (27%)	57.0	55.8	53.0	49.6	49.2	50.7	52.3	53.7	55.1	56.5	57.2	58.7

Revised Alternative 1

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57.8	57.4	54.4	50.7	50.3	51.4	52.7	53.5	54.5	55.7	56.5	57.2
20%	56.0	55.9	53.4	50.0	49.6	50.7	52.0	52.8	53.8	54.8	55.3	55.7
30%	55.2	54.7	52.9	49.6	48.9	50.3	51.7	52.5	53.2	53.9	54.8	55.1
40%	54.7	54.4	51.9	49.1	48.7	49.9	51.3	52.3	53.0	53.7	54.2	54.6
50%	54.4	53.9	51.6	48.9	48.3	49.7	51.1	52.1	52.6	53.2	53.9	54.2
60%	53.9	53.4	51.4	48.4	47.9	49.4	50.8	51.7	52.2	52.7	53.4	53.6
70%	53.5	53.0	51.0	48.0	47.7	49.1	50.3	51.6	52.0	52.5	53.1	53.4
80%	53.1	52.7	50.6	47.5	47.3	48.6	49.9	51.0	51.5	51.8	52.6	52.9
90%	52.1	51.9	49.7	47.0	46.0	47.9	49.1	50.3	50.7	51.1	51.8	51.7
Long Term												
Full Simulation Period[b]	54.9	54.5	52.0	48.7	48.3	49.7	51.0	52.0	52.7	53.4	54.3	54.7
Water Year Types[c]												
Wet (23%)	51.1	50.8	48.6	47.6	47.6	48.8	49.8	51.0	51.4	51.6	52.3	52.4
Above Normal (24%)	55.4	55.0	52.0	48.5	47.7	49.0	50.3	51.4	51.8	52.4	53.3	53.8
Below Normal (10%)	54.0	53.4	50.9	48.3	48.3	49.5	51.0	51.7	52.2	53.2	53.7	54.0
Dry (16%)	54.0	53.7	51.6	48.9	48.6	50.1	51.5	52.3	53.1	53.9	54.5	54.9
Critical (27%)	56.1	55.6	53.1	49.7	49.3	50.9	52.2	53.3	54.5	55.5	57.0	57.5

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-2.7**	**-1.6**	-0.3	0.0	0.1	0.2	0.1	-0.1	-0.2	**-0.8**	**-0.9**	**-2.0**
20%	**-1.3**	**-0.7**	0.1	-0.3	0.1	0.2	-0.1	-0.1	-0.3	-0.3	-0.4	**-1.0**
30%	-0.5	-0.4	0.0	0.0	0.1	0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.5
40%	-0.4	-0.2	-0.1	0.1	0.2	0.1	0.0	-0.1	0.1	-0.2	-0.3	-0.4
50%	-0.2	-0.2	-0.1	0.1	0.3	0.1	0.1	0.0	0.0	-0.5	-0.2	-0.3
60%	-0.2	-0.4	0.0	0.2	0.1	0.1	0.2	0.0	-0.1	-0.1	-0.1	-0.3
70%	-0.1	-0.2	0.1	0.2	0.1	0.1	0.2	0.3	0.2	0.0	-0.1	-0.1
80%	-0.1	0.1	0.1	0.3	**0.5**	0.2	0.2	0.0	0.1	0.0	-0.2	-0.1
90%	0.0	0.1	-0.2	**0.7**	0.2	0.4	0.3	0.1	0.4	0.3	0.3	-0.1
Long Term												
Full Simulation Period[b]	**-0.7**	-0.2	0.1	0.1	0.2	0.1	0.1	-0.1	-0.1	-0.4	-0.3	**-0.7**
Water Year Types[c]												
Wet (23%)	-0.4	-0.3	-0.1	0.1	0.5	0.0	0.3	0.1	0.3	0.1	0.1	0.0
Above Normal (24%)	**-0.8**	0.0	**0.5**	0.4	0.3	0.3	0.1	0.0	-0.1	-0.3	-0.5	**-0.7**
Below Normal (10%)	**-0.6**	-0.4	-0.1	0.0	0.2	0.1	0.0	0.1	0.0	-0.1	-0.3	-0.4
Dry (16%)	**-0.5**	-0.4	-0.2	-0.1	0.0	0.0	-0.1	0.0	-0.1	-0.4	**-0.8**	**-1.1**
Critical (27%)	**-1.0**	-0.2	0.0	0.1	0.1	0.2	-0.1	-0.5	**-0.6**	**-0.9**	-0.2	**-1.3**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.6.2 Stanislaus River below Tulloch Reservoir, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57.8	57.4	54.4	50.7	50.3	51.4	52.7	53.5	54.5	55.7	56.5	57.2
20%	56.0	55.9	53.4	50.0	49.6	50.7	52.0	52.8	53.8	54.8	55.3	55.7
30%	55.2	54.7	52.9	49.6	48.9	50.3	51.7	52.5	53.2	53.9	54.8	55.1
40%	54.7	54.4	51.9	49.1	48.7	49.9	51.3	52.3	53.0	53.7	54.2	54.6
50%	54.4	53.9	51.6	48.9	48.3	49.7	51.1	52.1	52.6	53.2	53.9	54.2
60%	53.9	53.4	51.4	48.4	47.9	49.4	50.8	51.7	52.2	52.7	53.4	53.6
70%	53.5	53.0	51.0	48.0	47.7	49.1	50.3	51.6	52.0	52.5	53.1	53.4
80%	53.1	52.7	50.6	47.5	47.3	48.6	49.9	51.0	51.5	51.8	52.6	52.9
90%	52.1	51.9	49.7	47.0	46.0	47.9	49.1	50.3	50.7	51.1	51.8	51.7
Long Term												
Full Simulation Period[b]	54.9	54.5	52.0	48.7	48.3	49.7	51.0	52.0	52.7	53.4	54.3	54.7
Water Year Types[c]												
Wet (23%)	51.1	50.8	48.6	47.6	47.6	48.8	49.8	51.0	51.4	51.6	52.3	52.4
Above Normal (24%)	55.4	55.0	52.0	48.5	47.7	49.0	50.3	51.4	51.8	52.4	53.3	53.8
Below Normal (10%)	54.0	53.4	50.9	48.3	48.3	49.5	51.0	51.7	52.2	53.2	53.7	54.0
Dry (16%)	54.0	53.7	51.6	48.9	48.6	50.1	51.5	52.3	53.1	53.9	54.5	54.9
Critical (27%)	56.1	55.6	53.1	49.7	49.3	50.9	52.2	53.3	54.5	55.5	57.0	57.5

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.5	59.0	54.8	50.7	50.2	51.2	52.6	53.6	54.7	56.5	57.4	59.2
20%	57.4	56.6	53.3	50.3	49.5	50.6	52.1	53.0	54.1	55.0	55.7	56.7
30%	55.6	55.1	52.8	49.6	48.8	50.2	51.7	52.6	53.4	54.3	55.0	55.6
40%	55.1	54.6	52.0	49.1	48.5	49.8	51.3	52.4	52.9	53.9	54.5	55.0
50%	54.5	54.1	51.7	48.7	48.0	49.6	51.0	52.1	52.6	53.7	54.1	54.5
60%	54.1	53.9	51.4	48.3	47.8	49.3	50.6	51.6	52.2	52.8	53.5	54.0
70%	53.6	53.2	50.9	47.8	47.5	48.9	50.1	51.3	51.8	52.4	53.2	53.5
80%	53.2	52.6	50.4	47.1	46.7	48.4	49.7	51.0	51.4	51.8	52.8	53.1
90%	52.0	51.8	49.9	46.3	45.8	47.5	48.8	50.2	50.3	50.8	51.5	51.8
Long Term												
Full Simulation Period[b]	55.6	54.7	51.9	48.6	48.1	49.5	50.9	52.1	52.8	53.7	54.6	55.4
Water Year Types[c]												
Wet (23%)	51.5	51.0	48.7	47.6	47.1	48.8	49.6	50.9	51.0	51.5	52.2	52.4
Above Normal (24%)	56.3	54.9	51.5	48.1	47.4	48.7	50.1	51.4	51.9	52.7	53.7	54.5
Below Normal (10%)	54.6	53.8	51.0	48.3	48.1	49.4	51.0	51.7	52.2	53.3	54.0	54.4
Dry (16%)	54.5	54.1	51.9	49.0	48.6	50.0	51.6	52.3	53.2	54.3	55.2	56.0
Critical (27%)	57.0	55.8	53.0	49.6	49.2	50.7	52.3	53.7	55.1	56.5	57.2	58.7

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.7**	**1.6**	0.3	0.0	-0.1	-0.2	-0.1	0.1	0.2	**0.8**	**0.9**	**2.0**
20%	**1.3**	**0.7**	-0.1	0.3	-0.1	-0.2	0.1	0.1	0.3	0.3	0.4	**1.0**
30%	0.5	0.4	0.0	0.0	-0.1	-0.1	0.1	0.1	0.2	0.3	0.3	0.5
40%	0.4	0.2	0.1	-0.1	-0.2	-0.1	0.0	0.1	-0.1	0.2	0.3	0.4
50%	0.2	0.2	0.1	-0.1	-0.3	-0.1	-0.1	0.0	0.0	0.5	0.2	0.3
60%	0.2	0.4	0.0	-0.2	-0.1	-0.1	-0.2	0.0	0.1	0.1	0.1	0.3
70%	0.1	0.2	-0.1	-0.2	-0.1	-0.1	-0.2	-0.3	-0.2	0.0	0.1	0.1
80%	0.1	-0.1	-0.1	-0.3	**-0.5**	-0.2	-0.2	0.0	-0.1	0.0	0.2	0.1
90%	0.0	-0.1	0.2	**-0.7**	-0.2	-0.4	-0.3	-0.1	-0.4	-0.3	-0.3	0.1
Long Term												
Full Simulation Period[b]	**0.7**	0.2	-0.1	-0.1	-0.2	-0.1	-0.1	0.1	0.1	0.4	0.3	**0.7**
Water Year Types[c]												
Wet (23%)	0.4	0.3	0.1	-0.1	-0.5	0.0	-0.3	-0.1	-0.3	-0.1	-0.1	0.0
Above Normal (24%)	**0.8**	0.0	**-0.5**	-0.4	-0.3	-0.3	-0.1	0.0	0.1	0.3	0.5	**0.7**
Below Normal (10%)	**0.6**	0.4	0.1	0.0	-0.2	-0.1	0.0	-0.1	0.0	0.1	0.3	0.4
Dry (16%)	**0.5**	0.4	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.4	**0.8**	**1.1**
Critical (27%)	**1.0**	0.2	0.0	-0.1	-0.1	-0.2	0.1	0.5	**0.6**	**0.9**	0.2	**1.3**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.6.3 Stanislaus River below Tulloch Reservoir, Monthly Temperature

Revised Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57.8	57.4	54.4	50.7	50.3	51.4	52.7	53.5	54.5	55.7	56.5	57.2
20%	56.0	55.9	53.4	50.0	49.6	50.7	52.0	52.8	53.8	54.8	55.3	55.7
30%	55.2	54.7	52.9	49.6	48.9	50.3	51.7	52.5	53.2	53.9	54.8	55.1
40%	54.7	54.4	51.9	49.1	48.7	49.9	51.3	52.3	53.0	53.7	54.2	54.6
50%	54.4	53.9	51.6	48.9	48.3	49.7	51.1	52.1	52.6	53.2	53.9	54.2
60%	53.9	53.4	51.4	48.4	47.9	49.4	50.8	51.7	52.2	52.7	53.4	53.6
70%	53.5	53.0	51.0	48.0	47.7	49.1	50.3	51.6	52.0	52.5	53.1	53.4
80%	53.1	52.7	50.6	47.5	47.3	48.6	49.9	51.0	51.5	51.8	52.6	52.9
90%	52.1	51.9	49.7	47.0	46.0	47.9	49.1	50.3	50.7	51.1	51.8	51.7
Long Term												
Full Simulation Period[b]	54.9	54.5	52.0	48.7	48.3	49.7	51.0	52.0	52.7	53.4	54.3	54.7
Water Year Types[c]												
Wet (23%)	51.1	50.8	48.6	47.6	47.6	48.8	49.8	51.0	51.4	51.6	52.3	52.4
Above Normal (24%)	55.4	55.0	52.0	48.5	47.7	49.0	50.3	51.4	51.8	52.4	53.3	53.8
Below Normal (10%)	54.0	53.4	50.9	48.3	48.3	49.5	51.0	51.7	52.2	53.2	53.7	54.0
Dry (16%)	54.0	53.7	51.6	48.9	48.6	50.1	51.5	52.3	53.1	53.9	54.5	54.9
Critical (27%)	56.1	55.6	53.1	49.7	49.3	50.9	52.2	53.3	54.5	55.5	57.0	57.5

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57.8	57.5	54.3	50.8	50.3	51.3	52.7	53.5	54.5	55.7	56.4	57.3
20%	56.4	55.9	53.5	50.0	49.6	50.7	52.0	52.8	53.8	54.8	55.3	55.7
30%	55.1	54.5	52.8	49.5	49.1	50.3	51.5	52.4	53.2	54.0	54.7	55.1
40%	54.6	54.1	51.8	49.0	48.7	49.9	51.4	52.2	52.8	53.6	54.2	54.5
50%	54.2	53.7	51.5	48.7	48.2	49.7	51.0	51.9	52.5	53.3	53.8	54.1
60%	53.7	53.4	51.3	48.5	47.9	49.5	50.8	51.6	52.1	52.9	53.3	53.6
70%	53.5	53.0	50.9	48.0	47.6	49.0	50.4	51.4	51.7	52.6	53.0	53.2
80%	52.9	52.7	50.5	47.5	47.2	48.6	49.9	50.9	51.2	52.1	52.5	52.8
90%	51.9	51.8	49.6	46.8	46.2	47.8	49.2	50.1	50.7	51.3	51.7	51.7
Long Term												
Full Simulation Period[b]	54.8	54.3	51.8	48.6	48.3	49.6	51.0	51.9	52.6	53.6	54.3	54.5
Water Year Types[c]												
Wet (23%)	51.0	50.7	48.5	47.6	47.7	48.8	49.8	50.8	51.3	51.8	52.2	52.3
Above Normal (24%)	55.6	55.0	51.8	48.5	47.6	48.9	50.3	51.2	51.6	52.6	53.3	53.8
Below Normal (10%)	53.9	53.3	50.8	48.5	48.3	49.5	51.0	51.6	52.3	53.2	53.7	54.0
Dry (16%)	53.8	53.5	51.5	48.9	48.6	50.0	51.5	52.2	53.0	53.9	54.4	54.9
Critical (27%)	55.8	55.3	52.9	49.6	49.2	50.9	52.3	53.3	54.5	56.1	56.9	57.2

Alternative 3 minus Revised Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.0	0.1	-0.2	0.1	0.0	-0.1	0.0	0.0	0.1	0.0	-0.1	0.0
20%	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
30%	-0.1	-0.2	-0.1	-0.1	0.2	0.0	-0.1	-0.1	-0.1	0.1	0.0	0.0
40%	-0.1	-0.3	-0.1	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1
50%	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.2	-0.1	0.0	-0.1	-0.2
60%	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.2	-0.1	0.0
70%	0.0	0.0	-0.2	0.0	-0.1	-0.1	0.1	-0.1	-0.3	0.2	0.0	-0.2
80%	-0.2	0.0	-0.1	0.0	0.0	-0.1	0.0	-0.1	-0.2	0.3	-0.1	-0.2
90%	-0.1	-0.1	-0.1	-0.2	0.2	-0.1	0.1	-0.2	0.0	0.2	-0.1	-0.1
Long Term												
Full Simulation Period[b]	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.3	0.0	-0.1
Water Year Types[c]												
Wet (23%)	-0.1	-0.1	-0.1	0.0	0.1	0.0	0.0	-0.2	-0.1	0.2	0.0	-0.1
Above Normal (24%)	0.2	0.0	-0.2	-0.1	0.0	-0.1	0.0	-0.1	-0.2	0.2	0.0	0.0
Below Normal (10%)	-0.1	-0.1	0.0	0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Dry (16%)	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0
Critical (27%)	-0.3	-0.2	-0.2	-0.1	-0.1	0.0	0.1	0.1	0.1	**0.6**	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.6.4 Stanislaus River below Tulloch Reservoir, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57.8	57.4	54.4	50.7	50.3	51.4	52.7	53.5	54.5	55.7	56.5	57.2
20%	56.0	55.9	53.4	50.0	49.6	50.7	52.0	52.8	53.8	54.8	55.3	55.7
30%	55.2	54.7	52.9	49.6	48.9	50.3	51.7	52.5	53.2	53.9	54.8	55.1
40%	54.7	54.4	51.9	49.1	48.7	49.9	51.3	52.3	53.0	53.7	54.2	54.6
50%	54.4	53.9	51.6	48.9	48.3	49.7	51.1	52.1	52.6	53.2	53.9	54.2
60%	53.9	53.4	51.4	48.4	47.9	49.4	50.8	51.7	52.2	52.7	53.4	53.6
70%	53.5	53.0	51.0	48.0	47.7	49.1	50.3	51.6	52.0	52.5	53.1	53.4
80%	53.1	52.7	50.6	47.5	47.3	48.6	49.9	51.0	51.5	51.8	52.6	52.9
90%	52.1	51.9	49.7	47.0	46.0	47.9	49.1	50.3	50.7	51.1	51.8	51.7
Long Term												
Full Simulation Period[b]	54.9	54.5	52.0	48.7	48.3	49.7	51.0	52.0	52.7	53.4	54.3	54.7
Water Year Types[c]												
Wet (23%)	51.1	50.8	48.6	47.6	47.6	48.8	49.8	51.0	51.4	51.6	52.3	52.4
Above Normal (24%)	55.4	55.0	52.0	48.5	47.7	49.0	50.3	51.4	51.8	52.4	53.3	53.8
Below Normal (10%)	54.0	53.4	50.9	48.3	48.3	49.5	51.0	51.7	52.2	53.2	53.7	54.0
Dry (16%)	54.0	53.7	51.6	48.9	48.6	50.1	51.5	52.3	53.1	53.9	54.5	54.9
Critical (27%)	56.1	55.6	53.1	49.7	49.3	50.9	52.2	53.3	54.5	55.5	57.0	57.5

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.5	60.2	55.1	51.0	50.0	51.1	52.9	53.9	55.2	57.1	60.8	63.2
20%	58.4	57.9	53.6	50.2	49.5	50.6	52.2	53.2	54.3	55.4	56.8	57.9
30%	56.4	55.7	52.7	49.4	48.8	50.0	51.8	52.6	53.4	54.7	55.5	56.1
40%	55.3	54.8	52.1	49.0	48.4	49.7	51.6	52.4	52.9	54.0	54.9	55.2
50%	54.7	54.2	51.8	48.7	48.0	49.5	51.0	52.2	52.6	53.7	54.2	54.6
60%	54.4	53.9	51.5	48.3	47.7	49.2	50.6	51.8	52.2	52.8	53.5	54.0
70%	53.7	53.4	50.9	47.9	47.2	48.8	50.1	51.4	51.7	52.4	53.2	53.6
80%	53.3	52.7	50.4	47.1	46.7	48.1	49.6	50.8	51.3	51.9	52.8	53.1
90%	52.1	51.8	49.8	45.9	45.6	47.4	48.7	50.1	50.1	50.7	51.4	52.0
Long Term												
Full Simulation Period[b]	56.2	55.1	52.0	48.6	48.0	49.4	50.9	52.2	52.6	53.9	55.1	56.0
Water Year Types[c]												
Wet (23%)	52.0	51.3	48.8	47.6	47.0	48.7	49.5	50.8	50.9	51.4	52.1	52.4
Above Normal (24%)	57.2	55.5	51.5	48.1	47.2	48.6	50.1	51.5	51.9	52.8	54.0	54.9
Below Normal (10%)	55.4	53.7	50.9	48.1	48.0	49.2	51.0	51.8	52.4	53.6	54.5	55.1
Dry (16%)	55.1	54.7	52.2	49.2	48.7	50.0	51.7	52.6	53.4	55.0	55.7	56.5
Critical (27%)	57.4	56.3	53.1	49.6	49.1	50.6	52.6	54.1	54.5	56.5	58.5	60.3

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**6.7**	**2.8**	**0.7**	0.3	-0.3	-0.3	0.2	0.4	**0.8**	**1.4**	**4.3**	**6.0**
20%	**2.4**	**2.1**	0.2	0.2	-0.2	-0.1	0.2	0.4	0.4	**0.6**	**1.6**	**2.2**
30%	**1.2**	**1.0**	-0.1	-0.2	-0.2	-0.3	0.2	0.2	0.2	**0.8**	**0.8**	**1.0**
40%	**0.5**	0.4	0.2	-0.1	-0.3	-0.2	0.2	0.2	0.0	0.3	**0.6**	**0.6**
50%	0.4	0.3	0.2	-0.2	-0.3	-0.2	-0.1	0.2	0.0	0.5	0.3	0.3
60%	0.5	0.5	0.1	-0.1	-0.2	-0.3	-0.2	0.2	0.0	0.1	0.1	0.4
70%	0.2	0.3	-0.1	-0.1	-0.4	-0.3	-0.2	-0.2	-0.3	0.0	0.1	0.3
80%	0.2	0.0	-0.2	-0.3	**-0.6**	-0.5	-0.3	-0.3	-0.1	0.1	0.2	0.2
90%	0.0	-0.1	0.1	**-1.0**	-0.4	-0.5	-0.4	-0.2	**-0.6**	-0.4	-0.4	0.3
Long Term												
Full Simulation Period[b]	**1.3**	**0.6**	0.0	-0.1	-0.3	-0.3	0.0	0.3	0.0	**0.5**	**0.8**	**1.4**
Water Year Types[c]												
Wet (23%)	**0.9**	0.5	0.2	0.0	**-0.5**	-0.1	-0.3	-0.2	-0.5	-0.2	-0.1	0.0
Above Normal (24%)	**1.8**	0.5	**-0.5**	-0.4	-0.5	-0.5	-0.2	0.1	0.0	0.5	**0.7**	**1.0**
Below Normal (10%)	**1.4**	0.3	0.1	-0.1	-0.3	-0.2	0.0	0.1	0.1	0.4	**0.7**	**1.1**
Dry (16%)	**1.1**	**1.0**	**0.6**	0.2	0.1	-0.1	0.1	0.3	0.4	**1.1**	**1.2**	**1.6**
Critical (27%)	**1.4**	**0.8**	0.1	-0.1	-0.2	-0.3	0.3	**0.8**	0.0	**0.9**	**1.5**	**2.8**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.7 Stanislaus River below Goodwin Dam Temperature

Table 5C.3.2.7.1 Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60.7	59.2	54.6	51.1	50.8	51.9	53.1	54.1	55.6	57.6	58.3	60.1
20%	58.0	56.6	53.3	50.3	50.2	51.4	52.4	53.6	54.8	55.9	56.5	57.4
30%	56.1	55.5	52.5	49.7	49.5	50.8	52.1	53.0	54.0	55.1	55.8	56.4
40%	55.5	54.8	51.9	49.3	48.9	50.6	51.7	52.8	53.7	54.6	55.3	55.7
50%	55.0	54.2	51.6	48.9	48.8	50.3	51.4	52.6	53.3	54.4	54.8	55.3
60%	54.5	54.0	51.3	48.4	48.4	50.0	51.0	52.1	52.8	53.5	54.2	54.6
70%	54.0	53.5	51.0	48.0	48.0	49.8	50.6	51.8	52.5	53.2	53.9	54.2
80%	53.5	52.9	50.4	47.3	47.4	49.0	50.1	51.5	52.0	52.6	53.3	53.8
90%	52.4	52.1	49.9	46.5	46.7	48.3	49.2	50.6	50.8	51.5	52.2	52.6
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.8	48.7	50.2	51.3	52.5	53.5	54.6	55.3	56.1
Water Year Types[c]												
Wet (23%)	51.9	51.3	48.8	47.9	47.6	49.1	50.0	51.3	51.6	52.2	52.8	53.0
Above Normal (24%)	56.7	55.2	51.5	48.4	48.0	49.6	50.6	51.9	52.5	53.5	54.5	55.2
Below Normal (10%)	55.0	54.1	51.0	48.4	48.7	50.0	51.3	52.1	52.9	54.1	54.7	55.1
Dry (16%)	54.9	54.3	51.8	49.2	49.2	50.9	51.9	52.8	53.9	55.1	56.0	56.7
Critical (27%)	57.4	56.0	52.9	49.7	49.9	51.5	52.7	54.3	56.0	57.5	58.2	59.5

Revised Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58.8	57.3	54.1	50.9	50.8	52.1	53.2	54.1	55.4	56.6	57.4	57.9
20%	57.0	56.0	53.4	50.1	50.2	51.4	52.4	53.5	54.6	55.6	56.0	56.7
30%	56.2	54.9	52.9	49.8	49.5	50.9	52.1	53.0	53.9	54.8	55.4	55.8
40%	55.5	54.6	51.9	49.2	49.1	50.7	51.7	52.7	53.6	54.5	55.0	55.3
50%	55.0	54.0	51.6	49.0	48.8	50.5	51.5	52.6	53.1	54.0	54.7	55.0
60%	54.6	53.8	51.4	48.5	48.5	50.2	51.2	52.1	52.8	53.4	54.1	54.4
70%	54.2	53.3	51.0	48.1	48.3	49.9	50.8	52.0	52.5	53.2	53.8	54.0
80%	53.6	52.9	50.6	47.6	47.8	49.2	50.3	51.6	52.0	52.5	53.3	53.5
90%	52.7	52.1	49.8	47.1	46.9	48.6	49.6	50.7	51.3	51.7	52.4	52.4
Long Term												
Full Simulation Period[b]	55.6	54.6	51.9	48.9	48.9	50.4	51.4	52.5	53.3	54.1	55.0	55.4
Water Year Types[c]												
Wet (23%)	51.7	51.0	48.6	47.9	48.0	49.4	50.2	51.4	51.9	52.3	52.9	53.0
Above Normal (24%)	56.2	55.1	51.9	48.7	48.4	49.9	50.7	51.9	52.4	53.1	54.0	54.5
Below Normal (10%)	54.7	53.6	50.9	48.4	48.8	50.1	51.4	52.2	52.9	53.9	54.4	54.7
Dry (16%)	54.7	53.9	51.6	49.1	49.2	50.9	51.9	52.8	53.8	54.7	55.2	55.6
Critical (27%)	56.8	55.7	52.9	49.8	50.0	51.7	52.7	53.9	55.3	56.4	57.8	58.5

Revised Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	**-2.0**	**-1.8**	**-0.5**	-0.1	0.0	0.2	0.1	0.0	-0.2	**-1.0**	**-1.0**	**-2.2**
20%	**-1.0**	**-0.6**	0.1	-0.2	0.0	0.0	0.0	-0.2	-0.2	-0.3	**-0.5**	**-0.8**
30%	0.1	**-0.6**	0.3	0.1	0.0	0.1	0.0	-0.1	-0.1	-0.4	-0.4	**-0.5**
40%	0.1	-0.2	-0.1	-0.1	0.1	0.2	0.0	-0.1	-0.1	-0.2	-0.3	-0.4
50%	0.1	-0.2	0.0	0.1	0.0	0.2	0.1	0.0	-0.2	-0.5	-0.2	-0.3
60%	0.1	-0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.0	-0.1	-0.1	-0.2
70%	0.2	-0.2	0.0	0.1	0.3	0.2	0.2	0.2	0.0	0.0	-0.1	-0.2
80%	0.1	0.0	0.2	0.3	0.4	0.2	0.2	0.1	0.0	-0.1	-0.1	-0.3
90%	0.3	0.0	-0.1	**0.6**	0.2	0.3	0.4	0.1	0.5	0.2	0.2	-0.2
Long Term												
Full Simulation Period[b]	-0.4	-0.3	0.0	0.1	0.2	0.2	0.1	-0.1	-0.2	-0.4	-0.4	**-0.6**
Water Year Types[c]												
Wet (23%)	-0.1	-0.3	-0.1	0.0	0.3	0.2	0.3	0.1	0.3	0.0	0.1	0.0
Above Normal (24%)	**-0.5**	0.0	0.5	0.4	0.3	0.4	0.2	0.0	-0.1	-0.3	-0.5	**-0.6**
Below Normal (10%)	-0.3	-0.4	-0.1	0.0	0.1	0.1	0.0	0.1	0.0	-0.2	-0.3	-0.4
Dry (16%)	-0.2	-0.4	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.4	**-0.8**	**-1.1**
Critical (27%)	**-0.6**	-0.3	0.0	0.1	0.1	0.2	0.0	-0.4	**-0.7**	**-1.1**	-0.4	**-1.0**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.7.2 Stanislaus River below Goodwin Dam, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	57.3	54.1	50.9	50.8	52.1	53.2	54.1	55.4	56.6	57.4	57.9
20%	57.0	56.0	53.4	50.1	50.2	51.4	52.4	53.5	54.6	55.6	56.0	56.7
30%	56.2	54.9	52.9	49.8	49.5	50.9	52.1	53.0	53.9	54.8	55.4	55.8
40%	55.5	54.6	51.9	49.2	49.1	50.7	51.7	52.7	53.6	54.5	55.0	55.3
50%	55.0	54.0	51.6	49.0	48.8	50.5	51.5	52.6	53.1	54.0	54.7	55.0
60%	54.6	53.8	51.4	48.5	48.5	50.2	51.2	52.1	52.8	53.4	54.1	54.4
70%	54.2	53.3	51.0	48.1	48.3	49.9	50.8	52.0	52.5	53.2	53.8	54.0
80%	53.6	52.9	50.6	47.6	47.8	49.2	50.3	51.6	52.0	52.5	53.3	53.5
90%	52.7	52.1	49.8	47.1	46.9	48.6	49.6	50.7	51.3	51.7	52.4	52.4
Long Term												
Full Simulation Period[b]	55.6	54.6	51.9	48.9	48.9	50.4	51.4	52.5	53.3	54.1	55.0	55.4
Water Year Types[c]												
Wet (23%)	51.7	51.0	48.6	47.9	48.0	49.4	50.2	51.4	51.9	52.3	52.9	53.0
Above Normal (24%)	56.2	55.1	51.9	48.7	48.4	49.9	50.7	51.9	52.4	53.1	54.0	54.5
Below Normal (10%)	54.7	53.6	50.9	48.4	48.8	50.1	51.4	52.2	52.9	53.9	54.4	54.7
Dry (16%)	54.7	53.9	51.6	49.1	49.2	50.9	51.9	52.8	53.8	54.7	55.2	55.6
Critical (27%)	56.8	55.7	52.9	49.8	50.0	51.7	52.7	53.9	55.3	56.4	57.8	58.5

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.7	59.2	54.6	51.1	50.8	51.9	53.1	54.1	55.6	57.6	58.3	60.1
20%	58.0	56.6	53.3	50.3	50.2	51.4	52.4	53.6	54.8	55.9	56.5	57.4
30%	56.1	55.5	52.5	49.7	49.5	50.8	52.1	53.0	54.0	55.1	55.8	56.4
40%	55.5	54.8	51.9	49.3	48.9	50.6	51.7	52.8	53.7	54.6	55.3	55.7
50%	55.0	54.2	51.6	48.9	48.8	50.3	51.4	52.6	53.3	54.4	54.8	55.3
60%	54.5	54.0	51.3	48.4	48.4	50.0	51.0	52.1	52.8	53.5	54.2	54.6
70%	54.0	53.5	51.0	48.0	48.0	49.8	50.6	51.8	52.5	53.2	53.9	54.2
80%	53.5	52.9	50.4	47.3	47.4	49.0	50.1	51.5	52.0	52.6	53.3	53.8
90%	52.4	52.1	49.9	46.5	46.7	48.3	49.2	50.6	50.8	51.5	52.2	52.6
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.8	48.7	50.2	51.3	52.5	53.5	54.6	55.3	56.1
Water Year Types[c]												
Wet (23%)	51.9	51.3	48.8	47.9	47.6	49.1	50.0	51.3	51.6	52.2	52.8	53.0
Above Normal (24%)	56.7	55.2	51.5	48.4	48.0	49.6	50.6	51.9	52.5	53.5	54.5	55.2
Below Normal (10%)	55.0	54.1	51.0	48.4	48.7	50.0	51.3	52.1	52.9	54.1	54.7	55.1
Dry (16%)	54.9	54.3	51.8	49.2	49.2	50.9	51.9	52.8	53.9	55.1	56.0	56.7
Critical (27%)	57.4	56.0	52.9	49.7	49.9	51.5	52.7	54.3	56.0	57.5	58.2	59.5

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.0**	**1.8**	**0.5**	0.1	0.0	-0.2	-0.1	0.0	0.2	**1.0**	**1.0**	**2.2**
20%	**1.0**	**0.6**	-0.1	0.2	0.0	0.0	0.0	0.2	0.2	0.3	**0.5**	**0.8**
30%	-0.1	**0.6**	-0.3	-0.1	0.0	-0.1	0.0	0.1	0.1	0.4	0.4	**0.5**
40%	-0.1	0.2	0.1	0.1	-0.1	-0.2	0.0	0.1	0.1	0.2	0.3	0.4
50%	-0.1	0.2	0.0	-0.1	0.0	-0.2	-0.1	0.0	0.2	0.5	0.2	0.3
60%	-0.1	0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	0.0	0.1	0.1	0.2
70%	-0.2	0.2	0.0	-0.1	-0.3	-0.2	-0.2	-0.2	0.0	0.0	0.1	0.2
80%	-0.1	0.0	-0.2	-0.3	-0.4	-0.2	-0.2	-0.1	0.0	0.1	0.1	0.3
90%	-0.3	0.0	0.1	**-0.6**	-0.2	-0.3	-0.4	-0.1	-0.5	-0.2	-0.2	0.2
Long Term												
Full Simulation Period[b]	0.4	0.3	0.0	-0.1	-0.2	-0.2	-0.1	0.1	0.2	0.4	0.4	**0.6**
Water Year Types[c]												
Wet (23%)	0.1	0.3	0.1	0.0	-0.3	-0.2	-0.3	-0.1	-0.3	0.0	-0.1	0.0
Above Normal (24%)	**0.5**	0.0	-0.5	-0.4	-0.3	-0.4	-0.2	0.0	0.1	0.3	0.5	**0.6**
Below Normal (10%)	0.3	0.4	0.1	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.2	0.3	0.4
Dry (16%)	0.2	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.4	**0.8**	**1.1**
Critical (27%)	**0.6**	0.3	0.0	-0.1	-0.1	-0.2	0.0	0.4	**0.7**	**1.1**	0.4	**1.0**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.7.3 Stanislaus River below Goodwin Dam, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	57.3	54.1	50.9	50.8	52.1	53.2	54.1	55.4	56.6	57.4	57.9
20%	57.0	56.0	53.4	50.1	50.2	51.4	52.4	53.5	54.6	55.6	56.0	56.7
30%	56.2	54.9	52.9	49.8	49.5	50.9	52.1	53.0	53.9	54.8	55.4	55.8
40%	55.5	54.6	51.9	49.2	49.1	50.7	51.7	52.7	53.6	54.5	55.0	55.3
50%	55.0	54.0	51.6	49.0	48.8	50.5	51.5	52.6	53.1	54.0	54.7	55.0
60%	54.6	53.8	51.4	48.5	48.5	50.2	51.2	52.1	52.8	53.4	54.1	54.4
70%	54.2	53.3	51.0	48.1	48.3	49.9	50.8	52.0	52.5	53.2	53.8	54.0
80%	53.6	52.9	50.6	47.6	47.8	49.2	50.3	51.6	52.0	52.5	53.3	53.5
90%	52.7	52.1	49.8	47.1	46.9	48.6	49.6	50.7	51.3	51.7	52.4	52.4
Long Term												
Full Simulation Period[b]	55.6	54.6	51.9	48.9	48.9	50.4	51.4	52.5	53.3	54.1	55.0	55.4
Water Year Types[c]												
Wet (23%)	51.7	51.0	48.6	47.9	48.0	49.4	50.2	51.4	51.9	52.3	52.9	53.0
Above Normal (24%)	56.2	55.1	51.9	48.7	48.4	49.9	50.7	51.9	52.4	53.1	54.0	54.5
Below Normal (10%)	54.7	53.6	50.9	48.4	48.8	50.1	51.4	52.2	52.9	53.9	54.4	54.7
Dry (16%)	54.7	53.9	51.6	49.1	49.2	50.9	51.9	52.8	53.8	54.7	55.2	55.6
Critical (27%)	56.8	55.7	52.9	49.8	50.0	51.7	52.7	53.9	55.3	56.4	57.8	58.5

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.5	57.6	54.1	50.9	50.8	52.1	53.1	54.0	55.3	56.7	57.3	58.2
20%	57.0	56.0	53.3	50.1	50.1	51.4	52.4	53.5	54.7	55.6	56.0	56.6
30%	56.0	54.7	52.8	49.7	49.5	50.9	52.0	52.9	53.9	54.8	55.4	55.9
40%	55.2	54.3	51.7	49.1	49.1	50.7	51.7	52.6	53.5	54.4	54.9	55.2
50%	54.8	53.9	51.5	48.9	48.8	50.4	51.4	52.4	53.2	54.0	54.5	54.8
60%	54.5	53.7	51.3	48.6	48.5	50.1	51.2	52.1	52.8	53.6	54.0	54.4
70%	54.1	53.2	50.8	48.1	48.1	49.8	50.8	51.9	52.5	53.3	53.7	53.9
80%	53.4	52.9	50.5	47.7	47.7	49.0	50.3	51.4	52.0	52.9	53.2	53.4
90%	52.6	52.1	49.7	47.1	46.9	48.6	49.6	50.6	51.4	51.9	52.4	52.4
Long Term												
Full Simulation Period[b]	55.5	54.5	51.8	48.8	48.9	50.4	51.4	52.4	53.4	54.4	55.0	55.3
Water Year Types[c]												
Wet (23%)	51.6	50.9	48.6	48.0	48.1	49.3	50.2	51.3	51.9	52.5	52.9	52.9
Above Normal (24%)	56.3	55.2	51.8	48.7	48.3	49.7	50.7	51.7	52.4	53.4	54.0	54.5
Below Normal (10%)	54.6	53.6	50.9	48.6	48.8	50.1	51.3	52.1	53.0	54.0	54.4	54.7
Dry (16%)	54.5	53.8	51.4	49.0	49.2	50.9	51.9	52.7	53.8	54.7	55.2	55.6
Critical (27%)	56.5	55.5	52.8	49.7	49.9	51.6	52.7	53.9	55.4	57.0	57.8	57.9

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.2	0.3	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.1	-0.1	0.3
20%	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0
30%	-0.3	-0.2	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1
40%	-0.3	-0.2	-0.1	-0.1	0.1	0.0	0.0	-0.1	-0.1	0.0	-0.1	-0.1
50%	-0.2	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	-0.2	0.1	0.0	-0.1	-0.2
60%	-0.1	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.2	0.0	0.0
70%	-0.1	0.0	-0.2	0.0	-0.2	-0.1	0.0	-0.1	0.0	0.2	-0.1	-0.2
80%	-0.2	0.0	-0.1	0.1	-0.1	-0.2	0.0	-0.1	-0.1	0.4	-0.1	-0.1
90%	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.2	0.1	0.2	0.0	0.0
Long Term												
Full Simulation Period[b]	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	0.3	0.0	-0.2
Water Year Types[c]												
Wet (23%)	-0.1	-0.1	-0.1	0.0	0.1	0.0	0.0	-0.2	0.0	0.2	0.0	-0.1
Above Normal (24%)	0.1	0.1	-0.1	-0.1	-0.1	-0.2	0.0	-0.1	0.0	0.3	0.0	0.0
Below Normal (10%)	-0.1	-0.1	0.0	0.2	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0
Dry (16%)	-0.2	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Critical (27%)	-0.4	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.6	0.0	-0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.7.4 Stanislaus River below Goodwin Dam, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	57.3	54.1	50.9	50.8	52.1	53.2	54.1	55.4	56.6	57.4	57.9
20%	57.0	56.0	53.4	50.1	50.2	51.4	52.4	53.5	54.6	55.6	56.0	56.7
30%	56.2	54.9	52.9	49.8	49.5	50.9	52.1	53.0	53.9	54.8	55.4	55.8
40%	55.5	54.6	51.9	49.2	49.1	50.7	51.7	52.7	53.6	54.5	55.0	55.3
50%	55.0	54.0	51.6	49.0	48.8	50.5	51.5	52.6	53.1	54.0	54.7	55.0
60%	54.6	53.8	51.4	48.5	48.5	50.2	51.2	52.1	52.8	53.4	54.1	54.4
70%	54.2	53.3	51.0	48.1	48.3	49.9	50.8	52.0	52.5	53.2	53.8	54.0
80%	53.6	52.9	50.6	47.6	47.8	49.2	50.3	51.6	52.0	52.5	53.3	53.5
90%	52.7	52.1	49.8	47.1	46.9	48.6	49.6	50.7	51.3	51.7	52.4	52.4
Long Term												
Full Simulation Period[b]	55.6	54.6	51.9	48.9	48.9	50.4	51.4	52.5	53.3	54.1	55.0	55.4
Water Year Types[c]												
Wet (23%)	51.7	51.0	48.6	47.9	48.0	49.4	50.2	51.4	51.9	52.3	52.9	53.0
Above Normal (24%)	56.2	55.1	51.9	48.7	48.4	49.9	50.7	51.9	52.4	53.1	54.0	54.5
Below Normal (10%)	54.7	53.6	50.9	48.4	48.8	50.1	51.4	52.2	52.9	53.9	54.4	54.7
Dry (16%)	54.7	53.9	51.6	49.1	49.2	50.9	51.9	52.8	53.8	54.7	55.2	55.6
Critical (27%)	56.8	55.7	52.9	49.8	50.0	51.7	52.7	53.9	55.3	56.4	57.8	58.5

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.8	60.4	54.8	51.2	50.7	51.9	53.2	54.3	56.3	58.3	61.3	64.0
20%	58.8	58.0	53.4	50.3	50.2	51.3	52.5	53.7	55.1	56.6	57.6	58.7
30%	56.7	56.0	52.7	49.6	49.4	50.8	52.2	53.0	54.2	55.6	56.3	56.9
40%	55.7	54.9	52.0	49.1	48.9	50.5	51.9	52.9	53.8	54.7	55.6	55.9
50%	55.2	54.4	51.6	48.9	48.8	50.1	51.4	52.7	53.2	54.5	54.9	55.3
60%	54.8	54.1	51.5	48.4	48.3	49.9	51.0	52.2	52.8	53.5	54.2	54.7
70%	54.2	53.6	50.9	48.0	47.8	49.5	50.6	51.8	52.2	53.2	53.9	54.3
80%	53.6	53.0	50.5	47.3	47.4	48.9	50.0	51.2	52.0	52.6	53.4	53.7
90%	52.5	52.1	49.7	46.2	46.7	48.2	49.1	50.5	50.7	51.5	52.2	52.7
Long Term												
Full Simulation Period[b]	56.6	55.3	52.0	48.8	48.6	50.1	51.3	52.7	53.4	54.8	55.9	56.7
Water Year Types[c]												
Wet (23%)	52.4	51.5	48.9	47.9	47.6	49.1	49.9	51.2	51.5	52.1	52.8	53.1
Above Normal (24%)	57.6	55.7	51.5	48.3	47.9	49.5	50.5	51.9	52.5	53.6	54.7	55.6
Below Normal (10%)	55.8	53.9	50.9	48.3	48.6	49.9	51.3	52.2	53.0	54.3	55.1	55.7
Dry (16%)	55.5	54.9	52.1	49.3	49.3	50.8	52.0	53.0	54.2	55.8	56.4	57.2
Critical (27%)	57.8	56.5	53.0	49.7	49.8	51.3	52.9	54.6	55.6	57.6	59.5	61.0

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**6.0**	**3.1**	**0.7**	0.3	-0.2	-0.2	0.0	0.2	**0.9**	**1.7**	**4.0**	**6.0**
20%	**1.8**	**2.0**	0.0	0.2	0.0	-0.1	0.1	0.3	**0.5**	**1.0**	**1.6**	**2.0**
30%	**0.5**	**1.1**	-0.2	-0.1	-0.1	-0.1	0.1	0.0	0.3	**0.8**	**0.8**	**1.1**
40%	0.2	0.4	0.1	-0.1	-0.1	-0.3	0.1	0.1	0.2	0.2	**0.6**	**0.6**
50%	0.2	0.4	0.1	-0.1	-0.1	-0.4	-0.1	0.1	0.1	**0.5**	0.2	0.3
60%	0.2	0.3	0.0	-0.1	-0.2	-0.3	-0.2	0.0	0.0	0.2	0.1	0.4
70%	0.0	0.4	-0.1	0.0	-0.4	-0.4	-0.2	-0.2	-0.3	0.0	0.2	0.3
80%	0.0	0.1	-0.1	-0.4	-0.4	-0.3	-0.3	-0.3	0.0	0.1	0.2	0.2
90%	-0.2	0.0	-0.1	**-0.9**	-0.2	-0.5	-0.5	-0.2	**-0.6**	-0.2	-0.2	0.3
Long Term												
Full Simulation Period[b]	**1.0**	**0.6**	0.1	-0.1	-0.3	-0.3	-0.1	0.2	0.1	**0.6**	**0.9**	**1.3**
Water Year Types[c]												
Wet (23%)	**0.7**	0.5	0.2	0.0	-0.4	-0.3	-0.3	-0.2	-0.4	-0.2	-0.1	0.1
Above Normal (24%)	**1.4**	**0.6**	-0.4	-0.4	-0.5	-0.5	-0.2	0.0	0.1	0.5	**0.7**	**1.0**
Below Normal (10%)	**1.1**	0.3	0.0	-0.1	-0.2	-0.2	-0.1	0.1	0.1	0.4	**0.7**	**1.0**
Dry (16%)	**0.8**	**1.0**	**0.5**	0.2	0.1	-0.1	0.0	0.2	0.4	**1.1**	**1.2**	**1.5**
Critical (27%)	**1.0**	**0.8**	0.1	-0.1	-0.2	-0.4	0.2	**0.7**	0.3	**1.2**	**1.7**	**2.5**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.8 Stanislaus River at Orange Blossom Bridge Temperature

Table 5C.3.2.8.1. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61.6	58.7	53.5	51.3	52.5	55.8	55.3	57.7	63.9	65.6	65.4	64.5
20%	59.3	56.9	52.6	50.8	51.7	55.1	54.8	56.8	62.5	64.6	64.2	63.3
30%	57.6	56.2	52.3	50.1	51.2	54.6	54.1	56.0	61.6	64.1	63.4	62.0
40%	56.8	55.1	51.5	49.6	50.7	54.0	53.6	55.3	60.7	63.7	62.9	61.7
50%	56.4	54.9	51.1	49.1	50.3	53.7	53.1	55.0	59.3	63.2	62.5	61.2
60%	55.9	54.6	50.7	48.8	50.1	53.2	52.7	54.4	56.6	62.6	62.2	60.7
70%	55.2	54.1	50.5	48.4	49.6	52.1	52.2	53.9	55.9	62.1	61.9	60.4
80%	54.9	53.7	50.2	47.9	49.2	51.0	51.9	53.6	55.3	61.5	61.5	59.9
90%	54.0	52.7	49.8	47.1	48.4	49.7	50.8	52.6	54.4	58.6	59.8	58.2
Long Term												
Full Simulation Period[b]	57.2	55.3	51.4	49.2	50.4	53.2	53.2	55.1	59.0	62.9	62.7	61.5
Water Year Types[c]												
Wet (23%)	53.1	51.8	48.6	48.7	49.3	50.2	51.3	53.2	55.2	59.5	59.4	57.8
Above Normal (24%)	57.9	55.5	51.2	49.0	49.9	52.7	52.4	54.5	56.3	61.9	62.2	61.1
Below Normal (10%)	56.2	54.7	50.7	48.9	50.3	53.4	52.9	54.2	58.8	63.3	62.4	61.0
Dry (16%)	56.3	55.0	51.1	49.5	50.9	54.5	54.0	55.4	61.2	64.2	63.5	62.4
Critical (27%)	58.6	56.2	52.1	49.8	51.6	55.2	55.2	57.4	63.4	65.9	65.5	64.6

Revised Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.9	57.4	53.0	51.1	52.6	56.7	56.1	58.0	63.1	65.2	64.6	63.3
20%	61.5	56.4	52.6	50.6	51.7	55.8	55.4	57.4	62.6	64.3	63.6	62.4
30%	61.0	55.5	52.0	50.0	51.2	55.2	54.9	56.5	62.1	63.8	63.0	61.9
40%	59.5	55.0	51.5	49.6	50.8	54.4	54.2	56.0	61.5	63.5	62.7	61.4
50%	59.0	54.6	51.1	49.1	50.5	53.7	53.5	55.5	59.2	63.1	62.4	60.9
60%	57.9	54.3	50.8	49.0	50.0	53.3	53.2	54.8	56.4	62.6	62.1	60.6
70%	56.8	54.0	50.6	48.4	49.8	52.5	52.6	54.3	55.8	62.1	61.8	60.0
80%	56.4	53.5	50.3	48.0	49.3	51.6	51.9	53.8	55.1	61.5	61.5	59.5
90%	55.7	52.8	49.9	47.5	48.4	50.3	51.2	52.9	53.9	58.6	60.4	57.9
Long Term												
Full Simulation Period[b]	59.2	55.1	51.4	49.3	50.5	53.8	53.8	55.5	58.9	62.4	62.3	60.9
Water Year Types[c]												
Wet (23%)	54.9	51.5	48.5	48.7	49.1	51.1	51.6	53.4	54.8	59.2	59.1	57.3
Above Normal (24%)	59.8	55.3	51.4	49.3	50.3	53.2	52.9	54.9	56.1	61.7	62.0	60.7
Below Normal (10%)	58.0	54.2	50.6	48.9	50.1	53.1	53.2	54.7	59.4	63.3	62.2	60.7
Dry (16%)	58.4	54.6	51.0	49.4	50.7	54.9	54.7	55.9	61.7	64.0	63.0	61.6
Critical (27%)	60.6	56.0	52.1	49.8	51.9	56.4	56.0	57.8	63.0	64.7	64.8	64.0

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**1.3**	**-1.3**	-0.5	-0.2	0.1	**1.0**	**0.9**	0.3	**-0.8**	-0.3	**-0.8**	**-1.2**
20%	**2.1**	**-0.5**	0.0	-0.1	0.0	**0.8**	**0.6**	**0.5**	0.1	-0.3	**-0.6**	**-0.8**
30%	**3.5**	**-0.6**	-0.4	-0.1	0.0	**0.6**	**0.8**	**0.5**	**0.5**	-0.3	-0.4	-0.2
40%	**2.7**	0.0	0.1	0.0	0.1	0.4	**0.5**	**0.7**	**0.8**	-0.2	-0.2	-0.3
50%	**2.6**	-0.3	0.0	0.0	0.1	0.0	0.4	**0.5**	0.0	-0.1	-0.1	-0.3
60%	**2.1**	-0.3	0.1	0.2	0.0	0.0	**0.5**	0.4	-0.3	-0.1	-0.1	-0.2
70%	**1.6**	-0.1	0.1	0.1	0.1	0.4	0.4	0.4	-0.1	0.0	0.0	-0.4
80%	**1.5**	-0.1	0.1	0.2	0.1	**0.7**	0.1	0.2	-0.2	-0.1	0.0	-0.4
90%	**1.7**	0.1	0.1	0.4	0.1	**0.7**	0.4	0.3	**-0.5**	0.0	**0.5**	-0.2
Long Term												
Full Simulation Period[b]	**1.9**	-0.3	0.0	0.1	0.1	**0.7**	**0.6**	0.4	-0.1	-0.5	-0.4	**-0.5**
Water Year Types[c]												
Wet (23%)	**1.8**	-0.3	-0.1	0.0	-0.2	**0.9**	0.3	0.2	-0.4	-0.3	-0.3	**-0.5**
Above Normal (24%)	**1.9**	-0.1	0.2	0.3	0.4	0.5	**0.5**	0.3	-0.2	-0.2	-0.2	-0.4
Below Normal (10%)	**1.8**	-0.5	-0.1	0.0	-0.2	-0.3	0.4	0.5	**0.6**	0.0	-0.1	-0.4
Dry (16%)	**2.1**	-0.4	-0.1	-0.1	-0.2	0.3	**0.8**	**0.5**	0.5	-0.2	**-0.6**	**-0.7**
Critical (27%)	**2.0**	-0.2	0.0	0.0	0.2	**1.2**	**0.8**	0.3	-0.4	**-1.2**	**-0.7**	**-0.6**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.8.2 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.9	57.4	53.0	51.1	52.6	56.7	56.1	58.0	63.1	65.2	64.6	63.3
20%	61.5	56.4	52.6	50.6	51.7	55.8	55.4	57.4	62.6	64.3	63.6	62.4
30%	61.0	55.5	52.0	50.0	51.2	55.2	54.9	56.5	62.1	63.8	63.0	61.9
40%	59.5	55.0	51.5	49.6	50.8	54.4	54.2	56.0	61.5	63.5	62.7	61.4
50%	59.0	54.6	51.1	49.1	50.5	53.7	53.5	55.5	59.2	63.1	62.4	60.9
60%	57.9	54.3	50.8	49.0	50.0	53.3	53.2	54.8	56.4	62.6	62.1	60.6
70%	56.8	54.0	50.6	48.4	49.8	52.5	52.6	54.3	55.8	62.1	61.8	60.0
80%	56.4	53.5	50.3	48.0	49.3	51.6	51.9	53.8	55.1	61.5	61.5	59.5
90%	55.7	52.8	49.9	47.5	48.4	50.3	51.2	52.9	53.9	58.6	60.4	57.9
Long Term												
Full Simulation Period[b]	59.2	55.1	51.4	49.3	50.5	53.8	53.8	55.5	58.9	62.4	62.3	60.9
Water Year Types[c]												
Wet (23%)	54.9	51.5	48.5	48.7	49.1	51.1	51.6	53.4	54.8	59.2	59.1	57.3
Above Normal (24%)	59.8	55.3	51.4	49.3	50.3	53.2	52.9	54.9	56.1	61.7	62.0	60.7
Below Normal (10%)	58.0	54.2	50.6	48.9	50.1	53.1	53.2	54.7	59.4	63.3	62.2	60.7
Dry (16%)	58.4	54.6	51.0	49.4	50.7	54.9	54.7	55.9	61.7	64.0	63.0	61.6
Critical (27%)	60.6	56.0	52.1	49.8	51.9	56.4	56.0	57.8	63.0	64.7	64.8	64.0

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61.6	58.7	53.5	51.3	52.5	55.8	55.3	57.7	63.9	65.6	65.4	64.5
20%	59.3	56.9	52.6	50.8	51.7	55.1	54.8	56.8	62.5	64.6	64.2	63.3
30%	57.6	56.2	52.3	50.1	51.2	54.6	54.1	56.0	61.6	64.1	63.4	62.0
40%	56.8	55.1	51.5	49.6	50.7	54.0	53.6	55.3	60.7	63.7	62.9	61.7
50%	56.4	54.9	51.1	49.1	50.3	53.7	53.1	55.0	59.3	63.2	62.5	61.2
60%	55.9	54.6	50.7	48.8	50.1	53.2	52.7	54.4	56.6	62.6	62.2	60.7
70%	55.2	54.1	50.5	48.4	49.6	52.1	52.2	53.9	55.9	62.1	61.9	60.4
80%	54.9	53.7	50.2	47.9	49.2	51.0	51.9	53.6	55.3	61.5	61.5	59.9
90%	54.0	52.7	49.8	47.1	48.4	49.7	50.8	52.6	54.4	58.6	59.8	58.2
Long Term												
Full Simulation Period[b]	57.2	55.3	51.4	49.2	50.4	53.2	53.2	55.1	59.0	62.9	62.7	61.5
Water Year Types[c]												
Wet (23%)	53.1	51.8	48.6	48.7	49.3	50.2	51.3	53.2	55.2	59.5	59.4	57.8
Above Normal (24%)	57.9	55.5	51.2	49.0	49.9	52.7	52.4	54.5	56.3	61.9	62.2	61.1
Below Normal (10%)	56.2	54.7	50.7	48.9	50.3	53.4	52.9	54.2	58.8	63.3	62.4	61.0
Dry (16%)	56.3	55.0	51.1	49.5	50.9	54.5	54.0	55.4	61.2	64.2	63.5	62.4
Critical (27%)	58.6	56.2	52.1	49.8	51.6	55.2	55.2	57.4	63.4	65.9	65.5	64.6

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-1.3**	**1.3**	0.5	0.2	-0.1	**-1.0**	**-0.9**	-0.3	**0.8**	0.3	**0.8**	**1.2**
20%	**-2.1**	**0.5**	0.0	0.1	0.0	**-0.8**	**-0.6**	**-0.5**	-0.1	0.3	**0.6**	**0.8**
30%	**-3.5**	**0.6**	0.4	0.1	0.0	**-0.6**	**-0.8**	**-0.5**	**-0.5**	0.3	0.4	0.2
40%	**-2.7**	0.0	-0.1	0.0	-0.1	-0.4	**-0.5**	**-0.7**	**-0.8**	0.2	0.2	0.3
50%	**-2.6**	0.3	0.0	0.0	-0.1	0.0	-0.4	**-0.5**	0.0	0.1	0.1	0.3
60%	**-2.1**	0.3	-0.1	-0.2	0.0	0.0	**-0.5**	-0.4	0.3	0.1	0.1	0.2
70%	**-1.6**	0.1	-0.1	-0.1	-0.1	-0.4	-0.4	-0.4	0.1	0.0	0.0	0.4
80%	**-1.5**	0.1	-0.1	-0.2	-0.1	**-0.7**	-0.1	-0.2	0.2	0.1	0.0	0.4
90%	**-1.7**	-0.1	-0.1	-0.4	-0.1	**-0.7**	-0.4	-0.3	**0.5**	0.0	**-0.5**	0.2
Long Term												
Full Simulation Period[b]	**-1.9**	0.3	0.0	-0.1	-0.1	**-0.7**	**-0.6**	-0.4	0.1	0.5	0.4	**0.5**
Water Year Types[c]												
Wet (23%)	**-1.8**	0.3	0.1	0.0	0.2	**-0.9**	-0.3	-0.2	0.4	0.3	0.3	**0.5**
Above Normal (24%)	**-1.9**	0.1	-0.2	-0.3	-0.4	-0.5	**-0.5**	-0.3	0.2	0.2	0.2	0.4
Below Normal (10%)	**-1.8**	0.5	0.1	0.0	0.2	0.3	-0.4	-0.5	**-0.6**	0.0	0.1	0.4
Dry (16%)	**-2.1**	0.4	0.1	0.1	0.2	-0.3	**-0.8**	**-0.5**	-0.5	0.2	**0.6**	**0.7**
Critical (27%)	**-2.0**	0.2	0.0	0.0	-0.2	**-1.2**	**-0.8**	-0.3	0.4	**1.2**	**0.7**	**0.6**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.8.3 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Revised Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	62.9	57.4	53.0	51.1	52.6	56.7	56.1	58.0	63.1	65.2	64.6	63.3
20%	61.5	56.4	52.6	50.6	51.7	55.8	55.4	57.4	62.6	64.3	63.6	62.4
30%	61.0	55.5	52.0	50.0	51.2	55.2	54.9	56.5	62.1	63.8	63.0	61.9
40%	59.5	55.0	51.5	49.6	50.8	54.4	54.2	56.0	61.5	63.5	62.7	61.4
50%	59.0	54.6	51.1	49.1	50.5	53.7	53.5	55.5	59.2	63.1	62.4	60.9
60%	57.9	54.3	50.8	49.0	50.0	53.3	53.2	54.8	56.4	62.6	62.1	60.6
70%	56.8	54.0	50.6	48.4	49.8	52.5	52.6	54.3	55.8	62.1	61.8	60.0
80%	56.4	53.5	50.3	48.0	49.3	51.6	51.9	53.8	55.1	61.5	61.5	59.5
90%	55.7	52.8	49.9	47.5	48.4	50.3	51.2	52.9	53.9	58.6	60.4	57.9
Long Term												
Full Simulation Period[b]	59.2	55.1	51.4	49.3	50.5	53.8	53.8	55.5	58.9	62.4	62.3	60.9
Water Year Types[c]												
Wet (23%)	54.9	51.5	48.5	48.7	49.1	51.1	51.6	53.4	54.8	59.2	59.1	57.3
Above Normal (24%)	59.8	55.3	51.4	49.3	50.3	53.2	52.9	54.9	56.1	61.7	62.0	60.7
Below Normal (10%)	58.0	54.2	50.6	48.9	50.1	53.1	53.2	54.7	59.4	63.3	62.2	60.7
Dry (16%)	58.4	54.6	51.0	49.4	50.7	54.9	54.7	55.9	61.7	64.0	63.0	61.6
Critical (27%)	60.6	56.0	52.1	49.8	51.9	56.4	56.0	57.8	63.0	64.7	64.8	64.0

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	61.3	57.6	53.2	51.0	52.9	55.8	55.5	57.8	63.9	65.8	64.8	63.5
20%	60.0	56.6	52.7	50.7	51.9	55.2	54.8	56.7	63.2	64.8	63.8	62.6
30%	59.2	55.4	52.2	50.2	51.3	54.6	54.3	56.2	62.6	64.2	63.1	62.1
40%	58.3	54.8	51.6	49.5	50.9	54.1	53.8	55.6	62.1	63.9	62.8	61.4
50%	57.9	54.5	51.1	49.2	50.5	53.7	53.2	55.2	61.7	63.5	62.4	61.1
60%	57.4	54.1	50.9	48.8	50.1	53.4	52.8	54.7	61.3	63.3	62.1	60.8
70%	56.8	53.9	50.5	48.5	49.7	52.6	52.5	54.4	60.8	63.1	61.9	60.3
80%	56.4	53.5	50.2	48.2	49.4	51.6	51.8	53.8	60.3	62.7	61.6	60.0
90%	55.4	52.9	49.9	47.5	48.5	50.5	51.1	53.1	59.0	61.4	60.4	55.8
Long Term												
Full Simulation Period[b]	58.3	55.0	51.4	49.3	50.6	53.4	53.4	55.3	61.3	63.3	62.4	60.8
Water Year Types[c]												
Wet (23%)	54.3	51.4	48.5	48.8	49.3	51.2	51.6	53.5	58.0	59.6	59.0	57.3
Above Normal (24%)	58.8	55.4	51.4	49.3	50.2	52.8	52.5	54.6	61.2	63.1	62.2	60.8
Below Normal (10%)	57.5	54.2	50.6	48.8	50.2	53.2	53.1	54.8	61.3	63.5	62.2	60.9
Dry (16%)	57.6	54.4	51.0	49.4	51.0	54.5	54.2	56.0	62.5	64.2	62.9	61.6
Critical (27%)	59.4	55.8	52.1	49.8	52.0	55.4	55.3	57.4	63.6	65.9	65.1	63.4

Alternative 3 minus Revised Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	**-1.6**	0.2	0.2	-0.1	0.3	**-1.0**	**-0.7**	-0.2	**0.9**	**0.6**	0.2	0.1
20%	**-1.5**	0.1	0.1	0.1	0.3	**-0.6**	**-0.6**	**-0.7**	**0.5**	**0.5**	0.2	0.2
30%	**-1.8**	-0.2	0.3	0.1	0.1	**-0.6**	**-0.6**	-0.2	0.5	0.4	0.1	0.2
40%	**-1.3**	-0.2	0.0	-0.1	0.1	-0.3	-0.4	-0.4	**0.6**	0.4	0.1	0.0
50%	**-1.1**	-0.1	-0.1	0.0	0.0	0.0	-0.2	-0.3	**2.5**	0.4	0.0	0.1
60%	**-0.5**	-0.2	0.1	-0.1	0.1	0.1	-0.4	-0.1	**4.9**	**0.7**	0.0	0.2
70%	0.0	-0.2	-0.1	0.1	-0.1	0.1	-0.1	0.1	**5.0**	**1.0**	0.1	0.3
80%	0.0	0.0	-0.1	0.1	0.1	0.0	-0.1	0.0	**5.2**	**1.3**	0.1	0.5
90%	-0.3	0.1	0.0	0.0	0.0	0.2	-0.1	0.2	**5.1**	**2.8**	0.1	**-2.1**
Long Term												
Full Simulation Period[b]	**-0.9**	-0.1	0.0	0.0	0.1	-0.4	-0.4	-0.1	**2.4**	**0.8**	0.1	-0.1
Water Year Types[c]												
Wet (23%)	**-0.5**	-0.1	0.0	0.1	0.2	0.1	0.0	0.1	**3.1**	0.4	-0.1	0.0
Above Normal (24%)	**-1.0**	0.0	0.1	0.0	0.0	-0.3	-0.3	-0.3	**5.1**	**1.5**	0.1	0.2
Below Normal (10%)	-0.5	0.0	0.0	0.0	0.1	0.1	-0.1	0.1	**1.9**	0.2	0.0	0.2
Dry (16%)	**-0.8**	-0.1	0.0	0.0	0.2	-0.3	**-0.6**	0.0	**0.8**	0.3	0.0	0.0
Critical (27%)	**-1.2**	-0.2	0.0	0.0	0.1	**-1.0**	**-0.7**	-0.4	**0.6**	**1.2**	0.3	**-0.5**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.8.4 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.9	57.4	53.0	51.1	52.6	56.7	56.1	58.0	63.1	65.2	64.6	63.3
20%	61.5	56.4	52.6	50.6	51.7	55.8	55.4	57.4	62.6	64.3	63.6	62.4
30%	61.0	55.5	52.0	50.0	51.2	55.2	54.9	56.5	62.1	63.8	63.0	61.9
40%	59.5	55.0	51.5	49.6	50.8	54.4	54.2	56.0	61.5	63.5	62.7	61.4
50%	59.0	54.6	51.1	49.1	50.5	53.7	53.5	55.5	59.2	63.1	62.4	60.9
60%	57.9	54.3	50.8	49.0	50.0	53.3	53.2	54.8	56.4	62.6	62.1	60.6
70%	56.8	54.0	50.6	48.4	49.8	52.5	52.6	54.3	55.8	62.1	61.8	60.0
80%	56.4	53.5	50.3	48.0	49.3	51.6	51.9	53.8	55.1	61.5	61.5	59.5
90%	55.7	52.8	49.9	47.5	48.4	50.3	51.2	52.9	53.9	58.6	60.4	57.9
Long Term												
Full Simulation Period[b]	59.2	55.1	51.4	49.3	50.5	53.8	53.8	55.5	58.9	62.4	62.3	60.9
Water Year Types[c]												
Wet (23%)	54.9	51.5	48.5	48.7	49.1	51.1	51.6	53.4	54.8	59.2	59.1	57.3
Above Normal (24%)	59.8	55.3	51.4	49.3	50.3	53.2	52.9	54.9	56.1	61.7	62.0	60.7
Below Normal (10%)	58.0	54.2	50.6	48.9	50.1	53.1	53.2	54.7	59.4	63.3	62.2	60.7
Dry (16%)	58.4	54.6	51.0	49.4	50.7	54.9	54.7	55.9	61.7	64.0	63.0	61.6
Critical (27%)	60.6	56.0	52.1	49.8	51.9	56.4	56.0	57.8	63.0	64.7	64.8	64.0

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65.0	59.6	53.4	51.3	52.5	55.7	54.6	56.3	64.0	66.4	67.0	67.3
20%	60.0	58.0	52.6	50.6	51.7	55.0	54.1	55.8	62.7	65.1	65.0	64.2
30%	58.1	56.5	52.2	49.9	51.2	54.5	53.7	55.4	61.8	64.3	63.7	62.7
40%	57.1	55.3	51.6	49.6	50.7	54.0	53.5	55.0	61.0	63.7	63.0	61.8
50%	56.5	55.0	51.2	49.1	50.3	53.6	53.0	54.7	59.2	63.2	62.7	61.3
60%	55.9	54.6	50.8	48.9	50.1	53.3	52.6	54.3	57.0	62.7	62.3	60.9
70%	55.4	54.2	50.6	48.4	49.6	52.0	52.2	53.7	55.9	62.2	61.9	60.6
80%	55.0	53.7	50.3	47.9	49.2	51.0	51.8	53.4	55.3	61.6	61.5	60.0
90%	54.0	53.1	49.8	47.2	48.3	49.6	50.7	52.6	54.4	58.9	60.1	58.1
Long Term												
Full Simulation Period[b]	57.8	55.7	51.5	49.2	50.4	53.1	52.9	54.8	59.1	63.3	63.2	61.9
Water Year Types[c]												
Wet (23%)	53.6	52.0	48.7	48.7	49.3	50.3	51.3	53.1	55.3	60.2	60.0	58.0
Above Normal (24%)	58.6	56.0	51.2	48.9	49.8	52.6	52.4	54.0	56.3	62.0	62.4	61.4
Below Normal (10%)	57.0	54.6	50.6	48.8	50.2	53.3	52.9	54.3	59.1	63.5	62.6	61.5
Dry (16%)	56.8	55.4	51.4	49.6	51.0	54.5	53.5	54.9	61.5	64.6	63.9	62.7
Critical (27%)	59.0	56.6	52.2	49.8	51.6	55.1	54.5	57.0	63.7	66.2	66.5	65.6

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.1**	**2.2**	0.4	0.3	-0.1	**-1.0**	**-1.5**	**-1.6**	**1.0**	**1.2**	**2.4**	**3.9**
20%	**-1.5**	**1.6**	0.0	-0.1	0.0	**-0.8**	**-1.3**	**-1.6**	0.1	**0.9**	**1.4**	**1.7**
30%	**-2.9**	**0.9**	0.2	-0.1	0.0	**-0.7**	**-1.3**	**-1.1**	-0.4	0.5	**0.7**	**0.9**
40%	**-2.4**	0.2	0.1	-0.1	-0.1	-0.5	**-0.7**	**-1.0**	-0.5	0.2	0.3	0.4
50%	**-2.5**	0.4	0.0	-0.1	-0.2	-0.1	-0.4	**-0.8**	0.0	0.1	0.3	0.4
60%	**-2.0**	0.4	0.0	-0.1	0.0	0.0	**-0.5**	-0.5	**0.7**	0.2	0.2	0.3
70%	**-1.4**	0.2	0.0	0.0	-0.1	**-0.5**	-0.3	**-0.6**	0.1	0.1	0.1	**0.5**
80%	**-1.4**	0.2	0.0	-0.1	-0.1	**-0.6**	-0.1	-0.4	0.3	0.2	0.0	0.4
90%	**-1.7**	0.2	-0.1	-0.3	-0.2	**-0.7**	**-0.5**	-0.3	**0.5**	0.3	-0.3	0.1
Long Term												
Full Simulation Period[b]	**-1.4**	**0.6**	0.1	0.0	-0.1	**-0.7**	**-0.8**	**-0.7**	0.3	**0.8**	**0.9**	**1.0**
Water Year Types[c]												
Wet (23%)	**-1.3**	0.5	0.2	0.1	0.2	**-0.8**	-0.3	-0.4	0.5	**1.0**	**0.9**	**0.7**
Above Normal (24%)	**-1.2**	**0.6**	-0.2	-0.3	-0.5	**-0.5**	-0.4	**-0.9**	0.1	0.3	0.4	**0.7**
Below Normal (10%)	**-1.0**	0.4	0.0	-0.1	0.1	0.2	-0.3	-0.4	-0.3	0.2	0.4	**0.8**
Dry (16%)	**-1.6**	**0.8**	0.4	0.2	0.2	-0.4	**-1.3**	**-1.0**	-0.2	**0.6**	**0.9**	**1.0**
Critical (27%)	**-1.7**	**0.6**	0.1	0.0	-0.2	**-1.3**	**-1.5**	**-0.7**	**0.7**	**1.5**	**1.7**	**1.7**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.9 Stanislaus River at Mouth Temperature

Table 5C.3.2.9.1 Stanislaus River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.3	58.6	51.9	51.4	55.1	60.5	62.1	65.5	72.3	76.5	75.2	71.8
20%	62.9	57.4	51.6	50.8	54.3	59.7	61.1	64.6	71.7	75.5	74.4	70.7
30%	61.7	56.8	51.0	50.2	53.8	59.1	60.3	63.6	70.8	74.9	73.8	70.4
40%	60.6	56.5	50.7	49.7	53.2	58.7	58.8	62.1	70.2	74.3	73.4	69.8
50%	60.1	55.7	50.3	49.4	52.9	57.9	57.9	61.0	67.8	73.8	73.0	69.5
60%	59.6	55.2	49.9	49.0	52.6	57.0	57.1	60.7	65.3	73.1	72.6	69.0
70%	59.0	55.0	49.7	48.8	52.1	55.7	56.2	59.8	63.8	72.9	72.4	68.6
80%	58.7	54.7	49.3	48.5	51.5	53.6	55.7	58.7	62.7	71.7	71.9	68.1
90%	58.2	54.2	49.0	47.9	50.6	52.1	54.8	58.0	61.7	69.3	70.7	66.9
Long Term												
Full Simulation Period[b]	60.8	56.0	50.4	49.6	52.9	57.1	58.3	61.6	67.3	73.1	72.6	69.0
Water Year Types[c]												
Wet (23%)	56.7	52.7	48.1	49.6	51.8	53.0	55.4	58.9	63.1	69.7	69.6	65.7
Above Normal (24%)	61.1	56.0	50.4	49.5	52.5	56.8	57.2	61.2	64.2	72.1	72.6	69.2
Below Normal (10%)	59.7	55.5	49.9	49.3	52.5	57.3	57.4	59.9	67.6	73.9	72.6	69.0
Dry (16%)	60.3	56.0	49.9	49.7	53.3	58.6	59.6	62.1	70.3	75.0	73.4	70.0
Critical (27%)	61.9	56.6	50.6	49.6	54.2	59.9	61.3	64.8	72.0	75.7	74.6	71.1

Revised Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.8	58.5	52.0	51.4	54.8	60.8	63.5	66.4	72.5	76.0	74.9	71.4
20%	65.8	57.8	51.4	50.7	54.1	60.1	62.8	65.6	72.2	75.4	74.2	70.4
30%	64.7	57.0	51.0	50.2	53.8	59.3	61.6	64.6	71.1	74.8	73.6	70.1
40%	64.1	56.5	50.7	49.7	53.2	58.9	60.2	63.7	70.6	74.3	73.3	69.7
50%	63.5	55.8	50.2	49.2	52.6	57.5	59.5	62.6	68.3	73.9	72.9	69.4
60%	62.5	55.5	50.0	49.0	52.3	57.1	57.8	61.7	65.2	73.2	72.5	68.8
70%	61.9	55.2	49.6	48.8	51.9	56.5	56.8	60.0	63.8	72.7	72.3	68.5
80%	61.2	54.8	49.4	48.5	51.0	55.8	56.1	59.1	62.4	71.8	72.0	68.0
90%	60.2	54.3	48.9	47.9	50.3	53.9	55.4	58.6	61.3	69.0	71.0	66.9
Long Term												
Full Simulation Period[b]	63.4	56.2	50.4	49.5	52.7	57.6	59.3	62.5	67.2	72.9	72.3	68.6
Water Year Types[c]												
Wet (23%)	59.2	52.8	48.0	49.6	51.0	54.5	55.8	59.3	61.8	68.8	68.9	64.7
Above Normal (24%)	63.5	56.1	50.4	49.6	52.5	57.2	58.0	61.9	64.1	72.0	72.6	69.0
Below Normal (10%)	62.4	55.5	49.9	49.2	52.1	57.1	58.3	60.9	68.2	74.0	72.6	68.9
Dry (16%)	63.1	56.1	49.9	49.6	53.1	58.6	61.3	63.3	70.8	75.1	73.2	69.7
Critical (27%)	64.6	56.9	50.6	49.5	54.2	60.3	62.8	65.9	72.1	75.4	74.3	70.8

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.5**	-0.1	0.1	0.0	-0.2	0.3	**1.4**	**0.9**	0.2	**-0.5**	-0.4	-0.5
20%	**2.8**	0.4	-0.1	0.0	-0.2	0.5	**1.7**	**1.0**	**0.5**	0.0	-0.2	-0.3
30%	**3.0**	0.1	-0.1	0.0	0.0	0.2	**1.4**	**1.1**	0.4	-0.1	-0.2	-0.3
40%	**3.5**	0.0	0.0	0.0	0.0	0.2	**1.5**	**1.5**	0.4	0.1	-0.2	-0.2
50%	**3.4**	0.2	0.0	-0.2	-0.4	-0.4	**1.6**	**1.7**	**0.5**	0.0	-0.1	-0.1
60%	**2.9**	0.2	0.1	0.0	-0.3	0.2	**0.7**	**1.0**	-0.1	0.1	0.0	-0.2
70%	**2.8**	0.2	0.0	-0.1	-0.3	**0.9**	**0.5**	0.2	0.0	-0.1	0.0	-0.1
80%	**2.5**	0.1	0.1	0.0	**-0.5**	**2.2**	0.4	0.4	-0.3	0.1	0.1	-0.1
90%	**2.0**	0.1	-0.2	0.1	-0.3	**1.8**	**0.6**	**0.6**	-0.4	-0.4	0.3	0.0
Long Term												
Full Simulation Period[b]	**2.6**	0.1	0.0	0.0	-0.2	**0.5**	**1.0**	**0.9**	-0.2	-0.3	-0.3	-0.4
Water Year Types[c]												
Wet (23%)	**2.5**	0.1	0.0	-0.1	**-0.7**	**1.5**	0.4	0.5	**-1.3**	**-0.9**	**-0.7**	**-1.0**
Above Normal (24%)	**2.4**	0.1	0.0	0.1	0.0	0.4	**0.8**	**0.6**	-0.1	-0.1	0.0	-0.1
Below Normal (10%)	**2.6**	-0.1	0.0	-0.1	-0.4	-0.2	**0.9**	**1.0**	**0.6**	0.1	0.0	-0.2
Dry (16%)	**2.8**	0.1	0.0	-0.1	-0.2	0.0	**1.7**	**1.2**	0.5	0.0	-0.2	-0.2
Critical (27%)	**2.7**	0.2	0.0	0.0	0.0	0.4	**1.5**	**1.2**	0.2	-0.3	-0.3	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.9.2 Stanislaus River at Mouth, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.8	58.5	52.0	51.4	54.8	60.8	63.5	66.4	72.5	76.0	74.9	71.4
20%	65.8	57.8	51.4	50.7	54.1	60.1	62.8	65.6	72.2	75.4	74.2	70.4
30%	64.7	57.0	51.0	50.2	53.8	59.3	61.6	64.6	71.1	74.8	73.6	70.1
40%	64.1	56.5	50.7	49.7	53.2	58.9	60.2	63.7	70.6	74.3	73.3	69.7
50%	63.5	55.8	50.2	49.2	52.6	57.5	59.5	62.6	68.3	73.9	72.9	69.4
60%	62.5	55.5	50.0	49.0	52.3	57.1	57.8	61.7	65.2	73.2	72.5	68.8
70%	61.9	55.2	49.6	48.8	51.9	56.5	56.8	60.0	63.8	72.7	72.3	68.5
80%	61.2	54.8	49.4	48.5	51.0	55.8	56.1	59.1	62.4	71.8	72.0	68.0
90%	60.2	54.3	48.9	47.9	50.3	53.9	55.4	58.6	61.3	69.0	71.0	66.9
Long Term												
Full Simulation Period[b]	63.4	56.2	50.4	49.5	52.7	57.6	59.3	62.5	67.2	72.9	72.3	68.6
Water Year Types[c]												
Wet (23%)	59.2	52.8	48.0	49.6	51.0	54.5	55.8	59.3	61.8	68.8	68.9	64.7
Above Normal (24%)	63.5	56.1	50.4	49.6	52.5	57.2	58.0	61.9	64.1	72.0	72.6	69.0
Below Normal (10%)	62.4	55.5	49.9	49.2	52.1	57.1	58.3	60.9	68.2	74.0	72.6	68.9
Dry (16%)	63.1	56.1	49.9	49.6	53.1	58.6	61.3	63.3	70.8	75.1	73.2	69.7
Critical (27%)	64.6	56.9	50.6	49.5	54.2	60.3	62.8	65.9	72.1	75.4	74.3	70.8

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.3	58.6	51.9	51.4	55.1	60.5	62.1	65.5	72.3	76.5	75.2	71.8
20%	62.9	57.4	51.6	50.8	54.3	59.7	61.1	64.6	71.7	75.5	74.4	70.7
30%	61.7	56.8	51.0	50.2	53.8	59.1	60.3	63.6	70.8	74.9	73.8	70.4
40%	60.6	56.5	50.7	49.7	53.2	58.7	58.8	62.1	70.2	74.3	73.4	69.8
50%	60.1	55.7	50.3	49.4	52.9	57.9	57.9	61.0	67.8	73.8	73.0	69.5
60%	59.6	55.2	49.9	49.0	52.6	57.0	57.1	60.7	65.3	73.1	72.6	69.0
70%	59.0	55.0	49.7	48.8	52.1	55.7	56.2	59.8	63.8	72.9	72.4	68.6
80%	58.7	54.7	49.3	48.5	51.5	53.6	55.7	58.7	62.7	71.7	71.9	68.1
90%	58.2	54.2	49.0	47.9	50.6	52.1	54.8	58.0	61.7	69.3	70.7	66.9
Long Term												
Full Simulation Period[b]	60.8	56.0	50.4	49.6	52.9	57.1	58.3	61.6	67.3	73.1	72.6	69.0
Water Year Types[c]												
Wet (23%)	56.7	52.7	48.1	49.6	51.8	53.0	55.4	58.9	63.1	69.7	69.6	65.7
Above Normal (24%)	61.1	56.0	50.4	49.5	52.5	56.8	57.2	61.2	64.2	72.1	72.6	69.2
Below Normal (10%)	59.7	55.5	49.9	49.3	52.5	57.3	57.4	59.9	67.6	73.9	72.6	69.0
Dry (16%)	60.3	56.0	49.9	49.7	53.3	58.6	59.6	62.1	70.3	75.0	73.4	70.0
Critical (27%)	61.9	56.6	50.6	49.6	54.2	59.9	61.3	64.8	72.0	75.7	74.6	71.1

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-2.5**	0.1	-0.1	0.0	0.2	-0.3	**-1.4**	**-0.9**	-0.2	**0.5**	0.4	0.5
20%	**-2.8**	-0.4	0.1	0.0	0.2	-0.5	**-1.7**	**-1.0**	**-0.5**	0.0	0.2	0.3
30%	**-3.0**	-0.1	0.1	0.0	0.0	-0.2	**-1.4**	**-1.1**	-0.4	0.1	0.2	0.3
40%	**-3.5**	0.0	0.0	0.0	0.0	-0.2	**-1.5**	**-1.5**	-0.4	-0.1	0.2	0.2
50%	**-3.4**	-0.2	0.0	0.2	0.4	0.4	**-1.6**	**-1.7**	**-0.5**	0.0	0.1	0.1
60%	**-2.9**	-0.2	-0.1	0.0	0.3	-0.2	**-0.7**	**-1.0**	0.1	-0.1	0.0	0.2
70%	**-2.8**	-0.2	0.0	0.1	0.3	**-0.9**	**-0.5**	-0.2	0.0	0.1	0.0	0.1
80%	**-2.5**	-0.1	-0.1	0.0	**0.5**	**-2.2**	-0.4	-0.4	0.3	-0.1	-0.1	0.1
90%	**-2.0**	-0.1	0.2	-0.1	0.3	**-1.8**	**-0.6**	**-0.6**	0.4	0.4	-0.3	0.0
Long Term												
Full Simulation Period[b]	**-2.6**	-0.1	0.0	0.0	0.2	**-0.5**	**-1.0**	**-0.9**	0.2	0.3	0.3	0.4
Water Year Types[c]												
Wet (23%)	**-2.5**	-0.1	0.0	0.1	**0.7**	**-1.5**	-0.4	-0.5	**1.3**	**0.9**	**0.7**	**1.0**
Above Normal (24%)	**-2.4**	-0.1	0.0	-0.1	0.0	-0.4	**-0.8**	**-0.6**	0.1	0.1	0.0	0.1
Below Normal (10%)	**-2.6**	0.1	0.0	0.1	0.4	0.2	**-0.9**	**-1.0**	**-0.6**	-0.1	0.0	0.2
Dry (16%)	**-2.8**	-0.1	0.0	0.1	0.2	0.0	**-1.7**	**-1.2**	-0.5	0.0	0.2	0.2
Critical (27%)	**-2.7**	-0.2	0.0	0.0	0.0	-0.4	**-1.5**	**-1.2**	-0.2	0.3	0.3	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.9.3 Stanislaus River at Mouth, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.8	58.5	52.0	51.4	54.8	60.8	63.5	66.4	72.5	76.0	74.9	71.4
20%	65.8	57.8	51.4	50.7	54.1	60.1	62.8	65.6	72.2	75.4	74.2	70.4
30%	64.7	57.0	51.0	50.2	53.8	59.3	61.6	64.6	71.1	74.8	73.6	70.1
40%	64.1	56.5	50.7	49.7	53.2	58.9	60.2	63.7	70.6	74.3	73.3	69.7
50%	63.5	55.8	50.2	49.2	52.6	57.5	59.5	62.6	68.3	73.9	72.9	69.4
60%	62.5	55.5	50.0	49.0	52.3	57.1	57.8	61.7	65.2	73.2	72.5	68.8
70%	61.9	55.2	49.6	48.8	51.9	56.5	56.8	60.0	63.8	72.7	72.3	68.5
80%	61.2	54.8	49.4	48.5	51.0	55.8	56.1	59.1	62.4	71.8	72.0	68.0
90%	60.2	54.3	48.9	47.9	50.3	53.9	55.4	58.6	61.3	69.0	71.0	66.9
Long Term												
Full Simulation Period[b]	63.4	56.2	50.4	49.5	52.7	57.6	59.3	62.5	67.2	72.9	72.3	68.6
Water Year Types[c]												
Wet (23%)	59.2	52.8	48.0	49.6	51.0	54.5	55.8	59.3	61.8	68.8	68.9	64.7
Above Normal (24%)	63.5	56.1	50.4	49.6	52.5	57.2	58.0	61.9	64.1	72.0	72.6	69.0
Below Normal (10%)	62.4	55.5	49.9	49.2	52.1	57.1	58.3	60.9	68.2	74.0	72.6	68.9
Dry (16%)	63.1	56.1	49.9	49.6	53.1	58.6	61.3	63.3	70.8	75.1	73.2	69.7
Critical (27%)	64.6	56.9	50.6	49.5	54.2	60.3	62.8	65.9	72.1	75.4	74.3	70.8

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65.7	58.3	51.9	51.6	55.2	60.9	62.6	65.8	73.2	76.9	75.3	71.7
20%	65.2	57.7	51.5	50.7	54.7	59.7	61.6	64.6	72.4	76.0	74.3	70.7
30%	64.0	56.7	51.0	50.2	53.8	59.2	60.4	63.7	72.1	75.5	73.8	70.2
40%	63.2	56.3	50.8	49.7	53.2	58.7	59.7	62.9	71.7	75.0	73.4	69.9
50%	62.9	55.6	50.4	49.4	52.8	58.2	58.3	62.5	71.1	74.7	73.1	69.4
60%	62.4	55.3	50.0	49.0	52.3	57.3	57.3	61.7	70.3	74.2	72.5	69.0
70%	61.7	55.0	49.6	48.8	52.0	56.7	56.6	60.9	69.3	73.8	72.4	68.7
80%	61.3	54.8	49.4	48.6	51.1	55.0	56.1	60.2	68.5	73.5	72.0	68.1
90%	60.6	54.3	49.0	47.9	50.3	53.5	55.4	59.0	67.4	73.0	71.3	62.2
Long Term												
Full Simulation Period[b]	62.9	56.0	50.4	49.6	52.8	57.5	58.7	62.5	69.9	73.7	72.4	68.6
Water Year Types[c]												
Wet (23%)	58.8	52.7	48.1	49.7	51.1	54.6	55.7	60.0	65.7	69.2	68.6	64.6
Above Normal (24%)	62.9	56.0	50.5	49.7	52.6	57.1	57.4	61.8	70.2	74.2	72.9	69.2
Below Normal (10%)	62.3	55.5	49.9	49.1	52.1	57.3	58.2	61.2	70.0	74.4	72.6	69.0
Dry (16%)	62.6	55.9	49.9	49.6	53.3	58.6	60.4	63.3	71.6	75.4	73.2	69.7
Critical (27%)	64.0	56.6	50.7	49.5	54.4	60.0	61.6	65.1	72.3	76.0	74.5	70.8

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1.1	-0.2	0.0	0.2	0.4	0.0	-0.9	-0.6	0.6	1.0	0.4	0.4
20%	-0.6	-0.1	0.1	0.0	0.6	-0.4	-1.3	-1.0	0.2	0.6	0.1	0.2
30%	-0.7	-0.2	0.0	0.0	0.0	-0.1	-1.2	-0.9	1.0	0.7	0.2	0.1
40%	-0.9	-0.2	0.1	0.0	0.0	-0.2	-0.5	-0.7	1.1	0.7	0.1	0.2
50%	-0.7	-0.2	0.2	0.2	0.3	0.7	-1.2	-0.2	2.7	0.8	0.1	0.0
60%	-0.1	-0.1	0.0	-0.1	0.1	0.2	-0.5	0.0	5.1	1.0	0.0	0.2
70%	-0.1	-0.2	0.0	0.1	0.1	0.2	-0.1	0.9	5.5	1.1	0.1	0.1
80%	0.1	0.0	0.0	0.1	0.0	-0.8	0.0	1.1	6.1	1.8	0.0	0.0
90%	0.4	0.0	0.1	0.0	0.0	-0.3	0.0	0.4	6.1	4.0	0.4	-4.7
Long Term												
Full Simulation Period[b]	-0.5	-0.1	0.1	0.0	0.1	-0.1	-0.6	-0.1	2.7	0.9	0.1	0.0
Water Year Types[c]												
Wet (23%)	-0.3	-0.1	0.0	0.1	0.1	0.1	-0.1	0.6	3.9	0.4	-0.3	-0.1
Above Normal (24%)	-0.6	-0.1	0.1	0.0	0.0	-0.1	-0.5	0.0	6.1	2.2	0.3	0.1
Below Normal (10%)	-0.1	0.0	0.0	-0.1	0.1	0.2	-0.2	0.3	1.8	0.4	0.0	0.2
Dry (16%)	-0.5	-0.1	0.0	0.0	0.2	0.0	-1.0	0.0	0.8	0.3	0.0	0.0
Critical (27%)	-0.6	-0.2	0.1	0.0	0.2	-0.2	-1.2	-0.8	0.2	0.6	0.3	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.9.4 Stanislaus River at Mouth, Monthly Temperature

Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.8	58.5	52.0	51.4	54.8	60.8	63.5	66.4	72.5	76.0	74.9	71.4
20%	65.8	57.8	51.4	50.7	54.1	60.1	62.8	65.6	72.2	75.4	74.2	70.4
30%	64.7	57.0	51.0	50.2	53.8	59.3	61.6	64.6	71.1	74.8	73.6	70.1
40%	64.1	56.5	50.7	49.7	53.2	58.9	60.2	63.7	70.6	74.3	73.3	69.7
50%	63.5	55.8	50.2	49.2	52.6	57.5	59.5	62.6	68.3	73.9	72.9	69.4
60%	62.5	55.5	50.0	49.0	52.3	57.1	57.8	61.7	65.2	73.2	72.5	68.8
70%	61.9	55.2	49.6	48.8	51.9	56.5	56.8	60.0	63.8	72.7	72.3	68.5
80%	61.2	54.8	49.4	48.5	51.0	55.8	56.1	59.1	62.4	71.8	72.0	68.0
90%	60.2	54.3	48.9	47.9	50.3	53.9	55.4	58.6	61.3	69.0	71.0	66.9
Long Term												
Full Simulation Period[b]	63.4	56.2	50.4	49.5	52.7	57.6	59.3	62.5	67.2	72.9	72.3	68.6
Water Year Types[c]												
Wet (23%)	59.2	52.8	48.0	49.6	51.0	54.5	55.8	59.3	61.8	68.8	68.9	64.7
Above Normal (24%)	63.5	56.1	50.4	49.6	52.5	57.2	58.0	61.9	64.1	72.0	72.6	69.0
Below Normal (10%)	62.4	55.5	49.9	49.2	52.1	57.1	58.3	60.9	68.2	74.0	72.6	68.9
Dry (16%)	63.1	56.1	49.9	49.6	53.1	58.6	61.3	63.3	70.8	75.1	73.2	69.7
Critical (27%)	64.6	56.9	50.6	49.5	54.2	60.3	62.8	65.9	72.1	75.4	74.3	70.8

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65.4	58.6	52.2	51.4	55.1	60.5	60.1	64.4	72.3	76.3	75.4	72.0
20%	63.3	57.7	51.5	50.8	54.4	59.7	59.1	62.6	71.8	75.6	74.6	71.0
30%	62.0	57.0	51.0	50.3	53.7	59.2	58.7	61.5	70.9	75.0	73.9	70.5
40%	61.1	56.7	50.5	49.7	53.2	58.7	58.3	60.8	70.1	74.3	73.5	70.0
50%	60.4	56.0	50.3	49.3	52.9	57.9	57.7	60.1	67.6	73.9	73.1	69.7
60%	59.7	55.4	50.0	49.0	52.6	57.1	57.3	59.5	65.2	73.1	72.6	69.2
70%	59.2	55.1	49.7	48.9	52.0	55.9	56.3	59.0	64.0	72.9	72.4	68.7
80%	58.7	54.8	49.3	48.5	51.5	53.8	55.7	58.3	62.7	72.0	72.0	68.2
90%	58.2	54.2	48.9	47.9	50.6	52.1	55.0	57.9	61.5	69.4	71.3	66.9
Long Term												
Full Simulation Period[b]	61.1	56.2	50.4	49.6	52.9	57.1	57.6	60.6	67.4	73.4	72.9	69.2
Water Year Types[c]												
Wet (23%)	57.0	52.8	48.1	49.7	51.8	53.3	55.4	58.8	63.4	70.6	70.6	66.0
Above Normal (24%)	61.5	56.3	50.4	49.5	52.5	56.8	57.4	59.9	64.1	72.1	72.7	69.3
Below Normal (10%)	60.2	55.5	49.9	49.3	52.5	57.2	57.5	59.9	67.8	73.9	72.6	69.1
Dry (16%)	60.6	56.2	50.0	49.7	53.4	58.6	58.2	60.3	70.2	75.1	73.5	70.0
Critical (27%)	62.1	56.8	50.7	49.6	54.2	59.9	59.4	63.4	72.0	75.9	74.8	71.5

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-1.3**	0.2	0.2	0.0	0.3	-0.3	**-3.4**	**-2.0**	-0.2	0.4	0.5	**0.7**
20%	**-2.4**	-0.1	0.1	0.0	0.3	-0.5	**-3.7**	**-3.1**	-0.4	0.2	0.4	**0.6**
30%	**-2.7**	0.0	0.1	0.1	-0.1	-0.1	**-2.9**	**-3.1**	-0.2	0.2	0.4	0.3
40%	**-3.1**	0.2	-0.2	0.0	0.1	-0.2	**-1.9**	**-2.9**	-0.4	0.0	0.2	0.3
50%	**-3.1**	0.1	0.1	0.0	0.4	0.4	**-1.8**	**-2.5**	**-0.7**	0.0	0.2	0.3
60%	**-2.8**	-0.1	0.0	0.0	0.3	0.0	-0.5	**-2.2**	-0.1	-0.1	0.1	0.4
70%	**-2.7**	-0.2	0.0	0.1	0.1	**-0.6**	-0.5	**-1.0**	0.2	0.2	0.1	0.2
80%	**-2.5**	0.0	0.0	0.0	0.5	**-2.0**	-0.4	**-0.7**	0.3	0.3	0.0	0.2
90%	**-2.0**	0.0	0.0	0.0	0.3	**-1.8**	-0.4	**-0.7**	0.2	0.5	0.3	0.0
Long Term												
Full Simulation Period[b]	**-2.3**	0.0	0.1	0.0	0.3	-0.5	**-1.7**	**-1.9**	0.2	**0.6**	**0.6**	**0.6**
Water Year Types[c]												
Wet (23%)	**-2.2**	0.0	0.1	0.1	**0.7**	**-1.2**	-0.4	**-0.6**	**1.6**	**1.8**	**1.7**	**1.3**
Above Normal (24%)	**-1.9**	0.1	0.0	-0.1	0.0	-0.5	**-0.6**	**-1.9**	0.0	0.1	0.1	0.2
Below Normal (10%)	**-2.1**	0.0	0.0	0.1	0.4	0.1	**-0.8**	**-1.0**	-0.4	0.0	0.1	0.3
Dry (16%)	**-2.5**	0.1	0.1	0.1	0.3	0.0	**-3.1**	**-3.0**	**-0.6**	0.1	0.3	0.3
Critical (27%)	**-2.4**	0.0	0.1	0.1	0.1	-0.4	**-3.3**	**-2.6**	-0.1	0.5	**0.6**	**0.6**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.10 San Joaquin River at Vernalis Flow

Table 5C.3.2.10.1 San Joaquin River at Vernalis, Monthly Flow

No Action Alternative

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,498	2,953	4,804	11,135	14,596	15,471	14,974	14,174	9,351	5,890	2,796	3,060
20%	3,161	2,777	2,857	4,812	10,143	10,197	10,637	8,318	4,690	2,628	2,589	2,654
30%	2,980	2,527	2,401	3,610	6,118	8,459	8,616	5,534	3,364	1,985	1,904	2,490
40%	2,796	2,395	2,215	2,629	4,232	5,570	7,564	4,609	2,947	1,735	1,666	2,125
50%	2,601	2,219	2,101	2,402	3,420	3,847	6,017	3,925	2,246	1,487	1,488	1,930
60%	2,401	2,169	2,046	2,293	2,683	3,459	4,832	3,062	1,859	1,366	1,403	1,835
70%	2,247	2,059	1,979	2,114	2,305	2,906	3,776	2,699	1,448	1,154	1,307	1,739
80%	1,994	1,951	1,829	1,884	2,150	2,371	2,789	2,153	1,293	1,087	1,202	1,611
90%	1,849	1,763	1,669	1,699	1,947	2,204	1,887	1,678	1,085	885	1,067	1,476
Long Term												
Full Simulation Period[b]	2,672	2,611	3,391	5,070	6,655	7,278	7,528	6,039	4,194	2,622	1,847	2,223
Water Year Types[c]												
Wet (23%)	2,918	3,513	6,545	11,446	15,776	16,863	15,423	14,628	11,335	6,676	3,135	3,416
Above Normal (24%)	2,700	2,416	2,663	4,883	6,881	7,536	8,542	5,264	3,280	1,989	1,975	2,345
Below Normal (10%)	2,538	2,249	3,661	3,507	3,651	4,149	6,337	4,140	2,076	1,463	1,446	1,837
Dry (16%)	2,767	2,569	2,232	2,402	2,549	3,241	3,996	2,805	1,680	1,254	1,347	1,776
Critical (27%)	2,426	2,168	1,915	1,877	2,090	2,288	2,307	1,929	1,115	926	1,060	1,487

Revised Alternative 1

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,384	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,170	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

Revised Alternative 1 minus No Action Alternative

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-13%**	5%	3%	-1%	**18%**	0%	-1%	-1%	4%	3%	**7%**	**8%**
20%	**-15%**	1%	2%	1%	1%	**-8%**	-3%	-1%	2%	0%	0%	0%
30%	**-17%**	4%	3%	1%	2%	**-7%**	-1%	-1%	0%	0%	0%	0%
40%	**-17%**	2%	4%	-1%	0%	-4%	-1%	-3%	0%	0%	1%	1%
50%	**-20%**	**6%**	**6%**	3%	0%	-1%	0%	0%	-2%	1%	1%	0%
60%	**-21%**	2%	3%	-2%	0%	0%	**-8%**	-5%	-2%	1%	1%	0%
70%	**-24%**	2%	0%	-2%	3%	-1%	**-15%**	**-8%**	-2%	1%	1%	0%
80%	**-24%**	0%	2%	-3%	0%	-2%	**-12%**	**-7%**	-2%	0%	1%	0%
90%	**-28%**	-1%	0%	-4%	-1%	-4%	-4%	**-7%**	0%	**6%**	3%	2%
Long Term												
Full Simulation Period[b]	**-18%**	2%	2%	0%	2%	-2%	-3%	-2%	4%	2%	2%	2%
Water Year Types[c]												
Wet (23%)	**-15%**	2%	1%	0%	3%	-2%	0%	-1%	**6%**	2%	3%	5%
Above Normal (24%)	**-17%**	2%	2%	0%	1%	-2%	-2%	-2%	1%	0%	0%	0%
Below Normal (10%)	**-19%**	4%	2%	2%	**5%**	-2%	**-6%**	-4%	-2%	1%	1%	1%
Dry (16%)	**-17%**	3%	3%	1%	3%	0%	**-9%**	**-6%**	-1%	1%	1%	0%
Critical (27%)	**-21%**	2%	2%	-1%	0%	-3%	**-10%**	**-8%**	0%	3%	2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.10.2 San Joaquin River at Vernalis, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,384	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,170	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

No Action Alternative

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	3,498	2,953	4,804	11,135	14,596	15,471	14,974	14,174	9,351	5,890	2,796	3,060
20%	3,161	2,777	2,857	4,812	10,143	10,197	10,637	8,318	4,690	2,628	2,589	2,654
30%	2,980	2,527	2,401	3,610	6,118	8,459	8,616	5,534	3,364	1,985	1,904	2,490
40%	2,796	2,395	2,215	2,629	4,232	5,570	7,564	4,609	2,947	1,735	1,666	2,125
50%	2,601	2,219	2,101	2,402	3,420	3,847	6,017	3,925	2,246	1,487	1,488	1,930
60%	2,401	2,169	2,046	2,293	2,683	3,459	4,832	3,062	1,859	1,366	1,403	1,835
70%	2,247	2,059	1,979	2,114	2,305	2,906	3,776	2,699	1,448	1,154	1,307	1,739
80%	1,994	1,951	1,829	1,884	2,150	2,371	2,789	2,153	1,293	1,087	1,202	1,611
90%	1,849	1,763	1,669	1,699	1,947	2,204	1,887	1,678	1,085	885	1,067	1,476
Long Term												
Full Simulation Period[b]	2,672	2,611	3,391	5,070	6,655	7,278	7,528	6,039	4,194	2,622	1,847	2,223
Water Year Types[c]												
Wet (23%)	2,918	3,513	6,545	11,446	15,776	16,863	15,423	14,628	11,335	6,676	3,135	3,416
Above Normal (24%)	2,700	2,416	2,663	4,883	6,881	7,536	8,542	5,264	3,280	1,989	1,975	2,345
Below Normal (10%)	2,538	2,249	3,661	3,507	3,651	4,149	6,337	4,140	2,076	1,463	1,446	1,837
Dry (16%)	2,767	2,569	2,232	2,402	2,549	3,241	3,996	2,805	1,680	1,254	1,347	1,776
Critical (27%)	2,426	2,168	1,915	1,877	2,090	2,288	2,307	1,929	1,115	926	1,060	1,487

No Action Alternative minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	**14%**	-4%	-3%	1%	**-15%**	0%	1%	1%	-4%	-3%	**-7%**	**-8%**
20%	**17%**	-1%	-2%	-1%	-1%	**8%**	3%	1%	-2%	0%	0%	0%
30%	**21%**	-4%	-3%	-1%	-2%	**8%**	1%	2%	0%	0%	0%	0%
40%	**20%**	-2%	-4%	1%	0%	4%	1%	3%	0%	0%	-1%	-1%
50%	**25%**	**-5%**	**-6%**	-3%	0%	1%	0%	0%	2%	-1%	-1%	0%
60%	**27%**	-2%	-3%	2%	0%	0%	**9%**	**5%**	2%	-1%	-1%	0%
70%	**32%**	-2%	0%	2%	-3%	1%	**17%**	**8%**	2%	-1%	-1%	0%
80%	**32%**	0%	-2%	3%	0%	2%	**14%**	**8%**	2%	0%	-1%	0%
90%	**38%**	1%	0%	4%	1%	4%	4%	**7%**	0%	**-6%**	-3%	-2%
Long Term												
Full Simulation Period[b]	**21%**	-2%	-2%	0%	-2%	2%	3%	2%	-4%	-2%	-2%	-2%
Water Year Types[c]												
Wet (23%)	**18%**	-2%	-1%	0%	-3%	3%	0%	1%	**-6%**	-2%	-3%	-5%
Above Normal (24%)	**21%**	-2%	-2%	0%	-1%	2%	2%	2%	-1%	0%	0%	0%
Below Normal (10%)	**24%**	-3%	-2%	-2%	-5%	2%	**6%**	4%	2%	-1%	-1%	-1%
Dry (16%)	**20%**	-3%	-3%	-1%	-3%	0%	**9%**	**7%**	1%	-1%	-1%	0%
Critical (27%)	**26%**	-2%	-2%	1%	0%	3%	**11%**	**8%**	0%	-3%	-2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.10.3 San Joaquin River at Vernalis, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,384	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,170	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,023	3,053	4,949	12,089	17,246	15,467	14,936	14,309	10,004	6,473	3,525	3,287
20%	2,667	2,830	2,938	4,833	10,213	9,874	10,251	7,931	4,627	2,495	2,587	2,623
30%	2,494	2,583	2,421	3,540	6,797	7,753	8,532	5,438	2,558	1,926	1,892	2,464
40%	2,328	2,478	2,304	2,753	4,210	5,305	7,580	4,344	2,294	1,722	1,667	2,125
50%	2,137	2,313	2,191	2,439	3,215	3,847	6,112	3,821	1,955	1,506	1,495	1,932
60%	1,956	2,244	2,140	2,236	2,668	3,440	4,501	2,907	1,700	1,361	1,415	1,838
70%	1,782	2,148	2,012	2,088	2,360	2,906	3,355	2,502	1,364	1,164	1,319	1,743
80%	1,609	1,974	1,886	1,824	2,090	2,371	2,581	2,158	1,241	1,026	1,211	1,612
90%	1,466	1,763	1,669	1,639	1,849	2,205	1,936	1,650	1,001	930	1,065	1,477
Long Term												
Full Simulation Period[b]	2,252	2,683	3,501	5,108	6,872	7,145	7,431	5,830	4,009	2,655	1,882	2,271
Water Year Types[c]												
Wet (23%)	2,505	3,604	6,760	11,512	16,584	16,445	15,425	14,237	11,476	6,916	3,267	3,610
Above Normal (24%)	2,310	2,488	2,775	4,925	6,937	7,444	8,476	5,078	2,579	1,910	1,972	2,341
Below Normal (10%)	2,067	2,299	3,711	3,708	3,857	4,057	6,015	3,856	1,865	1,472	1,454	1,834
Dry (16%)	2,346	2,646	2,309	2,419	2,607	3,241	3,785	2,611	1,568	1,253	1,360	1,782
Critical (27%)	1,991	2,227	1,974	1,842	2,043	2,273	2,247	1,874	1,080	912	1,067	1,497

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1%	-1%	0%	9%	0%	0%	1%	1%	3%	7%	18%	-1%
20%	-1%	1%	0%	-1%	0%	5%	-1%	-3%	-3%	-5%	0%	-1%
30%	1%	-2%	-2%	-3%	9%	-1%	0%	0%	-24%	-3%	0%	-1%
40%	0%	1%	0%	6%	-1%	-1%	1%	-3%	-22%	-1%	0%	-1%
50%	2%	-1%	-2%	-2%	-6%	1%	2%	-2%	-11%	0%	0%	0%
60%	3%	1%	2%	0%	0%	-1%	2%	0%	-7%	-2%	0%	0%
70%	5%	2%	1%	1%	-1%	1%	4%	0%	-4%	0%	0%	0%
80%	6%	1%	1%	0%	-3%	2%	5%	8%	-2%	-6%	0%	0%
90%	10%	1%	0%	0%	-4%	4%	7%	5%	-8%	-1%	-3%	-2%
Long Term												
Full Simulation Period[b]	2%	0%	1%	1%	1%	0%	1%	-1%	-8%	0%	0%	0%
Water Year Types[c]												
Wet (23%)	1%	0%	2%	0%	2%	0%	0%	-2%	-4%	1%	1%	1%
Above Normal (24%)	3%	1%	2%	1%	0%	1%	1%	-2%	-22%	-4%	0%	0%
Below Normal (10%)	1%	-1%	-1%	4%	1%	0%	1%	-3%	-8%	0%	0%	-1%
Dry (16%)	2%	0%	0%	0%	-1%	0%	4%	-1%	-6%	-1%	0%	0%
Critical (27%)	3%	1%	1%	-1%	-2%	2%	8%	5%	-3%	-4%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.10.4 San Joaquin River at Vernalis, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,384	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,170	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,495	2,953	4,804	11,129	14,597	15,473	14,976	14,176	9,351	5,773	2,776	3,084
20%	3,146	2,777	2,897	4,811	10,142	9,856	10,265	8,232	4,688	2,628	2,589	2,654
30%	2,938	2,527	2,401	3,610	6,118	8,461	8,576	5,670	3,364	1,985	1,904	2,488
40%	2,763	2,395	2,204	2,629	4,232	5,570	7,567	5,162	2,947	1,735	1,666	2,125
50%	2,588	2,219	2,101	2,402	3,420	3,846	6,110	4,183	2,219	1,484	1,488	1,930
60%	2,385	2,169	2,046	2,289	2,683	3,459	5,047	3,554	1,860	1,365	1,402	1,835
70%	2,196	2,059	1,979	2,083	2,303	2,906	4,317	2,916	1,447	1,155	1,307	1,739
80%	1,988	1,951	1,829	1,883	2,145	2,371	3,100	2,401	1,283	1,052	1,202	1,611
90%	1,849	1,763	1,669	1,699	1,947	2,204	2,461	2,245	1,000	885	1,025	1,431
Long Term												
Full Simulation Period[b]	2,660	2,609	3,371	5,071	6,639	7,235	7,686	6,290	4,174	2,597	1,818	2,213
Water Year Types[c]												
Wet (23%)	2,903	3,513	6,448	11,445	15,743	16,679	15,389	14,666	11,287	6,580	3,020	3,379
Above Normal (24%)	2,691	2,411	2,679	4,897	6,864	7,536	8,487	5,671	3,280	1,989	1,975	2,345
Below Normal (10%)	2,531	2,249	3,661	3,506	3,650	4,149	6,299	4,206	2,062	1,462	1,446	1,837
Dry (16%)	2,750	2,569	2,232	2,400	2,547	3,241	4,420	3,245	1,672	1,253	1,346	1,776
Critical (27%)	2,418	2,163	1,910	1,871	2,078	2,288	2,741	2,177	1,090	916	1,051	1,480

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**14%**	-4%	-3%	1%	**-15%**	0%	1%	1%	-4%	-5%	**-7%**	**-7%**
20%	**17%**	-1%	-1%	-1%	-1%	5%	-1%	0%	-2%	0%	0%	0%
30%	**19%**	-4%	-3%	-1%	-2%	**8%**	0%	4%	0%	0%	0%	0%
40%	**19%**	-2%	-4%	1%	0%	4%	1%	**15%**	0%	0%	-1%	-1%
50%	**24%**	**-5%**	**-6%**	-3%	0%	1%	2%	**7%**	1%	-1%	-1%	0%
60%	**26%**	-2%	-3%	2%	0%	0%	**14%**	**22%**	2%	-1%	-1%	0%
70%	**29%**	-2%	0%	1%	-3%	1%	**34%**	**17%**	2%	-1%	-1%	0%
80%	**32%**	0%	-2%	3%	0%	2%	**26%**	**20%**	1%	-3%	-1%	0%
90%	**38%**	1%	0%	4%	1%	4%	**36%**	**44%**	**-8%**	**-6%**	**-7%**	-5%
Long Term												
Full Simulation Period[b]	**21%**	-2%	-2%	0%	-2%	2%	5%	**7%**	-4%	-3%	-3%	-2%
Water Year Types[c]												
Wet (23%)	**17%**	-2%	-3%	0%	-3%	1%	0%	1%	**-6%**	-4%	**-6%**	**-6%**
Above Normal (24%)	**20%**	-2%	-1%	0%	-1%	2%	1%	**9%**	-1%	0%	0%	0%
Below Normal (10%)	**23%**	-3%	-2%	-2%	-5%	2%	**5%**	**6%**	2%	-1%	-1%	-1%
Dry (16%)	**19%**	-3%	-3%	-1%	-3%	0%	**21%**	**24%**	1%	-1%	-1%	0%
Critical (27%)	**26%**	-2%	-2%	1%	-1%	3%	**32%**	**22%**	-2%	-4%	-2%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.11 Old and Middle River Flow

Table 5C.3.2.11.1 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

No Action Alternative

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (23%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (24%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (10%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (16%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (27%)	253	296	418	723	861	747	559	410	348	249	235	179

Revised Alternative 1

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259
20%	286	384	2,029	4,469	4,884	4,375	2,589	1,579	658	581	247	240
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229
50%	246	269	464	1,078	1,898	1,614	859	715	512	461	246	221
60%	246	268	371	829	1,168	1,103	726	675	495	400	246	184
70%	246	268	312	665	918	899	599	560	439	307	246	179
80%	246	268	277	501	720	751	565	533	422	307	236	179
90%	232	208	277	405	596	601	528	437	369	246	215	179
Long Term												
Full Simulation Period[b]	289	508	1,407	2,590	3,140	2,678	1,609	1,159	704	457	252	238
Water Year Types[c]												
Wet (23%)	345	794	3,009	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321
Above Normal (24%)	252	566	1,394	2,837	3,821	3,313	1,620	1,021	569	599	250	223
Below Normal (10%)	294	433	540	878	2,078	1,075	812	715	532	429	254	208
Dry (16%)	267	297	433	821	1,268	1,232	879	627	455	310	244	191
Critical (27%)	241	244	367	640	692	680	525	385	346	247	229	179

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-39%	0%	-1%	3%	3%	6%	-5%	-11%	-3%	-12%	-2%	-78%
20%	-51%	-56%	-4%	3%	-1%	5%	-9%	-9%	8%	-16%	-5%	-79%
30%	-53%	-60%	-6%	-10%	-7%	-5%	-18%	-21%	8%	-11%	0%	-74%
40%	-39%	-56%	-17%	-13%	0%	-2%	-19%	-21%	20%	-1%	0%	-65%
50%	-9%	-54%	-24%	-17%	-7%	-4%	-28%	-15%	19%	-6%	0%	-15%
60%	0%	-27%	4%	-21%	-17%	-8%	-23%	-8%	17%	0%	0%	-8%
70%	0%	0%	-1%	-17%	-10%	-15%	-21%	-5%	7%	0%	0%	0%
80%	0%	0%	0%	-14%	-13%	-4%	-6%	2%	10%	0%	-4%	0%
90%	26%	-1%	0%	-17%	-6%	-9%	-6%	-2%	11%	0%	-10%	0%
Long Term												
Full Simulation Period[b]	-28%	-26%	-1%	-5%	-1%	-1%	-11%	-10%	9%	-8%	-2%	-58%
Water Year Types[c]												
Wet (23%)	-34%	-22%	3%	-1%	1%	1%	-9%	-9%	7%	-7%	-1%	-72%
Above Normal (24%)	-24%	-24%	-7%	-7%	0%	2%	-16%	-15%	17%	-10%	-1%	-66%
Below Normal (10%)	-38%	-33%	-7%	-18%	1%	-3%	-20%	-9%	20%	-16%	0%	-1%
Dry (16%)	-22%	-37%	-8%	-16%	-12%	-12%	-12%	-8%	6%	-2%	-5%	0%
Critical (27%)	-5%	-18%	-12%	-12%	-20%	-9%	-6%	-6%	-1%	-1%	-3%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.11.2 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259
20%	286	384	2,029	4,469	4,884	4,375	2,589	1,579	658	581	247	240
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229
50%	246	269	464	1,078	1,898	1,614	859	715	512	461	246	221
60%	246	268	371	829	1,168	1,103	726	675	495	400	246	184
70%	246	268	312	665	918	899	599	560	439	307	246	179
80%	246	268	277	501	720	751	565	533	422	307	236	179
90%	232	208	277	405	596	601	528	437	369	246	215	179
Long Term												
Full Simulation Period[b]	289	508	1,407	2,590	3,140	2,678	1,609	1,159	704	457	252	238
Water Year Types[c]												
Wet (23%)	345	794	3,009	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321
Above Normal (24%)	252	566	1,394	2,837	3,821	3,313	1,620	1,021	569	599	250	223
Below Normal (10%)	294	433	540	878	2,078	1,075	812	715	532	429	254	208
Dry (16%)	267	297	433	821	1,268	1,232	879	627	455	310	244	191
Critical (27%)	241	244	367	640	692	680	525	385	346	247	229	179

No Action Alternative

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (23%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (24%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (10%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (16%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (27%)	253	296	418	723	861	747	559	410	348	249	235	179

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65%	0%	1%	-3%	-3%	-6%	5%	12%	3%	14%	2%	349%
20%	105%	128%	4%	-3%	1%	-4%	9%	9%	-7%	18%	5%	372%
30%	114%	151%	6%	11%	7%	6%	22%	26%	-7%	13%	0%	288%
40%	64%	126%	20%	15%	0%	2%	24%	27%	-17%	1%	0%	187%
50%	10%	118%	32%	20%	7%	4%	39%	18%	-16%	7%	0%	18%
60%	0%	37%	-3%	27%	20%	9%	30%	8%	-15%	0%	0%	9%
70%	0%	0%	1%	20%	11%	18%	26%	6%	-7%	0%	0%	0%
80%	0%	0%	0%	17%	14%	4%	6%	-2%	-9%	0%	4%	0%
90%	-20%	1%	0%	20%	6%	10%	7%	2%	-10%	0%	11%	0%
Long Term												
Full Simulation Period[b]	39%	35%	1%	5%	1%	1%	13%	11%	-8%	8%	2%	138%
Water Year Types[c]												
Wet (23%)	51%	28%	-3%	1%	-1%	-1%	9%	10%	-7%	8%	1%	253%
Above Normal (24%)	32%	31%	8%	8%	0%	-2%	20%	18%	-15%	11%	1%	197%
Below Normal (10%)	60%	50%	8%	23%	-1%	4%	25%	10%	-16%	18%	0%	2%
Dry (16%)	28%	58%	9%	19%	14%	13%	14%	8%	-5%	2%	5%	0%
Critical (27%)	5%	21%	14%	13%	24%	10%	6%	6%	1%	1%	3%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.11.3 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259
20%	286	384	2,029	4,469	4,884	4,375	2,589	1,579	658	581	247	240
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229
50%	246	269	464	1,078	1,898	1,614	859	715	512	461	246	221
60%	246	268	371	829	1,168	1,103	726	675	495	400	246	184
70%	246	268	312	665	918	899	599	560	439	307	246	179
80%	246	268	277	501	720	751	565	533	422	307	236	179
90%	232	208	277	405	596	601	528	437	369	246	215	179
Long Term												
Full Simulation Period[b]	289	508	1,407	2,590	3,140	2,678	1,609	1,159	704	457	252	238
Water Year Types[c]												
Wet (23%)	345	794	3,009	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321
Above Normal (24%)	252	566	1,394	2,837	3,821	3,313	1,620	1,021	569	599	250	223
Below Normal (10%)	294	433	540	878	2,078	1,075	812	715	532	429	254	208
Dry (16%)	267	297	433	821	1,268	1,232	879	627	455	310	244	191
Critical (27%)	241	244	367	640	692	680	525	385	346	247	229	179

Alternative 3

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	298	902	4,155	6,646	7,924	5,788	3,812	2,471	1,066	729	265	261
20%	266	389	2,140	4,462	4,802	4,293	2,584	1,383	630	659	246	245
30%	257	319	1,154	3,104	3,795	2,714	1,525	913	572	575	246	235
40%	246	290	722	1,875	3,031	2,137	1,238	750	502	492	246	229
50%	246	268	480	1,398	2,079	1,678	867	704	477	492	246	222
60%	246	268	398	1,061	1,416	1,185	754	630	436	428	246	191
70%	246	268	336	768	1,078	1,032	601	579	422	307	246	179
80%	246	268	277	599	821	789	566	493	409	307	241	179
90%	185	208	277	497	634	654	512	437	351	246	222	179
Long Term												
Full Simulation Period[b]	277	506	1,465	2,772	3,236	2,711	1,617	1,122	656	490	252	240
Water Year Types[c]												
Wet (23%)	333	791	3,116	5,609	5,812	5,020	2,996	2,109	1,118	649	271	319
Above Normal (24%)	242	568	1,461	3,096	3,903	3,292	1,636	960	514	645	246	228
Below Normal (10%)	281	422	564	1,156	2,186	1,120	856	699	457	507	254	221
Dry (16%)	250	297	457	992	1,459	1,384	882	612	445	321	245	191
Critical (27%)	234	243	397	721	859	752	528	397	346	246	230	179

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-20%**	1%	3%	1%	-2%	0%	-4%	-3%	**-7%**	**9%**	-2%	1%
20%	**-7%**	1%	**5%**	0%	-2%	-2%	0%	**-12%**	-4%	**13%**	0%	2%
30%	-5%	-3%	**22%**	**10%**	**12%**	1%	4%	-4%	-3%	**13%**	0%	0%
40%	-4%	0%	**14%**	**20%**	**5%**	4%	2%	-5%	**-10%**	0%	0%	0%
50%	0%	0%	4%	**30%**	**10%**	4%	1%	-2%	**-7%**	**7%**	0%	0%
60%	0%	0%	**7%**	**28%**	**21%**	**7%**	4%	**-7%**	**-12%**	**7%**	0%	3%
70%	0%	0%	**8%**	**15%**	**17%**	**15%**	0%	3%	-4%	0%	0%	0%
80%	0%	0%	0%	**20%**	**14%**	**5%**	0%	**-7%**	-3%	0%	2%	0%
90%	**-20%**	0%	0%	**23%**	**7%**	**9%**	-3%	0%	-5%	0%	3%	0%
Long Term												
Full Simulation Period[b]	-4%	0%	4%	**7%**	3%	1%	0%	-3%	**-7%**	**7%**	0%	1%
Water Year Types[c]												
Wet (23%)	-3%	0%	4%	3%	0%	-1%	0%	-3%	**-7%**	**7%**	0%	0%
Above Normal (24%)	-4%	0%	5%	**9%**	2%	-1%	1%	**-6%**	**-10%**	**8%**	-1%	2%
Below Normal (10%)	-4%	-3%	4%	**32%**	**5%**	4%	**5%**	-2%	**-14%**	**18%**	0%	**6%**
Dry (16%)	**-6%**	0%	**5%**	**21%**	**15%**	**12%**	0%	-2%	-2%	4%	0%	0%
Critical (27%)	-3%	0%	**8%**	**13%**	**24%**	**11%**	1%	3%	0%	-1%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.11.4 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259
20%	286	384	2,029	4,469	4,884	4,375	2,589	1,579	658	581	247	240
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229
50%	246	269	464	1,078	1,898	1,614	859	715	512	461	246	221
60%	246	268	371	829	1,168	1,103	726	675	495	400	246	184
70%	246	268	312	665	918	899	599	560	439	307	246	179
80%	246	268	277	501	720	751	565	533	422	307	236	179
90%	232	208	277	405	596	601	528	437	369	246	215	179
Long Term												
Full Simulation Period[b]	289	508	1,407	2,590	3,140	2,678	1,609	1,159	704	457	252	238
Water Year Types[c]												
Wet (23%)	345	794	3,009	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321
Above Normal (24%)	252	566	1,394	2,837	3,821	3,313	1,620	1,021	569	599	250	223
Below Normal (10%)	294	433	540	878	2,078	1,075	812	715	532	429	254	208
Dry (16%)	267	297	433	821	1,268	1,232	879	627	455	310	244	191
Critical (27%)	241	244	367	640	692	680	525	385	346	247	229	179

Alternative 5

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	623	960	4,115	6,339	7,831	5,439	4,160	2,849	1,180	767	284	1,161
20%	594	874	2,112	4,319	4,907	4,174	2,807	1,763	606	688	256	1,134
30%	576	830	1,008	3,149	3,653	2,835	1,798	1,237	524	593	246	910
40%	423	660	762	1,785	2,869	2,092	1,542	1,002	453	501	246	651
50%	257	586	616	1,301	2,053	1,666	1,234	873	423	492	246	255
60%	246	369	359	1,048	1,406	1,203	1,028	776	422	400	246	204
70%	246	268	310	800	1,025	1,057	817	629	401	308	246	179
80%	246	268	286	585	823	783	712	561	370	307	246	179
90%	184	211	277	486	633	662	623	462	330	246	230	179
Long Term												
Full Simulation Period[b]	401	690	1,413	2,714	3,184	2,695	1,848	1,312	642	500	257	565
Water Year Types[c]												
Wet (23%)	517	1,020	2,905	5,499	5,773	4,996	3,288	2,411	1,117	667	273	1,132
Above Normal (24%)	334	767	1,505	3,048	3,795	3,232	1,947	1,223	482	668	251	661
Below Normal (10%)	471	650	582	1,075	2,047	1,110	1,061	821	434	513	254	214
Dry (16%)	342	471	467	980	1,444	1,396	1,081	720	423	316	256	191
Critical (27%)	254	296	418	714	856	747	621	462	346	249	233	179

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**67%**	**7%**	2%	-3%	-3%	**-6%**	**5%**	**12%**	3%	**14%**	5%	**349%**
20%	**108%**	**128%**	4%	-3%	0%	-5%	**8%**	**12%**	**-8%**	**18%**	4%	**372%**
30%	**114%**	**152%**	**7%**	**11%**	**8%**	**6%**	**23%**	**30%**	**-11%**	**17%**	0%	**288%**
40%	**64%**	**127%**	**20%**	**14%**	0%	2%	**27%**	**27%**	**-19%**	2%	0%	**185%**
50%	5%	**118%**	**33%**	**21%**	**8%**	3%	**44%**	**22%**	**-17%**	**7%**	0%	**16%**
60%	0%	**38%**	-3%	**26%**	**20%**	**9%**	**42%**	**15%**	**-15%**	0%	0%	**10%**
70%	0%	0%	-1%	**20%**	**12%**	**18%**	**36%**	**12%**	**-9%**	0%	0%	0%
80%	0%	0%	3%	**17%**	**14%**	4%	**26%**	**5%**	**-12%**	0%	4%	0%
90%	**-20%**	1%	0%	**20%**	**6%**	**10%**	**18%**	**6%**	**-11%**	0%	**7%**	0%
Long Term												
Full Simulation Period[b]	**39%**	**36%**	0%	5%	1%	1%	**15%**	**13%**	**-9%**	**9%**	2%	**138%**
Water Year Types[c]												
Wet (23%)	**50%**	**28%**	-3%	1%	-1%	-2%	**9%**	**11%**	**-7%**	**10%**	1%	**253%**
Above Normal (24%)	**32%**	**36%**	**8%**	**7%**	-1%	-2%	**20%**	**20%**	**-15%**	**11%**	1%	**197%**
Below Normal (10%)	**60%**	**50%**	**8%**	**22%**	-1%	3%	**31%**	**15%**	**-18%**	**20%**	0%	3%
Dry (16%)	**28%**	**59%**	**8%**	**19%**	**14%**	**13%**	**23%**	**15%**	**-7%**	2%	5%	0%
Critical (27%)	**5%**	**21%**	**14%**	**12%**	**24%**	**10%**	**18%**	**20%**	0%	1%	2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.12 X2 Position

Table 5C.3.2.12.1 X2, End of Month Position

No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (23%)	80.6	76.8	63.7	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (24%)	86.9	82.4	75.1	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (10%)	80.4	80.3	80.4	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (16%)	85.6	85.5	84.5	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (27%)	90.4	90.7	88.2	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

Revised Alternative 1

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.3	92.5	91.0	87.3	80.4	78.2	78.5	81.5	83.5	86.6	90.0	92.1
20%	91.8	91.3	90.6	85.9	75.6	73.5	75.2	79.6	81.6	84.8	88.5	91.4
30%	91.2	91.0	89.5	83.6	72.1	68.3	73.3	78.6	80.5	84.3	88.0	90.8
40%	91.0	90.8	88.7	78.9	66.2	66.6	69.7	75.4	78.6	82.1	86.5	90.1
50%	90.6	90.3	86.8	75.6	61.5	61.7	67.3	72.9	77.9	81.1	85.6	89.4
60%	90.2	89.6	82.5	67.7	55.7	57.8	64.2	70.3	76.1	78.9	84.7	89.0
70%	90.0	89.0	77.0	56.3	52.4	54.0	59.9	66.0	74.4	78.2	84.4	88.6
80%	89.6	88.0	65.9	51.9	49.4	50.4	54.7	60.2	71.4	77.3	84.1	88.4
90%	87.3	79.7	53.3	49.5	48.2	48.8	50.4	54.6	64.1	74.8	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.4	62.8	62.3	65.9	70.6	75.8	80.7	86.0	89.3
Water Year Types[c]												
Wet (23%)	88.1	83.7	66.3	55.7	51.6	53.0	56.4	60.3	67.3	75.3	83.3	86.6
Above Normal (24%)	91.0	87.1	79.1	63.6	56.1	55.2	61.1	67.9	75.0	78.2	83.8	81.9
Below Normal (10%)	89.6	87.3	84.5	78.8	66.0	67.3	71.3	74.9	78.2	81.4	86.0	89.7
Dry (16%)	90.7	90.4	87.9	81.1	70.7	67.6	70.8	76.0	80.2	84.4	88.0	90.8
Critical (27%)	91.9	92.1	90.0	84.0	78.5	76.8	78.8	83.3	85.7	88.2	90.6	92.4

Revised Alternative 1 minus No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1.1	-1.1	0.2	3.3	3.1	2.3	0.4	0.5	0.3	0.1	0.3	0.1
20%	0.0	-0.1	2.9	3.6	3.9	0.7	1.6	0.3	-0.1	-0.1	0.4	0.3
30%	-0.4	0.1	5.5	3.8	4.8	2.6	3.2	1.3	-0.5	0.1	0.5	0.3
40%	-0.1	2.7	6.2	5.4	2.2	2.1	3.0	3.1	-1.6	-0.2	0.3	0.0
50%	0.9	9.2	5.7	4.4	3.0	1.8	2.6	3.0	0.2	0.5	0.8	0.9
60%	9.2	8.6	2.7	3.3	0.6	-0.2	3.3	4.0	-0.6	0.8	0.1	8.0
70%	15.9	13.9	5.1	1.1	0.5	0.1	1.9	2.2	1.0	0.8	0.3	14.6
80%	15.6	13.9	3.6	0.6	0.0	-0.2	0.9	1.1	1.5	0.5	1.4	14.4
90%	13.3	5.8	0.5	0.1	0.0	-0.2	0.5	1.2	0.7	0.2	0.7	13.8
Long Term												
Full Simulation Period[b]	5.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Water Year Types[c]												
Wet (23%)	7.5	6.9	2.7	1.0	0.4	0.0	1.3	1.9	0.0	0.4	0.5	12.7
Above Normal (24%)	4.1	4.6	4.0	2.7	1.2	0.0	2.0	2.7	-0.3	0.3	0.7	7.2
Below Normal (10%)	9.2	7.0	4.1	4.2	1.7	0.5	2.3	2.0	-0.9	0.3	0.9	0.4
Dry (16%)	5.1	4.9	3.5	3.4	3.1	2.2	2.0	1.5	0.1	-0.1	0.4	0.3
Critical (27%)	1.4	1.4	1.8	2.1	3.2	2.2	1.2	1.0	0.5	0.3	0.3	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.12.2 X2, End of Month Position

Revised Second Basis of Comparison

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.3	92.5	91.0	87.3	80.4	78.2	78.5	81.5	83.5	86.6	90.0	92.1
20%	91.8	91.3	90.6	85.9	75.6	73.5	75.2	79.6	81.6	84.8	88.5	91.4
30%	91.2	91.0	89.5	83.6	72.1	68.3	73.3	78.6	80.5	84.3	88.0	90.8
40%	91.0	90.8	88.7	78.9	66.2	66.6	69.7	75.4	78.6	82.1	86.5	90.1
50%	90.6	90.3	86.8	75.6	61.5	61.7	67.3	72.9	77.9	81.1	85.6	89.4
60%	90.2	89.6	82.5	67.7	55.7	57.8	64.2	70.3	76.1	78.9	84.7	89.0
70%	90.0	89.0	77.0	56.3	52.4	54.0	59.9	66.0	74.4	78.2	84.4	88.6
80%	89.6	88.0	65.9	51.9	49.4	50.4	54.7	60.2	71.4	77.3	84.1	88.4
90%	87.3	79.7	53.3	49.5	48.2	48.8	50.4	54.6	64.1	74.8	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.4	62.8	62.3	65.9	70.6	75.8	80.7	86.0	89.3
Water Year Types[c]												
Wet (23%)	88.1	83.7	66.3	55.7	51.6	53.0	56.4	60.3	67.3	75.3	83.3	86.6
Above Normal (24%)	91.0	87.1	79.1	63.6	56.1	55.2	61.1	67.9	75.0	78.2	83.8	81.9
Below Normal (10%)	89.6	87.3	84.5	78.8	66.0	67.3	71.3	74.9	78.2	81.4	86.0	89.7
Dry (16%)	90.7	90.4	87.9	81.1	70.7	67.6	70.8	76.0	80.2	84.4	88.0	90.8
Critical (27%)	91.9	92.1	90.0	84.0	78.5	76.8	78.8	83.3	85.7	88.2	90.6	92.4

No Action Alternative

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (23%)	80.6	76.8	63.7	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (24%)	86.9	82.4	75.1	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (10%)	80.4	80.3	80.4	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (16%)	85.6	85.5	84.5	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (27%)	90.4	90.7	88.2	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

No Action Alternative minus Revised Second Basis of Comparison

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1.1	1.1	-0.2	-3.3	-3.1	-2.3	-0.4	-0.5	-0.3	-0.1	-0.3	-0.1
20%	0.0	0.1	-2.9	-3.6	-3.9	-0.7	-1.6	-0.3	0.1	0.1	-0.4	-0.3
30%	0.4	-0.1	-5.5	-3.8	-4.8	-2.6	-3.2	-1.3	0.5	-0.1	-0.5	-0.3
40%	0.1	-2.7	-6.2	-5.4	-2.2	-2.1	-3.0	-3.1	1.6	0.2	-0.3	0.0
50%	-0.9	-9.2	-5.7	-4.4	-3.0	-1.8	-2.6	-3.0	-0.2	-0.5	-0.8	-0.9
60%	-9.2	-8.6	-2.7	-3.3	-0.6	0.2	-3.3	-4.0	0.6	-0.8	-0.1	-8.0
70%	-15.9	-13.9	-5.1	-1.1	-0.5	-0.1	-1.9	-2.2	-1.0	-0.8	-0.3	-14.6
80%	-15.6	-13.9	-3.6	-0.6	0.0	0.2	-0.9	-1.1	-1.5	-0.5	-1.4	-14.4
90%	-13.3	-5.8	-0.5	-0.1	0.0	0.2	-0.5	-1.2	-0.7	-0.2	-0.7	-13.8
Long Term												
Full Simulation Period[b]	-5.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Water Year Types[c]												
Wet (23%)	-7.5	-6.9	-2.7	-1.0	-0.4	0.0	-1.3	-1.9	0.0	-0.4	-0.5	-12.7
Above Normal (24%)	-4.1	-4.6	-4.0	-2.7	-1.2	0.0	-2.0	-2.7	0.3	-0.3	-0.7	-7.2
Below Normal (10%)	-9.2	-7.0	-4.1	-4.2	-1.7	-0.5	-2.3	-2.0	0.9	-0.3	-0.9	-0.4
Dry (16%)	-5.1	-4.9	-3.5	-3.4	-3.1	-2.2	-2.0	-1.5	-0.1	0.1	-0.4	-0.3
Critical (27%)	-1.4	-1.4	-1.8	-2.1	-3.2	-2.2	-1.2	-1.0	-0.5	-0.3	-0.3	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.12.3 X2, End of Month Position

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Position (km)											
Probability of Exceedance[a]												
10%	92.3	92.5	91.0	87.3	80.4	78.2	78.5	81.5	83.5	86.6	90.0	92.1
20%	91.8	91.3	90.6	85.9	75.6	73.5	75.2	79.6	81.6	84.8	88.5	91.4
30%	91.2	91.0	89.5	83.6	72.1	68.3	73.3	78.6	80.5	84.3	88.0	90.8
40%	91.0	90.8	88.7	78.9	66.2	66.6	69.7	75.4	78.6	82.1	86.5	90.1
50%	90.6	90.3	86.8	75.6	61.5	61.7	67.3	72.9	77.9	81.1	85.6	89.4
60%	90.2	89.6	82.5	67.7	55.7	57.8	64.2	70.3	76.1	78.9	84.7	89.0
70%	90.0	89.0	77.0	56.3	52.4	54.0	59.9	66.0	74.4	78.2	84.4	88.6
80%	89.6	88.0	65.9	51.9	49.4	50.4	54.7	60.2	71.4	77.3	84.1	88.4
90%	87.3	79.7	53.3	49.5	48.2	48.8	50.4	54.6	64.1	74.8	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.4	62.8	62.3	65.9	70.6	75.8	80.7	86.0	89.3
Water Year Types[c]												
Wet (23%)	88.1	83.7	66.3	55.7	51.6	53.0	56.4	60.3	67.3	75.3	83.3	86.6
Above Normal (24%)	91.0	87.1	79.1	63.6	56.1	55.2	61.1	67.9	75.0	78.2	83.8	81.9
Below Normal (10%)	89.6	87.3	84.5	78.8	66.0	67.3	71.3	74.9	78.2	81.4	86.0	89.7
Dry (16%)	90.7	90.4	87.9	81.1	70.7	67.6	70.8	76.0	80.2	84.4	88.0	90.8
Critical (27%)	91.9	92.1	90.0	84.0	78.5	76.8	78.8	83.3	85.7	88.2	90.6	92.4

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Position (km)											
Probability of Exceedance[a]												
10%	93.2	93.6	90.8	86.1	77.8	75.8	78.2	81.5	83.2	86.4	90.0	92.2
20%	91.9	91.5	90.5	83.7	71.7	72.5	74.6	79.6	82.0	84.8	88.4	91.3
30%	91.6	91.1	89.4	81.5	67.6	66.1	71.3	78.4	81.0	84.3	87.7	90.8
40%	91.2	90.8	88.5	74.8	64.1	64.5	69.7	75.6	80.3	81.7	86.0	89.8
50%	90.7	90.6	86.7	71.8	58.8	60.0	67.3	73.1	78.8	80.7	84.9	89.3
60%	90.2	89.8	82.6	64.6	54.4	58.0	63.6	70.4	77.1	78.4	84.6	88.7
70%	89.9	89.0	74.2	55.1	52.2	54.4	59.9	66.8	75.1	77.8	84.2	88.4
80%	89.6	87.9	65.1	51.2	49.3	50.4	54.8	61.7	71.8	77.1	83.2	88.2
90%	88.2	79.6	53.0	49.5	48.1	48.8	50.4	54.8	64.9	75.0	82.4	87.6
Long Term												
Full Simulation Period[b]	90.1	87.8	79.0	68.5	61.2	61.4	65.5	70.8	76.5	80.5	85.6	89.1
Water Year Types[c]												
Wet (23%)	88.1	83.9	65.6	54.8	51.3	53.1	56.5	60.8	68.3	75.1	82.9	86.6
Above Normal (24%)	91.2	87.2	78.3	61.5	54.9	55.0	60.9	68.4	76.2	78.0	83.4	81.8
Below Normal (10%)	89.9	87.7	84.4	75.4	64.0	66.6	70.5	74.9	79.6	81.0	85.1	89.2
Dry (16%)	90.8	90.6	87.6	78.8	67.9	65.5	69.9	76.0	80.4	84.3	87.8	90.8
Critical (27%)	92.1	92.2	89.5	82.7	75.6	74.6	78.1	82.8	85.4	88.0	90.5	92.3

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Position (km)											
Probability of Exceedance[a]												
10%	0.9	1.0	-0.1	-1.2	-2.6	-2.4	-0.3	-0.1	-0.3	-0.2	0.0	0.2
20%	0.2	0.1	-0.1	-2.2	-3.9	-1.0	-0.6	0.0	0.3	0.0	-0.2	-0.1
30%	0.4	0.1	0.0	-2.1	-4.5	-2.2	-2.0	-0.1	0.5	0.0	-0.3	-0.1
40%	0.2	0.1	-0.2	-4.1	-2.0	-2.1	0.0	0.3	1.8	-0.4	-0.5	-0.3
50%	0.1	0.3	-0.1	-3.8	-2.6	-1.7	0.0	0.3	0.9	-0.4	-0.7	-0.1
60%	0.0	0.2	0.2	-3.1	-1.4	0.2	-0.5	0.1	1.1	-0.6	-0.1	-0.3
70%	-0.1	0.0	-2.8	-1.1	-0.2	0.3	-0.1	0.8	0.7	-0.5	-0.1	-0.2
80%	0.0	-0.1	-0.8	-0.7	0.0	0.1	0.1	1.5	0.4	-0.2	-0.8	-0.2
90%	0.8	-0.1	-0.3	0.0	-0.1	0.0	0.0	0.2	0.7	0.1	-0.6	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types[c]												
Wet (23%)	0.0	0.2	-0.7	-0.9	-0.3	0.1	0.0	0.5	1.0	-0.2	-0.4	-0.1
Above Normal (24%)	0.3	0.1	-0.8	-2.2	-1.2	-0.2	-0.2	0.5	1.1	-0.2	-0.4	-0.2
Below Normal (10%)	0.4	0.4	-0.1	-3.4	-2.0	-0.8	-0.7	0.0	1.4	-0.4	-0.8	-0.5
Dry (16%)	0.1	0.2	-0.3	-2.3	-2.8	-2.1	-0.8	0.0	0.3	-0.1	-0.2	-0.1
Critical (27%)	0.2	0.2	-0.5	-1.4	-2.8	-2.2	-0.8	-0.4	-0.3	-0.2	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.12.4 X2, End of Month Position

Revised Second Basis of Comparison

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.3	92.5	91.0	87.3	80.4	78.2	78.5	81.5	83.5	86.6	90.0	92.1
20%	91.8	91.3	90.6	85.9	75.6	73.5	75.2	79.6	81.6	84.8	88.5	91.4
30%	91.2	91.0	89.5	83.6	72.1	68.3	73.3	78.6	80.5	84.3	88.0	90.8
40%	91.0	90.8	88.7	78.9	66.2	66.6	69.7	75.4	78.6	82.1	86.5	90.1
50%	90.6	90.3	86.8	75.6	61.5	61.7	67.3	72.9	77.9	81.1	85.6	89.4
60%	90.2	89.6	82.5	67.7	55.7	57.8	64.2	70.3	76.1	78.9	84.7	89.0
70%	90.0	89.0	77.0	56.3	52.4	54.0	59.9	66.0	74.4	78.2	84.4	88.6
80%	89.6	88.0	65.9	51.9	49.4	50.4	54.7	60.2	71.4	77.3	84.1	88.4
90%	87.3	79.7	53.3	49.5	48.2	48.8	50.4	54.6	64.1	74.8	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.4	62.8	62.3	65.9	70.6	75.8	80.7	86.0	89.3
Water Year Types[c]												
Wet (23%)	88.1	83.7	66.3	55.7	51.6	53.0	56.4	60.3	67.3	75.3	83.3	86.6
Above Normal (24%)	91.0	87.1	79.1	63.6	56.1	55.2	61.1	67.9	75.0	78.2	83.8	81.9
Below Normal (10%)	89.6	87.3	84.5	78.8	66.0	67.3	71.3	74.9	78.2	81.4	86.0	89.7
Dry (16%)	90.7	90.4	87.9	81.1	70.7	67.6	70.8	76.0	80.2	84.4	88.0	90.8
Critical (27%)	91.9	92.1	90.0	84.0	78.5	76.8	78.8	83.3	85.7	88.2	90.6	92.4

Alternative 5

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.3	90.8	84.0	77.3	75.9	77.2	79.1	83.1	86.5	89.6	91.9
20%	91.9	91.5	87.6	82.3	71.7	72.8	72.5	77.9	81.4	84.9	88.1	91.1
30%	91.6	91.0	83.9	79.8	67.2	65.8	69.5	75.8	81.0	84.2	87.4	90.5
40%	91.0	88.0	82.4	73.5	63.9	64.5	66.4	71.5	79.6	82.3	86.1	90.0
50%	89.5	81.1	81.2	71.2	58.5	59.9	64.2	69.3	77.8	80.7	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.1	57.9	60.8	66.4	76.6	78.2	84.6	81.0
70%	74.1	75.1	71.9	55.1	51.9	53.9	58.0	63.7	73.4	77.5	84.1	74.1
80%	74.0	74.1	62.2	51.3	49.4	50.6	53.5	58.9	69.8	76.8	82.6	74.0
90%	74.0	73.9	53.0	49.4	48.2	49.1	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	63.8	68.2	75.7	80.4	85.3	83.8
Water Year Types[c]												
Wet (23%)	80.6	76.9	63.7	54.7	51.2	53.1	55.1	58.2	67.3	74.7	82.6	73.9
Above Normal (24%)	86.8	82.1	74.9	60.9	54.9	55.3	59.0	65.0	75.2	77.9	83.1	74.8
Below Normal (10%)	80.4	80.3	80.4	74.6	64.3	66.9	68.4	72.1	79.0	81.1	85.0	89.3
Dry (16%)	85.6	85.5	84.5	77.7	67.7	65.4	67.9	73.4	79.8	84.5	87.6	90.5
Critical (27%)	90.4	90.6	88.2	82.1	75.5	74.6	76.7	80.8	84.5	87.7	90.2	92.1

Alternative 5 minus Revised Second Basis of Comparison

	End of Month Position (km)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.9	0.8	-0.1	-3.2	-3.1	-2.3	-1.4	-2.4	-0.4	-0.1	-0.4	-0.1
20%	0.1	0.1	-3.0	-3.6	-3.9	-0.7	-2.7	-1.6	-0.2	0.1	-0.4	-0.3
30%	0.4	0.0	-5.5	-3.8	-4.8	-2.5	-3.7	-2.7	0.4	-0.2	-0.6	-0.3
40%	0.0	-2.7	-6.3	-5.4	-2.2	-2.0	-3.3	-3.8	1.0	0.2	-0.5	0.0
50%	-1.0	-9.2	-5.6	-4.4	-3.0	-1.8	-3.1	-3.5	-0.2	-0.4	-0.8	-0.9
60%	-9.2	-8.6	-2.7	-3.3	-0.6	0.1	-3.4	-3.9	0.5	-0.8	-0.1	-8.0
70%	-15.9	-13.9	-5.2	-1.2	-0.5	-0.1	-1.9	-2.3	-1.0	-0.7	-0.3	-14.6
80%	-15.6	-13.9	-3.7	-0.6	0.0	0.2	-1.2	-1.3	-1.6	-0.5	-1.5	-14.4
90%	-13.4	-5.8	-0.3	-0.1	0.0	0.3	-0.5	-1.2	-0.7	-0.2	-0.8	-13.8
Long Term												
Full Simulation Period[b]	-5.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Water Year Types[c]												
Wet (23%)	-7.5	-6.8	-2.6	-1.0	-0.4	0.0	-1.3	-2.0	0.0	-0.5	-0.6	-12.7
Above Normal (24%)	-4.1	-5.0	-4.2	-2.7	-1.2	0.0	-2.1	-2.9	0.2	-0.3	-0.7	-7.2
Below Normal (10%)	-9.2	-7.0	-4.1	-4.2	-1.7	-0.5	-2.8	-2.8	0.7	-0.4	-1.0	-0.5
Dry (16%)	-5.1	-4.9	-3.4	-3.4	-3.1	-2.2	-2.9	-2.6	-0.4	0.1	-0.4	-0.3
Critical (27%)	-1.5	-1.4	-1.8	-1.9	-3.0	-2.1	-2.1	-2.5	-1.3	-0.5	-0.4	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.13 Delta Outflow

Table 5C.3.2.13.1 Old and Middle River, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (23%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (24%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (10%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (16%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (27%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

Revised Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,213	-4,272	-3,968	-2,854	-824	-160	-2,064	-1,634	-2,112	-3,246	-3,105	-3,732
20%	-3,760	-5,330	-6,081	-4,745	-2,550	-1,248	-3,157	-2,833	-2,809	-5,223	-4,480	-5,069
30%	-4,915	-6,950	-6,787	-6,261	-4,041	-3,273	-4,168	-3,932	-3,314	-6,217	-5,712	-6,231
40%	-6,258	-7,438	-7,871	-7,379	-5,843	-4,024	-4,920	-4,714	-3,970	-7,181	-7,103	-8,305
50%	-7,278	-8,669	-8,406	-8,289	-6,429	-4,945	-5,965	-5,153	-5,163	-8,021	-8,109	-9,168
60%	-8,071	-9,221	-9,004	-8,845	-7,331	-5,427	-6,654	-5,526	-5,795	-8,941	-9,175	-9,647
70%	-9,158	-9,706	-9,347	-9,257	-8,356	-6,217	-7,180	-5,865	-6,068	-9,445	-9,861	-9,963
80%	-9,924	-9,988	-9,503	-9,553	-8,878	-6,633	-7,672	-6,382	-6,578	-9,955	-10,366	-10,089
90%	-10,188	-10,067	-9,686	-9,795	-9,516	-7,604	-8,033	-7,291	-7,016	-10,733	-10,684	-10,164
Long Term												
Full Simulation Period[b]	-6,927	-7,828	-7,459	-6,669	-4,977	-3,763	-5,451	-4,776	-4,655	-7,520	-7,457	-7,883
Water Year Types[c]												
Wet (23%)	-7,970	-9,125	-7,749	-4,991	-2,581	-1,121	-7,036	-6,345	-4,153	-8,364	-9,546	-9,646
Above Normal (24%)	-6,298	-7,886	-7,998	-8,337	-6,176	-5,288	-7,062	-5,723	-5,991	-8,950	-9,951	-9,844
Below Normal (10%)	-8,002	-8,896	-8,199	-8,551	-5,299	-5,515	-5,435	-4,867	-6,643	-10,133	-8,149	-8,185
Dry (16%)	-6,476	-7,093	-7,256	-7,215	-6,840	-5,661	-4,200	-3,734	-4,589	-6,796	-5,151	-6,536
Critical (27%)	-5,117	-5,206	-5,908	-5,862	-5,471	-3,067	-2,373	-2,005	-2,584	-2,950	-3,436	-3,906

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	552	-548	-156	-32	-158	809	-5270	-4431	-961	883	-652	43
20%	317	-770	-1409	-1922	-779	146	-5363	-4137	-1239	1626	-448	78
30%	-302	-1794	-1543	-2906	-1218	-535	-5800	-4493	186	1429	57	-226
40%	-1437	-1812	-2000	-2986	-2529	-524	-6188	-4822	-470	1707	893	-684
50%	-1950	-2349	-2535	-3579	-2648	-1445	-6576	-4971	-1663	1355	1847	-168
60%	-2482	-2657	-3133	-3845	-2453	-860	-6552	-5043	-1309	805	1455	-391
70%	-2905	-2605	-1934	-4257	-3356	-1217	-6732	-5233	-1068	856	876	-311
80%	-3363	-1803	34	-4553	-3878	-1633	-6677	-5253	-1578	647	488	-205
90%	-2784	-71	-5	-4795	-4516	-2604	-6786	-5876	-2016	375	399	-133
Long Term												
Full Simulation Period[b]	-1451	-1448	-1232	-3134	-2072	-1073	-6371	-5086	-1078	976	518	-177
Water Year Types[c]												
Wet (23%)	-2123	-1895	-2223	-3091	-590	432	-10146	-8356	121	593	986	-288
Above Normal (24%)	-773	-1085	-1148	-4637	-3015	-1112	-8258	-6134	-1466	200	922	-302
Below Normal (10%)	-2514	-2147	-530	-4171	-1823	-1597	-5601	-4551	-3198	407	1476	-7
Dry (16%)	-1036	-1140	-581	-2594	-3267	-2588	-3531	-2828	-1240	2104	-406	-84
Critical (27%)	-446	-748	-902	-1548	-2503	-1287	-1587	-1118	-1045	1291	-268	-113

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.13.2 Old and Middle River, Monthly Flow

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,213	-4,272	-3,968	-2,854	-824	-160	-2,064	-1,634	-2,112	-3,246	-3,105	-3,732
20%	-3,760	-5,330	-6,081	-4,745	-2,550	-1,248	-3,157	-2,833	-2,809	-5,223	-4,480	-5,069
30%	-4,915	-6,950	-6,787	-6,261	-4,041	-3,273	-4,168	-3,932	-3,314	-6,217	-5,712	-6,231
40%	-6,258	-7,438	-7,871	-7,379	-5,843	-4,024	-4,920	-4,714	-3,970	-7,181	-7,103	-8,305
50%	-7,278	-8,669	-8,406	-8,289	-6,429	-4,945	-5,965	-5,153	-5,163	-8,021	-8,109	-9,168
60%	-8,071	-9,221	-9,004	-8,845	-7,331	-5,427	-6,654	-5,526	-5,795	-8,941	-9,175	-9,647
70%	-9,158	-9,706	-9,347	-9,257	-8,356	-6,217	-7,180	-5,865	-6,068	-9,445	-9,861	-9,963
80%	-9,924	-9,988	-9,503	-9,553	-8,878	-6,633	-7,672	-6,382	-6,578	-9,955	-10,366	-10,089
90%	-10,188	-10,067	-9,686	-9,795	-9,516	-7,604	-8,033	-7,291	-7,016	-10,733	-10,684	-10,164
Long Term												
Full Simulation Period[b]	-6,927	-7,828	-7,459	-6,669	-4,977	-3,763	-5,451	-4,776	-4,655	-7,520	-7,457	-7,883
Water Year Types[c]												
Wet (23%)	-7,970	-9,125	-7,749	-4,991	-2,581	-1,121	-7,036	-6,345	-4,153	-8,364	-9,546	-9,646
Above Normal (24%)	-6,298	-7,886	-7,998	-8,337	-6,176	-5,288	-7,062	-5,723	-5,991	-8,950	-9,951	-9,844
Below Normal (10%)	-8,002	-8,896	-8,199	-8,551	-5,299	-5,515	-5,435	-4,867	-6,643	-10,133	-8,149	-8,185
Dry (16%)	-6,476	-7,093	-7,256	-7,215	-6,840	-5,661	-4,200	-3,734	-4,589	-6,796	-5,151	-6,536
Critical (27%)	-5,117	-5,206	-5,908	-5,862	-5,471	-3,067	-2,373	-2,005	-2,584	-2,950	-3,436	-3,906

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (23%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (24%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (10%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (16%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (27%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	-552	548	156	32	158	-809	5270	4431	961	-883	652	-43
20%	-317	770	1409	1922	779	-146	5363	4137	1239	-1626	448	-78
30%	302	1794	1543	2906	1218	535	5800	4493	-186	-1429	-57	226
40%	1437	1812	2000	2986	2529	524	6188	4822	470	-1707	-893	684
50%	1950	2349	2535	3579	2648	1445	6576	4971	1663	-1355	-1847	168
60%	2482	2657	3133	3845	2453	860	6552	5043	1309	-805	-1455	391
70%	2905	2605	1934	4257	3356	1217	6732	5233	1068	-856	-876	311
80%	3363	1803	-34	4553	3878	1633	6677	5253	1578	-647	-488	205
90%	2784	71	5	4795	4516	2604	6786	5876	2016	-375	-399	133
Long Term												
Full Simulation Period[b]	1451	1448	1232	3134	2072	1073	6371	5086	1078	-976	-518	177
Water Year Types[c]												
Wet (23%)	2123	1895	2223	3091	590	-432	10146	8356	-121	-593	-986	288
Above Normal (24%)	773	1085	1148	4637	3015	1112	8258	6134	1466	-200	-922	302
Below Normal (10%)	2514	2147	530	4171	1823	1597	5601	4551	3198	-407	-1476	7
Dry (16%)	1036	1140	581	2594	3267	2588	3531	2828	1240	-2104	406	84
Critical (27%)	446	748	902	1548	2503	1287	1587	1118	1045	-1291	268	113

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.13.3 Old and Middle River, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	-3,213	-4,272	-3,968	-2,854	-824	-160	-2,064	-1,634	-2,112	-3,246	-3,105	-3,732
20%	-3,760	-5,330	-6,081	-4,745	-2,550	-1,248	-3,157	-2,833	-2,809	-5,223	-4,480	-5,069
30%	-4,915	-6,950	-6,787	-6,261	-4,041	-3,273	-4,168	-3,932	-3,314	-6,217	-5,712	-6,231
40%	-6,258	-7,438	-7,871	-7,379	-5,843	-4,024	-4,920	-4,714	-3,970	-7,181	-7,103	-8,305
50%	-7,278	-8,669	-8,406	-8,289	-6,429	-4,945	-5,965	-5,153	-5,163	-8,021	-8,109	-9,168
60%	-8,071	-9,221	-9,004	-8,845	-7,331	-5,427	-6,654	-5,526	-5,795	-8,941	-9,175	-9,647
70%	-9,158	-9,706	-9,347	-9,257	-8,356	-6,217	-7,180	-5,865	-6,068	-9,445	-9,861	-9,963
80%	-9,924	-9,988	-9,503	-9,553	-8,878	-6,633	-7,672	-6,382	-6,578	-9,955	-10,366	-10,089
90%	-10,188	-10,067	-9,686	-9,795	-9,516	-7,604	-8,033	-7,291	-7,016	-10,733	-10,684	-10,164
Long Term												
Full Simulation Period[b]	-6,927	-7,828	-7,459	-6,669	-4,977	-3,763	-5,451	-4,776	-4,655	-7,520	-7,457	-7,883
Water Year Types[c]												
Wet (23%)	-7,970	-9,125	-7,749	-4,991	-2,581	-1,121	-7,036	-6,345	-4,153	-8,364	-9,546	-9,646
Above Normal (24%)	-6,298	-7,886	-7,998	-8,337	-6,176	-5,288	-7,062	-5,723	-5,991	-8,950	-9,951	-9,844
Below Normal (10%)	-8,002	-8,896	-8,199	-8,551	-5,299	-5,515	-5,435	-4,867	-6,643	-10,133	-8,149	-8,185
Dry (16%)	-6,476	-7,093	-7,256	-7,215	-6,840	-5,661	-4,200	-3,734	-4,589	-6,796	-5,151	-6,536
Critical (27%)	-5,117	-5,206	-5,908	-5,862	-5,471	-3,067	-2,373	-2,005	-2,584	-2,950	-3,436	-3,906

Alternative 3

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	-3,471	-4,154	-3,935	-2,361	-447	-819	405	-673	-2,098	-3,660	-3,007	-3,495
20%	-4,101	-5,233	-5,184	-3,500	-1,896	-1,347	-946	-1,150	-4,287	-5,775	-4,278	-5,225
30%	-4,803	-6,947	-6,403	-3,500	-2,838	-2,283	-1,200	-1,150	-4,625	-7,093	-6,258	-6,437
40%	-5,638	-7,541	-6,403	-3,500	-3,500	-3,500	-2,086	-2,560	-5,017	-8,012	-7,669	-8,402
50%	-7,049	-8,326	-6,403	-5,000	-3,500	-3,500	-2,787	-3,326	-5,526	-8,990	-9,396	-9,192
60%	-8,252	-9,400	-6,811	-5,000	-4,273	-3,616	-3,368	-3,500	-5,750	-9,549	-9,845	-9,680
70%	-8,982	-9,810	-7,677	-5,000	-5,000	-5,061	-3,526	-3,500	-5,750	-10,046	-10,212	-9,842
80%	-9,734	-9,990	-8,823	-5,000	-5,621	-6,252	-4,031	-4,451	-6,160	-10,767	-10,624	-10,044
90%	-10,085	-10,084	-9,552	-6,976	-7,500	-7,499	-4,474	-5,149	-7,011	-11,148	-10,797	-10,177
Long Term												
Full Simulation Period[b]	-6,888	-7,771	-6,494	-3,764	-3,283	-3,072	-2,176	-2,623	-4,997	-8,112	-7,831	-7,917
Water Year Types[c]												
Wet (23%)	-7,965	-9,052	-5,964	-2,522	-2,581	-1,646	-1,367	-2,399	-5,476	-8,581	-9,731	-9,555
Above Normal (24%)	-6,452	-8,078	-6,997	-3,789	-4,137	-5,220	-3,630	-4,226	-5,981	-9,160	-10,444	-9,839
Below Normal (10%)	-7,685	-8,790	-7,868	-4,451	-3,689	-4,765	-2,676	-2,885	-5,409	-10,929	-10,032	-8,880
Dry (16%)	-6,546	-7,086	-6,848	-4,588	-3,582	-3,358	-2,517	-2,670	-4,927	-8,172	-5,079	-6,457
Critical (27%)	-4,869	-4,871	-5,252	-4,429	-3,011	-1,804	-1,328	-1,054	-2,628	-3,280	-3,450	-3,839

Alternative 3 minus Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	**-258**	118	33	494	377	**-660**	2469	960	13	**-413**	98	237
20%	**-341**	98	897	1245	654	**-99**	2210	1682	**-1478**	**-551**	202	**-156**
30%	112	3	384	2761	1203	990	2968	2782	**-1311**	**-875**	**-546**	**-205**
40%	620	**-103**	1468	3879	2343	524	2834	2153	**-1047**	**-831**	**-566**	**-97**
50%	229	344	2002	3289	2929	1445	3178	1827	**-363**	**-969**	**-1287**	**-24**
60%	**-181**	**-178**	2193	3845	3058	1811	3287	2026	45	**-608**	**-670**	**-33**
70%	176	**-104**	1669	4257	3356	1156	3654	2365	318	**-601**	**-351**	121
80%	189	**-2**	680	4553	3257	381	3641	1930	418	**-812**	**-258**	45
90%	103	**-17**	134	2819	2016	105	3558	2141	5	**-414**	**-113**	**-13**
Long Term												
Full Simulation Period[b]	39	57	965	2904	1694	692	3275	2153	**-341**	**-593**	**-374**	**-34**
Water Year Types[c]												
Wet (23%)	5	73	1785	2469	**0**	**-525**	5669	3946	**-1323**	**-217**	**-185**	91
Above Normal (24%)	**-154**	**-192**	1001	4548	2039	68	3432	1497	10	**-210**	**-493**	5
Below Normal (10%)	317	106	331	4100	1611	751	2760	1982	1234	**-796**	**-1883**	**-695**
Dry (16%)	**-70**	7	408	2627	3257	2303	1684	1064	**-337**	**-1376**	72	80
Critical (27%)	248	334	656	1433	2460	1263	1046	951	**-44**	**-330**	**-14**	68

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.13.4 Old and Middle River, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,213	-4,272	-3,968	-2,854	-824	-160	-2,064	-1,634	-2,112	-3,246	-3,105	-3,732
20%	-3,760	-5,330	-6,081	-4,745	-2,550	-1,248	-3,157	-2,833	-2,809	-5,223	-4,480	-5,069
30%	-4,915	-6,950	-6,787	-6,261	-4,041	-3,273	-4,168	-3,932	-3,314	-6,217	-5,712	-6,231
40%	-6,258	-7,438	-7,871	-7,379	-5,843	-4,024	-4,920	-4,714	-3,970	-7,181	-7,103	-8,305
50%	-7,278	-8,669	-8,406	-8,289	-6,429	-4,945	-5,965	-5,153	-5,163	-8,021	-8,109	-9,168
60%	-8,071	-9,221	-9,004	-8,845	-7,331	-5,427	-6,654	-5,526	-5,795	-8,941	-9,175	-9,647
70%	-9,158	-9,706	-9,347	-9,257	-8,356	-6,217	-7,180	-5,865	-6,068	-9,445	-9,861	-9,963
80%	-9,924	-9,988	-9,503	-9,553	-8,878	-6,633	-7,672	-6,382	-6,578	-9,955	-10,366	-10,089
90%	-10,188	-10,067	-9,686	-9,795	-9,516	-7,604	-8,033	-7,291	-7,016	-10,733	-10,684	-10,164
Long Term												
Full Simulation Period[b]	-6,927	-7,828	-7,459	-6,669	-4,977	-3,763	-5,451	-4,776	-4,655	-7,520	-7,457	-7,883
Water Year Types[c]												
Wet (23%)	-7,970	-9,125	-7,749	-4,991	-2,581	-1,121	-7,036	-6,345	-4,153	-8,364	-9,546	-9,646
Above Normal (24%)	-6,298	-7,886	-7,998	-8,337	-6,176	-5,288	-7,062	-5,723	-5,991	-8,950	-9,951	-9,844
Below Normal (10%)	-8,002	-8,896	-8,199	-8,551	-5,299	-5,515	-5,435	-4,867	-6,643	-10,133	-8,149	-8,185
Dry (16%)	-6,476	-7,093	-7,256	-7,215	-6,840	-5,661	-4,200	-3,734	-4,589	-6,796	-5,151	-6,536
Critical (27%)	-5,117	-5,206	-5,908	-5,862	-5,471	-3,067	-2,373	-2,005	-2,584	-2,950	-3,436	-3,906

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,722	-3,722	-3,826	-2,823	-641	-965	3,206	2,797	-1,150	-4,455	-3,295	-3,913
20%	-4,102	-4,558	-4,737	-2,823	-1,771	-1,394	2,134	1,335	-2,319	-6,620	-4,451	-5,247
30%	-4,583	-5,162	-5,150	-3,355	-2,820	-2,738	1,566	712	-3,500	-8,001	-6,361	-6,304
40%	-4,858	-5,603	-5,871	-4,378	-3,267	-3,500	1,270	568	-3,500	-9,172	-8,612	-7,552
50%	-5,145	-6,098	-5,871	-4,710	-3,513	-3,500	623	381	-3,500	-9,522	-10,244	-8,864
60%	-5,368	-6,494	-5,871	-5,000	-4,878	-4,568	381	381	-4,467	-9,822	-10,615	-9,232
70%	-6,237	-7,087	-7,453	-5,000	-5,000	-5,000	381	381	-5,000	-10,430	-10,756	-9,654
80%	-6,583	-8,086	-9,466	-5,000	-5,000	-5,000	381	381	-5,000	-10,694	-10,844	-9,915
90%	-7,355	-9,871	-9,681	-5,000	-5,000	-5,000	381	381	-5,000	-11,168	-11,076	-10,031
Long Term												
Full Simulation Period[b]	-5,443	-6,337	-6,246	-3,551	-2,904	-2,710	1,482	1,034	-3,631	-8,687	-8,239	-7,714
Water Year Types[c]												
Wet (23%)	-5,812	-7,354	-5,572	-1,900	-1,926	-1,598	3,122	2,182	-4,275	-8,965	-10,573	-9,193
Above Normal (24%)	-5,543	-6,368	-6,838	-3,716	-3,222	-4,174	1,292	780	-4,521	-9,187	-10,817	-9,491
Below Normal (10%)	-5,418	-6,748	-7,637	-4,380	-3,554	-3,971	718	468	-3,444	-10,623	-9,770	-8,460
Dry (16%)	-5,380	-5,893	-6,731	-4,620	-3,578	-3,074	565	453	-3,523	-9,446	-5,313	-6,571
Critical (27%)	-4,661	-4,461	-4,983	-4,409	-2,957	-1,770	363	310	-1,623	-4,501	-3,860	-3,805

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-510	550	142	32	183	-805	5270	4431	961	-1209	-189	-181
20%	-343	773	1345	1922	779	-146	5291	4168	490	-1397	30	-178
30%	332	1788	1637	2906	1221	535	5733	4644	-186	-1784	-648	-73
40%	1400	1835	2000	3001	2576	524	6190	5281	470	-1991	-1509	752
50%	2132	2571	2535	3579	2916	1445	6588	5534	1663	-1501	-2135	305
60%	2703	2727	3133	3845	2453	860	7036	5907	1328	-881	-1440	415
70%	2921	2619	1893	4257	3356	1217	7562	6247	1068	-985	-895	309
80%	3340	1902	37	4553	3878	1633	8053	6763	1578	-739	-478	174
90%	2833	196	5	4795	4516	2604	8414	7672	2016	-435	-392	133
Long Term												
Full Simulation Period[b]	1485	1492	1213	3118	2074	1053	6933	5811	1025	-1167	-782	169
Water Year Types[c]												
Wet (23%)	2158	1771	2177	3091	655	-477	10158	8528	-122	-602	-1027	453
Above Normal (24%)	755	1517	1160	4621	2954	1114	8354	6502	1470	-236	-866	353
Below Normal (10%)	2585	2148	562	4171	1746	1544	6153	5335	3199	-490	-1621	-275
Dry (16%)	1096	1200	525	2595	3262	2587	4766	4187	1067	-2650	-162	-34
Critical (27%)	456	744	925	1453	2514	1297	2737	2315	962	-1551	-424	102

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.14 Exports through Jones and Banks Pumping Plants

Table 5C.3.2.14.1 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

No Action Alternative

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (23%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (24%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (10%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (16%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (27%)	314	293	384	349	250	179	93	90	64	223	176	242

Revised Alternative 1

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	738	803	722	707	530	515	526	694	694	671
20%	681	671	723	769	684	619	508	417	450	694	694	671
30%	626	659	719	746	666	563	481	369	429	691	694	671
40%	551	622	717	738	602	542	433	351	408	609	621	668
50%	488	590	683	724	552	512	391	314	392	555	529	628
60%	426	502	609	645	512	489	336	277	353	474	468	549
70%	327	460	554	562	461	459	264	228	316	390	364	408
80%	249	349	492	499	393	373	189	169	176	306	281	338
90%	196	286	382	371	309	301	109	81	128	146	183	228
Long Term												
Full Simulation Period[b]	467	524	613	638	528	491	355	302	349	494	487	526
Water Year Types[c]												
Wet (23%)	544	620	717	724	587	554	485	428	451	632	653	660
Above Normal (24%)	419	520	641	719	590	568	455	359	411	574	647	648
Below Normal (10%)	544	595	629	670	471	498	342	296	413	631	525	543
Dry (16%)	434	472	550	567	516	491	262	221	273	401	323	431
Critical (27%)	336	340	444	451	405	264	135	110	132	138	195	249

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**34%**	0%	2%	**33%**	**18%**	5%	**119%**	**115%**	3%	-3%	-4%	0%
20%	**50%**	**17%**	1%	**57%**	**29%**	0%	**180%**	**176%**	**25%**	-2%	-4%	1%
30%	**44%**	**38%**	5%	**75%**	**49%**	**11%**	**205%**	**189%**	**26%**	0%	-3%	3%
40%	**38%**	**40%**	**28%**	**76%**	**47%**	**13%**	**214%**	**238%**	**28%**	**-9%**	**-12%**	**7%**
50%	**32%**	**42%**	**38%**	**79%**	**45%**	**21%**	**205%**	**225%**	**55%**	**-12%**	**-24%**	4%
60%	**27%**	**32%**	**28%**	**63%**	**41%**	**40%**	**179%**	**201%**	**70%**	**-19%**	**-10%**	**8%**
70%	**5%**	**33%**	**22%**	**49%**	**42%**	**47%**	**133%**	**147%**	**64%**	**-22%**	-2%	0%
80%	**-13%**	**16%**	**30%**	**55%**	**48%**	**32%**	**82%**	**83%**	**17%**	**-31%**	**17%**	1%
90%	**-22%**	**14%**	**14%**	**33%**	**88%**	**89%**	**22%**	**-12%**	**200%**	**-37%**	**30%**	**-6%**
Long Term												
Full Simulation Period[b]	**23%**	**22%**	**16%**	**50%**	**34%**	**16%**	**130%**	**117%**	**27%**	**-11%**	**-6%**	2%
Water Year Types[c]												
Wet (23%)	**33%**	**25%**	**27%**	**41%**	**9%**	**-7%**	**138%**	**107%**	1%	**-5%**	**-9%**	3%
Above Normal (24%)	**11%**	**16%**	**14%**	**77%**	**47%**	**14%**	**249%**	**241%**	**30%**	-2%	**-9%**	3%
Below Normal (10%)	**41%**	**30%**	**7%**	**73%**	**33%**	**27%**	**154%**	**196%**	**98%**	-4%	**-16%**	0%
Dry (16%)	**16%**	**19%**	**8%**	**45%**	**64%**	**55%**	**71%**	**76%**	**41%**	**-26%**	**9%**	1%
Critical (27%)	**7%**	**16%**	**16%**	**29%**	**62%**	**47%**	**46%**	**23%**	**105%**	**-38%**	**11%**	3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.14.2 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Revised Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	738	803	722	707	530	515	526	694	694	671
20%	681	671	723	769	684	619	508	417	450	694	694	671
30%	626	659	719	746	666	563	481	369	429	691	694	671
40%	551	622	717	738	602	542	433	351	408	609	621	668
50%	488	590	683	724	552	512	391	314	392	555	529	628
60%	426	502	609	645	512	489	336	277	353	474	468	549
70%	327	460	554	562	461	459	264	228	316	390	364	408
80%	249	349	492	499	393	373	189	169	176	306	281	338
90%	196	286	382	371	309	301	109	81	128	146	183	228
Long Term												
Full Simulation Period[b]	467	524	613	638	528	491	355	302	349	494	487	526
Water Year Types[c]												
Wet (23%)	544	620	717	724	587	554	485	428	451	632	653	660
Above Normal (24%)	419	520	641	719	590	568	455	359	411	574	647	648
Below Normal (10%)	544	595	629	670	471	498	342	296	413	631	525	543
Dry (16%)	434	472	550	567	516	491	262	221	273	401	323	431
Critical (27%)	336	340	444	451	405	264	135	110	132	138	195	249

No Action Alternative

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (23%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (24%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (10%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (16%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (27%)	314	293	384	349	250	179	93	90	64	223	176	242

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-25%	0%	-2%	-25%	-15%	-5%	-54%	-53%	-3%	3%	4%	0%
20%	-33%	-15%	-1%	-36%	-22%	0%	-64%	-64%	-20%	2%	4%	-1%
30%	-31%	-27%	-5%	-43%	-33%	-10%	-67%	-65%	-21%	0%	3%	-3%
40%	-27%	-29%	-22%	-43%	-32%	-12%	-68%	-70%	-22%	9%	14%	-7%
50%	-24%	-30%	-28%	-44%	-31%	-17%	-67%	-69%	-36%	14%	31%	-4%
60%	-21%	-24%	-22%	-39%	-29%	-29%	-64%	-67%	-41%	24%	11%	-7%
70%	-5%	-25%	-18%	-33%	-30%	-32%	-57%	-60%	-39%	29%	2%	0%
80%	15%	-14%	-23%	-36%	-32%	-24%	-45%	-45%	-14%	45%	-14%	-1%
90%	28%	-12%	-12%	-25%	-47%	-47%	-18%	14%	-67%	58%	-23%	7%
Long Term												
Full Simulation Period[b]	-19%	-18%	-14%	-33%	-25%	-14%	-57%	-54%	-21%	13%	7%	-2%
Water Year Types[c]												
Wet (23%)	-25%	-20%	-21%	-29%	-8%	7%	-58%	-52%	-1%	6%	10%	-3%
Above Normal (24%)	-10%	-13%	-12%	-44%	-32%	-13%	-71%	-71%	-23%	2%	9%	-3%
Below Normal (10%)	-29%	-23%	-6%	-42%	-25%	-21%	-61%	-66%	-49%	4%	19%	0%
Dry (16%)	-14%	-16%	-7%	-31%	-39%	-35%	-41%	-43%	-29%	35%	-8%	-1%
Critical (27%)	-6%	-14%	-14%	-23%	-38%	-32%	-31%	-18%	-51%	62%	-10%	-3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.14.3 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Revised Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	738	803	722	707	530	515	526	694	694	671
20%	681	671	723	769	684	619	508	417	450	694	694	671
30%	626	659	719	746	666	563	481	369	429	691	694	671
40%	551	622	717	738	602	542	433	351	408	609	621	668
50%	488	590	683	724	552	512	391	314	392	555	529	628
60%	426	502	609	645	512	489	336	277	353	474	468	549
70%	327	460	554	562	461	459	264	228	316	390	364	408
80%	249	349	492	499	393	373	189	169	176	306	281	338
90%	196	286	382	371	309	301	109	81	128	146	183	228
Long Term												
Full Simulation Period[b]	467	524	613	638	528	491	355	302	349	494	487	526
Water Year Types[c]												
Wet (23%)	544	620	717	724	587	554	485	428	451	632	653	660
Above Normal (24%)	419	520	641	719	590	568	455	359	411	574	647	648
Below Normal (10%)	544	595	629	670	471	498	342	296	413	631	525	543
Dry (16%)	434	472	550	567	516	491	262	221	273	401	323	431
Critical (27%)	336	340	444	451	405	264	135	110	132	138	195	249

Alternative 3

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	718	653	725	722	547	563	667	694	694	671
20%	673	671	691	565	603	622	510	496	461	694	694	671
30%	627	652	628	440	524	577	465	452	399	694	694	671
40%	552	627	583	422	449	532	437	386	373	680	694	657
50%	476	571	546	411	393	460	369	329	355	628	624	640
60%	382	501	523	395	365	351	320	281	338	566	502	572
70%	322	467	505	377	320	316	255	230	311	448	396	417
80%	265	346	479	328	264	288	187	124	252	382	268	344
90%	218	276	378	304	202	159	124	102	138	190	170	228
Long Term												
Full Simulation Period[b]	465	520	549	442	426	445	353	330	362	533	513	529
Water Year Types[c]												
Wet (23%)	544	615	601	559	594	589	494	490	519	648	667	654
Above Normal (24%)	430	533	574	414	469	566	441	413	397	586	680	647
Below Normal (10%)	524	587	607	394	373	448	312	266	330	683	650	588
Dry (16%)	440	471	523	389	314	337	270	242	292	492	318	426
Critical (27%)	321	319	401	355	251	180	127	100	131	158	196	245

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	-3%	**-19%**	0%	2%	3%	**9%**	**27%**	0%	0%	0%
20%	-1%	0%	-4%	**-26%**	**-12%**	1%	0%	**19%**	2%	0%	0%	0%
30%	0%	-1%	**-13%**	**-41%**	**-21%**	2%	-3%	**22%**	**-7%**	0%	0%	0%
40%	0%	1%	**-19%**	**-43%**	**-25%**	-2%	1%	**10%**	**-9%**	**12%**	**12%**	-2%
50%	-3%	-3%	**-20%**	**-43%**	**-29%**	**-10%**	**-6%**	5%	**-9%**	**13%**	**18%**	2%
60%	**-10%**	0%	**-14%**	**-39%**	**-29%**	**-28%**	-5%	1%	-4%	**20%**	**7%**	4%
70%	-2%	1%	**-9%**	**-33%**	**-31%**	**-31%**	-3%	1%	-1%	**15%**	**9%**	2%
80%	**7%**	-1%	-3%	**-34%**	**-33%**	**-23%**	-1%	**-26%**	**43%**	**25%**	-5%	2%
90%	**11%**	-3%	-1%	**-18%**	**-35%**	**-47%**	**14%**	**25%**	**7%**	**30%**	**-7%**	0%
Long Term												
Full Simulation Period[b]	0%	-1%	**-10%**	**-31%**	**-19%**	**-9%**	-1%	**9%**	4%	**8%**	**5%**	0%
Water Year Types[c]												
Wet (23%)	0%	-1%	**-16%**	**-23%**	1%	**6%**	2%	**14%**	**15%**	2%	2%	-1%
Above Normal (24%)	3%	2%	**-10%**	**-42%**	**-21%**	0%	-3%	**15%**	-3%	2%	**5%**	0%
Below Normal (10%)	-4%	-1%	-3%	**-41%**	**-21%**	**-10%**	**-9%**	**-10%**	**-20%**	**8%**	**24%**	**8%**
Dry (16%)	1%	0%	-5%	**-31%**	**-39%**	**-31%**	3%	**9%**	**7%**	**23%**	-1%	-1%
Critical (27%)	-4%	**-6%**	**-10%**	**-21%**	**-38%**	**-32%**	**-6%**	**-9%**	0%	**15%**	0%	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.14.4 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	694	671	738	803	722	707	530	515	526	694	694	671
20%	681	671	723	769	684	619	508	417	450	694	694	671
30%	626	659	719	746	666	563	481	369	429	691	694	671
40%	551	622	717	738	602	542	433	351	408	609	621	668
50%	488	590	683	724	552	512	391	314	392	555	529	628
60%	426	502	609	645	512	489	336	277	353	474	468	549
70%	327	460	554	562	461	459	264	228	316	390	364	408
80%	249	349	492	499	393	373	189	169	176	306	281	338
90%	196	286	382	371	309	301	109	81	128	146	183	228
Long Term												
Full Simulation Period[b]	467	524	613	638	528	491	355	302	349	494	487	526
Water Year Types[c]												
Wet (23%)	544	620	717	724	587	554	485	428	451	632	653	660
Above Normal (24%)	419	520	641	719	590	568	455	359	411	574	647	648
Below Normal (10%)	544	595	629	670	471	498	342	296	413	631	525	543
Dry (16%)	434	472	550	567	516	491	262	221	273	401	323	431
Critical (27%)	336	340	444	451	405	264	135	110	132	138	195	249

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (TAF)											
Probability of Exceedance[a]												
10%	514	671	721	604	613	677	223	218	509	714	724	671
20%	454	553	717	490	528	612	165	127	359	709	724	662
30%	429	479	685	427	448	528	134	91	340	696	715	648
40%	378	443	558	419	416	479	122	83	318	678	705	626
50%	360	408	496	405	380	424	111	71	251	646	693	598
60%	334	375	481	396	363	349	97	50	207	606	571	508
70%	311	347	452	377	323	312	80	38	193	568	401	415
80%	289	302	387	319	267	283	45	23	178	445	278	347
90%	245	250	337	280	165	159	30	7	42	271	192	254
Long Term												
Full Simulation Period[b]	376	427	528	427	394	423	122	99	279	570	538	514
Water Year Types[c]												
Wet (23%)	408	505	564	514	532	592	202	202	444	667	718	627
Above Normal (24%)	376	423	561	407	405	496	127	92	315	590	705	625
Below Normal (10%)	381	456	588	387	359	397	103	55	208	663	632	561
Dry (16%)	370	394	513	392	315	318	80	41	205	577	333	433
Critical (27%)	313	293	382	355	249	179	34	20	69	239	222	243

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Export Volume (Percent Change)											
Probability of Exceedance[a]												
10%	**-26%**	0%	-2%	**-25%**	**-15%**	-4%	**-58%**	**-58%**	-3%	3%	4%	0%
20%	**-33%**	**-18%**	-1%	**-36%**	**-23%**	-1%	**-67%**	**-70%**	**-20%**	2%	4%	-1%
30%	**-32%**	**-27%**	-5%	**-43%**	**-33%**	**-6%**	**-72%**	**-75%**	**-21%**	1%	3%	-4%
40%	**-31%**	**-29%**	**-22%**	**-43%**	**-31%**	**-12%**	**-72%**	**-77%**	**-22%**	**11%**	**14%**	**-6%**
50%	**-26%**	**-31%**	**-27%**	**-44%**	**-31%**	**-17%**	**-72%**	**-77%**	**-36%**	**16%**	**31%**	-5%
60%	**-22%**	**-25%**	**-21%**	**-39%**	**-29%**	**-29%**	**-71%**	**-82%**	**-41%**	**28%**	**22%**	**-8%**
70%	-5%	**-25%**	**-18%**	**-33%**	**-30%**	**-32%**	**-70%**	**-84%**	**-39%**	**46%**	**10%**	2%
80%	**16%**	**-14%**	**-21%**	**-36%**	**-32%**	**-24%**	**-76%**	**-86%**	1%	**45%**	-1%	3%
90%	**25%**	**-13%**	**-12%**	**-25%**	**-47%**	**-47%**	**-72%**	**-91%**	**-67%**	**85%**	5%	**11%**
Long Term												
Full Simulation Period[b]	**-19%**	**-18%**	**-14%**	**-33%**	**-25%**	**-14%**	**-66%**	**-67%**	**-20%**	**15%**	**10%**	-2%
Water Year Types[c]												
Wet (23%)	**-25%**	**-19%**	**-21%**	**-29%**	**-9%**	**7%**	**-58%**	**-53%**	-1%	**6%**	**10%**	-5%
Above Normal (24%)	**-10%**	**-19%**	**-12%**	**-43%**	**-31%**	**-13%**	**-72%**	**-74%**	**-23%**	3%	**9%**	-4%
Below Normal (10%)	**-30%**	**-23%**	**-6%**	**-42%**	**-24%**	**-20%**	**-70%**	**-82%**	**-50%**	**5%**	**21%**	3%
Dry (16%)	**-15%**	**-16%**	**-7%**	**-31%**	**-39%**	**-35%**	**-69%**	**-81%**	**-25%**	**44%**	3%	0%
Critical (27%)	**-7%**	**-14%**	**-14%**	**-21%**	**-38%**	**-32%**	**-75%**	**-82%**	**-48%**	**74%**	**14%**	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.15 CVP Deliveries

Table 5C.3.2.15.1.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

				Revised Alternative 1	No Action Alternative	Revised Alternative 1 minus No Action Alternative
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,859	-1
			Dry	1,905	1,906	-1
			Critical	1,732	1,737	-5
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	146	8
			Dry	151	146	5
			Critical	105	102	3
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	207	7
			Dry	192	186	5
			Critical	151	152	-1
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	219	185	34
			Dry	122	86	37
			Critical	35	24	12
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	260	261	0
			Dry	268	269	-1
			Critical	221	224	-3
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	348	269	79
			Dry	203	140	63
			Critical	61	41	20
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	288	275	13
			Dry	284	274	10
			Critical	269	264	4
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	43	33	11
			Dry	25	17	8
			Critical	7	5	2
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	709	545	164
			Dry	422	288	134
			Critical	127	85	41
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,959	4,646	313
			Dry	4,459	4,198	261
			Critical	3,460	3,385	74

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.1.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Revised Alternative 1	No Action Alternative	Revised Alternative 1 minus No Action Alternative
Water Supply Reliability							
North of Delta							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	219	185	34
				Dry	122	86	37
				Critical	35	24	12
	CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	485	467	18
				Dry	461	447	14
				Critical	408	405	3
	CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	120	113	7
				Dry	105	97	8
				Critical	79	75	5
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,859	-1
				Dry	1,905	1,906	-1
				Critical	1,732	1,737	-5
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	146	8
				Dry	151	146	5
				Critical	105	102	3
Total CVP North of Delta							
	Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,717	2,658	59
				Dry	2,639	2,584	55
				Critical	2,281	2,268	13
South of Delta (Does not include Eastside Contractors deliveries)							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,100	847	253
				Dry	650	445	206
				Critical	195	131	64
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	15	2
				Dry	15	14	1
				Critical	12	11	1
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	260	261	0
				Dry	268	269	-1
				Critical	221	224	-3
Total CVP South of Delta (Does not include Eastside Contractors deliveries)							
	Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,377	1,123	254
				Dry	933	727	206
				Critical	428	366	62
Eastside Contractors deliveries							
	Water Rights	Delivery (annual average)	(TAF/year)	Long Term	514	508	6
				Dry	524	524	0
				Critical	486	445	42
	CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	118	104	15
				Dry	98	84	13
				Critical	25	4	21
Total Eastside Contractors Deliveries							
	Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	632	611	21
				Dry	621	608	13
				Critical	511	449	63

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.2.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					No Action Alternative	Revised Second Basis of Comparison	No Action Alternative minus Revised Second Basis of Comparison
Water Supply Reliability							
Sacramento River Hydrologic Region							
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,859	1,858	1
				Dry	1,906	1,905	1
				Critical	1,737	1,732	5
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
				Dry	146	151	-5
				Critical	102	105	-3
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	207	214	-7
				Dry	186	192	-5
				Critical	152	151	1
	CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	185	219	-34
				Dry	86	122	-37
				Critical	24	35	-12
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	0
				Dry	269	268	1
				Critical	224	221	3
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
				Dry	0	0	0
				Critical	0	0	0
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	269	348	-79
				Dry	140	203	-63
				Critical	41	61	-20
San Francisco Bay Hydrologic Region							
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	275	288	-13
				Dry	274	284	-10
				Critical	264	269	-4
	CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	33	43	-11
				Dry	17	25	-8
				Critical	5	7	-2
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
				Dry	12	12	0
				Critical	10	10	0
	CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	545	709	-164
				Dry	288	422	-134
				Critical	85	127	-41
Total For All Regions							
	Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,646	4,959	-313
				Dry	4,198	4,459	-261
				Critical	3,385	3,460	-74

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.2.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					No Action Alternative	Revised Second Basis of Comparison	No Action Alternative minus Revised Second Basis of Comparison
Water Supply Reliability							
North of Delta							
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term		185	219	-34
			Dry		86	122	-37
			Critical		24	35	-12
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term		467	485	-18
			Dry		447	461	-14
			Critical		405	408	-3
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term		113	120	-7
			Dry		97	105	-8
			Critical		75	79	-5
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term		1,859	1,858	1
			Dry		1,906	1,905	1
			Critical		1,737	1,732	5
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		146	155	-8
			Dry		146	151	-5
			Critical		102	105	-3
Total CVP North of Delta							
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term		2,658	2,717	-59
			Dry		2,584	2,639	-55
			Critical		2,268	2,281	-13
South of Delta (Does not include Eastside Contractors deliveries)							
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term		847	1,100	-253
			Dry		445	650	-206
			Critical		131	195	-64
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term		15	17	-2
			Dry		14	15	-1
			Critical		11	12	-1
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term		261	260	0
			Dry		269	268	1
			Critical		224	221	3
Total CVP South of Delta (Does not include Eastside Contractors deliveries)							
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term		1,123	1,377	-254
			Dry		727	933	-206
			Critical		366	428	-62
Eastside Contractors deliveries							
Water Rights	Delivery (annual average)	(TAF/year)	Long Term		508	514	-6
			Dry		524	524	0
			Critical		445	486	-42
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term		104	118	-15
			Dry		84	98	-13
			Critical		4	25	-21
Total Eastside Contractors Deliveries							
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term		611	632	-21
			Dry		608	621	-13
			Critical		449	511	-63

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.3.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Alternative 3	Revised Second Basis of Comparison	Alternative 3 minus Revised Second Basis of Comparison
Water Supply Reliability							
Sacramento River Hydrologic Region							
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,858	2
				Dry	1,906	1,905	1
				Critical	1,742	1,732	10
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	155	-1
				Dry	149	151	-2
				Critical	103	105	-2
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	214	0
				Dry	192	192	0
				Critical	152	151	2
	CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	209	219	-10
				Dry	111	122	-11
				Critical	31	35	-4
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	1
				Dry	269	268	1
				Critical	224	221	3
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
				Dry	0	0	0
				Critical	0	0	0
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	342	348	-6
				Dry	185	203	-17
				Critical	53	61	-8
San Francisco Bay Hydrologic Region							
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	286	288	-2
				Dry	283	284	-1
				Critical	267	269	-2
	CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	42	43	-1
				Dry	23	25	-2
				Critical	6	7	-1
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
				Dry	12	12	0
				Critical	10	10	0
	CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	696	709	-13
				Dry	387	422	-35
				Critical	108	127	-18
Total For All Regions							
	Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,927	4,959	-32
				Dry	4,392	4,459	-67
				Critical	3,437	3,460	-22

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.3.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

				Alternative 3	Revised Second Basis of Comparison	Alternative 3 minus Revised Second Basis of Comparison
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	209	219	-10
			Dry	111	122	-11
			Critical	31	35	-4
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	483	485	-2
			Dry	460	461	-1
			Critical	408	408	0
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	118	120	-2
			Dry	104	105	-1
			Critical	78	79	-2
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,858	2
			Dry	1,906	1,905	1
			Critical	1,742	1,732	10
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	155	-1
			Dry	149	151	-2
			Critical	103	105	-2
Total CVP North of Delta						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,706	2,717	-11
			Dry	2,626	2,639	-13
			Critical	2,284	2,281	3
South of Delta (Does not include Eastside Contractors deliveries)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,079	1,100	-20
			Dry	596	650	-55
			Critical	168	195	-28
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	17	0
			Dry	15	15	0
			Critical	11	12	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	1
			Dry	269	268	1
			Critical	224	221	3
Total CVP South of Delta (Does not include Eastside Contractors deliveries)						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,357	1,377	-20
			Dry	879	933	-54
			Critical	403	428	-25
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	513	514	-1
			Dry	524	524	0
			Critical	478	486	-8
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	123	118	5
			Dry	109	98	12
			Critical	36	25	11
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	636	632	4
			Dry	633	621	12
			Critical	514	511	3

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.4.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Alternative 5	Revised Second Basis of Comparison	Alternative 5 minus Revised Second Basis of Comparison
Water Supply Reliability							
Sacramento River Hydrologic Region							
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,858	3
				Dry	1,906	1,905	1
				Critical	1,747	1,732	15
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
				Dry	145	151	-6
				Critical	103	105	-2
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	207	214	-6
				Dry	186	192	-6
				Critical	152	151	1
	CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	185	219	-34
				Dry	85	122	-37
				Critical	24	35	-11
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	0
				Dry	269	268	1
				Critical	222	221	0
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
				Dry	0	0	0
				Critical	0	0	0
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	264	348	-84
				Dry	135	203	-68
				Critical	40	61	-21
San Francisco Bay Hydrologic Region							
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	275	288	-13
				Dry	275	284	-9
				Critical	264	269	-5
	CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	32	43	-11
				Dry	17	25	-8
				Critical	5	7	-2
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
				Dry	12	12	0
				Critical	10	10	0
	CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	538	709	-171
				Dry	281	422	-141
				Critical	85	127	-42
Total For All Regions							
	Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,634	4,959	-324
				Dry	4,186	4,459	-273
				Critical	3,393	3,460	-67

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.4.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Alternative 5	Revised Second Basis of Comparison	Alternative 5 minus Revised Second Basis of Comparison
Water Supply Reliability							
North of Delta							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	185	219	-34
				Dry	85	122	-37
				Critical	24	35	-11
	CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	467	485	-18
				Dry	447	461	-14
				Critical	405	408	-3
	CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	112	120	-7
				Dry	96	105	-9
				Critical	74	79	-6
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,858	3
				Dry	1,906	1,905	1
				Critical	1,747	1,732	15
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
				Dry	145	151	-6
				Critical	103	105	-2
Total CVP North of Delta							
	Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,660	2,717	-57
				Dry	2,584	2,639	-55
				Critical	2,279	2,281	-2
South of Delta (Does not include Eastside Contractors deliveries)							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	834	1,100	-266
				Dry	433	650	-217
				Critical	130	195	-65
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	15	17	-2
				Dry	14	15	-1
				Critical	11	12	-1
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	260	0
				Dry	269	268	1
				Critical	222	221	0
Total CVP South of Delta (Does not include Eastside Contractors deliveries)							
	Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,110	1,377	-267
				Dry	715	933	-217
				Critical	363	428	-65
Eastside Contractors deliveries							
	Water Rights	Delivery (annual average)	(TAF/year)	Long Term	502	514	-12
				Dry	524	524	0
				Critical	406	486	-80
	CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	100	118	-19
				Dry	69	98	-29
				Critical	8	25	-17
Total Eastside Contractors Deliveries							
	Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	602	632	-31
				Dry	593	621	-29
				Critical	414	511	-97

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text. 6) Annual deliveries are based on March to February Average.

Table 5C.3.2.15.5 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

	Stanislaus Deliveries		Difference from No Action Alternative		Difference from Second Basis of Comparison	
	CVP	Water Rights	CVP	Water Rights	CVP	Water Rights
	(TAF)	(TAF)	(TAF)	(TAF)	(TAF)	(TAF)
No Action Alternative	103.5	507.8				
Revised Second Basis of Comparison	118.3	514.0	14.8	6.2		
Alternative 2	103.5	507.8			-14.8	-6.2
Alternative 3	123.2	512.7	19.6	4.9	4.8	-1.2
Alternative 5	99.7	502.1	-3.8	-5.7	-18.6	-11.9

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.16 CVP Total Generating Capacity

Table 5C.3.2.16.1 CVP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

Revised Alternative 1

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,773	1,820	1,859	1,890	1,911	1,950	1,942	1,907	1,822	1,762	1,756	1,742
20%	1,746	1,799	1,838	1,869	1,899	1,930	1,918	1,861	1,752	1,690	1,682	1,693
30%	1,701	1,778	1,823	1,859	1,892	1,909	1,897	1,824	1,699	1,626	1,621	1,658
40%	1,661	1,742	1,796	1,842	1,878	1,889	1,873	1,787	1,665	1,606	1,584	1,581
50%	1,594	1,703	1,761	1,819	1,858	1,874	1,840	1,764	1,622	1,557	1,552	1,553
60%	1,570	1,647	1,720	1,783	1,829	1,842	1,802	1,721	1,598	1,527	1,501	1,508
70%	1,501	1,573	1,664	1,726	1,786	1,799	1,774	1,681	1,567	1,491	1,453	1,460
80%	1,393	1,469	1,589	1,659	1,739	1,761	1,728	1,632	1,488	1,403	1,408	1,393
90%	1,235	1,374	1,447	1,554	1,588	1,576	1,546	1,454	1,350	1,236	1,196	1,227
Long Term												
Full Simulation Period[b]	1,550	1,626	1,698	1,754	1,797	1,814	1,791	1,712	1,590	1,509	1,486	1,494
Water Year Types[c]												
Wet (32%)	1,688	1,765	1,818	1,863	1,898	1,932	1,925	1,876	1,780	1,724	1,701	1,708
Above Normal (16%)	1,537	1,667	1,774	1,825	1,869	1,891	1,874	1,791	1,664	1,598	1,583	1,580
Below Normal (13%)	1,622	1,684	1,766	1,803	1,842	1,850	1,819	1,730	1,602	1,512	1,494	1,500
Dry (24%)	1,490	1,558	1,629	1,711	1,769	1,789	1,763	1,670	1,550	1,482	1,464	1,473
Critical (15%)	1,297	1,340	1,408	1,470	1,506	1,485	1,429	1,323	1,155	987	948	968

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Capacity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**5%**	4%	3%	2%	1%	3%	3%	3%	2%	1%	**5%**	**6%**
20%	**7%**	4%	4%	2%	2%	3%	4%	3%	2%	0%	4%	5%
30%	**6%**	5%	5%	3%	3%	4%	4%	2%	2%	0%	2%	4%
40%	**5%**	**7%**	5%	4%	4%	4%	4%	3%	2%	1%	3%	2%
50%	3%	**6%**	5%	**5%**	4%	**5%**	5%	3%	1%	1%	3%	2%
60%	3%	**6%**	**6%**	5%	5%	**5%**	4%	4%	2%	2%	1%	2%
70%	2%	4%	5%	4%	4%	5%	**5%**	4%	3%	2%	1%	2%
80%	3%	3%	5%	5%	4%	**5%**	**6%**	3%	3%	4%	**6%**	4%
90%	**9%**	**6%**	3%	**7%**	**8%**	5%	**6%**	**5%**	**12%**	**10%**	**10%**	**11%**
Long Term												
Full Simulation Period[b]	**5%**	**5%**	**5%**	4%	4%	5%	**5%**	4%	3%	3%	4%	5%
Water Year Types[c]												
Wet (32%)	4%	4%	3%	2%	2%	3%	4%	2%	1%	0%	3%	5%
Above Normal (16%)	5%	**5%**	**6%**	4%	3%	4%	5%	3%	2%	0%	2%	3%
Below Normal (13%)	**6%**	**7%**	**6%**	5%	4%	**5%**	**5%**	4%	3%	1%	1%	1%
Dry (24%)	3%	4%	5%	5%	5%	5%	5%	4%	3%	3%	3%	3%
Critical (15%)	**10%**	**10%**	**11%**	**9%**	**10%**	**10%**	**10%**	**10%**	**13%**	**19%**	**17%**	**17%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.16.2 CVP Total Capacity, Monthly Capacity

Revised Second Basis of Comparison

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,773	1,820	1,859	1,890	1,911	1,950	1,942	1,907	1,822	1,762	1,756	1,742
20%	1,746	1,799	1,838	1,869	1,899	1,930	1,918	1,861	1,752	1,690	1,682	1,693
30%	1,701	1,778	1,823	1,859	1,892	1,909	1,897	1,824	1,699	1,626	1,621	1,658
40%	1,661	1,742	1,796	1,842	1,878	1,889	1,873	1,787	1,665	1,606	1,584	1,581
50%	1,594	1,703	1,761	1,819	1,858	1,874	1,840	1,764	1,622	1,557	1,552	1,553
60%	1,570	1,647	1,720	1,783	1,829	1,842	1,802	1,721	1,598	1,527	1,501	1,508
70%	1,501	1,573	1,664	1,726	1,786	1,799	1,774	1,681	1,567	1,491	1,453	1,460
80%	1,393	1,469	1,589	1,659	1,739	1,761	1,728	1,632	1,488	1,403	1,408	1,393
90%	1,235	1,374	1,447	1,554	1,588	1,576	1,546	1,454	1,350	1,236	1,196	1,227
Long Term												
Full Simulation Period[b]	1,550	1,626	1,698	1,754	1,797	1,814	1,791	1,712	1,590	1,509	1,486	1,494
Water Year Types[c]												
Wet (32%)	1,688	1,765	1,818	1,863	1,898	1,932	1,925	1,876	1,780	1,724	1,701	1,708
Above Normal (16%)	1,537	1,667	1,774	1,825	1,869	1,891	1,874	1,791	1,664	1,598	1,583	1,580
Below Normal (13%)	1,622	1,684	1,766	1,803	1,842	1,850	1,819	1,730	1,602	1,512	1,494	1,500
Dry (24%)	1,490	1,558	1,629	1,711	1,769	1,789	1,763	1,670	1,550	1,482	1,464	1,473
Critical (15%)	1,297	1,340	1,408	1,470	1,506	1,485	1,429	1,323	1,155	987	948	968

No Action Alternative

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

No Action Alternative minus Revised Second Basis of Comparison

	Monthly Capacity (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5%	-4%	-3%	-2%	-1%	-3%	-3%	-3%	-2%	-1%	-5%	**-5%**
20%	**-6%**	-4%	-4%	-2%	-2%	-3%	-4%	-3%	-2%	0%	-4%	-5%
30%	**-6%**	-5%	-4%	-3%	-3%	-3%	-4%	-2%	-2%	0%	-2%	-4%
40%	-5%	**-6%**	-5%	-4%	-4%	-4%	-4%	-3%	-2%	-1%	-2%	-2%
50%	-3%	**-5%**	-5%	-5%	-4%	-5%	-5%	-3%	-1%	-1%	-3%	-2%
60%	-3%	**-6%**	**-6%**	-5%	-4%	-5%	-4%	-4%	-2%	-1%	-1%	-2%
70%	-2%	-3%	-5%	-4%	-4%	-5%	**-5%**	-4%	-3%	-2%	-1%	-2%
80%	-3%	-3%	-4%	-5%	-4%	-5%	**-5%**	-3%	-3%	-4%	**-5%**	-4%
90%	**-8%**	**-6%**	-3%	**-6%**	**-7%**	-5%	**-6%**	-5%	**-11%**	**-9%**	**-9%**	**-10%**
Long Term												
Full Simulation Period[b]	-5%	**-5%**	**-5%**	-4%	-4%	-4%	-5%	-4%	-3%	-3%	-4%	-4%
Water Year Types[c]												
Wet (32%)	-4%	-4%	-3%	-2%	-2%	-3%	-3%	-2%	-1%	0%	-3%	-5%
Above Normal (16%)	-5%	**-5%**	**-5%**	-3%	-3%	-4%	-4%	-3%	-2%	0%	-2%	-2%
Below Normal (13%)	**-6%**	**-6%**	**-6%**	-5%	-4%	**-5%**	**-5%**	-4%	-3%	-1%	-1%	-1%
Dry (24%)	-3%	-4%	-4%	-4%	-4%	-4%	-5%	-4%	-3%	-3%	-3%	-3%
Critical (15%)	**-9%**	**-9%**	**-10%**	**-8%**	**-9%**	**-9%**	**-9%**	**-9%**	**-11%**	**-16%**	**-15%**	**-15%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.16.3 CVP Total Capacity, Monthly Capacity

Revised Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,773	1,820	1,859	1,890	1,911	1,950	1,942	1,907	1,822	1,762	1,756	1,742
20%	1,746	1,799	1,838	1,869	1,899	1,930	1,918	1,861	1,752	1,690	1,682	1,693
30%	1,701	1,778	1,823	1,859	1,892	1,909	1,897	1,824	1,699	1,626	1,621	1,658
40%	1,661	1,742	1,796	1,842	1,878	1,889	1,873	1,787	1,665	1,606	1,584	1,581
50%	1,594	1,703	1,761	1,819	1,858	1,874	1,840	1,764	1,622	1,557	1,552	1,553
60%	1,570	1,647	1,720	1,783	1,829	1,842	1,802	1,721	1,598	1,527	1,501	1,508
70%	1,501	1,573	1,664	1,726	1,786	1,799	1,774	1,681	1,567	1,491	1,453	1,460
80%	1,393	1,469	1,589	1,659	1,739	1,761	1,728	1,632	1,488	1,403	1,408	1,393
90%	1,235	1,374	1,447	1,554	1,588	1,576	1,546	1,454	1,350	1,236	1,196	1,227
Long Term												
Full Simulation Period[b]	1,550	1,626	1,698	1,754	1,797	1,814	1,791	1,712	1,590	1,509	1,486	1,494
Water Year Types[c]												
Wet (32%)	1,688	1,765	1,818	1,863	1,898	1,932	1,925	1,876	1,780	1,724	1,701	1,708
Above Normal (16%)	1,537	1,667	1,774	1,825	1,869	1,891	1,874	1,791	1,664	1,598	1,583	1,580
Below Normal (13%)	1,622	1,684	1,766	1,803	1,842	1,850	1,819	1,730	1,602	1,512	1,494	1,500
Dry (24%)	1,490	1,558	1,629	1,711	1,769	1,789	1,763	1,670	1,550	1,482	1,464	1,473
Critical (15%)	1,297	1,340	1,408	1,470	1,506	1,485	1,429	1,323	1,155	987	948	968

Alternative 3

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,778	1,818	1,852	1,884	1,910	1,945	1,947	1,910	1,837	1,777	1,759	1,753
20%	1,749	1,789	1,828	1,860	1,894	1,930	1,930	1,883	1,766	1,692	1,687	1,696
30%	1,708	1,772	1,814	1,851	1,884	1,900	1,895	1,828	1,717	1,654	1,633	1,659
40%	1,663	1,741	1,781	1,838	1,866	1,882	1,849	1,777	1,670	1,601	1,604	1,600
50%	1,609	1,689	1,744	1,800	1,840	1,851	1,821	1,760	1,644	1,572	1,554	1,569
60%	1,579	1,639	1,695	1,748	1,797	1,814	1,781	1,711	1,603	1,542	1,511	1,510
70%	1,499	1,557	1,632	1,703	1,768	1,784	1,755	1,665	1,567	1,487	1,453	1,465
80%	1,394	1,457	1,570	1,624	1,708	1,738	1,707	1,620	1,506	1,408	1,378	1,372
90%	1,231	1,365	1,434	1,496	1,518	1,545	1,519	1,453	1,343	1,229	1,190	1,181
Long Term												
Full Simulation Period[b]	1,551	1,613	1,676	1,732	1,777	1,794	1,775	1,705	1,592	1,512	1,486	1,493
Water Year Types[c]												
Wet (32%)	1,690	1,756	1,806	1,856	1,894	1,929	1,928	1,885	1,791	1,730	1,713	1,716
Above Normal (16%)	1,527	1,640	1,746	1,802	1,852	1,875	1,862	1,786	1,679	1,615	1,591	1,589
Below Normal (13%)	1,629	1,676	1,751	1,790	1,829	1,832	1,788	1,718	1,607	1,529	1,504	1,501
Dry (24%)	1,504	1,551	1,612	1,686	1,748	1,768	1,745	1,660	1,555	1,479	1,459	1,475
Critical (15%)	1,283	1,319	1,355	1,411	1,444	1,422	1,386	1,288	1,113	967	909	930

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Capacity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%
20%	0%	-1%	-1%	0%	0%	0%	1%	1%	1%	0%	0%	0%
30%	0%	0%	-1%	0%	0%	0%	0%	0%	1%	2%	1%	0%
40%	0%	0%	-1%	0%	-1%	0%	-1%	-1%	0%	0%	1%	1%
50%	1%	-1%	-1%	-1%	-1%	-1%	-1%	0%	1%	1%	0%	1%
60%	1%	-1%	-1%	-2%	-2%	-2%	-1%	-1%	0%	1%	1%	0%
70%	0%	-1%	-2%	-1%	-1%	-1%	-1%	-1%	0%	0%	0%	0%
80%	0%	-1%	-1%	-2%	-2%	-1%	-1%	-1%	1%	0%	-2%	-2%
90%	0%	-1%	-1%	-4%	-4%	-2%	-2%	0%	-1%	-1%	0%	-4%
Long Term												
Full Simulation Period[b]	0%	-1%	-1%	-1%	-1%	-1%	-1%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	-1%	-1%	0%	0%	0%	0%	0%	1%	0%	1%	0%
Above Normal (16%)	-1%	-2%	-2%	-1%	-1%	-1%	-1%	0%	1%	1%	0%	1%
Below Normal (13%)	0%	0%	-1%	-1%	-1%	-1%	-2%	-1%	0%	1%	1%	0%
Dry (24%)	1%	0%	-1%	-1%	-1%	-1%	-1%	-1%	0%	0%	0%	0%
Critical (15%)	-1%	-2%	-4%	-4%	-4%	-4%	-3%	-3%	-4%	-2%	-4%	-4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.16.4 CVP Total Capacity, Monthly Capacity

Revised Second Basis of Comparison

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,773	1,820	1,859	1,890	1,911	1,950	1,942	1,907	1,822	1,762	1,756	1,742
20%	1,746	1,799	1,838	1,869	1,899	1,930	1,918	1,861	1,752	1,690	1,682	1,693
30%	1,701	1,778	1,823	1,859	1,892	1,909	1,897	1,824	1,699	1,626	1,621	1,658
40%	1,661	1,742	1,796	1,842	1,878	1,889	1,873	1,787	1,665	1,606	1,584	1,581
50%	1,594	1,703	1,761	1,819	1,858	1,874	1,840	1,764	1,622	1,557	1,552	1,553
60%	1,570	1,647	1,720	1,783	1,829	1,842	1,802	1,721	1,598	1,527	1,501	1,508
70%	1,501	1,573	1,664	1,726	1,786	1,799	1,774	1,681	1,567	1,491	1,453	1,460
80%	1,393	1,469	1,589	1,659	1,739	1,761	1,728	1,632	1,488	1,403	1,408	1,393
90%	1,235	1,374	1,447	1,554	1,588	1,576	1,546	1,454	1,350	1,236	1,196	1,227
Long Term												
Full Simulation Period[b]	1,550	1,626	1,698	1,754	1,797	1,814	1,791	1,712	1,590	1,509	1,486	1,494
Water Year Types[c]												
Wet (32%)	1,688	1,765	1,818	1,863	1,898	1,932	1,925	1,876	1,780	1,724	1,701	1,708
Above Normal (16%)	1,537	1,667	1,774	1,825	1,869	1,891	1,874	1,791	1,664	1,598	1,583	1,580
Below Normal (13%)	1,622	1,684	1,766	1,803	1,842	1,850	1,819	1,730	1,602	1,512	1,494	1,500
Dry (24%)	1,490	1,558	1,629	1,711	1,769	1,789	1,763	1,670	1,550	1,482	1,464	1,473
Critical (15%)	1,297	1,340	1,408	1,470	1,506	1,485	1,429	1,323	1,155	987	948	968

Alternative 5

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,693	1,746	1,805	1,849	1,882	1,891	1,879	1,849	1,777	1,748	1,671	1,650
20%	1,635	1,721	1,772	1,829	1,859	1,867	1,843	1,806	1,725	1,690	1,624	1,612
30%	1,599	1,680	1,744	1,797	1,836	1,839	1,816	1,766	1,655	1,616	1,576	1,579
40%	1,566	1,638	1,710	1,767	1,801	1,801	1,785	1,732	1,619	1,571	1,538	1,547
50%	1,538	1,596	1,668	1,726	1,775	1,774	1,737	1,700	1,598	1,555	1,504	1,510
60%	1,516	1,552	1,617	1,687	1,737	1,733	1,701	1,643	1,537	1,484	1,460	1,457
70%	1,458	1,512	1,571	1,650	1,694	1,699	1,673	1,596	1,506	1,415	1,413	1,413
80%	1,327	1,399	1,504	1,574	1,644	1,639	1,616	1,532	1,439	1,324	1,302	1,310
90%	1,044	1,242	1,372	1,427	1,440	1,483	1,450	1,351	1,173	1,061	1,046	1,029
Long Term												
Full Simulation Period[b]	1,460	1,532	1,603	1,672	1,716	1,717	1,692	1,633	1,525	1,450	1,410	1,410
Water Year Types[c]												
Wet (32%)	1,609	1,690	1,755	1,819	1,856	1,873	1,858	1,830	1,748	1,715	1,641	1,625
Above Normal (16%)	1,458	1,576	1,671	1,757	1,808	1,806	1,785	1,735	1,624	1,577	1,536	1,532
Below Normal (13%)	1,504	1,559	1,648	1,712	1,755	1,743	1,710	1,653	1,546	1,474	1,465	1,468
Dry (24%)	1,428	1,478	1,545	1,622	1,676	1,686	1,657	1,585	1,485	1,403	1,383	1,391
Critical (15%)	1,152	1,205	1,253	1,308	1,344	1,310	1,274	1,159	985	793	768	794

Alternative 5 minus Revised Second Basis of Comparison

	Monthly Capacity (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5%	-4%	-3%	-2%	-2%	-3%	-3%	-3%	-2%	-1%	-5%	-5%
20%	-6%	-4%	-4%	-2%	-2%	-3%	-4%	-3%	-2%	0%	-3%	-5%
30%	-6%	-6%	-4%	-3%	-3%	-4%	-4%	-3%	-3%	-1%	-3%	-5%
40%	-6%	-6%	-5%	-4%	-4%	-5%	-5%	-3%	-3%	-2%	-3%	-2%
50%	-4%	-6%	-5%	-5%	-4%	-5%	-6%	-4%	-1%	0%	-3%	-3%
60%	-3%	-6%	-6%	-5%	-5%	-6%	-6%	-5%	-4%	-3%	-3%	-3%
70%	-3%	-4%	-6%	-4%	-5%	-6%	-6%	-5%	-4%	-5%	-3%	-3%
80%	-5%	-5%	-5%	-5%	-5%	-7%	-6%	-6%	-3%	-6%	-8%	-6%
90%	-15%	-10%	-5%	-8%	-9%	-6%	-6%	-7%	-13%	-14%	-12%	-16%
Long Term												
Full Simulation Period[b]	-6%	-6%	-6%	-5%	-5%	-5%	-6%	-5%	-4%	-4%	-5%	-6%
Water Year Types[c]												
Wet (32%)	-5%	-4%	-3%	-2%	-2%	-3%	-3%	-2%	-2%	0%	-4%	-5%
Above Normal (16%)	-5%	-5%	-6%	-4%	-3%	-4%	-5%	-3%	-2%	-1%	-3%	-3%
Below Normal (13%)	-7%	-7%	-7%	-5%	-5%	-6%	-6%	-4%	-3%	-3%	-2%	-2%
Dry (24%)	-4%	-5%	-5%	-5%	-5%	-6%	-6%	-5%	-4%	-5%	-6%	-6%
Critical (15%)	-11%	-10%	-11%	-11%	-11%	-12%	-11%	-12%	-15%	-20%	-19%	-18%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.2.17 CVP Total Generation

Table 5C.3.2.17.1 CVP Total Generation, Monthly Generation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

Revised Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	416	296	658	692	692	710	488	631	701	773	637	443
20%	334	254	432	581	649	584	390	566	658	755	593	370
30%	302	232	240	439	446	368	347	535	619	732	570	337
40%	278	219	195	265	286	261	327	507	590	708	550	316
50%	237	206	181	207	219	226	312	492	565	688	527	298
60%	218	179	170	175	173	192	294	464	551	662	503	280
70%	199	167	147	153	144	175	280	442	531	628	479	259
80%	172	138	133	138	134	153	252	372	481	582	436	226
90%	152	124	113	121	115	139	221	314	389	472	392	191
Long Term												
Full Simulation Period[b]	257	215	278	334	335	335	337	481	566	659	517	307
Water Year Types[c]												
Wet (32%)	296	269	491	581	531	551	430	588	624	700	577	402
Above Normal (16%)	241	215	246	359	481	398	345	511	615	741	572	340
Below Normal (13%)	285	221	186	227	282	245	326	490	612	724	577	303
Dry (24%)	248	183	158	177	150	179	266	429	543	639	462	252
Critical (15%)	181	148	134	133	109	141	257	297	386	452	362	161

Revised Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (Percent Change)											
Probability of Exceedance[a]												
10%	2%	-28%	3%	0%	3%	2%	-1%	2%	13%	2%	9%	-30%
20%	-10%	-33%	28%	19%	4%	3%	-2%	3%	14%	4%	8%	-38%
30%	-8%	-25%	0%	15%	-5%	1%	-3%	4%	10%	4%	6%	-28%
40%	-5%	-20%	3%	13%	17%	-2%	-2%	6%	8%	7%	8%	-24%
50%	-12%	-11%	3%	3%	7%	-1%	-2%	6%	7%	7%	6%	-13%
60%	-9%	-2%	2%	-2%	0%	-1%	-3%	5%	11%	5%	6%	-2%
70%	-5%	3%	0%	1%	2%	2%	-1%	6%	11%	5%	6%	3%
80%	-8%	-2%	2%	1%	4%	1%	1%	6%	11%	6%	4%	5%
90%	-4%	5%	8%	1%	5%	-1%	2%	8%	11%	-1%	9%	4%
Long Term												
Full Simulation Period[b]	-6%	-16%	7%	6%	4%	2%	-2%	4%	10%	4%	6%	-18%
Water Year Types[c]												
Wet (32%)	-7%	-15%	12%	4%	3%	-1%	-4%	1%	10%	3%	6%	-33%
Above Normal (16%)	-10%	-18%	-5%	12%	6%	8%	-7%	6%	13%	5%	8%	-19%
Below Normal (13%)	-8%	-14%	6%	22%	6%	11%	3%	8%	13%	7%	9%	5%
Dry (24%)	-2%	-21%	3%	-3%	4%	-2%	1%	6%	6%	5%	1%	2%
Critical (15%)	-1%	-1%	9%	0%	-2%	5%	6%	10%	12%	5%	9%	11%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.17.2 CVP Total Generation, Monthly Generation

Revised Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	416	296	658	692	692	710	488	631	701	773	637	443
20%	334	254	432	581	649	584	390	566	658	755	593	370
30%	302	232	240	439	446	368	347	535	619	732	570	337
40%	278	219	195	265	286	261	327	507	590	708	550	316
50%	237	206	181	207	219	226	312	492	565	688	527	298
60%	218	179	170	175	173	192	294	464	551	662	503	280
70%	199	167	147	153	144	175	280	442	531	628	479	259
80%	172	138	133	138	134	153	252	372	481	582	436	226
90%	152	124	113	121	115	139	221	314	389	472	392	191
Long Term												
Full Simulation Period[b]	257	215	278	334	335	335	337	481	566	659	517	307
Water Year Types[c]												
Wet (32%)	296	269	491	581	531	551	430	588	624	700	577	402
Above Normal (16%)	241	215	246	359	481	398	345	511	615	741	572	340
Below Normal (13%)	285	221	186	227	282	245	326	490	612	724	577	303
Dry (24%)	248	183	158	177	150	179	266	429	543	639	462	252
Critical (15%)	181	148	134	133	109	141	257	297	386	452	362	161

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2%	**39%**	-3%	0%	-3%	-2%	1%	-2%	**-12%**	-2%	**-8%**	**42%**
20%	**11%**	**49%**	**-22%**	**-16%**	-4%	-2%	2%	-3%	**-12%**	-3%	**-7%**	**61%**
30%	**9%**	**33%**	0%	**-13%**	**6%**	-1%	3%	-4%	**-9%**	-4%	**-6%**	**39%**
40%	5%	**25%**	-3%	**-11%**	**-14%**	2%	2%	**-6%**	**-8%**	**-7%**	**-7%**	**31%**
50%	**14%**	**12%**	-3%	-3%	**-6%**	1%	2%	**-6%**	**-7%**	**-6%**	**-6%**	**15%**
60%	**10%**	2%	-2%	2%	0%	1%	3%	-5%	**-10%**	-5%	**-5%**	2%
70%	**5%**	-3%	0%	-1%	-2%	-2%	1%	**-6%**	**-10%**	-5%	**-6%**	-3%
80%	**8%**	2%	-2%	-1%	-3%	-1%	-1%	**-6%**	**-10%**	**-5%**	-3%	-5%
90%	5%	-5%	**-7%**	-1%	-5%	1%	-2%	**-7%**	**-10%**	1%	**-8%**	-4%
Long Term												
Full Simulation Period[b]	**6%**	**19%**	**-6%**	**-5%**	-4%	-2%	2%	-4%	**-9%**	-4%	**-6%**	**23%**
Water Year Types[c]												
Wet (32%)	**7%**	**18%**	**-10%**	-4%	-3%	1%	4%	-1%	**-9%**	-2%	**-6%**	**49%**
Above Normal (16%)	**11%**	**22%**	**6%**	**-11%**	**-6%**	**-8%**	**7%**	**-5%**	**-12%**	-4%	**-8%**	**24%**
Below Normal (13%)	**9%**	**17%**	**-6%**	**-18%**	**-6%**	**-10%**	-2%	**-7%**	**-12%**	**-6%**	**-8%**	-5%
Dry (24%)	2%	**27%**	-3%	3%	-3%	2%	-1%	**-5%**	**-6%**	-5%	-1%	-2%
Critical (15%)	1%	1%	**-8%**	0%	2%	-4%	**-6%**	**-9%**	**-11%**	-5%	**-8%**	**-10%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.17.3 CVP Total Generation, Monthly Generation

Revised Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	416	296	658	692	692	710	488	631	701	773	637	443
20%	334	254	432	581	649	584	390	566	658	755	593	370
30%	302	232	240	439	446	368	347	535	619	732	570	337
40%	278	219	195	265	286	261	327	507	590	708	550	316
50%	237	206	181	207	219	226	312	492	565	688	527	298
60%	218	179	170	175	173	192	294	464	551	662	503	280
70%	199	167	147	153	144	175	280	442	531	628	479	259
80%	172	138	133	138	134	153	252	372	481	582	436	226
90%	152	124	113	121	115	139	221	314	389	472	392	191
Long Term												
Full Simulation Period[b]	257	215	278	334	335	335	337	481	566	659	517	307
Water Year Types[c]												
Wet (32%)	296	269	491	581	531	551	430	588	624	700	577	402
Above Normal (16%)	241	215	246	359	481	398	345	511	615	741	572	340
Below Normal (13%)	285	221	186	227	282	245	326	490	612	724	577	303
Dry (24%)	248	183	158	177	150	179	266	429	543	639	462	252
Critical (15%)	181	148	134	133	109	141	257	297	386	452	362	161

Alternative 3

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	306	662	691	701	710	489	598	648	775	610	459
20%	342	256	426	590	650	583	393	551	635	759	578	387
30%	314	227	242	427	458	367	360	507	590	741	557	358
40%	275	216	199	254	283	258	330	493	564	720	538	328
50%	245	204	181	203	220	223	314	469	548	678	525	302
60%	222	180	170	173	179	192	291	442	518	657	513	279
70%	202	164	149	156	142	171	271	421	511	624	482	257
80%	176	145	133	134	128	153	250	363	453	561	445	227
90%	158	124	113	122	109	136	222	300	381	474	387	191
Long Term												
Full Simulation Period[b]	262	215	279	333	336	335	338	462	542	658	512	314
Water Year Types[c]												
Wet (32%)	298	268	493	584	537	551	430	562	593	712	576	407
Above Normal (16%)	249	222	245	350	477	401	346	482	580	736	550	341
Below Normal (13%)	284	211	187	228	283	245	332	476	580	711	557	347
Dry (24%)	256	184	162	175	146	180	265	416	532	635	471	251
Critical (15%)	189	150	132	130	113	139	253	285	373	445	360	160

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	3%	1%	0%	1%	0%	0%	-5%	-7%	0%	-4%	4%
20%	2%	0%	-1%	1%	0%	0%	1%	-3%	-3%	0%	-2%	5%
30%	4%	-2%	1%	-3%	3%	0%	4%	-5%	-5%	1%	-2%	6%
40%	-1%	-1%	2%	-4%	-1%	-1%	1%	-3%	-4%	2%	-2%	4%
50%	4%	-1%	0%	-2%	1%	-2%	0%	-5%	-3%	-1%	0%	1%
60%	2%	1%	0%	-2%	3%	0%	-1%	-5%	-6%	-1%	2%	0%
70%	2%	-1%	2%	2%	-2%	-2%	-3%	-5%	-4%	-1%	1%	-1%
80%	2%	5%	0%	-3%	-5%	0%	-1%	-3%	-6%	-3%	2%	0%
90%	4%	0%	1%	0%	-5%	-2%	0%	-4%	-2%	0%	-1%	0%
Long Term												
Full Simulation Period[b]	2%	0%	0%	0%	0%	0%	0%	-4%	-4%	0%	-1%	2%
Water Year Types[c]												
Wet (32%)	1%	-1%	0%	1%	1%	0%	0%	-4%	-5%	2%	0%	1%
Above Normal (16%)	3%	3%	0%	-2%	-1%	1%	0%	-6%	-6%	-1%	-4%	0%
Below Normal (13%)	0%	-4%	0%	1%	0%	0%	2%	-3%	-5%	-2%	-4%	14%
Dry (24%)	3%	1%	2%	-1%	-3%	1%	0%	-3%	-2%	-1%	2%	0%
Critical (15%)	4%	1%	-2%	-2%	4%	-1%	-2%	-4%	-3%	-2%	-1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.17.4 CVP Total Generation, Monthly Generation

Revised Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	416	296	658	692	692	710	488	631	701	773	637	443
20%	334	254	432	581	649	584	390	566	658	755	593	370
30%	302	232	240	439	446	368	347	535	619	732	570	337
40%	278	219	195	265	286	261	327	507	590	708	550	316
50%	237	206	181	207	219	226	312	492	565	688	527	298
60%	218	179	170	175	173	192	294	464	551	662	503	280
70%	199	167	147	153	144	175	280	442	531	628	479	259
80%	172	138	133	138	134	153	252	372	481	582	436	226
90%	152	124	113	121	115	139	221	314	389	472	392	191
Long Term												
Full Simulation Period[b]	257	215	278	334	335	335	337	481	566	659	517	307
Water Year Types[c]												
Wet (32%)	296	269	491	581	531	551	430	588	624	700	577	402
Above Normal (16%)	241	215	246	359	481	398	345	511	615	741	572	340
Below Normal (13%)	285	221	186	227	282	245	326	490	612	724	577	303
Dry (24%)	248	183	158	177	150	179	266	429	543	639	462	252
Critical (15%)	181	148	134	133	109	141	257	297	386	452	362	161

Alternative 5

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	404	410	647	689	671	694	491	627	618	752	574	628
20%	365	380	341	486	622	563	404	562	578	722	553	598
30%	328	316	236	381	459	362	368	513	557	705	534	468
40%	284	281	188	233	245	266	334	482	541	660	514	418
50%	269	226	173	201	205	229	327	460	525	648	498	351
60%	244	182	163	178	173	199	304	439	493	634	471	277
70%	220	161	145	153	139	170	281	412	472	601	451	248
80%	183	140	131	137	127	151	258	343	432	548	416	217
90%	155	113	102	120	108	136	233	308	350	463	365	184
Long Term												
Full Simulation Period[b]	273	254	258	317	321	328	348	463	509	628	485	378
Water Year Types[c]												
Wet (32%)	313	320	438	558	512	554	446	585	567	685	538	598
Above Normal (16%)	266	254	259	321	454	368	370	489	542	708	523	419
Below Normal (13%)	307	257	173	186	265	221	334	458	533	675	520	294
Dry (24%)	254	231	153	183	145	183	273	404	505	604	459	247
Critical (15%)	192	149	120	135	110	132	250	270	336	414	337	153

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3%	38%	-2%	0%	-3%	-2%	1%	-1%	-12%	-3%	-10%	42%
20%	9%	49%	-21%	-16%	-4%	-4%	4%	-1%	-12%	-4%	-7%	62%
30%	9%	36%	-1%	-13%	3%	-2%	6%	-4%	-10%	-4%	-6%	39%
40%	2%	28%	-3%	-12%	-14%	2%	2%	-5%	-8%	-7%	-7%	32%
50%	14%	10%	-4%	-3%	-6%	1%	5%	-7%	-7%	-6%	-6%	18%
60%	12%	2%	-4%	2%	0%	3%	3%	-5%	-11%	-4%	-6%	-1%
70%	11%	-3%	-1%	0%	-4%	-3%	0%	-7%	-11%	-4%	-6%	-4%
80%	7%	1%	-2%	-1%	-5%	-1%	3%	-8%	-10%	-6%	-5%	-4%
90%	2%	-9%	-9%	-1%	-6%	-2%	5%	-2%	-10%	-2%	-7%	-4%
Long Term												
Full Simulation Period[b]	6%	18%	-7%	-5%	-4%	-2%	3%	-4%	-10%	-5%	-6%	23%
Water Year Types[c]												
Wet (32%)	6%	19%	-11%	-4%	-4%	1%	4%	0%	-9%	-2%	-7%	49%
Above Normal (16%)	10%	18%	5%	-11%	-6%	-8%	7%	-4%	-12%	-4%	-9%	23%
Below Normal (13%)	8%	16%	-7%	-18%	-6%	-10%	2%	-7%	-13%	-7%	-10%	-3%
Dry (24%)	2%	26%	-3%	3%	-3%	2%	2%	-6%	-7%	-6%	-1%	-2%
Critical (15%)	6%	1%	-10%	1%	1%	-6%	-3%	-9%	-13%	-8%	-7%	-5%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.2.18 CVP Total Energy Use

Table 5C.3.2.18.1 CVP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

Revised Alternative 1

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	152	163	173	189	145	83	90	114	163	178	109
20%	121	140	159	167	148	128	81	64	103	156	153	108
30%	118	139	157	163	142	103	80	59	96	148	132	107
40%	96	131	155	162	138	82	75	53	91	140	128	106
50%	74	123	152	160	135	68	69	46	87	131	123	105
60%	65	108	143	157	99	67	63	43	78	117	110	90
70%	54	96	128	147	77	62	49	38	64	97	85	83
80%	44	77	119	123	48	52	36	28	43	86	54	68
90%	32	67	86	74	25	28	22	23	25	42	39	49
Long Term												
Full Simulation Period[b]	84	114	136	148	114	84	61	50	77	118	113	92
Water Year Types[c]												
Wet (32%)	99	131	154	168	137	96	79	69	102	145	149	109
Above Normal (16%)	73	115	136	148	133	93	79	57	100	129	135	115
Below Normal (13%)	93	135	149	157	99	85	61	51	83	147	139	93
Dry (24%)	86	101	125	139	103	84	43	36	55	105	67	75
Critical (15%)	52	76	106	109	78	50	30	24	30	45	61	58

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	23%	-11%	5%	13%	30%	-2%	39%	31%	-11%	7%	34%	3%
20%	27%	-7%	7%	27%	11%	-8%	90%	40%	1%	12%	25%	3%
30%	39%	-1%	11%	39%	23%	-6%	114%	44%	9%	21%	16%	3%
40%	27%	2%	16%	43%	39%	-17%	118%	37%	17%	23%	18%	10%
50%	3%	17%	18%	46%	44%	-8%	113%	30%	34%	26%	21%	20%
60%	-3%	16%	16%	49%	17%	2%	106%	33%	34%	26%	17%	18%
70%	-13%	18%	11%	54%	8%	2%	68%	26%	44%	14%	7%	23%
80%	-23%	18%	24%	49%	3%	13%	44%	8%	29%	25%	-8%	17%
90%	-42%	14%	16%	5%	-20%	27%	2%	6%	20%	0%	7%	9%
Long Term												
Full Simulation Period[b]	10%	3%	13%	36%	25%	-1%	69%	25%	9%	17%	21%	13%
Water Year Types[c]												
Wet (32%)	21%	5%	19%	35%	10%	-21%	59%	18%	-10%	9%	25%	16%
Above Normal (16%)	-1%	-4%	11%	53%	46%	-11%	119%	42%	18%	30%	25%	32%
Below Normal (13%)	18%	11%	13%	46%	17%	11%	105%	53%	35%	39%	32%	1%
Dry (24%)	13%	-3%	4%	28%	34%	31%	42%	20%	31%	18%	3%	4%
Critical (15%)	-20%	4%	19%	27%	51%	63%	47%	8%	33%	-12%	9%	3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.18.2 CVP Total Energy Use, Monthly Energy Use

Revised Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	152	163	173	189	145	83	90	114	163	178	109
20%	121	140	159	167	148	128	81	64	103	156	153	108
30%	118	139	157	163	142	103	80	59	96	148	132	107
40%	96	131	155	162	138	82	75	53	91	140	128	106
50%	74	123	152	160	135	68	69	46	87	131	123	105
60%	65	108	143	157	99	67	63	43	78	117	110	90
70%	54	96	128	147	77	62	49	38	64	97	85	83
80%	44	77	119	123	48	52	36	28	43	86	54	68
90%	32	67	86	74	25	28	22	23	25	42	39	49
Long Term												
Full Simulation Period[b]	84	114	136	148	114	84	61	50	77	118	113	92
Water Year Types[c]												
Wet (32%)	99	131	154	168	137	96	79	69	102	145	149	109
Above Normal (16%)	73	115	136	148	133	93	79	57	100	129	135	115
Below Normal (13%)	93	135	149	157	99	85	61	51	83	147	139	93
Dry (24%)	86	101	125	139	103	84	43	36	55	105	67	75
Critical (15%)	52	76	106	109	78	50	30	24	30	45	61	58

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-19%	13%	-5%	-12%	-23%	2%	-28%	-24%	12%	-6%	-26%	-3%
20%	-21%	7%	-6%	-21%	-10%	8%	-47%	-29%	-1%	-11%	-20%	-2%
30%	-28%	1%	-10%	-28%	-19%	6%	-53%	-31%	-8%	-18%	-14%	-3%
40%	-21%	-2%	-13%	-30%	-28%	21%	-54%	-27%	-14%	-19%	-15%	-9%
50%	-3%	-14%	-15%	-31%	-30%	9%	-53%	-23%	-25%	-21%	-17%	-17%
60%	3%	-14%	-14%	-33%	-14%	-2%	-51%	-25%	-25%	-21%	-15%	-15%
70%	14%	-15%	-10%	-35%	-7%	-2%	-41%	-21%	-30%	-13%	-7%	-18%
80%	30%	-15%	-19%	-33%	-3%	-11%	-30%	-7%	-22%	-20%	9%	-14%
90%	72%	-12%	-14%	-5%	25%	-21%	-2%	-6%	-17%	0%	-7%	-8%
Long Term												
Full Simulation Period[b]	-9%	-3%	-12%	-27%	-20%	1%	-41%	-20%	-8%	-15%	-17%	-11%
Water Year Types[c]												
Wet (32%)	-17%	-5%	-16%	-26%	-9%	27%	-37%	-15%	11%	-9%	-20%	-14%
Above Normal (16%)	1%	4%	-10%	-34%	-32%	12%	-54%	-29%	-15%	-23%	-20%	-24%
Below Normal (13%)	-15%	-10%	-11%	-32%	-15%	-10%	-51%	-34%	-26%	-28%	-24%	-1%
Dry (24%)	-11%	3%	-4%	-22%	-25%	-24%	-30%	-17%	-23%	-15%	-3%	-4%
Critical (15%)	25%	-4%	-16%	-21%	-34%	-39%	-32%	-7%	-25%	14%	-8%	-3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.18.3 CVP Total Energy Use, Monthly Energy Use

Revised Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	152	163	173	189	145	83	90	114	163	178	109
20%	121	140	159	167	148	128	81	64	103	156	153	108
30%	118	139	157	163	142	103	80	59	96	148	132	107
40%	96	131	155	162	138	82	75	53	91	140	128	106
50%	74	123	152	160	135	68	69	46	87	131	123	105
60%	65	108	143	157	99	67	63	43	78	117	110	90
70%	54	96	128	147	77	62	49	38	64	97	85	83
80%	44	77	119	123	48	52	36	28	43	86	54	68
90%	32	67	86	74	25	28	22	23	25	42	39	49
Long Term												
Full Simulation Period[b]	84	114	136	148	114	84	61	50	77	118	113	92
Water Year Types[c]												
Wet (32%)	99	131	154	168	137	96	79	69	102	145	149	109
Above Normal (16%)	73	115	136	148	133	93	79	57	100	129	135	115
Below Normal (13%)	93	135	149	157	99	85	61	51	83	147	139	93
Dry (24%)	86	101	125	139	103	84	43	36	55	105	67	75
Critical (15%)	52	76	106	109	78	50	30	24	30	45	61	58

Alternative 3

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	143	149	161	165	151	147	87	99	142	154	156	139
20%	124	140	157	131	142	139	82	89	122	146	134	112
30%	119	138	154	120	126	100	81	79	106	139	132	107
40%	108	128	143	117	105	78	79	72	100	128	128	106
50%	86	118	140	110	91	72	72	66	91	118	113	105
60%	70	107	131	104	75	64	64	53	80	103	99	95
70%	63	95	122	93	65	62	46	40	59	87	83	85
80%	52	82	102	84	54	51	35	30	41	71	62	63
90%	46	66	73	76	31	24	23	23	24	46	41	45
Long Term												
Full Simulation Period[b]	91	113	129	109	95	85	62	62	85	109	106	97
Water Year Types[c]												
Wet (32%)	101	130	144	128	135	108	83	87	125	139	140	113
Above Normal (16%)	83	113	122	93	96	125	77	74	105	115	121	111
Below Normal (13%)	94	130	144	111	85	78	56	58	86	123	117	126
Dry (24%)	97	104	126	108	75	65	49	44	54	98	75	74
Critical (15%)	64	78	97	85	53	31	30	25	27	43	55	58

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4%	-2%	-1%	-5%	-20%	1%	5%	11%	24%	-5%	-12%	27%
20%	2%	0%	-1%	-21%	-4%	9%	1%	38%	18%	-6%	-13%	4%
30%	1%	0%	-2%	-27%	-11%	-2%	2%	34%	11%	-6%	0%	1%
40%	12%	-3%	-8%	-27%	-24%	-4%	5%	35%	10%	-9%	0%	0%
50%	16%	-4%	-8%	-31%	-32%	5%	4%	43%	4%	-10%	-8%	0%
60%	8%	-1%	-8%	-34%	-24%	-4%	1%	22%	3%	-12%	-10%	6%
70%	16%	-1%	-4%	-37%	-16%	0%	-5%	4%	-8%	-10%	-2%	3%
80%	18%	8%	-15%	-31%	12%	-2%	-2%	8%	-5%	-18%	15%	-7%
90%	45%	-1%	-16%	2%	21%	-17%	8%	2%	-5%	11%	7%	-7%
Long Term												
Full Simulation Period[b]	8%	0%	-5%	-26%	-17%	1%	2%	23%	10%	-8%	-6%	5%
Water Year Types[c]												
Wet (32%)	3%	-1%	-7%	-24%	-2%	12%	5%	27%	23%	-4%	-6%	4%
Above Normal (16%)	13%	-2%	-10%	-37%	-27%	34%	-3%	30%	5%	-11%	-10%	-4%
Below Normal (13%)	1%	-4%	-3%	-29%	-14%	-8%	-9%	15%	4%	-16%	-16%	36%
Dry (24%)	13%	3%	1%	-22%	-27%	-22%	13%	20%	-2%	-7%	12%	-1%
Critical (15%)	22%	2%	-8%	-21%	-33%	-39%	-1%	5%	-10%	-4%	-9%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.18.4 CVP Total Energy Use, Monthly Energy Use

Revised Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	152	163	173	189	145	83	90	114	163	178	109
20%	121	140	159	167	148	128	81	64	103	156	153	108
30%	118	139	157	163	142	103	80	59	96	148	132	107
40%	96	131	155	162	138	82	75	53	91	140	128	106
50%	74	123	152	160	135	68	69	46	87	131	123	105
60%	65	108	143	157	99	67	63	43	78	117	110	90
70%	54	96	128	147	77	62	49	38	64	97	85	83
80%	44	77	119	123	48	52	36	28	43	86	54	68
90%	32	67	86	74	25	28	22	23	25	42	39	49
Long Term												
Full Simulation Period[b]	84	114	136	148	114	84	61	50	77	118	113	92
Water Year Types[c]												
Wet (32%)	99	131	154	168	137	96	79	69	102	145	149	109
Above Normal (16%)	73	115	136	148	133	93	79	57	100	129	135	115
Below Normal (13%)	93	135	149	157	99	85	61	51	83	147	139	93
Dry (24%)	86	101	125	139	103	84	43	36	55	105	67	75
Critical (15%)	52	76	106	109	78	50	30	24	30	45	61	58

Alternative 5

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	106	174	154	153	146	153	59	68	128	155	132	106
20%	94	153	151	134	134	138	41	44	103	140	121	105
30%	85	140	142	120	116	109	35	40	86	122	113	102
40%	75	126	135	114	104	99	32	37	77	115	110	95
50%	72	106	128	110	94	75	30	33	65	105	102	90
60%	69	92	123	104	86	65	29	30	57	94	94	76
70%	63	74	115	95	71	61	24	22	46	88	80	70
80%	59	65	92	83	46	48	18	16	32	74	63	58
90%	54	56	68	71	32	22	13	12	24	50	49	47
Long Term												
Full Simulation Period[b]	76	110	121	109	92	86	33	36	71	103	95	82
Water Year Types[c]												
Wet (32%)	81	129	131	125	124	123	50	58	113	132	119	93
Above Normal (16%)	75	112	122	100	90	104	35	40	84	100	107	86
Below Normal (13%)	76	122	132	107	90	77	28	30	62	106	100	96
Dry (24%)	74	101	121	108	77	64	23	21	43	96	71	74
Critical (15%)	69	73	86	88	54	30	13	13	22	56	64	56

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-23%	14%	-5%	-12%	-23%	5%	-29%	-25%	12%	-5%	-26%	-3%
20%	-22%	9%	-5%	-20%	-10%	8%	-49%	-31%	0%	-10%	-21%	-2%
30%	-28%	1%	-10%	-27%	-18%	6%	-56%	-32%	-10%	-17%	-15%	-4%
40%	-22%	-4%	-13%	-30%	-25%	21%	-57%	-31%	-16%	-18%	-14%	-10%
50%	-2%	-14%	-16%	-31%	-30%	9%	-57%	-29%	-25%	-20%	-17%	-14%
60%	7%	-15%	-14%	-34%	-13%	-2%	-55%	-32%	-26%	-20%	-15%	-15%
70%	16%	-22%	-10%	-35%	-8%	-2%	-52%	-42%	-28%	-9%	-5%	-16%
80%	33%	-16%	-23%	-33%	-4%	-8%	-49%	-42%	-26%	-15%	16%	-15%
90%	70%	-16%	-21%	-4%	27%	-22%	-40%	-48%	-6%	20%	27%	-4%
Long Term												
Full Simulation Period[b]	-10%	-3%	-12%	-26%	-19%	2%	-47%	-28%	-8%	-13%	-16%	-11%
Water Year Types[c]												
Wet (32%)	-18%	-2%	-16%	-26%	-10%	27%	-37%	-15%	10%	-9%	-20%	-15%
Above Normal (16%)	3%	-3%	-10%	-32%	-32%	12%	-56%	-31%	-16%	-23%	-21%	-25%
Below Normal (13%)	-18%	-10%	-11%	-32%	-9%	-9%	-54%	-42%	-25%	-28%	-28%	3%
Dry (24%)	-14%	0%	-3%	-22%	-25%	-24%	-47%	-41%	-21%	-9%	6%	-2%
Critical (15%)	31%	-4%	-18%	-19%	-31%	-39%	-57%	-44%	-25%	24%	5%	-4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.2.19 CVP Net Energy Use

Table 5C.3.2.19.1 CVP Net Generation, Monthly Net Generation

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

Revised Alternative 1

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	284	162	524	558	598	565	406	564	602	639	479	291
20%	242	130	268	409	492	482	323	519	571	620	466	257
30%	197	106	114	286	291	296	292	481	531	602	441	228
40%	172	88	75	135	201	194	272	463	503	585	423	217
50%	164	81	46	72	113	155	255	436	482	549	408	203
60%	154	74	32	37	81	129	236	407	465	524	395	191
70%	141	61	21	19	58	106	215	386	452	497	372	181
80%	115	51	9	11	24	83	199	340	410	463	358	156
90%	97	33	-13	-10	-6	63	170	288	366	399	319	103
Long Term												
Full Simulation Period[b]	173	102	142	187	220	251	277	431	489	540	404	215
Water Year Types[c]												
Wet (32%)	198	138	337	413	394	455	351	519	522	555	428	293
Above Normal (16%)	167	99	110	211	348	305	266	454	515	612	437	225
Below Normal (13%)	192	85	37	70	183	160	265	440	529	577	438	210
Dry (24%)	162	82	34	39	46	95	223	393	488	534	395	177
Critical (15%)	129	72	28	25	30	91	227	273	356	407	301	103

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Net Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-12%	-37%	0%	0%	5%	0%	-10%	1%	11%	-4%	1%	-45%
20%	-14%	-41%	23%	10%	0%	9%	-9%	1%	14%	-1%	5%	-48%
30%	-21%	-45%	-2%	11%	-19%	13%	-10%	3%	11%	1%	3%	-38%
40%	-20%	-45%	4%	-8%	24%	15%	-11%	5%	11%	5%	1%	-37%
50%	-18%	-28%	-6%	-31%	3%	3%	-10%	3%	10%	2%	1%	-18%
60%	0%	-23%	-24%	-48%	-14%	-3%	-13%	1%	9%	3%	4%	-4%
70%	5%	-14%	-30%	-62%	-18%	-3%	-13%	1%	10%	4%	2%	-1%
80%	-4%	-8%	-47%	-72%	-56%	-13%	-12%	4%	9%	3%	3%	4%
90%	13%	-18%	1847%	-141%	-117%	-14%	-14%	10%	10%	0%	6%	-1%
Long Term												
Full Simulation Period[b]	-12%	-30%	2%	-10%	-4%	3%	-10%	3%	10%	2%	3%	-27%
Water Year Types[c]												
Wet (32%)	-16%	-29%	8%	-5%	1%	5%	-12%	-1%	15%	1%	1%	-42%
Above Normal (16%)	-13%	-31%	-20%	-5%	-4%	16%	-20%	2%	12%	1%	4%	-33%
Below Normal (13%)	-17%	-37%	-13%	-12%	1%	11%	-8%	4%	11%	1%	4%	6%
Dry (24%)	-9%	-36%	-1%	-48%	-31%	-20%	-4%	4%	4%	3%	1%	2%
Critical (15%)	9%	-5%	-16%	-49%	-49%	-13%	3%	10%	10%	7%	9%	16%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.19.2 CVP Net Generation, Monthly Net Generation

Revised Second Basis of Comparison

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	284	162	524	558	598	565	406	564	602	639	479	291
20%	242	130	268	409	492	482	323	519	571	620	466	257
30%	197	106	114	286	291	296	292	481	531	602	441	228
40%	172	88	75	135	201	194	272	463	503	585	423	217
50%	164	81	46	72	113	155	255	436	482	549	408	203
60%	154	74	32	37	81	129	236	407	465	524	395	191
70%	141	61	21	19	58	106	215	386	452	497	372	181
80%	115	51	9	11	24	83	199	340	410	463	358	156
90%	97	33	-13	-10	-6	63	170	288	366	399	319	103
Long Term												
Full Simulation Period[b]	173	102	142	187	220	251	277	431	489	540	404	215
Water Year Types[c]												
Wet (32%)	198	138	337	413	394	455	351	519	522	555	428	293
Above Normal (16%)	167	99	110	211	348	305	266	454	515	612	437	225
Below Normal (13%)	192	85	37	70	183	160	265	440	529	577	438	210
Dry (24%)	162	82	34	39	46	95	223	393	488	534	395	177
Critical (15%)	129	72	28	25	30	91	227	273	356	407	301	103

No Action Alternative

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

No Action Alternative minus Revised Second Basis of Comparison

	Monthly Net Generation (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14%	59%	0%	0%	-5%	0%	11%	-1%	-10%	4%	-1%	81%
20%	17%	69%	-19%	-9%	0%	-8%	10%	-1%	-12%	1%	-4%	91%
30%	26%	83%	2%	-10%	23%	-11%	11%	-3%	-10%	-1%	-3%	61%
40%	26%	83%	-4%	8%	-19%	-13%	12%	-5%	-10%	-5%	-1%	59%
50%	22%	38%	7%	45%	-3%	-3%	12%	-3%	-9%	-2%	-1%	21%
60%	0%	30%	31%	91%	16%	3%	14%	-1%	-8%	-3%	-3%	4%
70%	-5%	16%	43%	162%	22%	3%	16%	-1%	-9%	-3%	-2%	1%
80%	4%	9%	89%	254%	130%	15%	13%	-4%	-8%	-3%	-3%	-4%
90%	-11%	21%	-95%	-341%	-681%	16%	16%	-9%	-9%	0%	-5%	1%
Long Term												
Full Simulation Period[b]	14%	42%	-2%	12%	4%	-3%	11%	-2%	-9%	-2%	-3%	37%
Water Year Types[c]												
Wet (32%)	19%	40%	-8%	5%	-1%	-4%	13%	1%	-13%	-1%	-1%	72%
Above Normal (16%)	15%	44%	24%	6%	4%	-14%	26%	-2%	-11%	-1%	-4%	49%
Below Normal (13%)	20%	60%	15%	14%	-1%	-10%	9%	-4%	-10%	-1%	-3%	-6%
Dry (24%)	10%	56%	1%	93%	45%	25%	4%	-4%	-4%	-3%	-1%	-2%
Critical (15%)	-8%	5%	20%	96%	95%	14%	-3%	-9%	-9%	-7%	-8%	-14%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.19.3 CVP Net Generation, Monthly Net Generation

Revised Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	284	162	524	558	598	565	406	564	602	639	479	291
20%	242	130	268	409	492	482	323	519	571	620	466	257
30%	197	106	114	286	291	296	292	481	531	602	441	228
40%	172	88	75	135	201	194	272	463	503	585	423	217
50%	164	81	46	72	113	155	255	436	482	549	408	203
60%	154	74	32	37	81	129	236	407	465	524	395	191
70%	141	61	21	19	58	106	215	386	452	497	372	181
80%	115	51	9	11	24	83	199	340	410	463	358	156
90%	97	33	-13	-10	-6	63	170	288	366	399	319	103
Long Term												
Full Simulation Period[b]	173	102	142	187	220	251	277	431	489	540	404	215
Water Year Types[c]												
Wet (32%)	198	138	337	413	394	455	351	519	522	555	428	293
Above Normal (16%)	167	99	110	211	348	305	266	454	515	612	437	225
Below Normal (13%)	192	85	37	70	183	160	265	440	529	577	438	210
Dry (24%)	162	82	34	39	46	95	223	393	488	534	395	177
Critical (15%)	129	72	28	25	30	91	227	273	356	407	301	103

Alternative 3

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	291	182	530	558	606	583	437	534	563	674	481	336
20%	235	125	266	480	511	511	316	479	531	638	465	266
30%	193	104	114	332	334	287	298	459	508	622	441	246
40%	173	91	74	160	183	189	268	439	473	596	424	216
50%	158	77	52	112	122	150	251	392	448	544	409	205
60%	147	66	39	72	84	122	229	374	433	528	387	195
70%	133	60	25	51	71	106	216	348	411	506	374	181
80%	113	52	12	36	56	92	200	316	387	469	362	155
90%	88	31	-6	18	41	71	174	260	340	397	326	104
Long Term												
Full Simulation Period[b]	172	102	150	224	241	250	275	400	457	549	406	217
Water Year Types[c]												
Wet (32%)	197	137	349	456	402	443	347	475	467	572	436	294
Above Normal (16%)	166	109	123	257	381	276	269	408	475	621	429	230
Below Normal (13%)	190	81	42	117	198	167	276	418	493	588	440	221
Dry (24%)	160	81	36	67	71	115	217	372	478	537	396	177
Critical (15%)	125	73	35	45	60	108	223	260	346	402	305	101

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Net Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2%	13%	1%	0%	1%	3%	8%	-5%	-6%	5%	0%	15%
20%	-3%	-4%	-1%	17%	4%	6%	-2%	-8%	-7%	3%	0%	3%
30%	-2%	-2%	0%	16%	15%	-3%	2%	-4%	-4%	3%	0%	8%
40%	1%	3%	-2%	18%	-9%	-2%	-1%	-5%	-6%	2%	0%	-1%
50%	-4%	-4%	12%	56%	8%	-3%	-2%	-10%	-7%	-1%	0%	1%
60%	-5%	-11%	20%	94%	3%	-5%	-3%	-8%	-7%	1%	-2%	2%
70%	-6%	-2%	19%	166%	23%	-1%	1%	-10%	-9%	2%	1%	0%
80%	-2%	1%	23%	241%	136%	11%	0%	-7%	-6%	1%	1%	0%
90%	-9%	-5%	-57%	-278%	-768%	14%	3%	-10%	-7%	-1%	2%	1%
Long Term												
Full Simulation Period[b]	-1%	0%	6%	20%	9%	0%	-1%	-7%	-7%	2%	1%	1%
Water Year Types[c]												
Wet (32%)	0%	0%	4%	11%	2%	-3%	-1%	-8%	-10%	3%	2%	0%
Above Normal (16%)	-1%	10%	12%	22%	9%	-10%	1%	-10%	-8%	2%	-2%	3%
Below Normal (13%)	-1%	-5%	14%	68%	8%	4%	4%	-5%	-7%	2%	0%	5%
Dry (24%)	-2%	-2%	7%	74%	53%	21%	-3%	-5%	-2%	1%	0%	0%
Critical (15%)	-3%	0%	22%	83%	97%	19%	-2%	-5%	-3%	-1%	1%	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.2.19.4 CVP Net Generation, Monthly Net Generation

Revised Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	284	162	524	558	598	565	406	564	602	639	479	291
20%	242	130	268	409	492	482	323	519	571	620	466	257
30%	197	106	114	286	291	296	292	481	531	602	441	228
40%	172	88	75	135	201	194	272	463	503	585	423	217
50%	164	81	46	72	113	155	255	436	482	549	408	203
60%	154	74	32	37	81	129	236	407	465	524	395	191
70%	141	61	21	19	58	106	215	386	452	497	372	181
80%	115	51	9	11	24	83	199	340	410	463	358	156
90%	97	33	-13	-10	-6	63	170	288	366	399	319	103
Long Term												
Full Simulation Period[b]	173	102	142	187	220	251	277	431	489	540	404	215
Water Year Types[c]												
Wet (32%)	198	138	337	413	394	455	351	519	522	555	428	293
Above Normal (16%)	167	99	110	211	348	305	266	454	515	612	437	225
Below Normal (13%)	192	85	37	70	183	160	265	440	529	577	438	210
Dry (24%)	162	82	34	39	46	95	223	393	488	534	395	177
Critical (15%)	129	72	28	25	30	91	227	273	356	407	301	103

Alternative 5

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	323	255	511	557	567	559	451	559	528	654	468	527
20%	285	219	219	356	495	444	360	514	496	620	442	495
30%	233	186	113	253	363	270	330	469	475	589	426	365
40%	217	160	72	146	159	168	310	447	450	551	415	343
50%	194	116	48	104	107	148	294	426	437	531	402	243
60%	158	99	39	72	92	131	274	409	424	509	377	199
70%	134	71	28	52	67	105	254	389	404	485	366	177
80%	110	57	18	38	52	84	237	323	368	425	346	146
90%	84	31	-2	25	35	72	210	288	322	396	304	107
Long Term												
Full Simulation Period[b]	197	144	137	208	229	242	315	427	438	524	390	296
Water Year Types[c]												
Wet (32%)	233	191	307	433	388	431	397	527	454	553	419	506
Above Normal (16%)	190	142	136	221	364	264	335	449	458	608	416	333
Below Normal (13%)	230	135	42	79	175	144	305	428	471	569	420	198
Dry (24%)	179	130	32	75	67	119	250	383	461	508	388	173
Critical (15%)	123	76	34	47	56	102	237	257	314	358	273	97

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Net Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14%	58%	-2%	0%	-5%	-1%	11%	-1%	-12%	2%	-2%	81%
20%	18%	68%	-18%	-13%	1%	-8%	11%	-1%	-13%	0%	-5%	92%
30%	18%	74%	0%	-12%	25%	-9%	13%	-2%	-10%	-2%	-4%	60%
40%	26%	80%	-5%	8%	-21%	-14%	14%	-3%	-10%	-6%	-2%	58%
50%	18%	44%	3%	44%	-6%	-5%	15%	-2%	-9%	-3%	-1%	20%
60%	2%	33%	21%	94%	13%	2%	16%	1%	-9%	-3%	-5%	4%
70%	-5%	16%	31%	167%	15%	-1%	18%	1%	-11%	-2%	-2%	-2%
80%	-5%	11%	88%	259%	122%	1%	19%	-5%	-10%	-8%	-3%	-6%
90%	-13%	-6%	-86%	-350%	-678%	15%	24%	0%	-12%	-1%	-5%	4%
Long Term												
Full Simulation Period[b]	13%	42%	-3%	12%	4%	-4%	14%	-1%	-10%	-3%	-4%	38%
Water Year Types[c]												
Wet (32%)	18%	39%	-9%	5%	-1%	-5%	13%	1%	-13%	0%	-2%	73%
Above Normal (16%)	14%	43%	24%	5%	4%	-14%	26%	-1%	-11%	-1%	-5%	48%
Below Normal (13%)	20%	58%	12%	13%	-5%	-10%	15%	-3%	-11%	-1%	-4%	-6%
Dry (24%)	11%	58%	-5%	95%	45%	25%	12%	-3%	-6%	-5%	-2%	-2%
Critical (15%)	-5%	6%	19%	91%	84%	12%	4%	-6%	-12%	-12%	-9%	-6%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.2.20 Stanislaus River Percent Mortality – Fall-run Chinook Salmon

Table 5C.3.2.20 Stanislaus River Percent Mortality - Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	7.0	---	0.4
Wet	1.6	---	0.1
Above Normal	5.3	---	1.1
Below Normal	4.4	---	0.5
Dry	4.9	---	-0.3
Critical	14.4	---	0.4
Second Basis of Comparison			
Long-term Average	6.6	-0.4	
Wet	1.5	-0.1	---
Above Normal	4.3	-1.1	---
Below Normal	4.0	-0.5	---
Dry	5.1	0.3	---
Critical	14.0	-0.4	---
Alternative 3			
Long-term Average	6.2	-0.8	-0.4
Wet	1.6	0.0	0.1
Above Normal	4.0	-1.3	-0.3
Below Normal	3.8	-0.6	-0.2
Dry	4.2	-0.7	-0.9
Critical	13.4	-1.0	-0.6
Alternative 5			
Long-term Average	8.5	1.5	1.9
Wet	1.8	0.2	0.3
Above Normal	6.4	1.1	2.1
Below Normal	6.1	1.6	2.1
Dry	7.0	2.2	1.9
Critical	16.9	2.5	2.9

Notes: All results are based on the 82-year simulation period. The water year types are defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

5C.3.2.21 New Melones Large Mouth Bass Nest Survival Percentage

Table 5C.3.2.21.1 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	66	38	80
20%	100	100	100	100	100	100	100	100	100	49	30	64
30%	84	100	100	100	100	100	100	100	100	31	25	59
40%	74	100	100	100	100	100	100	100	100	25	23	57
50%	67	100	100	100	100	100	80	100	98	22	20	55
60%	59	100	100	100	100	100	72	100	63	18	19	50
70%	50	100	100	100	100	100	49	40	42	13	16	43
80%	43	100	100	100	100	100	27	29	27	10	12	38
90%	29	100	100	100	100	100	13	14	15	1	4	34
Long Term												
Full Simulation Period[b]	66	99	100	100	97	95	68	72	69	29	23	54
Water Year Types[c]												
Wet (23%)	67	100	100	100	96	94	83	98	95	47	24	51
Above Normal (24%)	74	100	100	100	100	100	88	100	72	26	20	60
Below Normal (10%)	60	100	100	100	98	95	58	65	61	22	19	58
Dry (16%)	63	99	100	100	97	98	66	51	54	14	16	49
Critical (27%)	65	97	100	100	93	87	29	25	43	28	37	58

Revised Alternative 1

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	53	33	74
20%	100	100	100	100	100	100	100	100	100	38	30	65
30%	100	100	100	100	100	100	100	100	100	31	29	59
40%	100	100	100	100	100	100	100	100	100	27	26	57
50%	100	100	100	100	100	100	100	100	93	24	23	54
60%	100	100	100	100	100	100	86	100	63	22	21	51
70%	100	100	100	100	100	100	69	53	44	19	17	47
80%	97	100	100	100	100	100	49	43	31	16	11	39
90%	90	100	100	100	100	100	36	24	21	12	7	23
Long Term												
Full Simulation Period[b]	97	100	100	100	97	97	79	76	71	29	22	54
Water Year Types[c]												
Wet (23%)	99	100	100	100	96	97	91	98	96	41	22	47
Above Normal (24%)	96	99	100	100	100	100	93	100	72	29	23	61
Below Normal (10%)	96	100	100	100	98	100	74	73	65	25	22	57
Dry (16%)	96	99	100	100	96	98	81	60	58	20	21	53
Critical (27%)	99	100	100	100	96	87	42	34	40	19	20	57

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-20%	-13%	-8%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-24%	2%	1%
30%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	0%
40%	35%	0%	0%	0%	0%	0%	0%	0%	0%	6%	16%	0%
50%	48%	0%	0%	0%	0%	0%	26%	0%	-5%	5%	13%	0%
60%	70%	0%	0%	0%	0%	0%	20%	0%	-1%	19%	11%	3%
70%	99%	0%	0%	0%	0%	0%	41%	32%	7%	50%	2%	8%
80%	126%	0%	0%	0%	0%	0%	85%	48%	12%	62%	-4%	2%
90%	215%	0%	0%	0%	0%	0%	183%	75%	42%	888%	93%	-32%
Long Term												
Full Simulation Period[b]	48%	0%	0%	0%	0%	2%	17%	7%	2%	-3%	-4%	-1%
Water Year Types[c]												
Wet (23%)	49%	0%	0%	0%	0%	4%	10%	0%	2%	-14%	-7%	-8%
Above Normal (24%)	31%	0%	0%	0%	0%	0%	6%	0%	0%	13%	16%	1%
Below Normal (10%)	59%	0%	0%	0%	0%	5%	28%	12%	6%	11%	16%	0%
Dry (16%)	51%	0%	0%	0%	0%	0%	22%	18%	7%	48%	29%	8%
Critical (27%)	53%	3%	0%	0%	3%	0%	47%	34%	-7%	-32%	-45%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.21.2 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	53	33	74
20%	100	100	100	100	100	100	100	100	100	38	30	65
30%	100	100	100	100	100	100	100	100	100	31	29	59
40%	100	100	100	100	100	100	100	100	100	27	26	57
50%	100	100	100	100	100	100	100	100	93	24	23	54
60%	100	100	100	100	100	100	86	100	63	22	21	51
70%	100	100	100	100	100	100	69	53	44	19	17	47
80%	97	100	100	100	100	100	49	43	31	16	11	39
90%	90	100	100	100	100	100	36	24	21	12	7	23
Long Term												
Full Simulation Period[b]	97	100	100	100	97	97	79	76	71	29	22	54
Water Year Types[c]												
Wet (23%)	99	100	100	100	96	97	91	98	96	41	22	47
Above Normal (24%)	96	99	100	100	100	100	93	100	72	29	23	61
Below Normal (10%)	96	100	100	100	98	100	74	73	65	25	22	57
Dry (16%)	96	99	100	100	96	98	81	60	58	20	21	53
Critical (27%)	99	100	100	100	96	87	42	34	40	19	20	57

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	66	38	80
20%	100	100	100	100	100	100	100	100	100	49	30	64
30%	84	100	100	100	100	100	100	100	100	31	25	59
40%	74	100	100	100	100	100	100	100	100	25	23	57
50%	67	100	100	100	100	100	80	100	98	22	20	55
60%	59	100	100	100	100	100	72	100	63	18	19	50
70%	50	100	100	100	100	100	49	40	42	13	16	43
80%	43	100	100	100	100	100	27	29	27	10	12	38
90%	29	100	100	100	100	100	13	14	15	1	4	34
Long Term												
Full Simulation Period[b]	66	99	100	100	97	95	68	72	69	29	23	54
Water Year Types[c]												
Wet (23%)	67	100	100	100	96	94	83	98	95	47	24	51
Above Normal (24%)	74	100	100	100	100	100	88	100	72	26	20	60
Below Normal (10%)	60	100	100	100	98	95	58	65	61	22	19	58
Dry (16%)	63	99	100	100	97	98	66	51	54	14	16	49
Critical (27%)	65	97	100	100	93	87	29	25	43	28	37	58

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**25%**	**15%**	**8%**
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**32%**	-2%	-1%
30%	**-16%**	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-13%**	0%
40%	**-26%**	0%	0%	0%	0%	0%	0%	0%	0%	**-6%**	**-14%**	0%
50%	**-33%**	0%	0%	0%	0%	0%	**-20%**	0%	**5%**	-5%	**-12%**	0%
60%	**-41%**	0%	0%	0%	0%	0%	**-17%**	0%	1%	**-16%**	**-10%**	-3%
70%	**-50%**	0%	0%	0%	0%	0%	**-29%**	**-24%**	**-6%**	**-33%**	-2%	**-7%**
80%	**-56%**	0%	0%	0%	0%	0%	**-46%**	**-32%**	**-11%**	**-38%**	5%	-2%
90%	**-68%**	0%	0%	0%	0%	0%	**-65%**	**-43%**	**-30%**	**-90%**	**-48%**	**47%**
Long Term												
Full Simulation Period[b]	**-32%**	0%	0%	0%	0%	-2%	**-14%**	**-6%**	-2%	3%	4%	1%
Water Year Types[c]												
Wet (23%)	**-33%**	0%	0%	0%	0%	-3%	**-9%**	0%	-2%	**16%**	**8%**	**9%**
Above Normal (24%)	**-23%**	0%	0%	0%	0%	0%	**-6%**	0%	0%	**-12%**	**-13%**	-1%
Below Normal (10%)	**-37%**	0%	0%	0%	0%	**-5%**	**-22%**	**-11%**	**-6%**	**-10%**	**-14%**	0%
Dry (16%)	**-34%**	0%	0%	0%	0%	0%	**-18%**	**-16%**	**-7%**	**-32%**	**-22%**	**-7%**
Critical (27%)	**-35%**	-3%	0%	0%	-3%	0%	**-32%**	**-25%**	**7%**	**46%**	**81%**	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.21.3 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	53	33	74
20%	100	100	100	100	100	100	100	100	100	38	30	65
30%	100	100	100	100	100	100	100	100	100	31	29	59
40%	100	100	100	100	100	100	100	100	100	27	26	57
50%	100	100	100	100	100	100	100	100	93	24	23	54
60%	100	100	100	100	100	100	86	100	63	22	21	51
70%	100	100	100	100	100	100	69	53	44	19	17	47
80%	97	100	100	100	100	100	49	43	31	16	11	39
90%	90	100	100	100	100	100	36	24	21	12	7	23
Long Term												
Full Simulation Period[b]	97	100	100	100	97	97	79	76	71	29	22	54
Water Year Types[c]												
Wet (23%)	99	100	100	100	96	97	91	98	96	41	22	47
Above Normal (24%)	96	99	100	100	100	100	93	100	72	29	23	61
Below Normal (10%)	96	100	100	100	98	100	74	73	65	25	22	57
Dry (16%)	96	99	100	100	96	98	81	60	58	20	21	53
Critical (27%)	99	100	100	100	96	87	42	34	40	19	20	57

Alternative 3

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	43	78
20%	100	100	100	100	100	100	100	100	100	57	37	69
30%	100	100	100	100	100	100	100	100	100	43	29	61
40%	100	100	100	100	100	100	100	100	100	31	27	56
50%	100	100	100	100	100	100	97	100	100	24	23	55
60%	100	100	100	100	100	100	75	92	55	21	20	48
70%	100	100	100	100	100	100	57	44	35	18	18	42
80%	94	100	100	100	100	100	43	21	28	11	11	31
90%	84	100	100	100	100	100	23	0	14	0	0	23
Long Term												
Full Simulation Period[b]	95	99	99	100	99	96	73	70	67	35	24	51
Water Year Types[c]												
Wet (23%)	99	100	100	100	96	98	92	91	77	66	30	53
Above Normal (24%)	98	99	100	100	100	100	94	100	90	34	22	58
Below Normal (10%)	96	100	91	100	100	100	62	73	64	23	18	56
Dry (16%)	89	100	100	100	100	98	68	46	59	16	20	42
Critical (27%)	94	97	100	100	100	83	30	30	40	15	25	50

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**88%**	**33%**	**6%**
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**52%**	**21%**	**6%**
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**37%**	2%	3%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**18%**	2%	-1%
50%	0%	0%	0%	0%	0%	0%	-3%	0%	**7%**	1%	0%	0%
60%	0%	0%	0%	0%	0%	0%	**-13%**	**-8%**	**-13%**	**-5%**	-4%	**-6%**
70%	0%	0%	0%	0%	0%	0%	**-18%**	**-17%**	**-21%**	**-8%**	**8%**	**-9%**
80%	-3%	0%	0%	0%	0%	0%	**-14%**	**-53%**	**-10%**	**-29%**	**-5%**	**-20%**
90%	**-7%**	0%	0%	0%	0%	0%	**-36%**	**-98%**	**-34%**	**-100%**	**-99%**	1%
Long Term												
Full Simulation Period[b]	-2%	0%	-1%	0%	2%	-1%	**-8%**	**-8%**	-5%	**24%**	**10%**	-4%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	1%	**-7%**	**-20%**	**62%**	**34%**	**12%**
Above Normal (24%)	2%	0%	0%	0%	0%	0%	1%	0%	**24%**	**17%**	**-6%**	-4%
Below Normal (10%)	0%	0%	**-9%**	0%	2%	0%	**-17%**	-1%	-1%	**-7%**	**-18%**	-2%
Dry (16%)	**-7%**	1%	0%	0%	4%	0%	**-16%**	**-23%**	1%	**-22%**	-4%	**-20%**
Critical (27%)	-5%	-3%	0%	0%	4%	-5%	**-28%**	**-10%**	2%	**-19%**	**25%**	**-12%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.21.4 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	53	33	74
20%	100	100	100	100	100	100	100	100	100	38	30	65
30%	100	100	100	100	100	100	100	100	100	31	29	59
40%	100	100	100	100	100	100	100	100	100	27	26	57
50%	100	100	100	100	100	100	100	100	93	24	23	54
60%	100	100	100	100	100	100	86	100	63	22	21	51
70%	100	100	100	100	100	100	69	53	44	19	17	47
80%	97	100	100	100	100	100	49	43	31	16	11	39
90%	90	100	100	100	100	100	36	24	21	12	7	23
Long Term												
Full Simulation Period[b]	97	100	100	100	97	97	79	76	71	29	22	54
Water Year Types[c]												
Wet (23%)	99	100	100	100	96	97	91	98	96	41	22	47
Above Normal (24%)	96	99	100	100	100	100	93	100	72	29	23	61
Below Normal (10%)	96	100	100	100	98	100	74	73	65	25	22	57
Dry (16%)	96	99	100	100	96	98	81	60	58	20	21	53
Critical (27%)	99	100	100	100	96	87	42	34	40	19	20	57

Alternative 5

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	75	36	98
20%	100	100	100	100	100	100	100	100	100	42	24	62
30%	88	100	100	100	100	100	100	100	100	30	22	57
40%	75	100	100	100	100	100	100	100	100	23	20	55
50%	69	100	100	100	100	100	72	100	100	20	19	50
60%	57	100	100	100	100	100	43	60	79	16	16	44
70%	51	100	100	100	100	100	24	29	43	12	11	39
80%	46	100	100	100	100	100	10	1	25	5	5	35
90%	35	100	100	100	100	95	0	0	7	0	0	13
Long Term												
Full Simulation Period[b]	67	100	100	100	98	95	60	64	70	28	21	50
Water Year Types[c]												
Wet (23%)	71	100	100	100	96	95	87	93	97	41	19	47
Above Normal (24%)	73	99	100	100	100	100	79	94	61	21	17	53
Below Normal (10%)	58	100	100	100	98	95	50	58	59	18	14	44
Dry (16%)	58	99	100	100	100	98	45	37	52	10	13	45
Critical (27%)	73	100	100	100	99	85	14	19	60	44	50	67

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	10%	33%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	11%	-21%	-4%
30%	-12%	0%	0%	0%	0%	0%	0%	0%	0%	-3%	-24%	-4%
40%	-25%	0%	0%	0%	0%	0%	0%	0%	0%	-13%	-25%	-3%
50%	-31%	0%	0%	0%	0%	0%	-28%	0%	7%	-16%	-19%	-8%
60%	-43%	0%	0%	0%	0%	0%	-50%	-40%	26%	-27%	-21%	-14%
70%	-49%	0%	0%	0%	0%	0%	-65%	-45%	-3%	-38%	-33%	-16%
80%	-53%	0%	0%	0%	0%	0%	-80%	-97%	-19%	-72%	-53%	-10%
90%	-62%	0%	0%	0%	0%	-5%	-100%	-100%	-66%	-99%	-99%	-44%
Long Term												
Full Simulation Period[b]	-31%	0%	0%	0%	1%	-2%	-25%	-16%	-1%	-3%	-3%	-7%
Water Year Types[c]												
Wet (23%)	-28%	0%	0%	0%	0%	-3%	-5%	-5%	1%	1%	-14%	-1%
Above Normal (24%)	-24%	0%	0%	0%	0%	0%	-15%	-6%	-16%	-29%	-27%	-12%
Below Normal (10%)	-40%	0%	0%	0%	0%	-5%	-33%	-21%	-9%	-27%	-39%	-24%
Dry (16%)	-39%	0%	0%	0%	4%	0%	-45%	-38%	-9%	-51%	-39%	-15%
Critical (27%)	-26%	0%	0%	0%	3%	-2%	-67%	-43%	51%	134%	148%	17%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.22 New Melones Small Mouth Bass Nest Survival Percentage

Table 5C.3.2.22.1 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	56	32	67
20%	84	100	100	100	100	100	100	100	100	42	26	54
30%	71	100	100	100	100	100	100	100	100	27	22	50
40%	62	100	100	100	100	100	100	100	100	22	20	48
50%	57	100	100	100	100	100	67	100	86	20	18	46
60%	50	100	100	100	100	100	60	91	53	16	17	42
70%	43	100	100	100	100	100	42	34	35	12	15	37
80%	37	100	100	100	100	100	23	25	24	9	11	33
90%	25	100	100	100	100	85	12	13	14	2	4	29
Long Term												
Full Simulation Period[b]	58	98	100	100	96	94	65	70	66	26	21	47
Water Year Types[c]												
Wet (23%)	59	100	100	100	96	93	81	97	93	42	21	43
Above Normal (24%)	64	98	100	100	100	100	86	99	68	22	18	52
Below Normal (10%)	54	100	100	100	97	94	55	63	59	19	17	50
Dry (16%)	55	97	100	100	97	98	59	48	50	12	15	43
Critical (27%)	58	95	100	99	92	82	26	23	40	25	36	53

Revised Alternative 1

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	45	28	62
20%	100	100	100	100	100	100	100	100	100	32	26	55
30%	100	100	100	100	100	100	100	100	100	27	25	50
40%	100	100	100	100	100	100	100	100	100	23	23	48
50%	100	100	100	100	100	100	100	100	78	21	20	46
60%	93	100	100	100	100	100	72	100	53	19	18	43
70%	88	100	100	100	100	100	58	45	38	17	15	40
80%	81	100	100	100	100	100	42	37	26	15	10	33
90%	76	92	100	100	100	100	31	21	19	11	7	20
Long Term												
Full Simulation Period[b]	92	98	100	100	96	96	75	74	67	25	19	46
Water Year Types[c]												
Wet (23%)	94	100	100	100	96	97	88	98	94	36	20	40
Above Normal (24%)	92	97	100	100	100	100	92	100	68	25	20	53
Below Normal (10%)	86	99	100	100	97	100	69	70	62	22	20	50
Dry (16%)	88	97	100	100	96	98	75	55	53	18	18	46
Critical (27%)	98	96	100	100	94	83	37	30	37	17	18	49

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-19%**	**-13%**	**-8%**
20%	**19%**	0%	0%	0%	0%	0%	0%	0%	0%	**-23%**	2%	1%
30%	**42%**	0%	0%	0%	0%	0%	0%	0%	0%	0%	**14%**	0%
40%	**61%**	0%	0%	0%	0%	0%	0%	0%	0%	**6%**	**15%**	0%
50%	**76%**	0%	0%	0%	0%	0%	**49%**	0%	**-10%**	5%	**12%**	0%
60%	**87%**	0%	0%	0%	0%	0%	**20%**	**10%**	-1%	**18%**	**11%**	3%
70%	**106%**	0%	0%	0%	0%	0%	**40%**	**31%**	**7%**	**45%**	2%	**7%**
80%	**122%**	0%	0%	0%	0%	0%	**81%**	**46%**	**11%**	**54%**	-4%	2%
90%	**204%**	**-8%**	0%	0%	0%	**18%**	**164%**	**67%**	**38%**	**399%**	**66%**	**-31%**
Long Term												
Full Simulation Period[b]	**59%**	0%	0%	0%	0%	2%	**17%**	**6%**	1%	-4%	**-6%**	-2%
Water Year Types[c]												
Wet (23%)	**61%**	0%	0%	0%	0%	4%	**9%**	0%	1%	**-14%**	**-6%**	**-8%**
Above Normal (24%)	**44%**	-1%	0%	0%	0%	0%	**8%**	1%	1%	**13%**	**14%**	1%
Below Normal (10%)	**61%**	-1%	0%	0%	0%	**6%**	**25%**	**13%**	**5%**	**10%**	**15%**	0%
Dry (16%)	**59%**	0%	0%	0%	0%	0%	**28%**	**16%**	**6%**	**43%**	**26%**	**8%**
Critical (27%)	**69%**	2%	0%	1%	2%	1%	**44%**	**30%**	**-9%**	**-34%**	**-50%**	**-7%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.22.2 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	45	28	62
20%	100	100	100	100	100	100	100	100	100	32	26	55
30%	100	100	100	100	100	100	100	100	100	27	25	50
40%	100	100	100	100	100	100	100	100	100	23	23	48
50%	100	100	100	100	100	100	100	100	78	21	20	46
60%	93	100	100	100	100	100	72	100	53	19	18	43
70%	88	100	100	100	100	100	58	45	38	17	15	40
80%	81	100	100	100	100	100	42	37	26	15	10	33
90%	76	92	100	100	100	100	31	21	19	11	7	20
Long Term												
Full Simulation Period[b]	92	98	100	100	96	96	75	74	67	25	19	46
Water Year Types[c]												
Wet (23%)	94	100	100	100	96	97	88	98	94	36	20	40
Above Normal (24%)	92	97	100	100	100	100	92	100	68	25	20	53
Below Normal (10%)	86	99	100	100	97	100	69	70	62	22	20	50
Dry (16%)	88	97	100	100	96	98	75	55	53	18	18	46
Critical (27%)	98	96	100	100	94	83	37	30	37	17	18	49

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	56	32	67
20%	84	100	100	100	100	100	100	100	100	42	26	54
30%	71	100	100	100	100	100	100	100	100	27	22	50
40%	62	100	100	100	100	100	100	100	100	22	20	48
50%	57	100	100	100	100	100	67	100	86	20	18	46
60%	50	100	100	100	100	100	60	91	53	16	17	42
70%	43	100	100	100	100	100	42	34	35	12	15	37
80%	37	100	100	100	100	100	23	25	24	9	11	33
90%	25	100	100	100	100	85	12	13	14	2	4	29
Long Term												
Full Simulation Period[b]	58	98	100	100	96	94	65	70	66	26	21	47
Water Year Types[c]												
Wet (23%)	59	100	100	100	96	93	81	97	93	42	21	43
Above Normal (24%)	64	98	100	100	100	100	86	99	68	22	18	52
Below Normal (10%)	54	100	100	100	97	94	55	63	59	19	17	50
Dry (16%)	55	97	100	100	97	98	59	48	50	12	15	43
Critical (27%)	58	95	100	99	92	82	26	23	40	25	36	53

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	24%	15%	8%
20%	-16%	0%	0%	0%	0%	0%	0%	0%	0%	30%	-2%	-1%
30%	-29%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-12%	0%
40%	-38%	0%	0%	0%	0%	0%	0%	0%	0%	-5%	-13%	0%
50%	-43%	0%	0%	0%	0%	0%	-33%	0%	11%	-5%	-11%	0%
60%	-47%	0%	0%	0%	0%	0%	-17%	-9%	1%	-15%	-10%	-3%
70%	-51%	0%	0%	0%	0%	0%	-28%	-24%	-6%	-31%	-2%	-7%
80%	-55%	0%	0%	0%	0%	0%	-45%	-31%	-10%	-35%	4%	-2%
90%	-67%	9%	0%	0%	0%	-15%	-62%	-40%	-28%	-80%	-40%	44%
Long Term												
Full Simulation Period[b]	-37%	0%	0%	0%	0%	-2%	-14%	-6%	-1%	4%	7%	2%
Water Year Types[c]												
Wet (23%)	-38%	0%	0%	0%	0%	-4%	-8%	0%	-1%	16%	7%	8%
Above Normal (24%)	-30%	1%	0%	0%	0%	0%	-7%	-1%	-1%	-12%	-13%	-1%
Below Normal (10%)	-38%	1%	0%	0%	0%	-6%	-20%	-11%	-5%	-10%	-13%	0%
Dry (16%)	-37%	0%	0%	0%	0%	0%	-22%	-14%	-6%	-30%	-21%	-7%
Critical (27%)	-41%	-2%	0%	-1%	-2%	-1%	-30%	-23%	9%	51%	100%	8%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.22.3 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Survival)											
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	45	28	62
20%	100	100	100	100	100	100	100	100	100	32	26	55
30%	100	100	100	100	100	100	100	100	100	27	25	50
40%	100	100	100	100	100	100	100	100	100	23	23	48
50%	100	100	100	100	100	100	100	100	78	21	20	46
60%	93	100	100	100	100	100	72	100	53	19	18	43
70%	88	100	100	100	100	100	58	45	38	17	15	40
80%	81	100	100	100	100	100	42	37	26	15	10	33
90%	76	92	100	100	100	100	31	21	19	11	7	20
Long Term												
Full Simulation Period[b]	92	98	100	100	96	96	75	74	67	25	19	46
Water Year Types[c]												
Wet (23%)	94	100	100	100	96	97	88	98	94	36	20	40
Above Normal (24%)	92	97	100	100	100	100	92	100	68	25	20	53
Below Normal (10%)	86	99	100	100	97	100	69	70	62	22	20	50
Dry (16%)	88	97	100	100	96	98	75	55	53	18	18	46
Critical (27%)	98	96	100	100	94	83	37	30	37	17	18	49

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Survival)											
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	37	66
20%	100	100	100	100	100	100	100	100	100	48	31	58
30%	100	100	100	100	100	100	100	100	100	36	25	52
40%	100	100	100	100	100	100	100	100	100	27	23	48
50%	99	100	100	100	100	100	81	100	100	21	20	46
60%	97	100	100	100	100	100	63	81	46	18	18	41
70%	84	100	100	100	100	100	48	38	30	16	16	36
80%	79	100	100	100	100	100	36	18	24	11	10	27
90%	70	88	100	100	100	100	20	0	13	0	0	20
Long Term												
Full Simulation Period[b]	90	98	99	100	99	96	70	69	65	32	21	44
Water Year Types[c]												
Wet (23%)	94	100	100	100	96	98	89	90	77	62	26	45
Above Normal (24%)	93	98	100	100	100	100	93	100	88	30	19	50
Below Normal (10%)	90	100	91	100	100	100	57	69	61	20	16	49
Dry (16%)	81	96	100	100	100	97	62	44	54	14	18	37
Critical (27%)	90	92	100	100	99	79	27	27	37	13	23	44

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	122%	31%	6%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	20%	6%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	35%	2%	3%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	2%	-1%
50%	-1%	0%	0%	0%	0%	0%	-19%	0%	28%	1%	0%	0%
60%	4%	0%	0%	0%	0%	0%	-13%	-19%	-12%	-5%	-4%	-6%
70%	-5%	0%	0%	0%	0%	0%	-17%	-17%	-21%	-7%	8%	-9%
80%	-3%	0%	0%	0%	0%	0%	-14%	-51%	-9%	-27%	-5%	-19%
90%	-7%	-4%	0%	0%	0%	0%	-35%	-98%	-32%	-96%	-98%	1%
Long Term												
Full Simulation Period[b]	-2%	-1%	-1%	0%	2%	-1%	-8%	-8%	-3%	29%	10%	-4%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	1%	-8%	-18%	72%	32%	12%
Above Normal (24%)	1%	1%	0%	0%	0%	0%	1%	0%	28%	16%	-7%	-4%
Below Normal (10%)	4%	1%	-9%	0%	3%	0%	-17%	-1%	-1%	-8%	-18%	-2%
Dry (16%)	-7%	-1%	0%	0%	4%	0%	-18%	-20%	1%	-22%	-4%	-20%
Critical (27%)	-8%	-4%	0%	0%	5%	-5%	-27%	-9%	2%	-20%	31%	-11%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.22.4 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	45	28	62
20%	100	100	100	100	100	100	100	100	100	32	26	55
30%	100	100	100	100	100	100	100	100	100	27	25	50
40%	100	100	100	100	100	100	100	100	100	23	23	48
50%	100	100	100	100	100	100	100	100	78	21	20	46
60%	93	100	100	100	100	100	72	100	53	19	18	43
70%	88	100	100	100	100	100	58	45	38	17	15	40
80%	81	100	100	100	100	100	42	37	26	15	10	33
90%	76	92	100	100	100	100	31	21	19	11	7	20
Long Term												
Full Simulation Period[b]	92	98	100	100	96	96	75	74	67	25	19	46
Water Year Types[c]												
Wet (23%)	94	100	100	100	96	97	88	98	94	36	20	40
Above Normal (24%)	92	97	100	100	100	100	92	100	68	25	20	53
Below Normal (10%)	86	99	100	100	97	100	69	70	62	22	20	50
Dry (16%)	88	97	100	100	96	98	75	55	53	18	18	46
Critical (27%)	98	96	100	100	94	83	37	30	37	17	18	49

Alternative 5

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	63	31	88
20%	87	100	100	100	100	100	100	100	100	36	21	53
30%	74	100	100	100	100	100	100	100	100	26	19	48
40%	63	100	100	100	100	100	100	100	100	20	17	47
50%	58	100	100	100	100	100	60	100	100	18	17	42
60%	48	100	100	100	100	100	37	51	66	14	15	37
70%	43	100	100	100	100	100	21	25	37	11	10	34
80%	39	100	100	100	100	100	9	2	22	5	6	30
90%	30	100	100	100	100	80	0	0	7	0	1	12
Long Term												
Full Simulation Period[b]	59	99	100	100	98	94	57	62	67	25	20	44
Water Year Types[c]												
Wet (23%)	61	100	100	100	96	95	84	90	94	36	17	40
Above Normal (24%)	65	98	100	100	100	100	76	93	58	18	15	46
Below Normal (10%)	51	100	100	100	97	94	47	56	57	16	12	39
Dry (16%)	52	97	100	100	100	97	43	36	49	9	12	39
Critical (27%)	68	98	100	100	98	81	13	19	58	43	50	63

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**39%**	**10%**	**41%**
20%	**-13%**	0%	0%	0%	0%	0%	0%	0%	0%	**11%**	**-20%**	-4%
30%	**-26%**	0%	0%	0%	0%	0%	0%	0%	0%	-3%	**-23%**	-4%
40%	**-37%**	0%	0%	0%	0%	0%	0%	0%	0%	**-13%**	**-24%**	-3%
50%	**-42%**	0%	0%	0%	0%	0%	**-40%**	0%	**28%**	**-15%**	**-18%**	**-8%**
60%	**-48%**	0%	0%	0%	0%	0%	**-50%**	**-49%**	**25%**	**-25%**	**-19%**	**-14%**
70%	**-51%**	0%	0%	0%	0%	0%	**-64%**	**-44%**	-3%	**-35%**	**-30%**	**-16%**
80%	**-52%**	0%	0%	0%	0%	0%	**-78%**	**-94%**	**-18%**	**-66%**	**-47%**	**-10%**
90%	**-61%**	**9%**	0%	0%	0%	**-20%**	**-100%**	**-100%**	**-62%**	**-98%**	**-82%**	**-41%**
Long Term												
Full Simulation Period[b]	**-36%**	1%	0%	0%	2%	-2%	**-24%**	**-16%**	0%	0%	2%	-5%
Water Year Types[c]												
Wet (23%)	**-35%**	0%	0%	0%	0%	-3%	-4%	**-8%**	1%	1%	**-13%**	-1%
Above Normal (24%)	**-29%**	1%	0%	0%	0%	0%	**-17%**	**-7%**	**-15%**	**-29%**	**-25%**	**-12%**
Below Normal (10%)	**-41%**	1%	0%	0%	0%	**-6%**	**-32%**	**-20%**	**-7%**	**-26%**	**-37%**	**-23%**
Dry (16%)	**-41%**	0%	0%	0%	4%	-1%	**-43%**	**-36%**	**-9%**	**-48%**	**-37%**	**-14%**
Critical (27%)	**-31%**	2%	0%	0%	4%	-2%	**-65%**	**-37%**	**60%**	**157%**	**179%**	**28%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.2.23 New Melones Spotted Bass Nest Survival Percentage

Table 5C.3.2.23.1 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	100	100
20%	100	100	100	100	100	100	100	100	100	100	91	100
30%	100	100	100	100	100	100	100	100	100	93	85	100
40%	100	100	100	100	100	100	100	100	100	85	81	100
50%	100	100	100	100	100	100	100	100	100	81	78	100
60%	100	100	100	100	100	100	100	100	100	75	76	100
70%	100	100	100	100	100	100	100	100	100	68	73	100
80%	100	100	100	100	100	100	87	91	88	64	66	100
90%	90	100	100	100	100	100	68	69	71	51	55	97
Long Term												
Full Simulation Period[b]	94	100	100	100	99	99	90	91	91	77	76	97
Water Year Types[c]												
Wet (23%)	88	100	100	100	98	96	88	100	96	84	79	96
Above Normal (24%)	99	100	100	100	100	100	98	100	99	77	78	100
Below Normal (10%)	91	100	100	100	100	100	90	90	94	80	77	99
Dry (16%)	97	100	100	100	100	100	97	92	89	69	72	99
Critical (27%)	99	100	100	100	100	100	73	62	72	75	75	94

Revised Alternative 1

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	96	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	90	100
40%	100	100	100	100	100	100	100	100	100	87	86	100
50%	100	100	100	100	100	100	100	100	100	83	82	100
60%	100	100	100	100	100	100	100	100	100	80	79	100
70%	100	100	100	100	100	100	100	100	100	77	73	100
80%	100	100	100	100	100	100	100	100	93	73	66	100
90%	100	100	100	100	100	100	100	84	79	66	60	82
Long Term												
Full Simulation Period[b]	100	100	100	100	99	100	98	95	95	83	79	97
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	100	93	81	93
Above Normal (24%)	100	100	100	100	100	100	99	100	100	83	82	100
Below Normal (10%)	100	100	100	100	100	100	99	94	98	82	81	99
Dry (16%)	100	100	100	100	99	100	100	96	93	78	79	99
Critical (27%)	100	100	100	100	100	100	87	75	82	69	71	99

Revised Alternative 1 minus No Action Alternative

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-4%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**6%**	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	**6%**	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**6%**	4%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**13%**	1%	0%
80%	0%	0%	0%	0%	0%	0%	**15%**	**10%**	**5%**	**14%**	-1%	0%
90%	**11%**	0%	0%	0%	0%	0%	**48%**	**21%**	**12%**	**29%**	**9%**	**-16%**
Long Term												
Full Simulation Period[b]	**6%**	0%	0%	0%	0%	1%	**9%**	4%	4%	**7%**	4%	0%
Water Year Types[c]												
Wet (23%)	**13%**	0%	0%	0%	-1%	4%	**13%**	0%	4%	**11%**	3%	-2%
Above Normal (24%)	1%	0%	0%	0%	0%	0%	1%	0%	0%	**8%**	**6%**	0%
Below Normal (10%)	**10%**	0%	0%	0%	0%	0%	**10%**	4%	4%	3%	**6%**	0%
Dry (16%)	3%	0%	0%	0%	-1%	0%	3%	**5%**	4%	**13%**	**9%**	0%
Critical (27%)	1%	0%	0%	0%	0%	0%	**19%**	**21%**	**13%**	**-7%**	-5%	**5%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.23.2 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	96	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	90	100
40%	100	100	100	100	100	100	100	100	100	87	86	100
50%	100	100	100	100	100	100	100	100	100	83	82	100
60%	100	100	100	100	100	100	100	100	100	80	79	100
70%	100	100	100	100	100	100	100	100	100	77	73	100
80%	100	100	100	100	100	100	100	100	93	73	66	100
90%	100	100	100	100	100	100	100	84	79	66	60	82
Long Term												
Full Simulation Period[b]	100	100	100	100	99	100	98	95	95	83	79	97
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	100	93	81	93
Above Normal (24%)	100	100	100	100	100	100	99	100	100	83	82	100
Below Normal (10%)	100	100	100	100	100	100	99	94	98	82	81	99
Dry (16%)	100	100	100	100	99	100	100	96	93	78	79	99
Critical (27%)	100	100	100	100	100	100	87	75	82	69	71	99

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	100	100
20%	100	100	100	100	100	100	100	100	100	100	91	100
30%	100	100	100	100	100	100	100	100	100	93	85	100
40%	100	100	100	100	100	100	100	100	100	85	81	100
50%	100	100	100	100	100	100	100	100	100	81	78	100
60%	100	100	100	100	100	100	100	100	100	75	76	100
70%	100	100	100	100	100	100	100	100	100	68	73	100
80%	100	100	100	100	100	100	87	91	88	64	66	100
90%	90	100	100	100	100	100	68	69	71	51	55	97
Long Term												
Full Simulation Period[b]	94	100	100	100	99	99	90	91	91	77	76	97
Water Year Types[c]												
Wet (23%)	88	100	100	100	98	96	88	100	96	84	79	96
Above Normal (24%)	99	100	100	100	100	100	98	100	99	77	78	100
Below Normal (10%)	91	100	100	100	100	100	90	90	94	80	77	99
Dry (16%)	97	100	100	100	100	100	97	92	89	69	72	99
Critical (27%)	99	100	100	100	100	100	73	62	72	75	75	94

No Action Alternative minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-6%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-6%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-5%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-6%	-4%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-12%	-1%	0%
80%	0%	0%	0%	0%	0%	0%	-13%	-9%	-5%	-12%	1%	0%
90%	-10%	0%	0%	0%	0%	0%	-32%	-17%	-11%	-23%	-8%	18%
Long Term												
Full Simulation Period[b]	-6%	0%	0%	0%	0%	-1%	-8%	-4%	-4%	-7%	-4%	0%
Water Year Types[c]												
Wet (23%)	-12%	0%	0%	0%	1%	-4%	-12%	0%	-4%	-10%	-3%	2%
Above Normal (24%)	-1%	0%	0%	0%	0%	0%	-1%	0%	0%	-7%	-5%	0%
Below Normal (10%)	-9%	0%	0%	0%	0%	0%	-9%	-4%	-4%	-3%	-5%	0%
Dry (16%)	-3%	0%	0%	0%	1%	0%	-3%	-5%	-4%	-12%	-8%	0%
Critical (27%)	-1%	0%	0%	0%	0%	0%	-16%	-18%	-12%	8%	5%	-5%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.23.3 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	96	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	90	100
40%	100	100	100	100	100	100	100	100	100	87	86	100
50%	100	100	100	100	100	100	100	100	100	83	82	100
60%	100	100	100	100	100	100	100	100	100	80	79	100
70%	100	100	100	100	100	100	100	100	100	77	73	100
80%	100	100	100	100	100	100	100	100	93	73	66	100
90%	100	100	100	100	100	100	100	84	79	66	60	82
Long Term												
Full Simulation Period[b]	100	100	100	100	99	100	98	95	95	83	79	97
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	100	93	81	93
Above Normal (24%)	100	100	100	100	100	100	99	100	100	83	82	100
Below Normal (10%)	100	100	100	100	100	100	99	94	98	82	81	99
Dry (16%)	100	100	100	100	99	100	100	96	93	78	79	99
Critical (27%)	100	100	100	100	100	100	87	75	82	69	71	99

Alternative 3

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	100	100
20%	100	100	100	100	100	100	100	100	100	100	100	100
30%	100	100	100	100	100	100	100	100	100	100	91	100
40%	100	100	100	100	100	100	100	100	100	94	87	100
50%	100	100	100	100	100	100	100	100	100	83	82	100
60%	100	100	100	100	100	100	100	100	100	79	78	100
70%	100	100	100	100	100	100	100	100	98	75	75	100
80%	100	100	100	100	100	100	100	79	88	66	65	94
90%	100	100	100	100	100	100	82	38	69	48	38	82
Long Term												
Full Simulation Period[b]	100	100	99	100	99	99	94	86	88	78	75	91
Water Year Types[c]												
Wet (23%)	100	100	100	100	98	100	100	92	77	98	87	98
Above Normal (24%)	100	100	100	100	100	100	100	100	99	80	68	92
Below Normal (10%)	100	100	91	100	100	100	90	95	97	69	66	98
Dry (16%)	100	100	100	100	100	100	93	73	93	67	74	79
Critical (27%)	100	100	100	100	100	92	79	71	83	63	70	89

Alternative 3 minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**8%**	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**7%**	1%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**8%**	1%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-2%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-3%	3%	0%
80%	0%	0%	0%	0%	0%	0%	0%	**-21%**	-5%	**-9%**	-1%	**-6%**
90%	0%	0%	0%	0%	0%	0%	**-18%**	**-55%**	**-13%**	**-27%**	**-37%**	1%
Long Term												
Full Simulation Period[b]	0%	0%	-1%	0%	0%	-1%	-4%	**-9%**	**-8%**	**-5%**	-5%	**-6%**
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	1%	0%	0%	**-8%**	**-23%**	5%	**8%**	**5%**
Above Normal (24%)	0%	0%	0%	0%	0%	0%	1%	0%	0%	-3%	**-18%**	**-8%**
Below Normal (10%)	0%	0%	**-9%**	0%	0%	0%	**-9%**	0%	-1%	**-16%**	**-18%**	0%
Dry (16%)	0%	0%	0%	0%	1%	0%	**-7%**	**-24%**	1%	**-14%**	**-6%**	**-20%**
Critical (27%)	0%	0%	0%	0%	0%	**-8%**	**-9%**	**-6%**	1%	**-10%**	-2%	**-10%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.23.4 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	96	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	90	100
40%	100	100	100	100	100	100	100	100	100	87	86	100
50%	100	100	100	100	100	100	100	100	100	83	82	100
60%	100	100	100	100	100	100	100	100	100	80	79	100
70%	100	100	100	100	100	100	100	100	100	77	73	100
80%	100	100	100	100	100	100	100	100	93	73	66	100
90%	100	100	100	100	100	100	100	84	79	66	60	82
Long Term												
Full Simulation Period[b]	100	100	100	100	99	100	98	95	95	83	79	97
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	100	93	81	93
Above Normal (24%)	100	100	100	100	100	100	99	100	100	83	82	100
Below Normal (10%)	100	100	100	100	100	100	99	94	98	82	81	99
Dry (16%)	100	100	100	100	99	100	100	96	93	78	79	99
Critical (27%)	100	100	100	100	100	100	87	75	82	69	71	99

Alternative 5

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	99	100
20%	100	100	100	100	100	100	100	100	100	100	83	100
30%	100	100	100	100	100	100	100	100	100	92	80	100
40%	100	100	100	100	100	100	100	100	100	82	77	100
50%	100	100	100	100	100	100	100	100	100	78	76	100
60%	100	100	100	100	100	100	100	100	100	72	73	100
70%	100	100	100	100	100	100	84	91	100	67	65	100
80%	100	100	100	100	100	100	63	52	84	56	57	99
90%	98	100	100	100	100	100	27	9	60	33	50	68
Long Term												
Full Simulation Period[b]	96	100	100	100	99	100	81	80	88	72	71	91
Water Year Types[c]												
Wet (23%)	99	100	100	100	97	99	99	100	100	90	76	94
Above Normal (24%)	99	100	100	100	100	100	90	100	76	66	74	92
Below Normal (10%)	87	100	100	100	100	100	78	74	92	65	65	79
Dry (16%)	93	100	100	100	100	100	78	71	85	56	59	93
Critical (27%)	97	100	100	100	100	100	38	38	80	73	80	92

Alternative 5 minus Revised Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-10%**	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	**-11%**	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-6%**	**-11%**	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-6%**	**-8%**	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-10%**	**-8%**	0%
70%	0%	0%	0%	0%	0%	0%	**-16%**	**-9%**	0%	**-13%**	**-11%**	0%
80%	0%	0%	0%	0%	0%	0%	**-37%**	**-48%**	**-9%**	**-23%**	**-13%**	-1%
90%	-2%	0%	0%	0%	0%	0%	**-73%**	**-89%**	**-25%**	**-50%**	**-16%**	**-17%**
Long Term												
Full Simulation Period[b]	-4%	0%	0%	0%	0%	0%	**-17%**	**-15%**	**-7%**	**-13%**	**-11%**	**-6%**
Water Year Types[c]												
Wet (23%)	-1%	0%	0%	0%	-1%	-1%	-1%	0%	0%	-3%	**-6%**	1%
Above Normal (24%)	-1%	0%	0%	0%	0%	0%	**-9%**	0%	**-24%**	**-21%**	**-10%**	**-8%**
Below Normal (10%)	**-13%**	0%	0%	0%	0%	0%	**-22%**	**-22%**	**-6%**	**-21%**	**-21%**	**-20%**
Dry (16%)	**-7%**	0%	0%	0%	1%	0%	**-22%**	**-26%**	**-9%**	**-28%**	**-25%**	**-6%**
Critical (27%)	-3%	0%	0%	0%	0%	0%	**-56%**	**-49%**	-2%	**5%**	**13%**	**-7%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.2.24 Temperature Threshold Exceedances

Species	Lifestage	River	Reach	Water Year Type	Month	Temperature Objective (Degree F)	Temperature Objective Reference[1]	No Action Alternative	Revised Second Basis of Comparison (Revised Alternative 1)	Alternative 3	Alternative 5	Revised Alternative 1 minus No Action Alternative	No Action Alternative minus Revised Second Basis of Comparison	Alternative 3 minus Revised Second Basis of Comparison	Alternative 5 minus Revised Second Basis of Comparison
Steelhead	Adult Migration	Stanislaus	Orange Blossom Bridge	All	October	56	NMFS BiOp 2009	57%	86%	87%	58%	**29%**	**-29%**	1%	**-28%**
Steelhead	Adult Migration	Stanislaus	Orange Blossom Bridge	All	November	56	NMFS BiOp 2009	33%	27%	24%	36%	**-6%**	**6%**	-3%	**9%**
Steelhead	Adult Migration	Stanislaus	Orange Blossom Bridge	All	December	56	NMFS BiOp 2009	0%	0%	0%	3%	0%	0%	0%	3%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	January	52	NMFS BiOp 2009	0%	3%	2%	2%	3%	-3%	-1%	-1%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	February	52	NMFS BiOp 2009	0%	3%	2%	0%	3%	-3%	-1%	-3%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	March	52	NMFS BiOp 2009	8%	12%	12%	8%	4%	-4%	0%	-4%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	April	52	NMFS BiOp 2009	33%	34%	30%	37%	2%	-2%	-4%	3%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	May	52	NMFS BiOp 2009	63%	68%	63%	68%	**5%**	**-5%**	-5%	0%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	January	57	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	February	57	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	March	57	NMFS BiOp 2009	0%	10%	0%	0%	**10%**	**-10%**	**-10%**	**-10%**
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	April	57	NMFS BiOp 2009	2%	7%	3%	0%	**5%**	**-5%**	-4%	**-7%**
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	May	57	NMFS BiOp 2009	18%	22%	17%	8%	4%	-4%	**-5%**	**-15%**
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	January	55	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	February	55	NMFS BiOp 2009	0%	2%	1%	0%	2%	-2%	-1%	-2%
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	March	55	NMFS BiOp 2009	21%	35%	25%	21%	**14%**	**-14%**	**-11%**	**-15%**
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	April	55	NMFS BiOp 2009	16%	30%	17%	7%	**14%**	**-14%**	**-12%**	**-23%**
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	May	55	NMFS BiOp 2009	49%	57%	53%	40%	**9%**	**-9%**	-4%	**-17%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	June	65	NMFS BiOp 2009	6%	2%	4%	6%	-3%	3%	2%	4%
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	July	65	NMFS BiOp 2009	16%	15%	19%	21%	-2%	2%	5%	**7%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	August	65	NMFS BiOp 2009	15%	7%	9%	21%	**-8%**	**8%**	2%	**13%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	September	65	NMFS BiOp 2009	11%	7%	7%	18%	-4%	4%	0%	**11%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	October	65	NMFS BiOp 2009	7%	7%	4%	11%	0%	0%	-3%	4%
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	November	65	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%

[1]See Appendix 9N, Section C for the full reference

Table 5C.3.2.25 CVP Annual Power Generation Summary

				No Action Alternative	Revised Second Basis of Comparison (Revised Alternative 1)	Alternative 3	Alternative 5	Revised Alternative 1 vs. No Action Altenative (Percent Difference)	No Action Alternative vs. Revised Second Basis of Comparison (Percent Difference)	Alternative 3 vs. Revised Second Basis of Comparison (Percent Difference)	Alternative 5 vs. Revised Second Basis of Comparison (Percent Difference)
CVP Generation Facilities											
Capacity	At load center	(MW)	Long Term	1,583	1,651	1,642	1,568	4%	-4%	-1%	**-5%**
			Dry and Critical	1,203	1,327	1,291	1,173	**10%**	**-9%**	-3%	**-12%**
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,558	4,617	4,582	4,552	1%	-1%	-1%	-1%
			Dry and Critical	2,696	2,823	2,798	2,684	5%	-4%	-1%	-5%
CVP Pumping Facilities											
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,113	1,285	1,238	1,110	**15%**	**-13%**	-4%	**-14%**
			Dry and Critical	699	769	715	699	**10%**	**-9%**	**-7%**	**-9%**
All CVP Facilities											
Net Generation	Total of all Facilities	(GWh)	Long Term	3,445	3,331	3,344	3,442	-3%	3%	0%	3%
			Dry and Critical	1,997	2,054	2,084	1,986	3%	-3%	1%	-3%

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in text.

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5C.3.3.1 New Melones Storage

Table 5C.3.3.1.1 New Melones Reservoir, End of Month Storage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (32%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (16%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (13%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (24%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (15%)	624	623	638	645	661	656	602	554	526	476	431	408

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (Percent Change)											
Probability of Exceedance[a]												
10%	2%	1%	0%	0%	1%	3%	4%	4%	0%	0%	0%	0%
20%	3%	1%	1%	0%	4%	**7%**	3%	3%	0%	2%	2%	2%
30%	3%	3%	4%	2%	1%	1%	4%	**5%**	3%	2%	2%	1%
40%	**7%**	**8%**	3%	3%	2%	4%	4%	4%	**5%**	**5%**	**6%**	**7%**
50%	**7%**	**7%**	**8%**	3%	3%	0%	2%	5%	**5%**	**6%**	**6%**	4%
60%	**6%**	5%	4%	**5%**	**5%**	**5%**	**7%**	3%	3%	2%	3%	3%
70%	**8%**	**9%**	**5%**	**7%**	**6%**	4%	**6%**	**8%**	**5%**	**7%**	**8%**	**8%**
80%	**10%**	**8%**	**7%**	**10%**	**12%**	**15%**	**9%**	**8%**	4%	3%	3%	3%
90%	**18%**	**19%**	**17%**	**14%**	**23%**	**17%**	**6%**	**6%**	**11%**	**9%**	**8%**	**7%**
Long Term												
Full Simulation Period[b]	**5%**	5%	4%	3%	3%	4%	5%	4%	3%	3%	3%	3%
Water Year Types[c]												
Wet (32%)	5%	4%	3%	3%	3%	4%	4%	4%	1%	1%	2%	2%
Above Normal (16%)	**6%**	**5%**	4%	4%	3%	3%	5%	4%	3%	3%	3%	3%
Below Normal (13%)	**5%**	5%	4%	3%	3%	3%	**5%**	5%	4%	4%	4%	4%
Dry (24%)	**5%**	5%	4%	4%	3%	3%	5%	4%	4%	4%	5%	5%
Critical (15%)	**7%**	**6%**	**6%**	**6%**	**5%**	**5%**	**7%**	**6%**	**6%**	5%	4%	4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.1.2 New Melones Reservoir, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

No Action Alternative

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,823	1,880	1,931	1,980	1,945	2,052	2,075	1,978	1,869	1,805
20%	1,612	1,631	1,647	1,687	1,768	1,799	1,834	1,901	1,876	1,798	1,691	1,633
30%	1,533	1,534	1,556	1,598	1,686	1,729	1,686	1,745	1,786	1,707	1,605	1,556
40%	1,271	1,274	1,432	1,514	1,594	1,618	1,592	1,533	1,539	1,433	1,333	1,273
50%	1,121	1,127	1,154	1,307	1,436	1,535	1,461	1,444	1,392	1,283	1,190	1,156
60%	1,024	1,043	1,080	1,146	1,199	1,273	1,278	1,335	1,277	1,199	1,102	1,054
70%	882	911	986	1,015	1,038	1,057	1,080	1,090	1,087	994	910	868
80%	646	658	684	684	735	808	835	878	872	808	733	693
90%	430	435	440	488	541	569	574	586	630	566	507	473
Long Term												
Full Simulation Period[b]	1,132	1,142	1,180	1,237	1,305	1,348	1,337	1,373	1,381	1,300	1,208	1,159
Water Year Types[c]												
Wet (32%)	1,379	1,390	1,454	1,562	1,666	1,724	1,758	1,878	1,968	1,890	1,773	1,703
Above Normal (16%)	1,029	1,060	1,125	1,214	1,317	1,406	1,413	1,484	1,467	1,372	1,277	1,232
Below Normal (13%)	1,294	1,305	1,326	1,351	1,413	1,438	1,390	1,383	1,359	1,268	1,175	1,133
Dry (24%)	1,094	1,094	1,106	1,121	1,156	1,188	1,154	1,132	1,087	997	914	871
Critical (15%)	624	623	638	645	661	656	602	554	526	476	431	408

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2%	-1%	0%	0%	-1%	-2%	-4%	-4%	0%	0%	0%	0%
20%	-3%	-1%	-1%	0%	-4%	-7%	-3%	-3%	0%	-2%	-2%	-2%
30%	-3%	-3%	-4%	-2%	-1%	-1%	-4%	-5%	-3%	-2%	-2%	-1%
40%	-7%	-7%	-3%	-3%	-2%	-3%	-3%	-4%	-5%	-5%	-6%	-7%
50%	-7%	-7%	-8%	-3%	-2%	0%	-2%	-4%	-5%	-5%	-5%	-4%
60%	-6%	-5%	-4%	-5%	-5%	-5%	-7%	-3%	-3%	-2%	-3%	-3%
70%	-8%	-8%	-5%	-6%	-6%	-4%	-6%	-8%	-5%	-7%	-7%	-8%
80%	-9%	-8%	-6%	-9%	-11%	-13%	-9%	-7%	-3%	-3%	-3%	-3%
90%	-15%	-16%	-15%	-12%	-19%	-14%	-6%	-5%	-10%	-9%	-7%	-7%
Long Term												
Full Simulation Period[b]	-5%	-4%	-4%	-3%	-3%	-3%	-5%	-4%	-3%	-3%	-3%	-3%
Water Year Types[c]												
Wet (32%)	-4%	-4%	-3%	-3%	-3%	-4%	-4%	-4%	-1%	-1%	-2%	-2%
Above Normal (16%)	-6%	-5%	-4%	-4%	-3%	-3%	-5%	-4%	-3%	-3%	-3%	-3%
Below Normal (13%)	-5%	-4%	-4%	-3%	-3%	-3%	-5%	-4%	-4%	-4%	-4%	-4%
Dry (24%)	-5%	-4%	-4%	-3%	-3%	-3%	-5%	-4%	-4%	-4%	-4%	-5%
Critical (15%)	-7%	-6%	-5%	-5%	-5%	-5%	-7%	-5%	-6%	-5%	-4%	-4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.1.3 New Melones Reservoir, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Alternative 3

Statistic	End of Month Storage (TAF) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	1,954	1,970	1,970	1,970	2,030	2,062	2,198	2,284	2,209	2,103	2,000
20%	1,901	1,905	1,913	1,911	1,970	2,026	1,988	2,021	2,154	2,055	1,955	1,902
30%	1,729	1,727	1,790	1,857	1,925	1,975	1,910	1,972	1,983	1,877	1,785	1,736
40%	1,582	1,596	1,668	1,775	1,851	1,884	1,838	1,826	1,796	1,697	1,601	1,546
50%	1,427	1,416	1,439	1,556	1,660	1,719	1,674	1,721	1,675	1,561	1,460	1,409
60%	1,308	1,316	1,318	1,366	1,426	1,494	1,488	1,529	1,525	1,432	1,335	1,289
70%	1,049	1,073	1,187	1,210	1,289	1,269	1,265	1,343	1,276	1,180	1,092	1,043
80%	875	862	919	957	1,020	1,099	1,056	1,121	1,071	1,001	938	907
90%	635	646	646	681	779	803	734	731	835	756	682	639
Long Term												
Full Simulation Period[b]	1,347	1,351	1,382	1,436	1,491	1,541	1,534	1,580	1,595	1,506	1,408	1,353
Water Year Types[c]												
Wet (32%)	1,562	1,567	1,618	1,720	1,792	1,871	1,906	2,049	2,146	2,057	1,934	1,855
Above Normal (16%)	1,269	1,295	1,356	1,442	1,530	1,620	1,634	1,713	1,720	1,627	1,529	1,481
Below Normal (13%)	1,530	1,536	1,550	1,570	1,620	1,650	1,614	1,617	1,599	1,501	1,403	1,357
Dry (24%)	1,327	1,320	1,326	1,342	1,378	1,409	1,380	1,360	1,319	1,224	1,137	1,091
Critical (15%)	828	824	836	846	866	860	803	751	719	653	593	563

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9%	10%	8%	5%	1%	0%	2%	3%	10%	12%	13%	11%
20%	15%	15%	15%	13%	7%	5%	6%	3%	14%	12%	14%	14%
30%	10%	9%	11%	14%	13%	13%	9%	7%	8%	8%	9%	10%
40%	16%	16%	13%	14%	14%	12%	11%	14%	11%	12%	13%	14%
50%	19%	17%	15%	15%	13%	12%	13%	14%	14%	15%	16%	17%
60%	20%	20%	17%	13%	13%	11%	8%	11%	16%	17%	18%	18%
70%	10%	9%	14%	12%	17%	15%	10%	14%	11%	11%	11%	11%
80%	23%	21%	26%	27%	24%	18%	16%	19%	19%	20%	24%	27%
90%	25%	25%	25%	23%	17%	21%	21%	18%	20%	22%	25%	26%
Long Term												
Full Simulation Period[b]	13%	13%	13%	12%	11%	10%	9%	10%	12%	13%	13%	13%
Water Year Types[c]												
Wet (32%)	8%	8%	8%	7%	5%	4%	4%	4%	8%	7%	7%	7%
Above Normal (16%)	16%	16%	15%	14%	13%	11%	10%	11%	13%	15%	16%	16%
Below Normal (13%)	12%	12%	12%	12%	11%	12%	10%	12%	13%	14%	14%	15%
Dry (24%)	15%	15%	15%	16%	16%	15%	14%	16%	17%	18%	19%	20%
Critical (15%)	24%	24%	24%	24%	24%	25%	24%	28%	29%	31%	32%	32%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.1.4 New Melones Reservoir, End of Month Storage

Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,801	1,782	1,827	1,875	1,952	2,030	2,017	2,134	2,071	1,977	1,869	1,805
20%	1,657	1,655	1,665	1,690	1,847	1,928	1,884	1,963	1,884	1,830	1,719	1,663
30%	1,575	1,582	1,614	1,627	1,697	1,743	1,751	1,836	1,836	1,743	1,635	1,577
40%	1,366	1,372	1,472	1,556	1,621	1,675	1,649	1,601	1,619	1,510	1,415	1,362
50%	1,200	1,211	1,248	1,348	1,472	1,541	1,484	1,511	1,467	1,357	1,258	1,200
60%	1,089	1,093	1,124	1,209	1,259	1,341	1,373	1,379	1,317	1,224	1,134	1,089
70%	956	989	1,040	1,084	1,099	1,099	1,146	1,179	1,147	1,064	982	940
80%	711	712	730	753	825	932	914	945	903	837	758	712
90%	508	517	515	555	666	664	608	619	697	619	547	507
Long Term												
Full Simulation Period[b]	1,192	1,194	1,226	1,279	1,345	1,397	1,402	1,433	1,420	1,336	1,245	1,194
Water Year Types[c]												
Wet (32%)	1,443	1,446	1,502	1,606	1,709	1,794	1,833	1,962	1,994	1,917	1,803	1,731
Above Normal (16%)	1,092	1,116	1,175	1,261	1,360	1,455	1,481	1,543	1,516	1,419	1,321	1,274
Below Normal (13%)	1,364	1,366	1,378	1,397	1,453	1,479	1,461	1,447	1,415	1,322	1,228	1,183
Dry (24%)	1,149	1,143	1,149	1,161	1,191	1,221	1,210	1,176	1,131	1,039	956	912
Critical (15%)	667	663	674	680	696	690	646	585	557	498	449	426

Alternative 5

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,765	1,759	1,831	1,881	1,949	1,969	1,908	2,012	2,117	2,013	1,900	1,826
20%	1,588	1,587	1,601	1,626	1,782	1,794	1,752	1,844	1,816	1,740	1,631	1,571
30%	1,468	1,459	1,490	1,544	1,630	1,672	1,679	1,693	1,721	1,633	1,531	1,489
40%	1,249	1,252	1,347	1,437	1,522	1,573	1,512	1,494	1,505	1,405	1,297	1,242
50%	1,040	1,058	1,142	1,227	1,437	1,455	1,393	1,357	1,289	1,190	1,100	1,074
60%	976	997	1,023	1,072	1,134	1,161	1,159	1,246	1,218	1,130	1,032	983
70%	766	802	855	907	938	973	1,006	978	991	900	821	783
80%	554	553	620	621	623	697	651	721	761	686	617	587
90%	285	298	299	377	429	449	386	452	492	423	349	308
Long Term												
Full Simulation Period[b]	1,063	1,073	1,112	1,169	1,239	1,284	1,265	1,287	1,299	1,221	1,134	1,086
Water Year Types[c]												
Wet (32%)	1,309	1,321	1,388	1,496	1,602	1,668	1,704	1,812	1,906	1,833	1,722	1,653
Above Normal (16%)	983	1,014	1,079	1,168	1,271	1,361	1,363	1,413	1,396	1,302	1,207	1,162
Below Normal (13%)	1,210	1,220	1,242	1,267	1,329	1,354	1,298	1,276	1,254	1,163	1,071	1,028
Dry (24%)	1,018	1,018	1,030	1,045	1,081	1,114	1,066	1,031	990	903	823	781
Critical (15%)	558	559	570	578	597	591	506	449	433	391	355	336

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2%	-1%	0%	0%	0%	-3%	-5%	-6%	2%	2%	2%	1%
20%	-4%	-4%	-4%	-4%	-4%	-7%	-7%	-6%	-4%	-5%	-5%	-6%
30%	-7%	-8%	-8%	-5%	-4%	-4%	-4%	-8%	-6%	-6%	-6%	-6%
40%	-9%	-9%	-9%	-8%	-6%	-6%	-8%	-7%	-7%	-7%	-8%	-9%
50%	-13%	-13%	-8%	-9%	-2%	-6%	-6%	-10%	-12%	-12%	-13%	-11%
60%	-10%	-9%	-9%	-11%	-10%	-13%	-16%	-10%	-8%	-8%	-9%	-10%
70%	-20%	-19%	-18%	-16%	-15%	-11%	-12%	-17%	-14%	-15%	-16%	-17%
80%	-22%	-22%	-15%	-17%	-25%	-25%	-29%	-24%	-16%	-18%	-19%	-18%
90%	-44%	-42%	-42%	-32%	-36%	-32%	-36%	-27%	-29%	-32%	-36%	-39%
Long Term												
Full Simulation Period[b]	-11%	-10%	-9%	-9%	-8%	-8%	-10%	-10%	-9%	-9%	-9%	-9%
Water Year Types[c]												
Wet (32%)	-9%	-9%	-8%	-7%	-6%	-7%	-7%	-8%	-4%	-4%	-4%	-4%
Above Normal (16%)	-10%	-9%	-8%	-7%	-7%	-6%	-8%	-8%	-8%	-8%	-9%	-9%
Below Normal (13%)	-11%	-11%	-10%	-9%	-9%	-8%	-11%	-12%	-11%	-12%	-13%	-13%
Dry (24%)	-11%	-11%	-10%	-10%	-9%	-9%	-12%	-12%	-12%	-13%	-14%	-14%
Critical (15%)	-16%	-16%	-15%	-15%	-14%	-14%	-22%	-23%	-22%	-21%	-21%	-21%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.2 New Melones Elevation

Table 5C.3.3.2.1 New Melones Reservoir, End of Month Elevation

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,050	1,047	1,057	1,059	1,050	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	961
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	929
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	945	951	958	968	974	973	976	976	965	954	948
Water Year Types[c]												
Wet (32%)	980	982	990	1,004	1,016	1,023	1,026	1,039	1,047	1,040	1,029	1,022
Above Normal (16%)	932	937	945	960	974	986	988	997	996	985	973	897
Below Normal (13%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (24%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (15%)	856	856	862	864	870	871	860	848	840	828	818	812

Alternative 1

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Alternative 1 minus No Action Alternative

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
20%	0%	0%	0%	0%	1%	1%	0%	1%	0%	0%	0%	0%
30%	0%	0%	1%	0%	0%	0%	1%	1%	0%	0%	0%	0%
40%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%
50%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%
60%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%
70%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%
80%	2%	1%	1%	2%	2%	2%	1%	1%	0%	1%	1%	0%
90%	2%	2%	2%	2%	3%	2%	1%	1%	2%	1%	1%	1%
Long Term												
Full Simulation Period[b]	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Water Year Types[c]												
Wet (32%)	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%
Above Normal (16%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Below Normal (13%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Dry (24%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Critical (15%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.2.2 New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

No Action Alternative

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,035	1,040	1,046	1,050	1,047	1,057	1,059	1,050	1,039	1,033
20%	1,013	1,015	1,017	1,021	1,029	1,032	1,036	1,043	1,040	1,032	1,021	1,016
30%	1,006	1,006	1,008	1,012	1,021	1,025	1,021	1,027	1,031	1,023	1,013	1,008
40%	975	976	995	1,004	1,012	1,014	1,011	1,006	1,006	995	983	976
50%	956	957	960	980	996	1,006	998	997	991	977	965	961
60%	943	946	950	959	966	976	976	984	976	966	953	947
70%	925	928	938	942	945	947	950	952	951	939	928	929
80%	879	881	887	887	897	912	918	924	923	912	897	888
90%	835	836	837	847	857	863	864	867	876	863	850	843
Long Term												
Full Simulation Period[b]	944	945	951	958	968	974	973	976	976	965	954	948
Water Year Types[c]												
Wet (32%)	980	982	990	1,004	1,016	1,023	1,026	1,039	1,047	1,040	1,029	1,022
Above Normal (16%)	932	937	945	960	974	986	988	997	996	985	973	897
Below Normal (13%)	968	969	972	975	985	988	985	985	983	972	960	955
Dry (24%)	943	943	944	947	951	957	955	953	948	934	922	915
Critical (15%)	856	856	862	864	870	871	860	848	840	828	818	812

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	-1%	-1%	0%	0%	0%	0%
20%	0%	0%	0%	0%	-1%	-1%	0%	-1%	0%	0%	0%	0%
30%	0%	0%	-1%	0%	0%	0%	-1%	-1%	0%	0%	0%	0%
40%	-1%	-1%	0%	0%	0%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
50%	-1%	-1%	-1%	-1%	0%	0%	0%	-1%	-1%	-1%	-1%	-1%
60%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	0%	0%	0%
70%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	0%
80%	-2%	-1%	-1%	-2%	-2%	-2%	-1%	-1%	0%	-1%	-1%	0%
90%	-2%	-2%	-2%	-2%	-3%	-2%	-1%	-1%	-2%	-1%	-1%	-1%
Long Term												
Full Simulation Period[b]	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Water Year Types[c]												
Wet (32%)	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	0%	0%	0%	0%
Above Normal (16%)	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Below Normal (13%)	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Dry (24%)	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Critical (15%)	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.2.3 New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Alternative 3

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,049	1,048	1,050	1,050	1,050	1,055	1,057	1,069	1,076	1,070	1,061	1,052
20%	1,043	1,043	1,044	1,044	1,050	1,054	1,051	1,054	1,065	1,057	1,048	1,043
30%	1,025	1,025	1,031	1,038	1,045	1,050	1,044	1,050	1,051	1,040	1,031	1,027
40%	1,011	1,012	1,019	1,030	1,038	1,041	1,036	1,035	1,032	1,022	1,012	1,007
50%	995	994	996	1,008	1,018	1,024	1,020	1,024	1,020	1,008	998	994
60%	980	981	982	988	995	1,002	1,001	1,005	1,005	995	984	979
70%	946	950	964	967	978	975	974	985	976	963	952	945
80%	924	922	930	934	943	953	947	956	949	940	932	926
90%	877	879	879	886	906	911	897	896	918	901	886	876
Long Term												
Full Simulation Period[b]	974	974	978	985	993	999	998	1,002	1,003	992	981	975
Water Year Types[c]												
Wet (32%)	1,003	1,004	1,010	1,022	1,030	1,038	1,042	1,055	1,064	1,056	1,045	1,037
Above Normal (16%)	964	967	974	987	999	1,009	1,012	1,021	1,022	1,013	1,002	924
Below Normal (13%)	998	998	1,000	1,002	1,011	1,014	1,011	1,012	1,010	1,000	989	983
Dry (24%)	974	973	974	977	981	985	983	982	978	966	954	948
Critical (15%)	899	899	902	904	909	909	899	889	883	870	858	852

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2%	2%	1%	1%	0%	0%	0%	1%	2%	2%	2%	2%
20%	2%	2%	2%	2%	1%	1%	1%	0%	2%	2%	2%	2%
30%	2%	1%	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%
40%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
50%	3%	3%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
60%	3%	3%	3%	2%	2%	2%	1%	2%	2%	3%	3%	3%
70%	1%	1%	2%	2%	3%	2%	2%	2%	2%	2%	2%	1%
80%	4%	3%	4%	4%	3%	2%	2%	2%	2%	2%	3%	4%
90%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Long Term												
Full Simulation Period[b]	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Water Year Types[c]												
Wet (32%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Above Normal (16%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Below Normal (13%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Dry (24%)	2%	2%	2%	2%	3%	2%	2%	2%	3%	3%	3%	3%
Critical (15%)	4%	4%	4%	4%	3%	3%	3%	4%	4%	4%	4%	4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.2.4 New Melones Reservoir, End of Month Elevation

Second Basis of Comparison

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,032	1,031	1,035	1,040	1,048	1,055	1,054	1,064	1,058	1,050	1,039	1,033
20%	1,018	1,018	1,019	1,021	1,037	1,045	1,041	1,049	1,041	1,035	1,024	1,019
30%	1,010	1,010	1,014	1,015	1,022	1,027	1,027	1,036	1,036	1,027	1,016	1,010
40%	988	988	999	1,008	1,014	1,020	1,017	1,012	1,014	1,003	994	988
50%	966	968	972	985	999	1,006	1,001	1,003	999	986	974	968
60%	952	952	956	967	974	984	989	989	981	969	957	952
70%	934	939	945	951	953	953	959	963	959	948	938	933
80%	892	892	896	901	915	931	929	933	927	918	902	891
90%	851	852	852	860	883	883	871	873	889	873	859	849
Long Term												
Full Simulation Period[b]	952	953	957	965	974	981	981	984	982	971	959	953
Water Year Types[c]												
Wet (32%)	989	990	997	1,009	1,021	1,030	1,034	1,047	1,050	1,043	1,032	1,025
Above Normal (16%)	941	944	951	966	979	992	995	1,003	1,001	990	978	901
Below Normal (13%)	977	977	979	982	991	994	994	993	991	980	968	962
Dry (24%)	951	950	950	953	957	962	963	960	954	941	929	922
Critical (15%)	866	866	870	872	878	879	871	856	850	835	823	817

Alternative 5

Statistic	End of Month Elevation (Feet)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,029	1,028	1,036	1,041	1,047	1,049	1,043	1,053	1,062	1,053	1,043	1,035
20%	1,011	1,011	1,012	1,015	1,031	1,032	1,028	1,037	1,034	1,026	1,015	1,009
30%	999	998	1,001	1,007	1,015	1,019	1,020	1,022	1,024	1,016	1,005	1,002
40%	973	973	985	996	1,004	1,010	1,003	1,002	1,003	992	979	973
50%	945	948	959	970	996	998	991	987	978	965	953	951
60%	937	940	943	949	957	961	961	972	968	957	944	938
70%	904	911	921	928	932	936	941	937	939	927	915	909
80%	860	860	874	874	874	889	880	894	902	887	873	867
90%	803	807	808	824	834	838	826	839	847	833	818	810
Long Term												
Full Simulation Period[b]	931	933	939	947	957	964	961	962	963	952	941	935
Water Year Types[c]												
Wet (32%)	969	971	980	995	1,007	1,016	1,020	1,031	1,040	1,033	1,022	1,015
Above Normal (16%)	924	930	939	954	968	980	982	988	987	975	963	890
Below Normal (13%)	954	956	959	962	973	977	972	970	968	957	944	938
Dry (24%)	930	930	932	934	939	945	940	936	931	918	905	898
Critical (15%)	837	838	842	845	853	855	834	818	815	804	796	791

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Elevation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	-1%	-1%	0%	0%	0%	0%
20%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
30%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
40%	-2%	-2%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-2%
50%	-2%	-2%	-1%	-2%	0%	-1%	-1%	-2%	-2%	-2%	-2%	-2%
60%	-2%	-1%	-1%	-2%	-2%	-2%	-3%	-2%	-1%	-1%	-1%	-1%
70%	-3%	-3%	-3%	-2%	-2%	-2%	-2%	-3%	-2%	-2%	-2%	-3%
80%	-4%	-4%	-3%	-3%	-4%	-4%	-5%	-4%	-3%	-3%	-3%	-3%
90%	-6%	-5%	-5%	-4%	-6%	-5%	-5%	-4%	-5%	-5%	-5%	-5%
Long Term												
Full Simulation Period[b]	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%
Water Year Types[c]												
Wet (32%)	-2%	-2%	-2%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Above Normal (16%)	-2%	-2%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-2%	-1%
Below Normal (13%)	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%
Dry (24%)	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-3%	-3%	-3%
Critical (15%)	-3%	-3%	-3%	-3%	-3%	-3%	-4%	-4%	-4%	-4%	-3%	-3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.3 Stanislaus River below Goodwin Dam Flow

Table 5C.3.3.3.1 Stanislaus River below Goodwin, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	290	306	358	897	1,648	1,633	1,929	1,103	429	390	390
20%	797	200	218	232	409	1,521	1,553	1,555	1,090	310	300	300
30%	774	200	200	232	290	440	1,553	1,296	940	300	284	250
40%	774	200	200	226	236	200	1,400	1,242	855	300	283	250
50%	774	200	200	226	236	200	1,400	1,242	363	271	283	250
60%	636	200	200	219	229	200	812	918	363	265	283	249
70%	636	200	200	219	229	200	767	705	297	265	283	249
80%	578	200	200	214	221	200	767	631	261	265	283	249
90%	577	200	200	213	215	200	505	546	255	265	283	249
Long Term												
Full Simulation Period[b]	723	278	365	518	595	754	1,158	1,123	680	394	361	351
Water Year Types[c]												
Wet (23%)	781	499	787	999	1,201	2,016	1,536	1,691	1,140	715	639	692
Above Normal (24%)	714	216	282	663	676	645	1,224	1,146	962	353	292	267
Below Normal (10%)	740	225	225	282	346	365	1,454	1,201	476	269	285	256
Dry (16%)	707	208	216	234	313	200	1,030	930	374	275	277	245
Critical (27%)	683	205	215	227	255	234	741	699	281	269	262	231

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	499	508	508	907	709	1,500	1,500	2,887	360	300	300
20%	350	415	415	415	503	415	1,462	1,500	1,709	306	300	300
30%	331	386	415	408	415	415	1,337	1,434	1,571	300	296	268
40%	286	318	326	318	415	318	991	1,303	845	300	283	268
50%	286	318	318	318	318	318	664	1,303	450	284	283	268
60%	194	247	275	242	318	275	512	1,112	398	268	283	249
70%	194	247	247	242	260	242	461	920	289	268	283	249
80%	173	233	247	242	242	242	424	848	257	265	283	249
90%	164	230	230	200	239	200	378	760	255	265	283	249
Long Term												
Full Simulation Period[b]	291	388	466	584	642	607	884	1,181	1,028	390	347	363
Water Year Types[c]												
Wet (23%)	360	612	886	1,060	1,196	1,462	1,488	1,497	2,316	678	580	731
Above Normal (24%)	301	332	376	726	742	523	940	1,225	1,200	354	288	271
Below Normal (10%)	288	373	373	383	418	316	955	1,266	613	272	285	270
Dry (16%)	278	323	331	318	392	262	581	1,094	399	276	283	255
Critical (27%)	230	287	298	275	303	256	464	890	280	283	259	228

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-58%	72%	66%	42%	1%	-57%	-8%	-22%	162%	-16%	-23%	-23%
20%	-56%	107%	90%	79%	23%	-73%	-6%	-4%	57%	-1%	0%	0%
30%	-57%	93%	107%	76%	43%	-6%	-14%	11%	67%	0%	4%	7%
40%	-63%	59%	63%	41%	76%	59%	-29%	5%	-1%	0%	0%	7%
50%	-63%	59%	59%	41%	35%	59%	-53%	5%	24%	5%	0%	7%
60%	-69%	23%	38%	10%	39%	38%	-37%	21%	10%	1%	0%	0%
70%	-69%	23%	23%	10%	14%	21%	-40%	30%	-3%	1%	0%	0%
80%	-70%	17%	23%	13%	9%	21%	-45%	35%	-2%	0%	0%	0%
90%	-72%	15%	15%	-6%	11%	0%	-25%	39%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	-60%	39%	28%	13%	8%	-19%	-24%	5%	51%	-1%	-4%	3%
Water Year Types[c]												
Wet (23%)	-54%	23%	13%	6%	0%	-27%	-3%	-12%	103%	-5%	-9%	6%
Above Normal (24%)	-58%	54%	33%	10%	10%	-19%	-23%	7%	25%	0%	-1%	1%
Below Normal (10%)	-61%	66%	66%	36%	21%	-14%	-34%	5%	29%	1%	0%	5%
Dry (16%)	-61%	55%	53%	36%	25%	31%	-44%	18%	7%	0%	2%	4%
Critical (27%)	-66%	40%	39%	22%	19%	10%	-37%	27%	0%	5%	-1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.3.2 Stanislaus River below Goodwin, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	499	508	508	907	709	1,500	1,500	2,887	360	300	300
20%	350	415	415	415	503	415	1,462	1,500	1,709	306	300	300
30%	331	386	415	408	415	415	1,337	1,434	1,571	300	296	268
40%	286	318	326	318	415	318	991	1,303	845	300	283	268
50%	286	318	318	318	318	318	664	1,303	450	284	283	268
60%	194	247	275	242	318	275	512	1,112	398	268	283	249
70%	194	247	247	242	260	242	461	920	289	268	283	249
80%	173	233	247	242	242	242	424	848	257	265	283	249
90%	164	230	230	200	239	200	378	760	255	265	283	249
Long Term												
Full Simulation Period[b]	291	388	466	584	642	607	884	1,181	1,028	390	347	363
Water Year Types[c]												
Wet (23%)	360	612	886	1,060	1,196	1,462	1,488	1,497	2,316	678	580	731
Above Normal (24%)	301	332	376	726	742	523	940	1,225	1,200	354	288	271
Below Normal (10%)	288	373	373	383	418	316	955	1,266	613	272	285	270
Dry (16%)	278	323	331	318	392	262	581	1,094	399	276	283	255
Critical (27%)	230	287	298	275	303	256	464	890	280	283	259	228

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	837	290	306	358	897	1,648	1,633	1,929	1,103	429	390	390
20%	797	200	218	232	409	1,521	1,553	1,555	1,090	310	300	300
30%	774	200	200	232	290	440	1,553	1,296	940	300	284	250
40%	774	200	200	226	236	200	1,400	1,242	855	300	283	250
50%	774	200	200	226	236	200	1,400	1,242	363	271	283	250
60%	636	200	200	219	229	200	812	918	363	265	283	249
70%	636	200	200	219	229	200	767	705	297	265	283	249
80%	578	200	200	214	221	200	767	631	261	265	283	249
90%	577	200	200	213	215	200	505	546	255	265	283	249
Long Term												
Full Simulation Period[b]	723	278	365	518	595	754	1,158	1,123	680	394	361	351
Water Year Types[c]												
Wet (23%)	781	499	787	999	1,201	2,016	1,536	1,691	1,140	715	639	692
Above Normal (24%)	714	216	282	663	676	645	1,224	1,146	962	353	292	267
Below Normal (10%)	740	225	225	282	346	365	1,454	1,201	476	269	285	256
Dry (16%)	707	208	216	234	313	200	1,030	930	374	275	277	245
Critical (27%)	683	205	215	227	255	234	741	699	281	269	262	231

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	139%	-42%	-40%	-30%	-1%	132%	9%	29%	-62%	19%	30%	30%
20%	128%	-52%	-47%	-44%	-19%	267%	6%	4%	-36%	1%	0%	0%
30%	134%	-48%	-52%	-43%	-30%	6%	16%	-10%	-40%	0%	-4%	-7%
40%	170%	-37%	-39%	-29%	-43%	-37%	41%	-5%	1%	0%	0%	-7%
50%	170%	-37%	-37%	-29%	-26%	-37%	111%	-5%	-19%	-5%	0%	-7%
60%	227%	-19%	-27%	-9%	-28%	-27%	59%	-17%	-9%	-1%	0%	0%
70%	227%	-19%	-19%	-9%	-12%	-17%	66%	-23%	3%	-1%	0%	0%
80%	234%	-14%	-19%	-12%	-9%	-17%	81%	-26%	2%	0%	0%	0%
90%	252%	-13%	-13%	6%	-10%	0%	34%	-28%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	149%	-28%	-22%	-11%	-7%	24%	31%	-5%	-34%	1%	4%	-3%
Water Year Types[c]												
Wet (23%)	117%	-19%	-11%	-6%	0%	38%	3%	13%	-51%	5%	10%	-5%
Above Normal (24%)	137%	-35%	-25%	-9%	-9%	23%	30%	-6%	-20%	0%	1%	-1%
Below Normal (10%)	157%	-40%	-40%	-26%	-17%	16%	52%	-5%	-22%	-1%	0%	-5%
Dry (16%)	154%	-36%	-35%	-26%	-20%	-24%	77%	-15%	-6%	0%	-2%	-4%
Critical (27%)	197%	-29%	-28%	-18%	-16%	-9%	60%	-22%	0%	-5%	1%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.3.3 Stanislaus River below Goodwin, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	499	508	508	907	709	1,500	1,500	2,887	360	300	300
20%	350	415	415	415	503	415	1,462	1,500	1,709	306	300	300
30%	331	386	415	408	415	415	1,337	1,434	1,571	300	296	268
40%	286	318	326	318	415	318	991	1,303	845	300	283	268
50%	286	318	318	318	318	318	664	1,303	450	284	283	268
60%	194	247	275	242	318	275	512	1,112	398	268	283	249
70%	194	247	247	242	260	242	461	920	289	268	283	249
80%	173	233	247	242	242	242	424	848	257	265	283	249
90%	164	230	230	200	239	200	378	760	255	265	283	249
Long Term												
Full Simulation Period[b]	291	388	466	584	642	607	884	1,181	1,028	390	347	363
Water Year Types[c]												
Wet (23%)	360	612	886	1,060	1,196	1,462	1,488	1,497	2,316	678	580	731
Above Normal (24%)	301	332	376	726	742	523	940	1,225	1,200	354	288	271
Below Normal (10%)	288	373	373	383	418	316	955	1,266	613	272	285	270
Dry (16%)	278	323	331	318	392	262	581	1,094	399	276	283	255
Critical (27%)	230	287	298	275	303	256	464	890	280	283	259	228

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	300	300	609	1,135	2,548	1,189	1,500	1,165	255	265	283	952
20%	300	300	305	300	1,157	344	1,500	1,165	255	265	283	249
30%	300	300	300	300	333	300	1,500	1,165	255	265	283	249
40%	252	300	300	300	300	300	1,034	963	255	265	283	249
50%	252	300	300	150	176	200	893	829	255	265	283	249
60%	252	300	300	150	173	200	893	829	255	265	283	249
70%	252	300	300	150	173	200	893	829	255	265	283	249
80%	200	200	220	150	173	200	528	466	255	265	283	249
90%	200	200	200	150	173	200	493	466	255	265	283	249
Long Term												
Full Simulation Period[b]	302	349	475	557	814	622	1,060	911	490	421	391	397
Water Year Types[c]												
Wet (23%)	368	589	1,001	1,066	2,016	1,599	1,538	1,300	1,279	952	768	885
Above Normal (24%)	323	287	394	705	732	552	1,155	955	255	265	283	260
Below Normal (10%)	269	275	275	483	552	272	1,128	909	255	265	283	249
Dry (16%)	285	285	293	251	371	200	815	730	255	265	283	249
Critical (27%)	246	264	274	191	208	218	680	643	245	254	268	240

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-14%	-40%	20%	123%	181%	68%	0%	-22%	-91%	-26%	-6%	217%
20%	-14%	-28%	-27%	-28%	130%	-17%	3%	-22%	-85%	-13%	-6%	-17%
30%	-9%	-22%	-28%	-27%	-20%	-28%	12%	-19%	-84%	-12%	-4%	-7%
40%	-12%	-6%	-8%	-6%	-28%	-6%	4%	-26%	-70%	-12%	0%	-7%
50%	-12%	-6%	-6%	-53%	-45%	-37%	35%	-36%	-43%	-7%	0%	-7%
60%	30%	22%	9%	-38%	-46%	-27%	74%	-25%	-36%	-1%	0%	0%
70%	30%	22%	22%	-38%	-33%	-17%	94%	-10%	-12%	-1%	0%	0%
80%	15%	-14%	-11%	-38%	-29%	-17%	25%	-45%	0%	0%	0%	0%
90%	22%	-13%	-13%	-25%	-28%	0%	31%	-39%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	4%	-10%	2%	-5%	27%	2%	20%	-23%	-52%	8%	13%	9%
Water Year Types[c]												
Wet (23%)	2%	-4%	13%	1%	69%	9%	3%	-13%	-45%	40%	33%	21%
Above Normal (24%)	7%	-13%	5%	-3%	-1%	5%	23%	-22%	-79%	-25%	-2%	-4%
Below Normal (10%)	-7%	-26%	-26%	26%	32%	-14%	18%	-28%	-58%	-2%	-1%	-8%
Dry (16%)	3%	-12%	-12%	-21%	-5%	-24%	40%	-33%	-36%	-4%	0%	-2%
Critical (27%)	7%	-8%	-8%	-31%	-31%	-15%	47%	-28%	-12%	-10%	3%	5%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.3.4 Stanislaus River below Goodwin, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	499	508	508	907	709	1,500	1,500	2,887	360	300	300
20%	350	415	415	415	503	415	1,462	1,500	1,709	306	300	300
30%	331	386	415	408	415	415	1,337	1,434	1,571	300	296	268
40%	286	318	326	318	415	318	991	1,303	845	300	283	268
50%	286	318	318	318	318	318	664	1,303	450	284	283	268
60%	194	247	275	242	318	275	512	1,112	398	268	283	249
70%	194	247	247	242	260	242	461	920	289	268	283	249
80%	173	233	247	242	242	242	424	848	257	265	283	249
90%	164	230	230	200	239	200	378	760	255	265	283	249
Long Term												
Full Simulation Period[b]	291	388	466	584	642	607	884	1,181	1,028	390	347	363
Water Year Types[c]												
Wet (23%)	360	612	886	1,060	1,196	1,462	1,488	1,497	2,316	678	580	731
Above Normal (24%)	301	332	376	726	742	523	940	1,225	1,200	354	288	271
Below Normal (10%)	288	373	373	383	418	316	955	1,266	613	272	285	270
Dry (16%)	278	323	331	318	392	262	581	1,094	399	276	283	255
Critical (27%)	230	287	298	275	303	256	464	890	280	283	259	228

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	797	200	306	358	885	1,636	1,717	1,958	1,103	423	300	300
20%	797	200	211	232	415	1,521	1,633	1,815	979	307	300	300
30%	774	200	200	232	274	343	1,553	1,595	940	300	283	250
40%	774	200	200	226	236	200	1,487	1,555	759	297	283	250
50%	636	200	200	226	236	200	1,400	1,341	363	265	283	249
60%	636	200	200	219	229	200	1,324	1,242	342	265	283	249
70%	636	200	200	219	222	200	1,134	1,068	270	265	283	249
80%	577	200	200	213	221	200	825	887	255	265	283	249
90%	577	200	200	213	214	200	767	798	255	265	283	249
Long Term												
Full Simulation Period[b]	711	276	345	520	580	712	1,317	1,375	660	369	332	341
Water Year Types[c]												
Wet (23%)	766	499	690	998	1,169	1,831	1,502	1,730	1,093	619	523	655
Above Normal (24%)	705	211	298	676	659	645	1,170	1,553	962	353	292	267
Below Normal (10%)	733	225	225	281	345	365	1,416	1,267	462	269	285	256
Dry (16%)	690	208	216	233	312	200	1,454	1,370	366	275	277	245
Critical (27%)	674	200	210	221	242	234	1,175	948	257	260	253	224

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	128%	-60%	-40%	-30%	-2%	131%	14%	31%	-62%	18%	0%	0%
20%	128%	-52%	-49%	-44%	-17%	267%	12%	21%	-43%	0%	0%	0%
30%	134%	-48%	-52%	-43%	-34%	-17%	16%	11%	-40%	0%	-4%	-7%
40%	170%	-37%	-39%	-29%	-43%	-37%	50%	19%	-10%	-1%	0%	-7%
50%	122%	-37%	-37%	-29%	-26%	-37%	111%	3%	-19%	-7%	0%	-7%
60%	227%	-19%	-27%	-9%	-28%	-27%	159%	12%	-14%	-1%	0%	0%
70%	227%	-19%	-19%	-9%	-15%	-17%	146%	16%	-7%	-1%	0%	0%
80%	233%	-14%	-19%	-12%	-9%	-17%	95%	5%	0%	0%	0%	0%
90%	252%	-13%	-13%	6%	-11%	0%	103%	5%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	145%	-29%	-26%	-11%	-10%	17%	49%	16%	-36%	-5%	-4%	-6%
Water Year Types[c]												
Wet (23%)	113%	-19%	-22%	-6%	-2%	25%	1%	16%	-53%	-9%	-10%	-10%
Above Normal (24%)	134%	-36%	-21%	-7%	-11%	23%	24%	27%	-20%	0%	1%	-1%
Below Normal (10%)	155%	-40%	-40%	-27%	-17%	16%	48%	0%	-25%	-1%	0%	-5%
Dry (16%)	148%	-36%	-35%	-27%	-20%	-24%	150%	25%	-8%	0%	-2%	-4%
Critical (27%)	194%	-30%	-29%	-20%	-20%	-9%	153%	7%	-8%	-8%	-2%	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.3.4 Stanislaus River at Mouth Flow

Table 5C.3.3.4.1 Stanislaus River at Mouth, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,122	463	442	576	1,084	1,969	1,886	1,989	1,536	751	587	646
20%	1,029	384	368	427	643	1,708	1,769	1,647	1,334	606	488	507
30%	982	348	319	368	472	520	1,696	1,536	1,221	502	462	473
40%	958	337	304	347	406	433	1,610	1,362	1,053	442	445	443
50%	879	319	290	337	369	367	1,485	1,289	635	412	445	439
60%	826	292	281	326	331	336	936	873	510	383	416	428
70%	772	267	262	312	279	314	806	755	406	372	395	389
80%	755	260	241	295	253	241	686	646	358	341	371	360
90%	676	248	224	273	230	207	572	576	311	308	331	318
Long Term												
Full Simulation Period[b]	903	398	448	630	719	903	1,279	1,207	883	546	505	533
Water Year Types[c]												
Wet (23%)	952	624	881	1,115	1,412	2,258	1,779	1,828	1,456	976	831	946
Above Normal (24%)	907	347	357	776	786	801	1,410	1,244	1,257	534	467	480
Below Normal (10%)	932	354	358	430	517	539	1,556	1,378	669	449	440	429
Dry (16%)	916	322	300	349	405	345	1,064	1,002	530	375	397	399
Critical (27%)	837	310	277	317	319	286	754	695	335	321	346	342

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	662	653	656	688	1,117	1,153	1,804	1,679	3,009	661	569	673
20%	582	548	522	557	694	613	1,608	1,592	2,016	555	485	508
30%	507	492	464	518	562	562	1,489	1,533	1,772	502	461	481
40%	471	459	427	473	512	522	1,040	1,423	1,092	444	445	457
50%	405	421	378	412	484	446	821	1,331	694	412	443	439
60%	377	388	341	364	423	394	637	1,049	572	386	416	431
70%	346	355	329	339	331	361	529	972	402	378	395	396
80%	327	312	311	318	296	295	440	865	352	350	373	373
90%	249	280	269	283	257	233	406	787	312	318	331	316
Long Term												
Full Simulation Period[b]	471	507	549	696	766	756	1,004	1,265	1,231	542	491	545
Water Year Types[c]												
Wet (23%)	530	737	980	1,176	1,407	1,704	1,731	1,634	2,632	939	772	985
Above Normal (24%)	494	463	451	840	852	680	1,126	1,323	1,495	535	463	484
Below Normal (10%)	480	503	506	532	589	489	1,057	1,443	807	452	440	443
Dry (16%)	487	437	415	433	484	407	616	1,166	555	377	404	408
Critical (27%)	384	393	360	366	367	309	476	887	334	335	343	338

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-41%	41%	48%	19%	3%	-41%	-4%	-16%	96%	-12%	-3%	4%
20%	-43%	43%	42%	31%	8%	-64%	-9%	-3%	51%	-8%	-1%	0%
30%	-48%	42%	46%	41%	19%	8%	-12%	0%	45%	0%	0%	2%
40%	-51%	36%	40%	36%	26%	21%	-35%	4%	4%	0%	0%	3%
50%	-54%	32%	30%	22%	31%	22%	-45%	3%	9%	0%	0%	0%
60%	-54%	33%	22%	12%	28%	17%	-32%	20%	12%	1%	0%	1%
70%	-55%	33%	26%	9%	19%	15%	-34%	29%	-1%	1%	0%	2%
80%	-57%	20%	29%	8%	17%	22%	-36%	34%	-2%	3%	1%	3%
90%	-63%	13%	20%	3%	12%	12%	-29%	37%	0%	3%	0%	-1%
Long Term												
Full Simulation Period[b]	-48%	28%	23%	10%	7%	-16%	-21%	5%	39%	-1%	-3%	2%
Water Year Types[c]												
Wet (23%)	-44%	18%	11%	5%	0%	-25%	-3%	-11%	81%	-4%	-7%	4%
Above Normal (24%)	-46%	33%	26%	8%	8%	-15%	-20%	6%	19%	0%	-1%	1%
Below Normal (10%)	-49%	42%	41%	24%	14%	-9%	-32%	5%	21%	1%	0%	3%
Dry (16%)	-47%	36%	38%	24%	19%	18%	-42%	16%	5%	0%	2%	2%
Critical (27%)	-54%	27%	30%	15%	15%	8%	-37%	28%	0%	4%	-1%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.4.2 Stanislaus River at Mouth, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	662	653	656	688	1,117	1,153	1,804	1,679	3,009	661	569	673
20%	582	548	522	557	694	613	1,608	1,592	2,016	555	485	508
30%	507	492	464	518	562	562	1,489	1,533	1,772	502	461	481
40%	471	459	427	473	512	522	1,040	1,423	1,092	444	445	457
50%	405	421	378	412	484	446	821	1,331	694	412	443	439
60%	377	388	341	364	423	394	637	1,049	572	386	416	431
70%	346	355	329	339	331	361	529	972	402	378	395	396
80%	327	312	311	318	296	295	440	865	352	350	373	373
90%	249	280	269	283	257	233	406	787	312	318	331	316
Long Term												
Full Simulation Period[b]	471	507	549	696	766	756	1,004	1,265	1,231	542	491	545
Water Year Types[c]												
Wet (23%)	530	737	980	1,176	1,407	1,704	1,731	1,634	2,632	939	772	985
Above Normal (24%)	494	463	451	840	852	680	1,126	1,323	1,495	535	463	484
Below Normal (10%)	480	503	506	532	589	489	1,057	1,443	807	452	440	443
Dry (16%)	487	437	415	433	484	407	616	1,166	555	377	404	408
Critical (27%)	384	393	360	366	367	309	476	887	334	335	343	338

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,122	463	442	576	1,084	1,969	1,886	1,989	1,536	751	587	646
20%	1,029	384	368	427	643	1,708	1,769	1,647	1,334	606	488	507
30%	982	348	319	368	472	520	1,696	1,536	1,221	502	462	473
40%	958	337	304	347	406	433	1,610	1,362	1,053	442	445	443
50%	879	319	290	337	369	367	1,485	1,289	635	412	445	439
60%	826	292	281	326	331	336	936	873	510	383	416	428
70%	772	267	262	312	279	314	806	755	406	372	395	389
80%	755	260	241	295	253	241	686	646	358	341	371	360
90%	676	248	224	273	230	207	572	576	311	308	331	318
Long Term												
Full Simulation Period[b]	903	398	448	630	719	903	1,279	1,207	883	546	505	533
Water Year Types[c]												
Wet (23%)	952	624	881	1,115	1,412	2,258	1,779	1,828	1,456	976	831	946
Above Normal (24%)	907	347	357	776	786	801	1,410	1,244	1,257	534	467	480
Below Normal (10%)	932	354	358	430	517	539	1,556	1,378	669	449	440	429
Dry (16%)	916	322	300	349	405	345	1,064	1,002	530	375	397	399
Critical (27%)	837	310	277	317	319	286	754	695	335	321	346	342

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	70%	-29%	-33%	-16%	-3%	71%	5%	19%	-49%	14%	3%	-4%
20%	77%	-30%	-30%	-23%	-7%	178%	10%	3%	-34%	9%	1%	0%
30%	94%	-29%	-31%	-29%	-16%	-8%	14%	0%	-31%	0%	0%	-2%
40%	104%	-27%	-29%	-26%	-21%	-17%	55%	-4%	-4%	0%	0%	-3%
50%	117%	-24%	-23%	-18%	-24%	-18%	81%	-3%	-8%	0%	1%	0%
60%	119%	-25%	-18%	-10%	-22%	-15%	47%	-17%	-11%	-1%	0%	-1%
70%	123%	-25%	-20%	-8%	-16%	-13%	52%	-22%	1%	-1%	0%	-2%
80%	130%	-17%	-22%	-7%	-14%	-18%	56%	-25%	2%	-3%	-1%	-3%
90%	172%	-12%	-17%	-3%	-10%	-11%	41%	-27%	0%	-3%	0%	1%
Long Term												
Full Simulation Period[b]	92%	-22%	-18%	-9%	-6%	19%	27%	-5%	-28%	1%	3%	-2%
Water Year Types[c]												
Wet (23%)	79%	-15%	-10%	-5%	0%	33%	3%	12%	-45%	4%	8%	-4%
Above Normal (24%)	84%	-25%	-21%	-8%	-8%	18%	25%	-6%	-16%	0%	1%	-1%
Below Normal (10%)	94%	-29%	-29%	-19%	-12%	10%	47%	-4%	-17%	-1%	0%	-3%
Dry (16%)	88%	-26%	-28%	-19%	-16%	-15%	73%	-14%	-5%	0%	-2%	-2%
Critical (27%)	118%	-21%	-23%	-13%	-13%	-7%	58%	-22%	0%	-4%	1%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.4.3 Stanislaus River at Mouth, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	662	653	656	688	1,117	1,153	1,804	1,679	3,009	661	569	673
20%	582	548	522	557	694	613	1,608	1,592	2,016	555	485	508
30%	507	492	464	518	562	562	1,489	1,533	1,772	502	461	481
40%	471	459	427	473	512	522	1,040	1,423	1,092	444	445	457
50%	405	421	378	412	484	446	821	1,331	694	412	443	439
60%	377	388	341	364	423	394	637	1,049	572	386	416	431
70%	346	355	329	339	331	361	529	972	402	378	395	396
80%	327	312	311	318	296	295	440	865	352	350	373	373
90%	249	280	269	283	257	233	406	787	312	318	331	316
Long Term												
Full Simulation Period[b]	471	507	549	696	766	756	1,004	1,265	1,231	542	491	545
Water Year Types[c]												
Wet (23%)	530	737	980	1,176	1,407	1,704	1,731	1,634	2,632	939	772	985
Above Normal (24%)	494	463	451	840	852	680	1,126	1,323	1,495	535	463	484
Below Normal (10%)	480	503	506	532	589	489	1,057	1,443	807	452	440	443
Dry (16%)	487	437	415	433	484	407	616	1,166	555	377	404	408
Critical (27%)	384	393	360	366	367	309	476	887	334	335	343	338

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	679	485	722	1,267	2,628	1,444	1,865	1,414	950	885	571	1,146
20%	557	456	438	518	1,301	734	1,634	1,306	679	535	480	489
30%	482	441	411	410	502	486	1,552	1,233	558	476	457	450
40%	448	424	400	374	416	419	1,240	1,043	428	424	445	439
50%	435	402	381	311	366	367	1,064	920	413	382	440	435
60%	392	372	362	275	308	334	996	882	374	374	410	415
70%	377	359	325	251	238	312	893	829	352	350	390	384
80%	360	333	300	232	201	238	575	550	304	327	367	360
90%	293	260	239	198	180	203	493	489	273	290	347	320
Long Term												
Full Simulation Period[b]	482	469	558	669	938	770	1,180	995	693	573	535	578
Water Year Types[c]												
Wet (23%)	539	714	1,096	1,183	2,227	1,841	1,781	1,437	1,596	1,213	961	1,139
Above Normal (24%)	516	418	468	818	843	708	1,341	1,054	550	446	457	473
Below Normal (10%)	461	404	408	632	723	446	1,230	1,086	449	445	438	422
Dry (16%)	495	399	377	365	463	345	849	803	411	365	404	402
Critical (27%)	401	369	336	282	272	271	692	639	299	305	351	351

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3%	-26%	10%	84%	135%	25%	3%	-16%	-68%	34%	0%	70%
20%	-4%	-17%	-16%	-7%	87%	20%	2%	-18%	-66%	-4%	-1%	-4%
30%	-5%	-10%	-12%	-21%	-11%	-14%	4%	-20%	-68%	-5%	-1%	-7%
40%	-5%	-8%	-6%	-21%	-19%	-20%	19%	-27%	-61%	-5%	0%	-4%
50%	7%	-5%	1%	-24%	-25%	-18%	30%	-31%	-41%	-7%	-1%	-1%
60%	4%	-4%	6%	-24%	-27%	-15%	56%	-16%	-35%	-3%	-1%	-4%
70%	9%	1%	-1%	-26%	-28%	-14%	69%	-15%	-12%	-7%	-1%	-3%
80%	10%	7%	-4%	-27%	-32%	-19%	31%	-36%	-14%	-6%	-1%	-3%
90%	18%	-7%	-11%	-30%	-30%	-13%	21%	-38%	-13%	-9%	5%	1%
Long Term												
Full Simulation Period[b]	2%	-8%	2%	-4%	22%	2%	18%	-21%	-44%	6%	9%	6%
Water Year Types[c]												
Wet (23%)	2%	-3%	12%	1%	58%	8%	3%	-12%	-39%	29%	24%	16%
Above Normal (24%)	4%	-10%	4%	-3%	-1%	4%	19%	-20%	-63%	-17%	-1%	-2%
Below Normal (10%)	-4%	-20%	-19%	19%	23%	-9%	16%	-25%	-44%	-1%	0%	-5%
Dry (16%)	2%	-9%	-9%	-16%	-4%	-15%	38%	-31%	-26%	-3%	0%	-1%
Critical (27%)	4%	-6%	-7%	-23%	-26%	-12%	45%	-28%	-10%	-9%	3%	4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.4.4 Stanislaus River at Mouth, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	662	653	656	688	1,117	1,153	1,804	1,679	3,009	661	569	673
20%	582	548	522	557	694	613	1,608	1,592	2,016	555	485	508
30%	507	492	464	518	562	562	1,489	1,533	1,772	502	461	481
40%	471	459	427	473	512	522	1,040	1,423	1,092	444	445	457
50%	405	421	378	412	484	446	821	1,331	694	412	443	439
60%	377	388	341	364	423	394	637	1,049	572	386	416	431
70%	346	355	329	339	331	361	529	972	402	378	395	396
80%	327	312	311	318	296	295	440	865	352	350	373	373
90%	249	280	269	283	257	233	406	787	312	318	331	316
Long Term												
Full Simulation Period[b]	471	507	549	696	766	756	1,004	1,265	1,231	542	491	545
Water Year Types[c]												
Wet (23%)	530	737	980	1,176	1,407	1,704	1,731	1,634	2,632	939	772	985
Above Normal (24%)	494	463	451	840	852	680	1,126	1,323	1,495	535	463	484
Below Normal (10%)	480	503	506	532	589	489	1,057	1,443	807	452	440	443
Dry (16%)	487	437	415	433	484	407	616	1,166	555	377	404	408
Critical (27%)	384	393	360	366	367	309	476	887	334	335	343	338

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,121	456	442	570	1,081	1,952	1,950	2,148	1,536	719	571	659
20%	1,029	382	378	416	586	1,708	1,815	1,974	1,319	564	488	501
30%	979	348	319	363	483	495	1,707	1,806	1,139	502	461	473
40%	903	336	304	347	401	415	1,630	1,672	1,034	442	445	443
50%	854	318	290	337	368	365	1,529	1,434	635	407	443	439
60%	818	292	281	326	319	333	1,311	1,290	485	382	413	428
70%	764	267	262	312	272	312	1,168	1,183	383	371	389	389
80%	748	260	241	295	245	241	1,044	962	343	339	367	356
90%	681	248	224	270	230	207	865	752	300	307	305	316
Long Term												
Full Simulation Period[b]	891	396	428	631	704	860	1,437	1,458	863	521	476	522
Water Year Types[c]												
Wet (23%)	937	624	784	1,115	1,380	2,073	1,744	1,866	1,409	880	716	909
Above Normal (24%)	898	342	372	790	770	801	1,356	1,651	1,257	534	467	480
Below Normal (10%)	925	354	358	430	516	539	1,518	1,444	656	449	440	429
Dry (16%)	900	322	300	347	403	345	1,488	1,442	522	375	397	399
Critical (27%)	829	306	272	311	306	286	1,187	944	310	311	337	335

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**69%**	**-30%**	**-33%**	**-17%**	-3%	**69%**	**8%**	**28%**	**-49%**	**9%**	0%	-2%
20%	**77%**	**-30%**	**-28%**	**-25%**	**-16%**	**178%**	**13%**	**24%**	**-35%**	2%	1%	-1%
30%	**93%**	**-29%**	**-31%**	**-30%**	**-14%**	**-12%**	**15%**	**18%**	**-36%**	0%	0%	-2%
40%	**92%**	**-27%**	**-29%**	**-27%**	**-22%**	**-20%**	**57%**	**17%**	**-5%**	0%	0%	-3%
50%	**111%**	**-25%**	**-23%**	**-18%**	**-24%**	**-18%**	**86%**	**8%**	**-8%**	-1%	0%	0%
60%	**117%**	**-25%**	**-18%**	**-10%**	**-25%**	**-16%**	**106%**	**23%**	**-15%**	-1%	-1%	-1%
70%	**121%**	**-25%**	**-20%**	**-8%**	**-18%**	**-14%**	**121%**	**22%**	-5%	-2%	-1%	-2%
80%	**129%**	**-17%**	**-22%**	**-7%**	**-17%**	**-18%**	**137%**	**11%**	-3%	-3%	-1%	-4%
90%	**174%**	**-12%**	**-17%**	-4%	**-10%**	**-11%**	**113%**	-4%	-4%	-3%	**-8%**	0%
Long Term												
Full Simulation Period[b]	**89%**	**-22%**	**-22%**	**-9%**	**-8%**	**14%**	**43%**	**15%**	**-30%**	-4%	-3%	-4%
Water Year Types[c]												
Wet (23%)	**77%**	**-15%**	**-20%**	**-5%**	-2%	**22%**	1%	**14%**	**-46%**	**-6%**	**-7%**	**-8%**
Above Normal (24%)	**82%**	**-26%**	**-17%**	**-6%**	**-10%**	**18%**	**20%**	**25%**	**-16%**	0%	1%	-1%
Below Normal (10%)	**93%**	**-29%**	**-29%**	**-19%**	**-12%**	**10%**	**44%**	0%	**-19%**	-1%	0%	-3%
Dry (16%)	**85%**	**-26%**	**-28%**	**-20%**	**-17%**	**-15%**	**142%**	**24%**	**-6%**	0%	-2%	-2%
Critical (27%)	**116%**	**-22%**	**-24%**	**-15%**	**-16%**	**-7%**	**149%**	**7%**	**-7%**	**-7%**	-2%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.3.5 Stanislaus River below New Melones Temperature

Table 5C.3.3.5.1 Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	56.0	53.6	52.1	51.1	50.7	51.0	51.6	52.6	53.7	55.1	57.5
20%	55.6	54.6	52.7	51.5	50.4	49.9	50.2	51.1	51.8	52.5	53.0	54.4
30%	53.4	53.3	52.3	50.9	49.7	49.5	49.9	50.5	51.1	51.8	52.5	53.0
40%	52.9	52.8	51.8	50.6	49.4	49.2	49.7	50.3	50.8	51.4	51.9	52.5
50%	52.4	52.5	51.6	50.2	49.2	49.0	49.3	49.7	50.3	51.1	51.6	52.0
60%	52.0	52.1	51.4	49.9	48.9	48.7	48.9	49.3	49.7	50.4	50.9	51.4
70%	51.4	51.6	51.0	49.6	48.7	48.1	48.4	49.0	49.3	50.0	50.5	51.0
80%	51.1	51.2	50.3	49.2	48.0	47.5	48.0	48.4	48.9	49.6	50.1	50.7
90%	49.9	49.9	49.8	48.3	47.0	46.8	46.9	47.2	47.5	48.5	48.9	49.3
Long Term												
Full Simulation Period[b]	53.4	52.8	51.7	50.2	49.1	48.8	49.2	49.9	50.6	51.3	52.2	53.1
Water Year Types[c]												
Wet (32%)	50.0	50.0	49.1	49.4	48.3	48.1	48.1	48.4	48.9	49.3	49.9	50.3
Above Normal (16%)	53.4	53.0	51.6	50.1	48.7	48.3	48.5	49.0	49.5	50.2	51.0	51.6
Below Normal (13%)	52.8	52.5	51.6	50.5	49.4	48.9	49.2	49.8	50.4	51.1	51.9	52.4
Dry (24%)	53.0	52.9	52.0	51.1	50.0	49.6	49.8	50.4	51.1	51.9	52.9	53.9
Critical (15%)	57.4	54.4	52.4	50.4	49.7	49.5	51.0	53.0	54.6	55.8	57.4	60.4

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.1	55.8	53.6	52.1	51.4	50.7	51.0	51.6	52.5	53.6	55.2	56.5
20%	54.2	54.2	52.7	51.4	50.5	50.0	50.2	51.1	51.7	52.4	52.9	53.5
30%	53.1	53.1	52.3	51.0	49.9	49.5	49.9	50.5	51.0	51.7	52.4	52.9
40%	52.5	52.7	51.9	50.7	49.5	49.2	49.7	50.3	50.8	51.4	51.9	52.3
50%	52.1	52.3	51.5	50.3	49.3	49.1	49.3	49.7	50.3	51.0	51.5	51.9
60%	51.8	52.0	51.3	50.0	49.0	48.7	48.9	49.3	49.7	50.3	50.9	51.4
70%	51.2	51.5	51.0	49.6	48.7	48.2	48.5	48.9	49.4	50.0	50.5	50.9
80%	51.0	51.2	50.4	49.3	48.2	47.6	48.0	48.5	48.9	49.6	50.1	50.7
90%	49.6	49.9	49.8	48.5	47.0	46.9	47.0	47.2	47.6	48.4	48.7	49.3
Long Term												
Full Simulation Period[b]	53.0	52.7	51.7	50.3	49.2	48.8	49.2	49.9	50.4	51.3	52.1	52.7
Water Year Types[c]												
Wet (32%)	49.7	49.8	49.1	49.5	48.4	48.0	48.2	48.5	48.9	49.4	49.9	50.3
Above Normal (16%)	53.1	52.7	51.5	50.1	48.8	48.4	48.6	49.0	49.5	50.2	51.0	51.5
Below Normal (13%)	52.2	52.1	51.5	50.6	49.5	48.9	49.2	49.7	50.3	51.0	51.7	52.2
Dry (24%)	52.7	52.6	51.9	51.1	50.0	49.6	49.8	50.4	51.1	51.8	52.7	53.5
Critical (15%)	57.3	55.4	52.8	50.7	49.9	49.8	50.8	53.2	53.2	56.4	57.2	58.3

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.7	-0.3	0.0	0.0	0.3	0.1	0.0	0.0	-0.1	-0.1	0.1	-0.9
20%	-1.4	-0.4	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1	-0.9
30%	-0.3	-0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	-0.2	-0.1	-0.1
40%	-0.4	-0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
50%	-0.3	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2
60%	-0.2	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70%	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	-0.1
80%	-0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	-0.1
90%	-0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.1
Long Term												
Full Simulation Period[b]	-0.3	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	-0.2	0.1	-0.1	-0.4
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	0.0	0.1	0.1	-0.1	0.1	0.0	0.1	0.0	0.0	0.0
Above Normal (16%)	-0.4	-0.3	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.6	-0.4	-0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3
Critical (15%)	-0.1	1.0	0.3	0.3	0.3	0.2	-0.3	0.2	-1.4	0.6	-0.1	-2.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.5.2 Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.1	55.8	53.6	52.1	51.4	50.7	51.0	51.6	52.5	53.6	55.2	56.5
20%	54.2	54.2	52.7	51.4	50.5	50.0	50.2	51.1	51.7	52.4	52.9	53.5
30%	53.1	53.1	52.3	51.0	49.9	49.5	49.9	50.5	51.0	51.7	52.4	52.9
40%	52.5	52.7	51.9	50.7	49.5	49.2	49.7	50.3	50.8	51.4	51.9	52.3
50%	52.1	52.3	51.5	50.3	49.3	49.1	49.3	49.7	50.3	51.0	51.5	51.9
60%	51.8	52.0	51.3	50.0	49.0	48.7	48.9	49.3	49.7	50.3	50.9	51.4
70%	51.2	51.5	51.0	49.6	48.7	48.2	48.5	48.9	49.4	50.0	50.5	50.9
80%	51.0	51.2	50.4	49.3	48.2	47.6	48.0	48.5	48.9	49.6	50.1	50.7
90%	49.6	49.9	49.8	48.5	47.0	46.9	47.0	47.2	47.6	48.4	48.7	49.3
Long Term												
Full Simulation Period[b]	53.0	52.7	51.7	50.3	49.2	48.8	49.2	49.9	50.4	51.3	52.1	52.7
Water Year Types[c]												
Wet (32%)	49.7	49.8	49.1	49.5	48.4	48.0	48.2	48.5	48.9	49.4	49.9	50.3
Above Normal (16%)	53.1	52.7	51.5	50.1	48.8	48.4	48.6	49.0	49.5	50.2	51.0	51.5
Below Normal (13%)	52.2	52.1	51.5	50.6	49.5	48.9	49.2	49.7	50.3	51.0	51.7	52.2
Dry (24%)	52.7	52.6	51.9	51.1	50.0	49.6	49.8	50.4	51.1	51.8	52.7	53.5
Critical (15%)	57.3	55.4	52.8	50.7	49.9	49.8	50.8	53.2	53.2	56.4	57.2	58.3

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.8	56.0	53.6	52.1	51.1	50.7	51.0	51.6	52.6	53.7	55.1	57.5
20%	55.6	54.6	52.7	51.5	50.4	49.9	50.2	51.1	51.8	52.5	53.0	54.4
30%	53.4	53.3	52.3	50.9	49.7	49.5	49.9	50.5	51.1	51.8	52.5	53.0
40%	52.9	52.8	51.8	50.6	49.4	49.2	49.7	50.3	50.8	51.4	51.9	52.5
50%	52.4	52.5	51.6	50.2	49.2	49.0	49.3	49.7	50.3	51.1	51.6	52.0
60%	52.0	52.1	51.4	49.9	48.9	48.7	48.9	49.3	49.7	50.4	50.9	51.4
70%	51.4	51.6	51.0	49.6	48.7	48.1	48.4	49.0	49.3	50.0	50.5	51.0
80%	51.1	51.2	50.3	49.2	48.0	47.5	48.0	48.4	48.9	49.6	50.1	50.7
90%	49.9	49.9	49.8	48.3	47.0	46.8	46.9	47.2	47.5	48.5	48.9	49.3
Long Term												
Full Simulation Period[b]	53.4	52.8	51.7	50.2	49.1	48.8	49.2	49.9	50.6	51.3	52.2	53.1
Water Year Types[c]												
Wet (32%)	50.0	50.0	49.1	49.4	48.3	48.1	48.1	48.4	48.9	49.3	49.9	50.3
Above Normal (16%)	53.4	53.0	51.6	50.1	48.7	48.3	48.5	49.0	49.5	50.2	51.0	51.6
Below Normal (13%)	52.8	52.5	51.6	50.5	49.4	48.9	49.2	49.8	50.4	51.1	51.9	52.4
Dry (24%)	53.0	52.9	52.0	51.1	50.0	49.6	49.8	50.4	51.1	51.9	52.9	53.9
Critical (15%)	57.4	54.4	52.4	50.4	49.7	49.5	51.0	53.0	54.6	55.8	57.4	60.4

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.7**	0.3	0.0	0.0	-0.3	-0.1	0.0	0.0	0.1	0.1	-0.1	**0.9**
20%	**1.4**	0.4	0.0	0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	**0.9**
30%	0.3	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.2	0.1	0.1
40%	0.4	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
50%	0.3	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2
60%	0.2	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70%	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1
80%	0.1	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.1
90%	0.3	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.1
Long Term												
Full Simulation Period[b]	0.3	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.2	-0.1	0.1	0.4
Water Year Types[c]												
Wet (32%)	0.3	0.2	0.0	-0.1	-0.1	0.1	-0.1	0.0	-0.1	0.0	0.0	0.0
Above Normal (16%)	0.4	0.3	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1
Below Normal (13%)	**0.6**	0.4	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.2	0.3
Dry (24%)	0.3	0.3	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3
Critical (15%)	0.1	**-1.0**	-0.3	-0.3	-0.3	-0.2	0.3	-0.2	**1.4**	**-0.6**	0.1	**2.1**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.5.3 Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.1	55.8	53.6	52.1	51.4	50.7	51.0	51.6	52.5	53.6	55.2	56.5
20%	54.2	54.2	52.7	51.4	50.5	50.0	50.2	51.1	51.7	52.4	52.9	53.5
30%	53.1	53.1	52.3	51.0	49.9	49.5	49.9	50.5	51.0	51.7	52.4	52.9
40%	52.5	52.7	51.9	50.7	49.5	49.2	49.7	50.3	50.8	51.4	51.9	52.3
50%	52.1	52.3	51.5	50.3	49.3	49.1	49.3	49.7	50.3	51.0	51.5	51.9
60%	51.8	52.0	51.3	50.0	49.0	48.7	48.9	49.3	49.7	50.3	50.9	51.4
70%	51.2	51.5	51.0	49.6	48.7	48.2	48.5	48.9	49.4	50.0	50.5	50.9
80%	51.0	51.2	50.4	49.3	48.2	47.6	48.0	48.5	48.9	49.6	50.1	50.7
90%	49.6	49.9	49.8	48.5	47.0	46.9	47.0	47.2	47.6	48.4	48.7	49.3
Long Term												
Full Simulation Period[b]	53.0	52.7	51.7	50.3	49.2	48.8	49.2	49.9	50.4	51.3	52.1	52.7
Water Year Types[c]												
Wet (32%)	49.7	49.8	49.1	49.5	48.4	48.0	48.2	48.5	48.9	49.4	49.9	50.3
Above Normal (16%)	53.1	52.7	51.5	50.1	48.8	48.4	48.6	49.0	49.5	50.2	51.0	51.5
Below Normal (13%)	52.2	52.1	51.5	50.6	49.5	48.9	49.2	49.7	50.3	51.0	51.7	52.2
Dry (24%)	52.7	52.6	51.9	51.1	50.0	49.6	49.8	50.4	51.1	51.8	52.7	53.5
Critical (15%)	57.3	55.4	52.8	50.7	49.9	49.8	50.8	53.2	53.2	56.4	57.2	58.3

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55.7	55.3	53.2	52.3	51.1	50.8	51.1	51.6	52.2	53.0	53.7	54.9
20%	53.6	53.7	52.5	51.4	50.4	50.1	50.3	50.9	51.6	52.1	52.6	53.3
30%	52.6	52.7	52.1	51.0	49.9	49.6	50.0	50.4	50.9	51.5	52.0	52.5
40%	52.1	52.3	51.7	50.6	49.5	49.3	49.7	50.2	50.5	51.2	51.6	52.0
50%	51.7	51.9	51.4	50.3	49.5	49.2	49.3	49.6	50.0	50.6	51.1	51.5
60%	51.3	51.6	51.3	50.0	49.1	48.7	49.0	49.3	49.7	50.2	50.7	51.2
70%	51.1	51.3	51.0	49.7	48.8	48.5	48.7	49.1	49.5	49.9	50.4	50.8
80%	50.6	50.8	50.5	49.3	48.4	48.1	48.2	48.5	48.9	49.3	49.7	50.4
90%	49.7	49.9	50.0	48.4	47.3	47.1	47.3	47.6	48.0	48.5	48.9	49.4
Long Term												
Full Simulation Period[b]	52.5	52.4	51.6	50.3	49.3	49.0	49.3	49.7	50.3	51.1	51.6	52.1
Water Year Types[c]												
Wet (32%)	49.4	49.5	49.0	49.4	48.5	48.2	48.3	48.6	48.9	49.3	49.8	50.2
Above Normal (16%)	52.4	52.2	51.3	50.1	48.9	48.5	48.8	49.1	49.5	50.1	50.6	51.1
Below Normal (13%)	51.5	51.5	51.2	50.4	49.5	49.0	49.3	49.7	50.2	50.8	51.4	51.8
Dry (24%)	52.3	52.4	51.8	50.9	50.0	49.6	49.9	50.3	50.9	51.5	52.1	52.7
Critical (15%)	55.8	55.1	52.9	51.2	50.4	50.1	50.8	51.8	53.5	55.6	56.3	56.7

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.5	-0.5	-0.4	0.1	-0.3	0.1	0.1	0.0	-0.3	-0.6	-1.5	-1.6
20%	-0.6	-0.4	-0.2	0.0	0.0	0.1	0.2	-0.1	-0.1	-0.3	-0.3	-0.2
30%	-0.5	-0.4	-0.2	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.2	-0.4	-0.4
40%	-0.5	-0.4	-0.2	-0.1	0.0	0.1	0.0	-0.1	-0.3	-0.2	-0.3	-0.4
50%	-0.4	-0.3	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.3	-0.5	-0.4	-0.4
60%	-0.4	-0.4	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.1	-0.2	-0.2
70%	-0.1	-0.2	0.0	0.1	0.1	0.3	0.3	0.1	0.0	-0.1	-0.1	-0.1
80%	-0.4	-0.4	0.2	0.0	0.2	0.4	0.2	0.0	0.1	-0.3	-0.4	-0.3
90%	0.1	0.0	0.2	-0.1	0.4	0.3	0.3	0.4	0.4	0.1	0.3	0.1
Long Term												
Full Simulation Period[b]	-0.6	-0.3	-0.1	0.0	0.1	0.1	0.1	-0.2	0.0	-0.3	-0.4	-0.6
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1
Above Normal (16%)	-0.6	-0.5	-0.2	0.0	0.1	0.2	0.2	0.1	0.0	-0.2	-0.3	-0.4
Below Normal (13%)	-0.7	-0.6	-0.3	-0.2	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.3	-0.4
Dry (24%)	-0.3	-0.3	-0.1	-0.2	0.0	0.0	0.1	-0.1	-0.2	-0.4	-0.6	-0.9
Critical (15%)	-1.5	-0.3	0.2	0.5	0.5	0.3	0.0	-1.4	0.3	-0.7	-1.0	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.5.4 Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.1	55.8	53.6	52.1	51.4	50.7	51.0	51.6	52.5	53.6	55.2	56.5
20%	54.2	54.2	52.7	51.4	50.5	50.0	50.2	51.1	51.7	52.4	52.9	53.5
30%	53.1	53.1	52.3	51.0	49.9	49.5	49.9	50.5	51.0	51.7	52.4	52.9
40%	52.5	52.7	51.9	50.7	49.5	49.2	49.7	50.3	50.8	51.4	51.9	52.3
50%	52.1	52.3	51.5	50.3	49.3	49.1	49.3	49.7	50.3	51.0	51.5	51.9
60%	51.8	52.0	51.3	50.0	49.0	48.7	48.9	49.3	49.7	50.3	50.9	51.4
70%	51.2	51.5	51.0	49.6	48.7	48.2	48.5	48.9	49.4	50.0	50.5	50.9
80%	51.0	51.2	50.4	49.3	48.2	47.6	48.0	48.5	48.9	49.6	50.1	50.7
90%	49.6	49.9	49.8	48.5	47.0	46.9	47.0	47.2	47.6	48.4	48.7	49.3
Long Term												
Full Simulation Period[b]	53.0	52.7	51.7	50.3	49.2	48.8	49.2	49.9	50.4	51.3	52.1	52.7
Water Year Types[c]												
Wet (32%)	49.7	49.8	49.1	49.5	48.4	48.0	48.2	48.5	48.9	49.4	49.9	50.3
Above Normal (16%)	53.1	52.7	51.5	50.1	48.8	48.4	48.6	49.0	49.5	50.2	51.0	51.5
Below Normal (13%)	52.2	52.1	51.5	50.6	49.5	48.9	49.2	49.7	50.3	51.0	51.7	52.2
Dry (24%)	52.7	52.6	51.9	51.1	50.0	49.6	49.8	50.4	51.1	51.8	52.7	53.5
Critical (15%)	57.3	55.4	52.8	50.7	49.9	49.8	50.8	53.2	53.2	56.4	57.2	58.3

Alternative 5

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.7	57.0	53.9	52.0	51.0	50.7	51.2	52.3	53.1	55.4	59.8	63.1
20%	56.7	55.0	52.8	51.4	50.3	50.0	50.4	51.4	52.0	53.4	54.4	55.9
30%	54.4	53.7	52.3	50.9	49.6	49.5	50.0	50.7	51.3	52.2	53.1	53.8
40%	53.2	53.1	51.9	50.4	49.4	49.1	49.8	50.3	50.8	51.5	52.1	52.8
50%	52.5	52.6	51.6	50.2	49.0	49.0	49.3	49.9	50.3	51.2	51.7	52.1
60%	52.1	52.3	51.2	49.7	48.7	48.6	48.9	49.4	49.7	50.4	50.9	51.5
70%	51.5	51.8	51.0	49.4	48.3	48.0	48.5	48.9	49.3	50.0	50.6	51.1
80%	51.1	51.3	50.2	48.9	47.3	47.3	47.6	48.1	48.5	49.5	50.1	50.7
90%	49.9	50.1	49.5	47.8	46.3	46.3	46.7	47.1	47.4	48.4	48.9	49.5
Long Term												
Full Simulation Period[b]	54.0	53.1	51.7	50.0	48.9	48.7	49.2	50.0	50.4	51.7	52.8	53.9
Water Year Types[c]												
Wet (32%)	50.7	50.1	49.0	49.2	48.1	47.9	47.9	48.3	48.8	49.3	49.9	50.5
Above Normal (16%)	54.0	53.4	51.8	50.1	48.6	48.2	48.5	49.0	49.6	50.4	51.2	51.9
Below Normal (13%)	53.1	52.3	51.3	50.1	49.1	48.7	49.2	50.0	50.8	51.6	52.6	53.4
Dry (24%)	53.7	53.4	52.3	51.0	49.8	49.5	49.8	50.6	51.4	52.7	54.5	55.8
Critical (15%)	57.9	55.0	52.3	49.7	49.0	49.8	51.8	54.1	52.5	56.5	58.2	60.7

Alternative 5 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.6**	**1.2**	0.3	-0.2	-0.3	0.0	0.2	**0.6**	**0.6**	**1.9**	**4.6**	**6.6**
20%	**2.5**	**0.8**	0.1	0.0	-0.1	0.0	0.3	0.3	0.3	**0.9**	**1.5**	**2.4**
30%	**1.3**	**0.6**	0.0	0.0	-0.2	0.0	0.1	0.2	0.3	**0.6**	**0.6**	**0.9**
40%	**0.7**	0.4	0.0	-0.2	-0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.5
50%	0.4	0.3	0.1	-0.1	-0.3	-0.1	0.0	0.1	0.0	0.2	0.2	0.3
60%	0.3	0.3	-0.1	-0.3	-0.3	-0.1	0.0	0.1	-0.1	0.1	0.0	0.1
70%	0.4	0.3	0.0	-0.2	-0.3	-0.2	0.1	0.0	-0.1	0.0	0.1	0.2
80%	0.1	0.1	-0.1	-0.4	**-0.9**	-0.3	-0.4	-0.4	-0.3	-0.1	0.0	0.0
90%	0.3	0.1	-0.3	**-0.7**	**-0.6**	**-0.5**	-0.3	-0.1	-0.2	0.0	0.2	0.2
Long Term												
Full Simulation Period[b]	**1.0**	0.4	0.0	-0.3	-0.4	-0.1	0.0	0.2	0.0	0.3	**0.8**	**1.2**
Water Year Types[c]												
Wet (32%)	**1.0**	0.4	-0.1	-0.3	-0.3	-0.2	-0.3	-0.2	-0.1	0.0	0.1	0.1
Above Normal (16%)	**0.9**	**0.7**	0.2	0.0	-0.1	-0.2	-0.1	0.0	0.1	0.2	0.3	0.4
Below Normal (13%)	**0.9**	0.2	-0.2	-0.5	-0.3	-0.3	0.0	0.2	0.4	**0.7**	**0.9**	**1.2**
Dry (24%)	**1.0**	**0.8**	0.4	-0.1	-0.2	-0.1	0.0	0.1	0.4	**0.9**	**1.8**	**2.3**
Critical (15%)	**0.6**	-0.4	-0.5	**-0.9**	**-1.0**	0.0	**1.1**	**1.0**	**-0.7**	0.1	**0.9**	**2.4**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.6 Stanislaus River below Tulloch Reservoir Temperature

Table 5C.3.3.6.1 Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.5	59.0	54.8	50.7	50.2	51.2	52.6	53.6	54.7	56.5	57.4	59.2
20%	57.4	56.6	53.3	50.3	49.5	50.6	52.1	53.0	54.1	55.0	55.7	56.7
30%	55.6	55.1	52.8	49.6	48.8	50.2	51.7	52.6	53.4	54.3	55.0	55.6
40%	55.1	54.6	52.0	49.1	48.5	49.8	51.3	52.4	52.9	53.9	54.5	55.0
50%	54.5	54.1	51.7	48.7	48.0	49.6	51.0	52.1	52.6	53.7	54.1	54.5
60%	54.1	53.9	51.4	48.3	47.8	49.3	50.6	51.6	52.2	52.8	53.5	54.0
70%	53.6	53.2	50.9	47.8	47.5	48.9	50.1	51.3	51.8	52.4	53.2	53.5
80%	53.2	52.6	50.4	47.1	46.7	48.4	49.7	51.0	51.4	51.8	52.8	53.1
90%	52.0	51.8	49.9	46.3	45.8	47.5	48.8	50.2	50.3	50.8	51.5	51.8
Long Term												
Full Simulation Period[b]	55.6	54.7	51.9	48.6	48.1	49.5	50.9	52.1	52.8	53.7	54.6	55.4
Water Year Types[c]												
Wet (32%)	51.9	51.5	49.1	47.6	47.5	49.0	49.9	51.1	51.3	51.8	52.5	52.8
Above Normal (16%)	55.8	54.8	51.9	48.5	47.9	49.3	50.6	51.4	52.0	52.7	53.5	54.0
Below Normal (13%)	54.9	54.2	51.5	48.7	47.9	49.6	51.2	52.0	52.5	53.6	54.3	54.9
Dry (24%)	55.2	54.7	52.1	48.9	48.3	49.8	51.5	52.4	53.3	54.4	55.3	56.1
Critical (15%)	60.0	57.4	53.8	50.0	49.2	50.5	52.3	54.3	56.3	58.2	59.3	61.8

Alternative 1

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59.7	59.0	54.7	50.9	50.3	51.4	52.7	53.7	54.6	56.4	57.2	58.4
20%	56.6	56.3	53.3	50.3	49.7	50.8	51.9	53.2	54.0	55.0	55.6	56.3
30%	55.6	55.1	52.7	49.6	49.0	50.3	51.6	52.8	53.3	54.1	54.9	55.5
40%	55.0	54.5	52.1	49.2	48.7	49.8	51.3	52.4	53.0	53.8	54.5	54.9
50%	54.6	54.2	51.7	48.9	48.2	49.7	51.0	52.2	52.7	53.5	54.0	54.4
60%	54.0	53.9	51.5	48.4	47.9	49.5	50.7	51.8	52.4	52.6	53.4	53.9
70%	53.7	53.3	51.1	48.0	47.7	49.0	50.2	51.5	51.9	52.3	53.1	53.5
80%	53.3	52.8	50.5	47.4	47.2	48.5	49.7	50.9	51.5	51.6	52.7	53.1
90%	52.1	51.9	49.8	46.6	46.1	47.6	48.9	50.2	50.7	50.7	51.5	51.7
Long Term												
Full Simulation Period[b]	55.4	54.7	52.0	48.7	48.3	49.6	50.9	52.2	52.8	53.6	54.5	55.1
Water Year Types[c]												
Wet (32%)	51.8	51.4	49.0	47.8	47.7	49.0	50.0	51.2	51.7	51.6	52.4	52.8
Above Normal (16%)	55.6	54.8	52.0	48.7	48.1	49.4	50.6	51.6	52.0	52.6	53.4	53.9
Below Normal (13%)	54.7	54.0	51.4	48.8	48.2	49.7	50.9	52.2	52.4	53.4	54.2	54.6
Dry (24%)	55.1	54.6	52.2	49.0	48.5	50.0	51.5	52.6	53.3	54.3	55.1	55.8
Critical (15%)	59.4	58.1	54.1	50.2	49.5	50.7	52.2	54.5	55.4	58.0	59.5	60.4

Alternative 1 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.7	-0.1	0.0	0.2	0.1	0.2	0.0	0.1	-0.1	-0.1	-0.2	-0.7
20%	-0.8	-0.3	0.0	0.0	0.2	0.2	-0.2	0.2	-0.1	0.0	-0.1	-0.4
30%	0.0	0.0	-0.1	0.0	0.2	0.1	-0.1	0.2	-0.1	-0.2	-0.1	-0.1
40%	-0.1	-0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.1	-0.1	0.0	-0.1
50%	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.1	-0.2	-0.1	-0.2
60%	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.1	-0.1	0.0
70%	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.2	0.1	-0.2	0.0	0.0
80%	0.2	0.2	0.1	0.3	0.5	0.1	0.1	-0.1	0.1	-0.2	0.0	0.0
90%	0.1	0.1	-0.1	0.3	0.3	0.1	0.1	0.0	0.5	0.0	0.0	-0.1
Long Term												
Full Simulation Period[b]	-0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.0	-0.2	-0.1	-0.3
Water Year Types[c]												
Wet (32%)	-0.1	-0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.4	-0.2	0.0	0.0
Above Normal (16%)	-0.2	0.1	0.1	0.1	0.2	0.1	-0.1	0.2	0.0	-0.1	-0.1	-0.1
Below Normal (13%)	-0.2	-0.2	-0.1	0.1	0.2	0.1	-0.3	0.3	-0.1	-0.2	-0.2	-0.2
Dry (24%)	-0.2	0.0	0.1	0.2	0.2	0.1	0.0	0.1	-0.1	-0.1	-0.2	-0.3
Critical (15%)	-0.6	0.7	0.3	0.2	0.2	0.2	-0.1	0.2	-0.9	-0.2	0.2	-1.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.6.2 Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59.7	59.0	54.7	50.9	50.3	51.4	52.7	53.7	54.6	56.4	57.2	58.4
20%	56.6	56.3	53.3	50.3	49.7	50.8	51.9	53.2	54.0	55.0	55.6	56.3
30%	55.6	55.1	52.7	49.6	49.0	50.3	51.6	52.8	53.3	54.1	54.9	55.5
40%	55.0	54.5	52.1	49.2	48.7	49.8	51.3	52.4	53.0	53.8	54.5	54.9
50%	54.6	54.2	51.7	48.9	48.2	49.7	51.0	52.2	52.7	53.5	54.0	54.4
60%	54.0	53.9	51.5	48.4	47.9	49.5	50.7	51.8	52.4	52.6	53.4	53.9
70%	53.7	53.3	51.1	48.0	47.7	49.0	50.2	51.5	51.9	52.3	53.1	53.5
80%	53.3	52.8	50.5	47.4	47.2	48.5	49.7	50.9	51.5	51.6	52.7	53.1
90%	52.1	51.9	49.8	46.6	46.1	47.6	48.9	50.2	50.7	50.7	51.5	51.7
Long Term												
Full Simulation Period[b]	55.4	54.7	52.0	48.7	48.3	49.6	50.9	52.2	52.8	53.6	54.5	55.1
Water Year Types[c]												
Wet (32%)	51.8	51.4	49.0	47.8	47.7	49.0	50.0	51.2	51.7	51.6	52.4	52.8
Above Normal (16%)	55.6	54.8	52.0	48.7	48.1	49.4	50.6	51.6	52.0	52.6	53.4	53.9
Below Normal (13%)	54.7	54.0	51.4	48.8	48.2	49.7	50.9	52.2	52.4	53.4	54.2	54.6
Dry (24%)	55.1	54.6	52.2	49.0	48.5	50.0	51.5	52.6	53.3	54.3	55.1	55.8
Critical (15%)	59.4	58.1	54.1	50.2	49.5	50.7	52.2	54.5	55.4	58.0	59.5	60.4

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.5	59.0	54.8	50.7	50.2	51.2	52.6	53.6	54.7	56.5	57.4	59.2
20%	57.4	56.6	53.3	50.3	49.5	50.6	52.1	53.0	54.1	55.0	55.7	56.7
30%	55.6	55.1	52.8	49.6	48.8	50.2	51.7	52.6	53.4	54.3	55.0	55.6
40%	55.1	54.6	52.0	49.1	48.5	49.8	51.3	52.4	52.9	53.9	54.5	55.0
50%	54.5	54.1	51.7	48.7	48.0	49.6	51.0	52.1	52.6	53.7	54.1	54.5
60%	54.1	53.9	51.4	48.3	47.8	49.3	50.6	51.6	52.2	52.8	53.5	54.0
70%	53.6	53.2	50.9	47.8	47.5	48.9	50.1	51.3	51.8	52.4	53.2	53.5
80%	53.2	52.6	50.4	47.1	46.7	48.4	49.7	51.0	51.4	51.8	52.8	53.1
90%	52.0	51.8	49.9	46.3	45.8	47.5	48.8	50.2	50.3	50.8	51.5	51.8
Long Term												
Full Simulation Period[b]	55.6	54.7	51.9	48.6	48.1	49.5	50.9	52.1	52.8	53.7	54.6	55.4
Water Year Types[c]												
Wet (32%)	51.9	51.5	49.1	47.6	47.5	49.0	49.9	51.1	51.3	51.8	52.5	52.8
Above Normal (16%)	55.8	54.8	51.9	48.5	47.9	49.3	50.6	51.4	52.0	52.7	53.5	54.0
Below Normal (13%)	54.9	54.2	51.5	48.7	47.9	49.6	51.2	52.0	52.5	53.6	54.3	54.9
Dry (24%)	55.2	54.7	52.1	48.9	48.3	49.8	51.5	52.4	53.3	54.4	55.3	56.1
Critical (15%)	60.0	57.4	53.8	50.0	49.2	50.5	52.3	54.3	56.3	58.2	59.3	61.8

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.7**	0.1	0.0	-0.2	-0.1	-0.2	0.0	-0.1	0.1	0.1	0.2	**0.7**
20%	**0.8**	0.3	0.0	0.0	-0.2	-0.2	0.2	-0.2	0.1	0.0	0.1	0.4
30%	0.0	0.0	0.1	0.0	-0.2	-0.1	0.1	-0.2	0.1	0.2	0.1	0.1
40%	0.1	0.1	-0.1	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	0.0	0.1
50%	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	-0.1	0.2	0.1	0.2
60%	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.0
70%	0.0	0.0	-0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	0.2	0.0	0.0
80%	-0.2	-0.2	-0.1	-0.3	-0.5	-0.1	-0.1	0.1	-0.1	0.2	0.0	0.0
90%	-0.1	-0.1	0.1	-0.3	-0.3	-0.1	-0.1	0.0	-0.5	0.0	0.0	0.1
Long Term												
Full Simulation Period[b]	0.2	-0.1	-0.1	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.2	0.1	0.3
Water Year Types[c]												
Wet (32%)	0.1	0.1	0.0	-0.1	-0.2	0.0	-0.1	0.0	-0.4	0.2	0.0	0.0
Above Normal (16%)	0.2	-0.1	-0.1	-0.1	-0.2	-0.1	0.1	-0.2	0.0	0.1	0.1	0.1
Below Normal (13%)	0.2	0.2	0.1	-0.1	-0.2	-0.1	0.3	-0.3	0.1	0.2	0.2	0.2
Dry (24%)	0.2	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	0.1	0.1	0.2	0.3
Critical (15%)	**0.6**	**-0.7**	-0.3	-0.2	-0.2	-0.2	0.1	-0.2	**0.9**	0.2	-0.2	**1.4**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.6.3 Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59.7	59.0	54.7	50.9	50.3	51.4	52.7	53.7	54.6	56.4	57.2	58.4
20%	56.6	56.3	53.3	50.3	49.7	50.8	51.9	53.2	54.0	55.0	55.6	56.3
30%	55.6	55.1	52.7	49.6	49.0	50.3	51.6	52.8	53.3	54.1	54.9	55.5
40%	55.0	54.5	52.1	49.2	48.7	49.8	51.3	52.4	53.0	53.8	54.5	54.9
50%	54.6	54.2	51.7	48.9	48.2	49.7	51.0	52.2	52.7	53.5	54.0	54.4
60%	54.0	53.9	51.5	48.4	47.9	49.5	50.7	51.8	52.4	52.6	53.4	53.9
70%	53.7	53.3	51.1	48.0	47.7	49.0	50.2	51.5	51.9	52.3	53.1	53.5
80%	53.3	52.8	50.5	47.4	47.2	48.5	49.7	50.9	51.5	51.6	52.7	53.1
90%	52.1	51.9	49.8	46.6	46.1	47.6	48.9	50.2	50.7	50.7	51.5	51.7
Long Term												
Full Simulation Period[b]	55.4	54.7	52.0	48.7	48.3	49.6	50.9	52.2	52.8	53.6	54.5	55.1
Water Year Types[c]												
Wet (32%)	51.8	51.4	49.0	47.8	47.7	49.0	50.0	51.2	51.7	51.6	52.4	52.8
Above Normal (16%)	55.6	54.8	52.0	48.7	48.1	49.4	50.6	51.6	52.0	52.6	53.4	53.9
Below Normal (13%)	54.7	54.0	51.4	48.8	48.2	49.7	50.9	52.2	52.4	53.4	54.2	54.6
Dry (24%)	55.1	54.6	52.2	49.0	48.5	50.0	51.5	52.6	53.3	54.3	55.1	55.8
Critical (15%)	59.4	58.1	54.1	50.2	49.5	50.7	52.2	54.5	55.4	58.0	59.5	60.4

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57.8	57.5	54.3	50.8	50.3	51.3	52.7	53.5	54.5	55.7	56.4	57.3
20%	56.4	55.9	53.5	50.0	49.6	50.7	52.0	52.8	53.8	54.8	55.3	55.7
30%	55.1	54.5	52.8	49.5	49.1	50.3	51.5	52.4	53.2	54.0	54.7	55.1
40%	54.6	54.1	51.8	49.0	48.7	49.9	51.4	52.2	52.8	53.6	54.2	54.5
50%	54.2	53.7	51.5	48.7	48.2	49.7	51.0	51.9	52.5	53.3	53.8	54.1
60%	53.7	53.4	51.3	48.5	47.9	49.5	50.8	51.6	52.1	52.9	53.3	53.6
70%	53.5	53.0	50.9	48.0	47.6	49.0	50.4	51.4	51.7	52.6	53.0	53.2
80%	52.9	52.7	50.5	47.5	47.2	48.6	49.9	50.9	51.2	52.1	52.5	52.8
90%	51.9	51.8	49.6	46.8	46.2	47.8	49.2	50.1	50.7	51.3	51.7	51.7
Long Term												
Full Simulation Period[b]	54.8	54.3	51.8	48.6	48.3	49.6	51.0	51.9	52.6	53.6	54.3	54.5
Water Year Types[c]												
Wet (32%)	51.6	51.2	49.0	47.8	47.9	49.0	50.1	51.0	51.4	52.1	52.5	52.6
Above Normal (16%)	55.0	54.4	51.9	48.7	48.1	49.4	50.7	51.4	51.9	52.8	53.3	53.6
Below Normal (13%)	53.9	53.5	51.2	48.7	48.1	49.6	51.0	51.9	52.4	53.4	53.9	54.3
Dry (24%)	54.8	54.3	52.0	48.9	48.3	49.9	51.5	52.4	53.2	54.1	54.7	55.1
Critical (15%)	58.0	57.4	53.9	50.1	49.4	50.8	52.3	53.6	55.1	57.5	58.7	59.0

Alternative 3 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-2.0**	**-1.5**	-0.4	-0.1	-0.1	-0.1	0.1	-0.2	-0.1	**-0.7**	**-0.8**	**-1.2**
20%	-0.2	-0.4	0.2	-0.3	-0.1	0.0	0.1	-0.3	-0.2	-0.2	-0.3	**-0.6**
30%	**-0.5**	**-0.6**	0.1	-0.1	0.1	0.0	-0.1	-0.4	-0.1	-0.1	-0.2	-0.4
40%	-0.4	-0.4	-0.3	-0.2	0.0	0.0	0.1	-0.2	-0.2	-0.2	-0.3	-0.4
50%	-0.4	-0.4	-0.2	-0.2	0.0	0.0	0.0	-0.3	-0.2	-0.2	-0.3	-0.3
60%	-0.2	-0.5	-0.2	0.1	-0.1	0.0	0.1	-0.2	-0.3	0.2	-0.1	-0.3
70%	-0.2	-0.2	-0.3	0.0	0.0	0.0	0.2	-0.1	-0.2	0.4	-0.1	-0.3
80%	-0.4	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	-0.3	0.5	-0.2	-0.3
90%	-0.1	-0.1	-0.2	0.2	0.1	0.2	0.3	-0.1	-0.1	**0.6**	0.3	0.0
Long Term												
Full Simulation Period[b]	**-0.5**	-0.4	-0.1	-0.1	0.0	0.0	0.1	-0.3	-0.2	0.1	-0.3	**-0.5**
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.3	0.0	0.1	-0.2	-0.3	**0.5**	0.0	-0.2
Above Normal (16%)	**-0.5**	-0.4	-0.2	0.0	0.0	0.0	0.2	-0.2	-0.1	0.1	-0.1	-0.3
Below Normal (13%)	**-0.7**	**-0.5**	-0.2	-0.1	-0.1	-0.1	0.1	-0.3	0.0	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	-0.1	-0.3	-0.1	0.1	-0.2	-0.1	-0.2	-0.5	**-0.7**
Critical (15%)	**-1.3**	**-0.8**	-0.2	-0.1	-0.1	0.1	0.1	**-0.9**	-0.2	-0.5	**-0.8**	**-1.5**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.6.4 Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59.7	59.0	54.7	50.9	50.3	51.4	52.7	53.7	54.6	56.4	57.2	58.4
20%	56.6	56.3	53.3	50.3	49.7	50.8	51.9	53.2	54.0	55.0	55.6	56.3
30%	55.6	55.1	52.7	49.6	49.0	50.3	51.6	52.8	53.3	54.1	54.9	55.5
40%	55.0	54.5	52.1	49.2	48.7	49.8	51.3	52.4	53.0	53.8	54.5	54.9
50%	54.6	54.2	51.7	48.9	48.2	49.7	51.0	52.2	52.7	53.5	54.0	54.4
60%	54.0	53.9	51.5	48.4	47.9	49.5	50.7	51.8	52.4	52.6	53.4	53.9
70%	53.7	53.3	51.1	48.0	47.7	49.0	50.2	51.5	51.9	52.3	53.1	53.5
80%	53.3	52.8	50.5	47.4	47.2	48.5	49.7	50.9	51.5	51.6	52.7	53.1
90%	52.1	51.9	49.8	46.6	46.1	47.6	48.9	50.2	50.7	50.7	51.5	51.7
Long Term												
Full Simulation Period[b]	55.4	54.7	52.0	48.7	48.3	49.6	50.9	52.2	52.8	53.6	54.5	55.1
Water Year Types[c]												
Wet (32%)	51.8	51.4	49.0	47.8	47.7	49.0	50.0	51.2	51.7	51.6	52.4	52.8
Above Normal (16%)	55.6	54.8	52.0	48.7	48.1	49.4	50.6	51.6	52.0	52.6	53.4	53.9
Below Normal (13%)	54.7	54.0	51.4	48.8	48.2	49.7	50.9	52.2	52.4	53.4	54.2	54.6
Dry (24%)	55.1	54.6	52.2	49.0	48.5	50.0	51.5	52.6	53.3	54.3	55.1	55.8
Critical (15%)	59.4	58.1	54.1	50.2	49.5	50.7	52.2	54.5	55.4	58.0	59.5	60.4

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.5	60.2	55.1	51.0	50.0	51.1	52.9	53.9	55.2	57.1	60.8	63.2
20%	58.4	57.9	53.6	50.2	49.5	50.6	52.2	53.2	54.3	55.4	56.8	57.9
30%	56.4	55.7	52.7	49.4	48.8	50.0	51.8	52.6	53.4	54.7	55.5	56.1
40%	55.3	54.8	52.1	49.0	48.4	49.7	51.6	52.4	52.9	54.0	54.9	55.2
50%	54.7	54.2	51.8	48.7	48.0	49.5	51.0	52.2	52.6	53.7	54.2	54.6
60%	54.4	53.9	51.5	48.3	47.7	49.2	50.6	51.8	52.2	52.8	53.5	54.0
70%	53.7	53.4	50.9	47.9	47.2	48.8	50.1	51.4	51.7	52.4	53.2	53.6
80%	53.3	52.7	50.4	47.1	46.7	48.1	49.6	50.8	51.3	51.9	52.8	53.1
90%	52.1	51.8	49.8	45.9	45.6	47.4	48.7	50.1	50.1	50.7	51.4	52.0
Long Term												
Full Simulation Period[b]	56.2	55.1	52.0	48.6	48.0	49.4	50.9	52.2	52.6	53.9	55.1	56.0
Water Year Types[c]												
Wet (32%)	52.7	51.8	49.1	47.7	47.4	48.8	49.7	51.1	51.2	51.7	52.5	52.9
Above Normal (16%)	56.2	55.2	52.1	48.6	47.9	49.2	50.5	51.5	51.9	52.8	53.7	54.3
Below Normal (13%)	55.6	54.3	51.5	48.6	47.9	49.4	51.2	52.1	52.7	54.0	54.9	55.6
Dry (24%)	55.9	55.1	52.3	49.0	48.3	49.7	51.5	52.5	53.5	54.9	56.4	57.7
Critical (15%)	60.5	58.1	53.6	49.7	48.9	50.3	52.9	55.1	55.2	58.0	60.1	62.2

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**4.8**	**1.3**	0.4	0.1	-0.3	-0.3	0.2	0.2	**0.7**	**0.7**	**3.5**	**4.8**
20%	**1.8**	**1.7**	0.3	-0.1	-0.2	-0.2	0.3	0.1	0.2	0.4	**1.3**	**1.6**
30%	**0.8**	**0.6**	0.0	-0.2	-0.3	-0.2	0.2	-0.2	0.1	**0.6**	**0.6**	**0.6**
40%	0.3	0.3	0.0	-0.2	-0.3	-0.1	0.3	0.0	-0.1	0.2	0.4	0.3
50%	0.1	0.1	0.1	-0.2	-0.2	-0.2	0.0	0.0	-0.1	0.2	0.2	0.2
60%	0.4	0.0	0.0	0.0	-0.2	-0.3	0.0	0.0	-0.2	0.2	0.1	0.1
70%	0.1	0.1	-0.2	-0.1	-0.4	-0.2	-0.1	-0.1	-0.2	0.2	0.1	0.2
80%	-0.1	-0.1	-0.1	-0.3	-0.5	-0.4	-0.1	-0.2	-0.2	0.2	0.1	0.0
90%	0.0	-0.1	0.0	**-0.7**	**-0.6**	-0.2	-0.2	-0.1	**-0.6**	0.0	0.0	0.3
Long Term												
Full Simulation Period[b]	**0.9**	0.3	0.0	-0.1	-0.3	-0.2	0.1	0.0	-0.1	0.3	**0.6**	**1.0**
Water Year Types[c]												
Wet (32%)	**0.9**	0.4	0.1	-0.1	-0.2	-0.1	-0.2	-0.1	**-0.5**	0.2	0.1	0.1
Above Normal (16%)	**0.7**	0.4	0.1	-0.1	-0.2	-0.2	0.0	0.0	-0.1	0.2	0.3	0.4
Below Normal (13%)	**0.9**	0.2	0.1	-0.2	-0.3	-0.2	0.2	-0.1	0.3	**0.6**	**0.8**	**1.0**
Dry (24%)	**0.8**	**0.5**	0.2	-0.1	-0.2	-0.2	0.0	0.0	0.2	**0.6**	**1.3**	**1.9**
Critical (15%)	**1.1**	0.0	-0.5	-0.5	**-0.6**	-0.4	**0.7**	**0.7**	-0.2	0.0	**0.6**	**1.7**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.7 Stanislaus River below Goodwin Dam Temperature

Table 5C.3.3.7.1 Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.7	59.2	54.6	51.1	50.8	51.9	53.1	54.1	55.6	57.6	58.3	60.1
20%	58.0	56.6	53.3	50.3	50.2	51.4	52.4	53.6	54.8	55.9	56.5	57.4
30%	56.1	55.5	52.5	49.7	49.5	50.8	52.1	53.0	54.0	55.1	55.8	56.4
40%	55.5	54.8	51.9	49.3	48.9	50.6	51.7	52.8	53.7	54.6	55.3	55.7
50%	55.0	54.2	51.6	48.9	48.8	50.3	51.4	52.6	53.3	54.4	54.8	55.3
60%	54.5	54.0	51.3	48.4	48.4	50.0	51.0	52.1	52.8	53.5	54.2	54.6
70%	54.0	53.5	51.0	48.0	48.0	49.8	50.6	51.8	52.5	53.2	53.9	54.2
80%	53.5	52.9	50.4	47.3	47.4	49.0	50.1	51.5	52.0	52.6	53.3	53.8
90%	52.4	52.1	49.9	46.5	46.7	48.3	49.2	50.6	50.8	51.5	52.2	52.6
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.8	48.7	50.2	51.3	52.5	53.5	54.6	55.3	56.1
Water Year Types[c]												
Wet (32%)	52.3	51.8	49.1	47.9	48.0	49.4	50.2	51.5	51.8	52.5	53.2	53.4
Above Normal (16%)	56.2	55.1	52.1	48.9	48.6	50.2	51.0	51.9	52.6	53.5	54.2	54.7
Below Normal (13%)	55.3	54.4	51.4	48.8	48.6	50.3	51.5	52.4	53.2	54.4	55.1	55.6
Dry (24%)	55.6	54.8	52.0	49.0	48.9	50.7	51.9	52.9	54.1	55.2	56.0	56.8
Critical (15%)	60.4	57.6	53.6	50.1	49.9	51.3	52.8	54.9	57.2	59.4	60.4	62.6

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.3	59.1	54.5	51.1	50.8	51.9	53.1	54.2	55.5	57.4	58.2	59.2
20%	57.3	56.5	53.3	50.3	50.2	51.4	52.4	53.6	54.9	55.9	56.4	57.0
30%	56.4	55.4	52.7	49.7	49.5	50.9	52.0	53.2	53.9	55.0	55.7	56.2
40%	55.7	54.7	52.1	49.3	49.1	50.7	51.7	52.8	53.6	54.6	55.2	55.6
50%	55.2	54.4	51.7	49.0	48.8	50.3	51.4	52.6	53.3	54.2	54.7	55.1
60%	54.9	54.1	51.5	48.5	48.5	50.1	51.1	52.2	53.0	53.4	54.1	54.6
70%	54.5	53.5	51.1	48.2	48.1	49.8	50.7	51.9	52.5	53.0	53.8	54.1
80%	53.9	52.9	50.5	47.6	47.7	49.1	50.2	51.5	52.0	52.4	53.4	53.8
90%	52.7	52.2	49.9	46.9	46.8	48.4	49.4	50.6	51.2	51.2	52.2	52.3
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.9	48.8	50.3	51.3	52.7	53.4	54.4	55.3	55.8
Water Year Types[c]												
Wet (32%)	52.4	51.6	49.1	48.0	48.1	49.5	50.3	51.6	52.1	52.3	53.1	53.4
Above Normal (16%)	56.3	55.1	52.1	49.0	48.8	50.3	51.0	52.0	52.6	53.4	54.1	54.6
Below Normal (13%)	55.3	54.2	51.3	48.9	48.7	50.4	51.4	52.6	53.1	54.2	54.9	55.4
Dry (24%)	55.7	54.8	52.1	49.1	49.1	50.7	52.0	53.0	54.0	55.1	55.9	56.5
Critical (15%)	60.0	58.3	54.0	50.3	50.1	51.5	52.7	55.0	56.4	59.0	60.5	61.3

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	-0.2	-0.2	**-0.9**
20%	**-0.7**	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	-0.1	-0.4
30%	0.3	-0.1	0.2	0.1	0.1	0.1	-0.1	0.2	-0.1	-0.2	-0.1	-0.2
40%	0.2	-0.1	0.1	0.0	0.2	0.1	0.0	0.1	0.0	-0.1	0.0	-0.1
50%	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1	-0.1
60%	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.3	-0.1	-0.1	0.0
70%	0.5	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	-0.1	-0.1	-0.1
80%	0.3	0.0	0.1	0.3	0.3	0.1	0.1	0.0	0.0	-0.2	0.1	0.0
90%	0.3	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.3	-0.3	0.0	-0.3
Long Term												
Full Simulation Period[b]	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	-0.1	-0.2	-0.1	-0.3
Water Year Types[c]												
Wet (32%)	0.1	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.3	-0.2	0.0	0.0
Above Normal (16%)	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.2	0.0	-0.1	-0.1	-0.1
Below Normal (13%)	0.0	-0.2	0.0	0.1	0.1	0.1	-0.2	0.2	-0.1	-0.2	-0.2	-0.2
Dry (24%)	0.1	-0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.1	-0.1	-0.1	-0.3
Critical (15%)	-0.4	**0.7**	0.4	0.2	0.2	0.2	0.0	0.1	**-0.8**	-0.3	0.1	**-1.3**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.7.2 Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.3	59.1	54.5	51.1	50.8	51.9	53.1	54.2	55.5	57.4	58.2	59.2
20%	57.3	56.5	53.3	50.3	50.2	51.4	52.4	53.6	54.9	55.9	56.4	57.0
30%	56.4	55.4	52.7	49.7	49.5	50.9	52.0	53.2	53.9	55.0	55.7	56.2
40%	55.7	54.7	52.1	49.3	49.1	50.7	51.7	52.8	53.6	54.6	55.2	55.6
50%	55.2	54.4	51.7	49.0	48.8	50.3	51.4	52.6	53.3	54.2	54.7	55.1
60%	54.9	54.1	51.5	48.5	48.5	50.1	51.1	52.2	53.0	53.4	54.1	54.6
70%	54.5	53.5	51.1	48.2	48.1	49.8	50.7	51.9	52.5	53.0	53.8	54.1
80%	53.9	52.9	50.5	47.6	47.7	49.1	50.2	51.5	52.0	52.4	53.4	53.8
90%	52.7	52.2	49.9	46.9	46.8	48.4	49.4	50.6	51.2	51.2	52.2	52.3
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.9	48.8	50.3	51.3	52.7	53.4	54.4	55.3	55.8
Water Year Types[c]												
Wet (32%)	52.4	51.6	49.1	48.0	48.1	49.5	50.3	51.6	52.1	52.3	53.1	53.4
Above Normal (16%)	56.3	55.1	52.1	49.0	48.8	50.3	51.0	52.0	52.6	53.4	54.1	54.6
Below Normal (13%)	55.3	54.2	51.3	48.9	48.7	50.4	51.4	52.6	53.1	54.2	54.9	55.4
Dry (24%)	55.7	54.8	52.1	49.1	49.1	50.7	52.0	53.0	54.0	55.1	55.9	56.5
Critical (15%)	60.0	58.3	54.0	50.3	50.1	51.5	52.7	55.0	56.4	59.0	60.5	61.3

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.7	59.2	54.6	51.1	50.8	51.9	53.1	54.1	55.6	57.6	58.3	60.1
20%	58.0	56.6	53.3	50.3	50.2	51.4	52.4	53.6	54.8	55.9	56.5	57.4
30%	56.1	55.5	52.5	49.7	49.5	50.8	52.1	53.0	54.0	55.1	55.8	56.4
40%	55.5	54.8	51.9	49.3	48.9	50.6	51.7	52.8	53.7	54.6	55.3	55.7
50%	55.0	54.2	51.6	48.9	48.8	50.3	51.4	52.6	53.3	54.4	54.8	55.3
60%	54.5	54.0	51.3	48.4	48.4	50.0	51.0	52.1	52.8	53.5	54.2	54.6
70%	54.0	53.5	51.0	48.0	48.0	49.8	50.6	51.8	52.5	53.2	53.9	54.2
80%	53.5	52.9	50.4	47.3	47.4	49.0	50.1	51.5	52.0	52.6	53.3	53.8
90%	52.4	52.1	49.9	46.5	46.7	48.3	49.2	50.6	50.8	51.5	52.2	52.6
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.8	48.7	50.2	51.3	52.5	53.5	54.6	55.3	56.1
Water Year Types[c]												
Wet (32%)	52.3	51.8	49.1	47.9	48.0	49.4	50.2	51.5	51.8	52.5	53.2	53.4
Above Normal (16%)	56.2	55.1	52.0	48.9	48.6	50.2	51.0	51.9	52.6	53.5	54.2	54.7
Below Normal (13%)	55.3	54.4	51.4	48.8	48.6	50.3	51.5	52.4	53.2	54.4	55.1	55.6
Dry (24%)	55.6	54.8	52.0	49.0	48.9	50.7	51.9	52.9	54.1	55.2	56.0	56.8
Critical (15%)	60.4	57.6	53.6	50.1	49.9	51.3	52.8	54.9	57.2	59.4	60.4	62.6

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.5	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.2	0.2	**0.9**
20%	**0.7**	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.4
30%	-0.3	0.1	-0.2	-0.1	-0.1	-0.1	0.1	-0.2	0.1	0.2	0.1	0.2
40%	-0.2	0.1	-0.1	0.0	-0.2	-0.1	0.0	-0.1	0.0	0.1	0.0	0.1
50%	-0.3	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0	0.2	0.1	0.1
60%	-0.3	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.3	0.1	0.1	0.0
70%	-0.5	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.1
80%	-0.3	0.0	-0.1	-0.3	-0.3	-0.1	-0.1	0.0	0.0	0.2	-0.1	0.0
90%	-0.3	-0.1	0.0	-0.4	-0.1	0.0	-0.1	0.0	-0.3	0.3	0.0	0.3
Long Term												
Full Simulation Period[b]	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.1	0.2	0.1	0.3
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.3	0.2	0.0	0.0
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.2	0.0	0.1	0.1	0.1
Below Normal (13%)	0.0	0.2	0.0	-0.1	-0.1	-0.1	0.2	-0.2	0.1	0.2	0.2	0.2
Dry (24%)	-0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.3
Critical (15%)	0.4	**-0.7**	-0.4	-0.2	-0.2	-0.2	0.0	-0.1	**0.8**	0.3	-0.1	**1.3**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.7.3 Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.3	59.1	54.5	51.1	50.8	51.9	53.1	54.2	55.5	57.4	58.2	59.2
20%	57.3	56.5	53.3	50.3	50.2	51.4	52.4	53.6	54.9	55.9	56.4	57.0
30%	56.4	55.4	52.7	49.7	49.5	50.9	52.0	53.2	53.9	55.0	55.7	56.2
40%	55.7	54.7	52.1	49.3	49.1	50.7	51.7	52.8	53.6	54.6	55.2	55.6
50%	55.2	54.4	51.7	49.0	48.8	50.3	51.4	52.6	53.3	54.2	54.7	55.1
60%	54.9	54.1	51.5	48.5	48.5	50.1	51.1	52.2	53.0	53.4	54.1	54.6
70%	54.5	53.5	51.1	48.2	48.1	49.8	50.7	51.9	52.5	53.0	53.8	54.1
80%	53.9	52.9	50.5	47.6	47.7	49.1	50.2	51.5	52.0	52.4	53.4	53.8
90%	52.7	52.2	49.9	46.9	46.8	48.4	49.4	50.6	51.2	51.2	52.2	52.3
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.9	48.8	50.3	51.3	52.7	53.4	54.4	55.3	55.8
Water Year Types[c]												
Wet (32%)	52.4	51.6	49.1	48.0	48.1	49.5	50.3	51.6	52.1	52.3	53.1	53.4
Above Normal (16%)	56.3	55.1	52.1	49.0	48.8	50.3	51.0	52.0	52.6	53.4	54.1	54.6
Below Normal (13%)	55.3	54.2	51.3	48.9	48.7	50.4	51.4	52.6	53.1	54.2	54.9	55.4
Dry (24%)	55.7	54.8	52.1	49.1	49.1	50.7	52.0	53.0	54.0	55.1	55.9	56.5
Critical (15%)	60.0	58.3	54.0	50.3	50.1	51.5	52.7	55.0	56.4	59.0	60.5	61.3

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58.5	57.6	54.1	50.9	50.8	52.1	53.1	54.0	55.3	56.7	57.3	58.2
20%	57.0	56.0	53.3	50.1	50.1	51.4	52.4	53.5	54.7	55.6	56.0	56.6
30%	56.0	54.7	52.8	49.7	49.5	50.9	52.0	52.9	53.9	54.8	55.4	55.9
40%	55.2	54.3	51.7	49.1	49.1	50.7	51.7	52.6	53.5	54.4	54.9	55.2
50%	54.8	53.9	51.5	48.9	48.8	50.4	51.4	52.4	53.2	54.0	54.5	54.8
60%	54.5	53.7	51.3	48.6	48.5	50.1	51.2	52.1	52.8	53.6	54.0	54.4
70%	54.1	53.2	50.8	48.1	48.1	49.8	50.8	51.9	52.5	53.3	53.7	53.9
80%	53.4	52.9	50.5	47.7	47.7	49.0	50.3	51.4	52.0	52.9	53.2	53.4
90%	52.6	52.1	49.7	47.1	46.9	48.6	49.6	50.6	51.4	51.9	52.4	52.4
Long Term												
Full Simulation Period[b]	55.5	54.5	51.8	48.8	48.9	50.4	51.4	52.4	53.4	54.4	55.0	55.3
Water Year Types[c]												
Wet (32%)	52.2	51.5	49.0	48.0	48.4	49.6	50.4	51.5	52.1	52.8	53.1	53.2
Above Normal (16%)	55.8	54.7	51.9	49.0	48.8	50.2	51.1	51.9	52.7	53.6	54.0	54.3
Below Normal (13%)	54.6	53.7	51.1	48.8	48.6	50.4	51.4	52.3	53.2	54.2	54.6	55.1
Dry (24%)	55.4	54.5	52.0	49.0	48.9	50.7	51.9	52.9	54.0	54.9	55.4	55.9
Critical (15%)	58.7	57.5	53.8	50.2	50.2	51.6	52.7	54.2	56.0	58.4	59.6	59.8

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1.7	-1.4	-0.4	-0.1	0.0	0.2	0.0	-0.2	-0.2	-0.7	-0.9	-0.9
20%	-0.3	-0.5	0.1	-0.3	-0.1	0.0	0.1	-0.1	-0.2	-0.3	-0.4	-0.4
30%	-0.4	-0.7	0.1	-0.1	-0.1	0.0	0.0	-0.3	0.0	-0.2	-0.3	-0.3
40%	-0.5	-0.4	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.1	-0.1	-0.4	-0.4
50%	-0.4	-0.5	-0.2	-0.1	0.0	0.1	0.0	-0.2	-0.1	-0.2	-0.2	-0.3
60%	-0.3	-0.4	-0.2	0.1	-0.1	-0.1	0.0	-0.1	-0.2	0.2	0.0	-0.2
70%	-0.4	-0.2	-0.2	-0.1	0.0	0.0	0.1	-0.1	0.0	0.3	-0.1	-0.3
80%	-0.5	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.4	-0.3	-0.4
90%	-0.1	-0.1	-0.1	0.3	0.1	0.2	0.3	0.0	0.2	0.6	0.2	0.1
Long Term												
Full Simulation Period[b]	-0.5	-0.4	-0.1	-0.1	0.0	0.0	0.0	-0.3	-0.1	0.0	-0.3	-0.5
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.2	0.1	0.1	-0.1	-0.1	0.5	0.0	-0.2
Above Normal (16%)	-0.5	-0.4	-0.2	0.0	0.0	0.0	0.1	-0.1	0.1	0.2	-0.1	-0.3
Below Normal (13%)	-0.7	-0.5	-0.2	-0.1	-0.1	0.0	0.0	-0.3	0.1	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.5	-0.7
Critical (15%)	-1.3	-0.8	-0.2	-0.1	0.0	0.1	0.0	-0.8	-0.4	-0.6	-0.9	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.7.4 Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60.3	59.1	54.5	51.1	50.8	51.9	53.1	54.2	55.5	57.4	58.2	59.2
20%	57.3	56.5	53.3	50.3	50.2	51.4	52.4	53.6	54.9	55.9	56.4	57.0
30%	56.4	55.4	52.7	49.7	49.5	50.9	52.0	53.2	53.9	55.0	55.7	56.2
40%	55.7	54.7	52.1	49.3	49.1	50.7	51.7	52.8	53.6	54.6	55.2	55.6
50%	55.2	54.4	51.7	49.0	48.8	50.3	51.4	52.6	53.3	54.2	54.7	55.1
60%	54.9	54.1	51.5	48.5	48.5	50.1	51.1	52.2	53.0	53.4	54.1	54.6
70%	54.5	53.5	51.1	48.2	48.1	49.8	50.7	51.9	52.5	53.0	53.8	54.1
80%	53.9	52.9	50.5	47.6	47.7	49.1	50.2	51.5	52.0	52.4	53.4	53.8
90%	52.7	52.2	49.9	46.9	46.8	48.4	49.4	50.6	51.2	51.2	52.2	52.3
Long Term												
Full Simulation Period[b]	56.0	54.9	51.9	48.9	48.8	50.3	51.3	52.7	53.4	54.4	55.3	55.8
Water Year Types[c]												
Wet (32%)	52.4	51.6	49.1	48.0	48.1	49.5	50.3	51.6	52.1	52.3	53.1	53.4
Above Normal (16%)	56.3	55.1	52.1	49.0	48.8	50.3	51.0	52.0	52.6	53.4	54.1	54.6
Below Normal (13%)	55.3	54.2	51.3	48.9	48.7	50.4	51.4	52.6	53.1	54.2	54.9	55.4
Dry (24%)	55.7	54.8	52.1	49.1	49.1	50.7	52.0	53.0	54.0	55.1	55.9	56.5
Critical (15%)	60.0	58.3	54.0	50.3	50.1	51.5	52.7	55.0	56.4	59.0	60.5	61.3

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.8	60.4	54.8	51.2	50.7	51.9	53.2	54.3	56.3	58.3	61.3	64.0
20%	58.8	58.0	53.4	50.3	50.2	51.3	52.5	53.7	55.1	56.6	57.6	58.7
30%	56.7	56.0	52.7	49.6	49.4	50.8	52.2	53.0	54.2	55.6	56.3	56.9
40%	55.7	54.9	52.0	49.1	48.9	50.5	51.9	52.9	53.8	54.7	55.6	55.9
50%	55.2	54.4	51.6	48.9	48.8	50.1	51.4	52.7	53.2	54.5	54.9	55.3
60%	54.8	54.1	51.5	48.4	48.3	49.9	51.0	52.2	52.8	53.5	54.2	54.7
70%	54.2	53.6	50.9	48.0	47.8	49.5	50.6	51.8	52.2	53.2	53.9	54.3
80%	53.6	53.0	50.5	47.3	47.4	48.9	50.0	51.2	52.0	52.6	53.4	53.7
90%	52.5	52.1	49.7	46.2	46.7	48.2	49.1	50.5	50.7	51.5	52.2	52.7
Long Term												
Full Simulation Period[b]	56.6	55.3	52.0	48.8	48.6	50.1	51.3	52.7	53.4	54.8	55.9	56.7
Water Year Types[c]												
Wet (32%)	53.1	52.1	49.2	47.9	47.9	49.3	50.1	51.4	51.7	52.5	53.2	53.6
Above Normal (16%)	56.6	55.5	52.2	48.9	48.6	50.1	50.9	52.0	52.5	53.6	54.4	55.0
Below Normal (13%)	56.0	54.4	51.5	48.7	48.5	50.2	51.5	52.5	53.4	54.8	55.6	56.4
Dry (24%)	56.3	55.3	52.2	49.1	48.9	50.6	51.9	53.0	54.3	55.7	57.1	58.4
Critical (15%)	60.9	58.3	53.5	49.8	49.7	51.1	53.3	55.7	56.5	59.3	61.3	63.0

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**4.5**	**1.4**	0.3	0.1	-0.2	-0.1	0.1	0.1	**0.8**	**1.0**	**3.2**	**4.8**
20%	**1.4**	**1.6**	0.1	-0.1	-0.1	-0.1	0.2	0.1	0.3	**0.6**	**1.2**	**1.7**
30%	0.3	**0.6**	-0.1	-0.1	-0.1	-0.1	0.2	-0.2	0.3	**0.6**	**0.6**	**0.7**
40%	0.0	0.2	-0.1	-0.2	-0.2	-0.2	0.1	0.0	0.2	0.1	0.4	0.3
50%	0.0	0.1	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.0	0.3	0.2	0.1
60%	-0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.2	0.2	0.1	0.1
70%	-0.3	0.2	-0.2	-0.2	-0.3	-0.3	-0.1	-0.1	-0.3	0.1	0.1	0.2
80%	-0.2	0.0	0.0	-0.3	-0.3	-0.2	-0.2	-0.2	0.0	0.2	0.0	-0.1
90%	-0.2	-0.1	-0.2	**-0.7**	-0.1	-0.2	-0.2	-0.1	-0.5	0.2	0.0	0.4
Long Term												
Full Simulation Period[b]	**0.6**	0.4	0.0	-0.1	-0.2	-0.2	0.0	0.0	0.0	0.4	**0.6**	**1.0**
Water Year Types[c]												
Wet (32%)	**0.6**	0.4	0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.4	0.2	0.1	0.2
Above Normal (16%)	0.3	0.4	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	0.3	0.4
Below Normal (13%)	**0.7**	0.2	0.1	-0.1	-0.2	-0.2	0.1	-0.1	0.3	**0.5**	**0.8**	**1.0**
Dry (24%)	**0.5**	**0.5**	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.2	**0.6**	**1.2**	**1.9**
Critical (15%)	**0.8**	0.0	**-0.5**	-0.4	-0.5	-0.4	**0.5**	**0.7**	0.1	0.3	**0.8**	**1.7**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.8 Stanislaus River at Orange Blossom Bridge Temperature

Table 5C.3.3.8.1 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61.6	58.7	53.5	51.3	52.5	55.8	55.3	57.7	63.9	65.6	65.4	64.5
20%	59.3	56.9	52.6	50.8	51.7	55.1	54.8	56.8	62.5	64.6	64.2	63.3
30%	57.6	56.2	52.3	50.1	51.2	54.6	54.1	56.0	61.6	64.1	63.4	62.0
40%	56.8	55.1	51.5	49.6	50.7	54.0	53.6	55.3	60.7	63.7	62.9	61.7
50%	56.4	54.9	51.1	49.1	50.3	53.7	53.1	55.0	59.3	63.2	62.5	61.2
60%	55.9	54.6	50.7	48.8	50.1	53.2	52.7	54.4	56.6	62.6	62.2	60.7
70%	55.2	54.1	50.5	48.4	49.6	52.1	52.2	53.9	55.9	62.1	61.9	60.4
80%	54.9	53.7	50.2	47.9	49.2	51.0	51.9	53.6	55.3	61.5	61.5	59.9
90%	54.0	52.7	49.8	47.1	48.4	49.7	50.8	52.6	54.4	58.6	59.8	58.2
Long Term												
Full Simulation Period[b]	57.2	55.3	51.4	49.2	50.4	53.2	53.2	55.1	59.0	62.9	62.7	61.5
Water Year Types[c]												
Wet (32%)	53.6	52.3	49.0	48.6	49.5	50.8	51.5	53.3	55.2	60.0	60.0	58.5
Above Normal (16%)	57.5	55.7	51.7	49.7	50.7	53.6	52.8	54.6	58.0	62.5	62.2	60.9
Below Normal (13%)	56.5	54.7	50.9	49.1	50.4	53.9	53.4	54.8	59.5	63.4	62.8	61.5
Dry (24%)	56.9	55.2	51.3	49.2	50.7	54.5	54.1	56.0	61.4	64.0	63.5	62.4
Critical (15%)	61.4	57.7	52.6	50.1	51.7	54.9	55.5	58.2	63.7	67.5	67.5	66.9

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.7	58.9	53.4	51.2	52.1	55.3	56.2	56.9	63.5	65.3	65.3	64.1
20%	60.8	57.0	52.7	50.8	51.5	54.8	55.6	55.9	62.4	64.5	64.1	62.9
30%	60.1	55.7	52.4	50.0	50.9	54.3	55.3	55.5	61.6	64.0	63.3	61.9
40%	58.9	55.2	51.7	49.5	50.5	53.6	54.6	55.2	60.0	63.6	62.9	61.5
50%	58.3	54.7	51.3	49.1	50.2	53.1	53.9	54.8	58.4	63.0	62.5	61.0
60%	57.6	54.4	51.0	49.0	49.8	52.8	53.3	54.4	56.3	62.5	62.2	60.6
70%	57.0	54.1	50.7	48.4	49.5	52.2	52.6	54.0	55.4	61.9	61.8	60.1
80%	56.5	53.4	50.3	48.0	49.1	51.5	51.9	53.7	54.8	61.3	61.4	59.6
90%	55.7	52.7	49.9	47.4	48.5	50.5	51.0	52.8	53.5	60.1	60.3	58.2
Long Term												
Full Simulation Period[b]	58.8	55.2	51.5	49.2	50.3	53.1	53.9	54.9	58.5	62.8	62.7	61.2
Water Year Types[c]												
Wet (32%)	55.0	52.1	49.0	48.6	49.3	51.2	51.7	53.5	54.5	60.1	60.3	58.4
Above Normal (16%)	59.3	55.5	51.9	49.7	50.5	53.3	53.4	54.4	57.7	62.4	62.2	60.7
Below Normal (13%)	57.9	54.4	50.9	49.1	50.0	53.3	54.1	54.8	58.9	63.3	62.7	61.1
Dry (24%)	58.8	55.1	51.5	49.3	50.6	54.1	55.3	55.6	61.3	63.9	63.4	62.2
Critical (15%)	62.6	58.2	53.1	50.3	51.8	55.0	56.5	57.6	63.3	66.8	67.6	66.5

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**1.1**	0.2	-0.1	0.0	-0.4	-0.5	**0.9**	**-0.8**	-0.3	-0.2	-0.1	-0.4
20%	**1.5**	0.1	0.0	0.0	-0.1	-0.2	**0.8**	**-0.9**	-0.1	-0.1	-0.1	-0.4
30%	**2.5**	**-0.5**	0.1	-0.1	-0.3	-0.3	**1.2**	-0.4	-0.1	-0.1	-0.1	-0.1
40%	**2.1**	0.2	0.3	-0.1	-0.2	-0.4	**1.0**	-0.1	**-0.7**	-0.1	0.0	-0.2
50%	**1.9**	-0.2	0.2	0.0	-0.1	**-0.6**	**0.8**	-0.2	**-0.9**	-0.2	0.0	-0.2
60%	**1.7**	-0.1	0.3	0.2	-0.3	-0.4	**0.6**	0.0	-0.3	-0.1	0.0	-0.1
70%	**1.7**	0.0	0.2	0.0	-0.1	0.1	0.4	0.1	**-0.5**	-0.2	0.0	-0.3
80%	**1.6**	-0.2	0.1	0.1	-0.2	**0.6**	0.1	0.1	**-0.5**	-0.2	-0.1	-0.3
90%	**1.7**	0.0	0.1	0.3	0.1	**0.8**	0.2	0.2	**-1.0**	**1.5**	**0.5**	0.1
Long Term												
Full Simulation Period[b]	**1.6**	-0.1	0.2	0.0	-0.1	-0.1	**0.7**	-0.2	-0.4	-0.1	0.1	-0.2
Water Year Types[c]												
Wet (32%)	**1.4**	-0.2	0.0	0.0	-0.1	0.5	0.2	0.1	**-0.7**	0.2	0.3	-0.1
Above Normal (16%)	**1.8**	-0.2	0.2	0.0	-0.2	-0.3	**0.6**	-0.2	-0.3	-0.1	-0.1	-0.2
Below Normal (13%)	**1.4**	-0.3	0.1	0.0	-0.3	**-0.6**	**0.8**	0.0	**-0.6**	-0.2	-0.1	-0.3
Dry (24%)	**1.9**	-0.1	0.2	0.1	-0.1	-0.5	**1.2**	-0.5	-0.1	-0.1	-0.1	-0.2
Critical (15%)	**1.2**	0.5	0.4	0.2	0.1	0.1	**1.0**	**-0.7**	-0.4	**-0.7**	0.1	-0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.8.2 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.7	58.9	53.4	51.2	52.1	55.3	56.2	56.9	63.5	65.3	65.3	64.1
20%	60.8	57.0	52.7	50.8	51.5	54.8	55.6	55.9	62.4	64.5	64.1	62.9
30%	60.1	55.7	52.4	50.0	50.9	54.3	55.3	55.5	61.6	64.0	63.3	61.9
40%	58.9	55.2	51.7	49.5	50.5	53.6	54.6	55.2	60.0	63.6	62.9	61.5
50%	58.3	54.7	51.3	49.1	50.2	53.1	53.9	54.8	58.4	63.0	62.5	61.0
60%	57.6	54.4	51.0	49.0	49.8	52.8	53.3	54.4	56.3	62.5	62.2	60.6
70%	57.0	54.1	50.7	48.4	49.5	52.2	52.6	54.0	55.4	61.9	61.8	60.1
80%	56.5	53.4	50.3	48.0	49.1	51.5	51.9	53.7	54.8	61.3	61.4	59.6
90%	55.7	52.7	49.9	47.4	48.5	50.5	51.0	52.8	53.5	60.1	60.3	58.2
Long Term												
Full Simulation Period[b]	58.8	55.2	51.5	49.2	50.3	53.1	53.9	54.9	58.5	62.8	62.7	61.2
Water Year Types[c]												
Wet (32%)	55.0	52.1	49.0	48.6	49.3	51.2	51.7	53.5	54.5	60.1	60.3	58.4
Above Normal (16%)	59.3	55.5	51.9	49.7	50.5	53.3	53.4	54.4	57.7	62.4	62.2	60.7
Below Normal (13%)	57.9	54.4	50.9	49.1	50.0	53.3	54.1	54.8	58.9	63.3	62.7	61.1
Dry (24%)	58.8	55.1	51.5	49.3	50.6	54.1	55.3	55.6	61.3	63.9	63.4	62.2
Critical (15%)	62.6	58.2	53.1	50.3	51.8	55.0	56.5	57.6	63.3	66.8	67.6	66.5

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61.6	58.7	53.5	51.3	52.5	55.8	55.3	57.7	63.9	65.6	65.4	64.5
20%	59.3	56.9	52.6	50.8	51.7	55.1	54.8	56.8	62.5	64.6	64.2	63.3
30%	57.6	56.2	52.3	50.1	51.2	54.6	54.1	56.0	61.6	64.1	63.4	62.0
40%	56.8	55.1	51.5	49.6	50.7	54.0	53.6	55.3	60.7	63.7	62.9	61.7
50%	56.4	54.9	51.1	49.1	50.3	53.7	53.1	55.0	59.3	63.2	62.5	61.2
60%	55.9	54.6	50.7	48.8	50.1	53.2	52.7	54.4	56.6	62.6	62.2	60.7
70%	55.2	54.1	50.5	48.4	49.6	52.1	52.2	53.9	55.9	62.1	61.9	60.4
80%	54.9	53.7	50.2	47.9	49.2	51.0	51.9	53.6	55.3	61.5	61.5	59.9
90%	54.0	52.7	49.8	47.1	48.4	49.7	50.8	52.6	54.4	58.6	59.8	58.2
Long Term												
Full Simulation Period[b]	57.2	55.3	51.4	49.2	50.4	53.2	53.2	55.1	59.0	62.9	62.7	61.5
Water Year Types[c]												
Wet (32%)	53.6	52.3	49.0	48.6	49.5	50.8	51.5	53.3	55.2	60.0	60.0	58.5
Above Normal (16%)	57.5	55.7	51.7	49.7	50.7	53.6	52.8	54.6	58.0	62.5	62.2	60.9
Below Normal (13%)	56.5	54.7	50.9	49.1	50.4	53.9	53.4	54.8	59.5	63.4	62.8	61.5
Dry (24%)	56.9	55.2	51.3	49.2	50.7	54.5	54.1	56.0	61.4	64.0	63.5	62.4
Critical (15%)	61.4	57.7	52.6	50.1	51.7	54.9	55.5	58.2	63.7	67.5	67.5	66.9

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-1.1**	-0.2	0.1	0.0	0.4	0.5	**-0.9**	**0.8**	0.3	0.2	0.1	0.4
20%	**-1.5**	-0.1	0.0	0.0	0.1	0.2	**-0.8**	**0.9**	0.1	0.1	0.1	0.4
30%	**-2.5**	**0.5**	-0.1	0.1	0.3	0.3	**-1.2**	0.4	0.1	0.1	0.1	0.1
40%	**-2.1**	-0.2	-0.3	0.1	0.2	0.4	**-1.0**	0.1	**0.7**	0.1	0.0	0.2
50%	**-1.9**	0.2	-0.2	0.0	0.1	**0.6**	**-0.8**	0.2	**0.9**	0.2	0.0	0.2
60%	**-1.7**	0.1	-0.3	-0.2	0.3	0.4	**-0.6**	0.0	0.3	0.1	0.0	0.1
70%	**-1.7**	0.0	-0.2	0.0	0.1	-0.1	-0.4	-0.1	**0.5**	0.2	0.0	0.3
80%	**-1.6**	0.2	-0.1	-0.1	0.2	**-0.6**	-0.1	-0.1	**0.5**	0.2	0.1	0.3
90%	**-1.7**	0.0	-0.1	-0.3	-0.1	**-0.8**	-0.2	-0.2	**1.0**	**-1.5**	**-0.5**	-0.1
Long Term												
Full Simulation Period[b]	**-1.6**	0.1	-0.2	0.0	0.1	0.1	**-0.7**	0.2	0.4	0.1	-0.1	0.2
Water Year Types[c]												
Wet (32%)	**-1.4**	0.2	0.0	0.0	0.1	-0.5	-0.2	-0.1	**0.7**	-0.2	-0.3	0.1
Above Normal (16%)	**-1.8**	0.2	-0.2	0.0	0.2	0.3	**-0.6**	0.2	0.3	0.1	0.1	0.2
Below Normal (13%)	**-1.4**	0.3	-0.1	0.0	0.3	**0.6**	**-0.8**	0.0	**0.6**	0.2	0.1	0.3
Dry (24%)	**-1.9**	0.1	-0.2	-0.1	0.1	0.5	**-1.2**	0.5	0.1	0.1	0.1	0.2
Critical (15%)	**-1.2**	-0.5	-0.4	-0.2	-0.1	-0.1	**-1.0**	**0.7**	0.4	**0.7**	-0.1	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.8.3 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.7	58.9	53.4	51.2	52.1	55.3	56.2	56.9	63.5	65.3	65.3	64.1
20%	60.8	57.0	52.7	50.8	51.5	54.8	55.6	55.9	62.4	64.5	64.1	62.9
30%	60.1	55.7	52.4	50.0	50.9	54.3	55.3	55.5	61.6	64.0	63.3	61.9
40%	58.9	55.2	51.7	49.5	50.5	53.6	54.6	55.2	60.0	63.6	62.9	61.5
50%	58.3	54.7	51.3	49.1	50.2	53.1	53.9	54.8	58.4	63.0	62.5	61.0
60%	57.6	54.4	51.0	49.0	49.8	52.8	53.3	54.4	56.3	62.5	62.2	60.6
70%	57.0	54.1	50.7	48.4	49.5	52.2	52.6	54.0	55.4	61.9	61.8	60.1
80%	56.5	53.4	50.3	48.0	49.1	51.5	51.9	53.7	54.8	61.3	61.4	59.6
90%	55.7	52.7	49.9	47.4	48.5	50.5	51.0	52.8	53.5	60.1	60.3	58.2
Long Term												
Full Simulation Period[b]	58.8	55.2	51.5	49.2	50.3	53.1	53.9	54.9	58.5	62.8	62.7	61.2
Water Year Types[c]												
Wet (32%)	55.0	52.1	49.0	48.6	49.3	51.2	51.7	53.5	54.5	60.1	60.3	58.4
Above Normal (16%)	59.3	55.5	51.9	49.7	50.5	53.3	53.4	54.4	57.7	62.4	62.2	60.7
Below Normal (13%)	57.9	54.4	50.9	49.1	50.0	53.3	54.1	54.8	58.9	63.3	62.7	61.1
Dry (24%)	58.8	55.1	51.5	49.3	50.6	54.1	55.3	55.6	61.3	63.9	63.4	62.2
Critical (15%)	62.6	58.2	53.1	50.3	51.8	55.0	56.5	57.6	63.3	66.8	67.6	66.5

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61.3	57.6	53.2	51.0	52.9	55.8	55.5	57.8	63.9	65.8	64.8	63.5
20%	60.0	56.6	52.7	50.7	51.9	55.2	54.8	56.7	63.2	64.8	63.8	62.6
30%	59.2	55.4	52.2	50.2	51.3	54.6	54.3	56.2	62.6	64.2	63.1	62.1
40%	58.3	54.8	51.6	49.5	50.9	54.1	53.8	55.6	62.1	63.9	62.8	61.4
50%	57.9	54.5	51.1	49.2	50.5	53.7	53.2	55.2	61.7	63.5	62.4	61.1
60%	57.4	54.1	50.9	48.8	50.1	53.4	52.8	54.7	61.3	63.3	62.1	60.8
70%	56.8	53.9	50.5	48.5	49.7	52.6	52.5	54.4	60.8	63.1	61.9	60.3
80%	56.4	53.5	50.2	48.2	49.4	51.6	51.8	53.8	60.3	62.7	61.6	60.0
90%	55.4	52.9	49.9	47.5	48.5	50.5	51.1	53.1	59.0	61.4	60.4	55.8
Long Term												
Full Simulation Period[b]	58.3	55.0	51.4	49.3	50.6	53.4	53.4	55.3	61.3	63.3	62.4	60.8
Water Year Types[c]												
Wet (32%)	54.7	52.0	48.9	48.7	49.6	51.5	51.8	53.7	58.8	60.6	59.8	58.2
Above Normal (16%)	58.9	55.3	51.7	49.8	50.7	53.4	53.1	55.0	61.7	63.5	62.2	60.8
Below Normal (13%)	57.5	54.1	50.7	49.0	50.1	54.0	53.5	55.1	61.7	63.7	62.6	61.2
Dry (24%)	58.4	54.9	51.4	49.3	51.0	54.6	54.3	56.3	62.5	64.2	63.1	61.8
Critical (15%)	61.3	57.5	52.8	50.2	52.3	55.2	55.6	57.9	64.0	67.0	66.5	64.9

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-1.4**	**-1.4**	-0.2	-0.3	**0.8**	0.5	**-0.7**	**0.9**	0.4	**0.5**	-0.5	**-0.7**
20%	**-0.8**	-0.5	0.0	-0.1	0.4	0.4	**-0.8**	**0.8**	**0.7**	0.3	-0.3	-0.3
30%	**-0.9**	-0.3	-0.2	0.2	0.4	0.3	**-0.9**	**0.7**	**1.0**	0.2	-0.2	0.2
40%	**-0.7**	-0.4	-0.1	0.0	0.4	**0.5**	**-0.8**	0.4	**2.1**	0.3	-0.1	-0.1
50%	-0.4	-0.2	-0.2	0.0	0.3	**0.6**	**-0.6**	0.4	**3.3**	**0.5**	-0.1	0.1
60%	-0.2	-0.3	-0.1	-0.1	0.3	**0.6**	**-0.5**	0.3	**5.0**	**0.7**	-0.1	0.2
70%	-0.1	-0.2	-0.2	0.1	0.2	0.4	-0.1	0.4	**5.4**	**1.2**	0.1	0.2
80%	-0.1	0.1	-0.1	0.2	0.3	0.1	-0.1	0.1	**5.5**	**1.4**	0.2	0.4
90%	-0.3	0.3	-0.1	0.1	0.0	0.0	0.1	0.3	**5.5**	**1.3**	0.1	**-2.4**
Long Term												
Full Simulation Period[b]	-0.5	-0.3	-0.1	0.1	0.3	0.4	**-0.5**	0.4	**2.8**	0.5	-0.4	-0.4
Water Year Types[c]												
Wet (32%)	-0.3	-0.1	-0.1	0.1	0.3	0.3	0.0	0.2	**4.3**	0.4	**-0.5**	-0.3
Above Normal (16%)	-0.4	-0.3	-0.2	0.2	0.2	0.1	-0.4	**0.5**	**4.0**	**1.1**	0.0	0.1
Below Normal (13%)	-0.4	-0.3	-0.2	0.0	0.1	**0.7**	**-0.6**	0.4	**2.9**	0.4	-0.1	0.1
Dry (24%)	-0.4	-0.2	-0.1	0.0	0.4	**0.5**	**-1.0**	**0.7**	**1.2**	0.3	-0.3	-0.4
Critical (15%)	**-1.2**	**-0.7**	-0.3	-0.1	**0.5**	0.2	**-0.9**	0.3	**0.7**	0.2	**-1.1**	**-1.6**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.8.4 Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62.7	58.9	53.4	51.2	52.1	55.3	56.2	56.9	63.5	65.3	65.3	64.1
20%	60.8	57.0	52.7	50.8	51.5	54.8	55.6	55.9	62.4	64.5	64.1	62.9
30%	60.1	55.7	52.4	50.0	50.9	54.3	55.3	55.5	61.6	64.0	63.3	61.9
40%	58.9	55.2	51.7	49.5	50.5	53.6	54.6	55.2	60.0	63.6	62.9	61.5
50%	58.3	54.7	51.3	49.1	50.2	53.1	53.9	54.8	58.4	63.0	62.5	61.0
60%	57.6	54.4	51.0	49.0	49.8	52.8	53.3	54.4	56.3	62.5	62.2	60.6
70%	57.0	54.1	50.7	48.4	49.5	52.2	52.6	54.0	55.4	61.9	61.8	60.1
80%	56.5	53.4	50.3	48.0	49.1	51.5	51.9	53.7	54.8	61.3	61.4	59.6
90%	55.7	52.7	49.9	47.4	48.5	50.5	51.0	52.8	53.5	60.1	60.3	58.2
Long Term												
Full Simulation Period[b]	58.8	55.2	51.5	49.2	50.3	53.1	53.9	54.9	58.5	62.8	62.7	61.2
Water Year Types[c]												
Wet (32%)	55.0	52.1	49.0	48.6	49.3	51.2	51.7	53.5	54.5	60.1	60.3	58.4
Above Normal (16%)	59.3	55.5	51.9	49.7	50.5	53.3	53.4	54.4	57.7	62.4	62.2	60.7
Below Normal (13%)	57.9	54.4	50.9	49.1	50.0	53.3	54.1	54.8	58.9	63.3	62.7	61.1
Dry (24%)	58.8	55.1	51.5	49.3	50.6	54.1	55.3	55.6	61.3	63.9	63.4	62.2
Critical (15%)	62.6	58.2	53.1	50.3	51.8	55.0	56.5	57.6	63.3	66.8	67.6	66.5

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65.0	59.6	53.4	51.3	52.5	55.7	54.6	56.3	64.0	66.4	67.0	67.3
20%	60.0	58.0	52.6	50.6	51.7	55.0	54.1	55.8	62.7	65.1	65.0	64.2
30%	58.1	56.5	52.2	49.9	51.2	54.5	53.7	55.4	61.8	64.3	63.7	62.7
40%	57.1	55.3	51.6	49.6	50.7	54.0	53.5	55.0	61.0	63.7	63.0	61.8
50%	56.5	55.0	51.2	49.1	50.3	53.6	53.0	54.7	59.2	63.2	62.7	61.3
60%	55.9	54.6	50.8	48.9	50.1	53.3	52.6	54.3	57.0	62.7	62.3	60.9
70%	55.4	54.2	50.6	48.4	49.6	52.0	52.2	53.7	55.9	62.2	61.9	60.6
80%	55.0	53.7	50.3	47.9	49.2	51.0	51.8	53.4	55.3	61.6	61.5	60.0
90%	54.0	53.1	49.8	47.2	48.3	49.6	50.7	52.6	54.4	58.9	60.1	58.1
Long Term												
Full Simulation Period[b]	57.8	55.7	51.5	49.2	50.4	53.1	52.9	54.8	59.1	63.3	63.2	61.9
Water Year Types[c]												
Wet (32%)	54.2	52.6	49.0	48.6	49.4	50.8	51.5	53.1	55.2	60.5	60.5	58.8
Above Normal (16%)	57.9	56.0	51.8	49.7	50.8	53.6	52.6	54.2	57.9	62.6	62.3	61.0
Below Normal (13%)	57.2	54.7	50.9	49.0	50.3	53.8	53.2	54.6	59.9	63.7	63.1	62.0
Dry (24%)	57.5	55.6	51.4	49.3	50.8	54.5	53.7	55.4	61.6	64.3	64.2	63.5
Critical (15%)	61.7	58.3	52.6	50.0	51.6	54.7	54.9	58.0	64.2	68.0	68.4	67.3

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.3**	**0.7**	0.0	0.1	0.4	0.4	**-1.6**	**-0.6**	**0.5**	**1.1**	**1.7**	**3.1**
20%	**-0.8**	**0.9**	0.0	-0.2	0.2	0.2	**-1.5**	-0.1	0.3	**0.6**	**0.8**	**1.3**
30%	**-2.0**	**0.8**	-0.2	0.0	0.3	0.3	**-1.6**	-0.1	0.2	0.3	0.4	**0.8**
40%	**-1.8**	0.1	-0.1	0.0	0.2	0.4	**-1.1**	-0.2	**1.0**	0.1	0.1	0.3
50%	**-1.8**	0.3	-0.1	-0.1	0.1	**0.5**	**-0.8**	-0.1	**0.8**	0.2	0.2	0.3
60%	**-1.7**	0.2	-0.2	-0.1	0.2	0.5	**-0.6**	0.0	**0.7**	0.2	0.1	0.3
70%	**-1.5**	0.2	-0.1	0.1	0.2	-0.2	-0.3	-0.4	**0.5**	0.3	0.1	0.4
80%	**-1.5**	0.3	0.0	-0.1	0.2	**-0.6**	-0.1	-0.3	**0.6**	0.3	0.1	0.3
90%	**-1.7**	0.4	-0.1	-0.2	-0.2	**-0.9**	-0.3	-0.2	**0.9**	**-1.2**	-0.3	-0.2
Long Term												
Full Simulation Period[b]	**-1.0**	0.4	-0.1	0.0	0.1	0.0	**-0.9**	-0.1	**0.6**	0.4	0.5	**0.7**
Water Year Types[c]												
Wet (32%)	**-0.8**	**0.5**	0.1	0.0	0.1	-0.4	-0.2	-0.4	**0.8**	0.3	0.2	0.3
Above Normal (16%)	**-1.4**	0.5	0.0	0.1	0.2	0.3	**-0.8**	-0.2	0.2	0.2	0.2	0.4
Below Normal (13%)	**-0.7**	0.4	0.0	0.0	0.3	0.5	**-0.9**	-0.2	**1.0**	0.4	0.5	**0.8**
Dry (24%)	**-1.3**	0.5	0.0	0.0	0.2	0.4	**-1.6**	-0.1	0.2	0.4	**0.8**	**1.3**
Critical (15%)	**-0.8**	0.1	-0.5	-0.3	-0.2	-0.2	**-1.5**	0.5	**0.9**	**1.1**	**0.8**	**0.8**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.9 Stanislaus River at Mouth Temperature

Table 5C.3.3.9.1 Stanislaus River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64.3	58.6	51.9	51.4	55.1	60.5	62.1	65.5	72.3	76.5	75.2	71.8
20%	62.9	57.4	51.6	50.8	54.3	59.7	61.1	64.6	71.7	75.5	74.4	70.7
30%	61.7	56.8	51.0	50.2	53.8	59.1	60.3	63.6	70.8	74.9	73.8	70.4
40%	60.6	56.5	50.7	49.7	53.2	58.7	58.8	62.1	70.2	74.3	73.4	69.8
50%	60.1	55.7	50.3	49.4	52.9	57.9	57.9	61.0	67.8	73.8	73.0	69.5
60%	59.6	55.2	49.9	49.0	52.6	57.0	57.1	60.7	65.3	73.1	72.6	69.0
70%	59.0	55.0	49.7	48.8	52.1	55.7	56.2	59.8	63.8	72.9	72.4	68.6
80%	58.7	54.7	49.3	48.5	51.5	53.6	55.7	58.7	62.7	71.7	71.9	68.1
90%	58.2	54.2	49.0	47.9	50.6	52.1	54.8	58.0	61.7	69.3	70.7	66.9
Long Term												
Full Simulation Period[b]	60.8	56.0	50.4	49.6	52.9	57.1	58.3	61.6	67.3	73.1	72.6	69.0
Water Year Types[c]												
Wet (32%)	57.1	53.3	48.5	49.4	51.8	53.6	55.5	58.8	62.9	70.1	70.2	66.6
Above Normal (16%)	61.2	56.5	51.0	50.5	53.4	57.9	57.9	61.6	66.7	73.1	72.9	69.0
Below Normal (13%)	60.1	55.2	49.8	49.2	52.8	58.0	58.5	61.0	68.6	74.3	73.1	69.5
Dry (24%)	60.7	55.8	50.1	49.2	53.2	58.9	59.8	63.3	70.3	74.7	73.4	70.0
Critical (15%)	63.9	57.8	50.7	49.9	54.3	59.7	62.0	65.5	71.4	76.1	75.3	72.0

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.5	58.4	52.0	51.3	54.5	60.3	63.6	64.1	72.1	76.2	75.1	71.5
20%	65.2	57.8	51.6	50.8	54.0	59.5	63.0	63.5	71.5	75.3	74.3	70.6
30%	64.4	56.9	51.1	50.2	53.6	58.7	62.2	62.7	70.4	74.8	73.8	70.2
40%	63.9	56.3	50.9	49.7	53.0	58.2	60.8	61.5	69.6	74.2	73.4	69.7
50%	62.9	55.9	50.5	49.3	52.5	57.3	60.0	61.2	67.2	73.6	73.0	69.4
60%	62.3	55.3	50.1	49.1	52.2	56.6	58.2	60.8	65.1	73.0	72.6	68.8
70%	61.8	55.1	49.7	48.8	51.9	56.3	56.8	59.8	62.3	72.7	72.4	68.5
80%	61.2	54.6	49.5	48.4	51.4	55.5	56.1	59.1	61.0	71.5	72.0	68.2
90%	60.8	54.2	49.1	47.9	50.4	54.2	55.3	58.5	59.1	70.4	71.3	67.1
Long Term												
Full Simulation Period[b]	63.1	56.1	50.5	49.5	52.7	57.3	59.6	61.3	66.3	73.0	72.7	68.9
Water Year Types[c]												
Wet (32%)	59.3	53.2	48.6	49.3	51.6	54.7	55.9	59.2	60.6	70.1	70.7	66.4
Above Normal (16%)	63.8	56.5	51.1	50.4	53.1	57.9	59.2	61.2	66.1	73.0	72.9	68.9
Below Normal (13%)	62.3	55.1	49.9	49.1	52.4	57.7	60.4	60.8	67.8	74.1	73.1	69.3
Dry (24%)	63.4	56.0	50.2	49.3	53.0	58.4	61.8	62.5	70.1	74.6	73.4	70.0
Critical (15%)	65.8	58.2	51.0	49.9	54.2	59.7	63.5	64.3	71.1	75.9	75.2	71.9

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**2.2**	-0.2	0.1	-0.1	**-0.5**	-0.2	**1.6**	**-1.4**	-0.2	-0.3	-0.1	-0.4
20%	**2.3**	0.3	0.1	0.0	-0.2	-0.2	**1.9**	**-1.1**	-0.2	-0.1	-0.1	-0.1
30%	**2.6**	0.1	0.1	0.0	-0.2	-0.4	**1.9**	**-0.9**	-0.3	-0.1	0.0	-0.2
40%	**3.2**	-0.2	0.1	0.0	-0.2	-0.5	**2.0**	**-0.7**	**-0.6**	-0.1	0.0	-0.2
50%	**2.8**	0.2	0.2	-0.1	-0.4	**-0.6**	**2.1**	0.2	**-0.6**	-0.2	0.0	-0.1
60%	**2.6**	0.1	0.2	0.0	-0.4	-0.3	**1.1**	0.1	-0.2	-0.1	0.0	-0.2
70%	**2.7**	0.1	0.0	0.0	-0.2	**0.6**	**0.6**	0.0	**-1.5**	-0.2	0.0	-0.2
80%	**2.6**	0.0	0.2	0.0	-0.1	**1.9**	0.4	0.4	**-1.6**	-0.2	0.1	0.0
90%	**2.5**	0.0	0.1	0.1	-0.2	**2.1**	**0.5**	**0.5**	**-2.6**	**1.1**	**0.6**	0.2
Long Term												
Full Simulation Period[b]	**2.4**	0.1	0.1	0.0	-0.2	0.2	**1.3**	-0.4	**-1.0**	-0.1	0.1	-0.1
Water Year Types[c]												
Wet (32%)	**2.2**	-0.1	0.0	-0.1	-0.2	**1.1**	0.4	0.4	**-2.4**	0.0	0.5	-0.1
Above Normal (16%)	**2.6**	0.0	0.1	-0.1	-0.3	0.0	**1.3**	-0.5	**-0.6**	-0.1	0.0	-0.1
Below Normal (13%)	**2.2**	-0.2	0.1	-0.1	-0.4	-0.4	**1.9**	-0.2	**-0.7**	-0.2	0.0	-0.2
Dry (24%)	**2.7**	0.2	0.2	0.0	-0.3	-0.4	**2.0**	**-0.8**	-0.2	0.0	0.0	-0.1
Critical (15%)	**1.8**	0.4	0.3	0.1	0.0	0.0	**1.5**	**-1.2**	-0.3	-0.2	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.9.2 Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66.5	58.4	52.0	51.3	54.5	60.3	63.6	64.1	72.1	76.2	75.1	71.5
20%	65.2	57.8	51.6	50.8	54.0	59.5	63.0	63.5	71.5	75.3	74.3	70.6
30%	64.4	56.9	51.1	50.2	53.6	58.7	62.2	62.7	70.4	74.8	73.8	70.2
40%	63.9	56.3	50.9	49.7	53.0	58.2	60.8	61.5	69.6	74.2	73.4	69.7
50%	62.9	55.9	50.5	49.3	52.5	57.3	60.0	61.2	67.2	73.6	73.0	69.4
60%	62.3	55.3	50.1	49.1	52.2	56.6	58.2	60.8	65.1	73.0	72.6	68.8
70%	61.8	55.1	49.7	48.8	51.9	56.3	56.8	59.8	62.3	72.7	72.4	68.5
80%	61.2	54.6	49.5	48.4	51.4	55.5	56.1	59.1	61.0	71.5	72.0	68.2
90%	60.8	54.2	49.1	47.9	50.4	54.2	55.3	58.5	59.1	70.4	71.3	67.1
Long Term												
Full Simulation Period[b]	63.1	56.1	50.5	49.5	52.7	57.3	59.6	61.3	66.3	73.0	72.7	68.9
Water Year Types[c]												
Wet (32%)	59.3	53.2	48.6	49.3	51.6	54.7	55.9	59.2	60.6	70.1	70.7	66.4
Above Normal (16%)	63.8	56.5	51.1	50.4	53.1	57.9	59.2	61.2	66.1	73.0	72.9	68.9
Below Normal (13%)	62.3	55.1	49.9	49.1	52.4	57.7	60.4	60.8	67.8	74.1	73.1	69.3
Dry (24%)	63.4	56.0	50.2	49.3	53.0	58.4	61.8	62.5	70.1	74.6	73.4	70.0
Critical (15%)	65.8	58.2	51.0	49.9	54.2	59.7	63.5	64.3	71.1	75.9	75.2	71.9

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	64.3	58.6	51.9	51.4	55.1	60.5	62.1	65.5	72.3	76.5	75.2	71.8
20%	62.9	57.4	51.6	50.8	54.3	59.7	61.1	64.6	71.7	75.5	74.4	70.7
30%	61.7	56.8	51.0	50.2	53.8	59.1	60.3	63.6	70.8	74.9	73.8	70.4
40%	60.6	56.5	50.7	49.7	53.2	58.7	58.8	62.1	70.2	74.3	73.4	69.8
50%	60.1	55.7	50.3	49.4	52.9	57.9	57.9	61.0	67.8	73.8	73.0	69.5
60%	59.6	55.2	49.9	49.0	52.6	57.0	57.1	60.7	65.3	73.1	72.6	69.0
70%	59.0	55.0	49.7	48.8	52.1	55.7	56.2	59.8	63.8	72.9	72.4	68.6
80%	58.7	54.7	49.3	48.5	51.5	53.6	55.7	58.7	62.7	71.7	71.9	68.1
90%	58.2	54.2	49.0	47.9	50.6	52.1	54.8	58.0	61.7	69.3	70.7	66.9
Long Term												
Full Simulation Period[b]	60.8	56.0	50.4	49.6	52.9	57.1	58.3	61.6	67.3	73.1	72.6	69.0
Water Year Types[c]												
Wet (32%)	57.1	53.3	48.5	49.4	51.8	53.6	55.5	58.8	62.9	70.1	70.2	66.6
Above Normal (16%)	61.2	56.5	51.0	50.5	53.4	57.9	57.9	61.6	66.7	73.1	72.9	69.0
Below Normal (13%)	60.1	55.2	49.8	49.2	52.8	58.0	58.5	61.0	68.6	74.3	73.1	69.5
Dry (24%)	60.7	55.8	50.1	49.2	53.2	58.9	59.8	63.3	70.3	74.7	73.4	70.0
Critical (15%)	63.9	57.8	50.7	49.9	54.3	59.7	62.0	65.5	71.4	76.1	75.3	72.0

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	**-2.2**	0.2	-0.1	0.1	**0.5**	0.2	**-1.6**	**1.4**	0.2	0.3	0.1	0.4
20%	**-2.3**	-0.3	-0.1	0.0	0.2	0.2	**-1.9**	**1.1**	0.2	0.1	0.1	0.1
30%	**-2.6**	-0.1	-0.1	0.0	0.2	0.4	**-1.9**	**0.9**	0.3	0.1	0.0	0.2
40%	**-3.2**	0.2	-0.1	0.0	0.2	0.5	**-2.0**	**0.7**	**0.6**	0.1	0.0	0.2
50%	**-2.8**	-0.2	-0.2	0.1	0.4	**0.6**	**-2.1**	-0.2	**0.6**	0.2	0.0	0.1
60%	**-2.6**	-0.1	-0.2	0.0	0.4	0.3	**-1.1**	-0.1	0.2	0.1	0.0	0.2
70%	**-2.7**	-0.1	0.0	0.0	0.2	**-0.6**	**-0.6**	0.0	**1.5**	0.2	0.0	0.2
80%	**-2.6**	0.0	-0.2	0.0	0.1	**-1.9**	-0.4	-0.4	**1.6**	0.2	-0.1	0.0
90%	**-2.5**	0.0	-0.1	-0.1	0.2	**-2.1**	**-0.5**	**-0.5**	**2.6**	**-1.1**	**-0.6**	-0.2
Long Term												
Full Simulation Period[b]	**-2.4**	-0.1	-0.1	0.0	0.2	-0.2	**-1.3**	0.4	**1.0**	0.1	-0.1	0.1
Water Year Types[c]												
Wet (32%)	**-2.2**	0.1	0.0	0.1	0.2	**-1.1**	-0.4	-0.4	**2.4**	0.0	-0.5	0.1
Above Normal (16%)	**-2.6**	0.0	-0.1	0.1	0.3	0.0	**-1.3**	0.5	**0.6**	0.1	0.0	0.1
Below Normal (13%)	**-2.2**	0.2	-0.1	0.1	0.4	0.4	**-1.9**	0.2	**0.7**	0.2	0.0	0.2
Dry (24%)	**-2.7**	-0.2	-0.2	0.0	0.3	0.4	**-2.0**	**0.8**	0.2	0.0	0.0	0.1
Critical (15%)	**-1.8**	-0.4	-0.3	-0.1	0.0	0.0	**-1.5**	**1.2**	0.3	0.2	0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.9.3 Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.5	58.4	52.0	51.3	54.5	60.3	63.6	64.1	72.1	76.2	75.1	71.5
20%	65.2	57.8	51.6	50.8	54.0	59.5	63.0	63.5	71.5	75.3	74.3	70.6
30%	64.4	56.9	51.1	50.2	53.6	58.7	62.2	62.7	70.4	74.8	73.8	70.2
40%	63.9	56.3	50.9	49.7	53.0	58.2	60.8	61.5	69.6	74.2	73.4	69.7
50%	62.9	55.9	50.5	49.3	52.5	57.3	60.0	61.2	67.2	73.6	73.0	69.4
60%	62.3	55.3	50.1	49.1	52.2	56.6	58.2	60.8	65.1	73.0	72.6	68.8
70%	61.8	55.1	49.7	48.8	51.9	56.3	56.8	59.8	62.3	72.7	72.4	68.5
80%	61.2	54.6	49.5	48.4	51.4	55.5	56.1	59.1	61.0	71.5	72.0	68.2
90%	60.8	54.2	49.1	47.9	50.4	54.2	55.3	58.5	59.1	70.4	71.3	67.1
Long Term												
Full Simulation Period[b]	63.1	56.1	50.5	49.5	52.7	57.3	59.6	61.3	66.3	73.0	72.7	68.9
Water Year Types[c]												
Wet (32%)	59.3	53.2	48.6	49.3	51.6	54.7	55.9	59.2	60.6	70.1	70.7	66.4
Above Normal (16%)	63.8	56.5	51.1	50.4	53.1	57.9	59.2	61.2	66.1	73.0	72.9	68.9
Below Normal (13%)	62.3	55.1	49.9	49.1	52.4	57.7	60.4	60.8	67.8	74.1	73.1	69.3
Dry (24%)	63.4	56.0	50.2	49.3	53.0	58.4	61.8	62.5	70.1	74.6	73.4	70.0
Critical (15%)	65.8	58.2	51.0	49.9	54.2	59.7	63.5	64.3	71.1	75.9	75.2	71.9

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65.7	58.3	51.9	51.6	55.2	60.9	62.6	65.8	73.2	76.9	75.3	71.7
20%	65.2	57.7	51.5	50.7	54.7	59.7	61.6	64.6	72.4	76.0	74.3	70.7
30%	64.0	56.7	51.0	50.2	53.8	59.2	60.4	63.7	72.1	75.5	73.8	70.2
40%	63.2	56.3	50.8	49.7	53.2	58.7	59.7	62.9	71.7	75.0	73.4	69.9
50%	62.9	55.6	50.4	49.4	52.8	58.2	58.3	62.5	71.1	74.7	73.1	69.4
60%	62.4	55.3	50.0	49.0	52.3	57.3	57.3	61.7	70.3	74.2	72.5	69.0
70%	61.7	55.0	49.6	48.8	52.0	56.7	56.6	60.9	69.3	73.8	72.4	68.7
80%	61.3	54.8	49.4	48.6	51.1	55.0	56.1	60.2	68.5	73.5	72.0	68.1
90%	60.6	54.3	49.0	47.9	50.3	53.5	55.4	59.0	67.4	73.0	71.3	62.2
Long Term												
Full Simulation Period[b]	62.9	56.0	50.4	49.6	52.8	57.5	58.7	62.5	69.9	73.7	72.4	68.6
Water Year Types[c]												
Wet (32%)	59.1	53.3	48.6	49.4	51.4	54.9	55.8	60.0	66.7	70.5	69.7	65.8
Above Normal (16%)	63.8	56.5	51.0	50.5	53.1	57.7	58.3	62.4	70.9	74.8	73.1	69.1
Below Normal (13%)	62.2	55.1	49.7	49.1	52.4	58.3	59.2	62.0	70.7	74.8	73.1	69.5
Dry (24%)	63.2	55.9	50.2	49.2	53.5	59.0	60.2	63.9	71.6	75.0	73.4	69.9
Critical (15%)	65.2	57.8	50.8	49.8	54.7	60.0	62.3	65.7	72.3	76.4	75.1	71.4

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-0.8**	-0.1	0.0	0.3	**0.7**	**0.5**	**-1.0**	**1.7**	**1.1**	**0.7**	0.2	0.3
20%	-0.1	-0.1	-0.1	0.0	**0.6**	0.2	**-1.5**	**1.1**	**0.9**	**0.6**	0.0	0.1
30%	-0.3	-0.2	-0.1	0.0	0.3	**0.5**	**-1.7**	**1.0**	**1.6**	**0.7**	0.0	0.0
40%	**-0.6**	0.0	0.0	0.0	0.2	**0.5**	**-1.1**	**1.5**	**2.1**	**0.8**	0.0	0.3
50%	0.0	-0.2	-0.1	0.1	0.3	**0.9**	**-1.7**	**1.3**	**3.9**	**1.1**	0.1	0.0
60%	0.1	0.0	-0.1	-0.1	0.1	**0.7**	**-1.0**	**0.9**	**5.2**	**1.2**	-0.1	0.2
70%	0.0	-0.1	-0.1	0.0	0.0	0.4	-0.2	**1.1**	**7.0**	**1.1**	0.0	0.2
80%	0.1	0.1	-0.1	0.1	-0.4	-0.4	0.0	**1.1**	**7.5**	**2.0**	0.0	-0.1
90%	-0.2	0.1	-0.1	0.0	-0.1	**-0.6**	0.1	**0.6**	**8.3**	**2.6**	0.1	**-4.8**
Long Term												
Full Simulation Period[b]	-0.2	-0.1	-0.1	0.0	0.1	0.3	**-0.9**	**1.2**	**3.6**	**0.7**	-0.3	-0.2
Water Year Types[c]												
Wet (32%)	-0.2	0.0	0.0	0.1	-0.1	0.2	-0.1	**0.8**	**6.1**	0.4	**-1.1**	**-0.6**
Above Normal (16%)	0.0	0.0	-0.1	0.1	0.0	-0.1	**-0.9**	**1.2**	**4.9**	**1.8**	0.2	0.2
Below Normal (13%)	-0.2	0.0	-0.2	0.0	0.0	**0.6**	**-1.2**	**1.2**	**2.8**	**0.7**	0.0	0.2
Dry (24%)	-0.2	0.0	0.0	0.0	**0.5**	**0.5**	**-1.6**	**1.4**	**1.5**	0.4	0.0	-0.1
Critical (15%)	**-0.6**	-0.4	-0.2	-0.1	0.5	0.3	**-1.2**	**1.4**	**1.2**	**0.5**	-0.1	**-0.5**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.9.4 Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66.5	58.4	52.0	51.3	54.5	60.3	63.6	64.1	72.1	76.2	75.1	71.5
20%	65.2	57.8	51.6	50.8	54.0	59.5	63.0	63.5	71.5	75.3	74.3	70.6
30%	64.4	56.9	51.1	50.2	53.6	58.7	62.2	62.7	70.4	74.8	73.8	70.2
40%	63.9	56.3	50.9	49.7	53.0	58.2	60.8	61.5	69.6	74.2	73.4	69.7
50%	62.9	55.9	50.5	49.3	52.5	57.3	60.0	61.2	67.2	73.6	73.0	69.4
60%	62.3	55.3	50.1	49.1	52.2	56.6	58.2	60.8	65.1	73.0	72.6	68.8
70%	61.8	55.1	49.7	48.8	51.9	56.3	56.8	59.8	62.3	72.7	72.4	68.5
80%	61.2	54.6	49.5	48.4	51.4	55.5	56.1	59.1	61.0	71.5	72.0	68.2
90%	60.8	54.2	49.1	47.9	50.4	54.2	55.3	58.5	59.1	70.4	71.3	67.1
Long Term												
Full Simulation Period[b]	63.1	56.1	50.5	49.5	52.7	57.3	59.6	61.3	66.3	73.0	72.7	68.9
Water Year Types[c]												
Wet (32%)	59.3	53.2	48.6	49.3	51.6	54.7	55.9	59.2	60.6	70.1	70.7	66.4
Above Normal (16%)	63.8	56.5	51.1	50.4	53.1	57.9	59.2	61.2	66.1	73.0	72.9	68.9
Below Normal (13%)	62.3	55.1	49.9	49.1	52.4	57.7	60.4	60.8	67.8	74.1	73.1	69.3
Dry (24%)	63.4	56.0	50.2	49.3	53.0	58.4	61.8	62.5	70.1	74.6	73.4	70.0
Critical (15%)	65.8	58.2	51.0	49.9	54.2	59.7	63.5	64.3	71.1	75.9	75.2	71.9

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65.4	58.6	52.2	51.4	55.1	60.5	60.1	64.4	72.3	76.3	75.4	72.0
20%	63.3	57.7	51.5	50.8	54.4	59.7	59.1	62.6	71.8	75.6	74.6	71.0
30%	62.0	57.0	51.0	50.3	53.7	59.2	58.7	61.5	70.9	75.0	73.9	70.5
40%	61.1	56.7	50.5	49.7	53.2	58.7	58.3	60.8	70.1	74.3	73.5	70.0
50%	60.4	56.0	50.3	49.3	52.9	57.9	57.7	60.1	67.6	73.9	73.1	69.7
60%	59.7	55.4	50.0	49.0	52.6	57.1	57.3	59.5	65.2	73.1	72.6	69.2
70%	59.2	55.1	49.7	48.9	52.0	55.9	56.3	59.0	64.0	72.9	72.4	68.7
80%	58.7	54.8	49.3	48.5	51.5	53.8	55.7	58.3	62.7	72.0	72.0	68.2
90%	58.2	54.2	48.9	47.9	50.6	52.1	55.0	57.9	61.5	69.4	71.3	66.9
Long Term												
Full Simulation Period[b]	61.1	56.2	50.4	49.6	52.9	57.1	57.6	60.6	67.4	73.4	72.9	69.2
Water Year Types[c]												
Wet (32%)	57.5	53.4	48.6	49.4	51.8	53.8	55.6	58.4	63.1	70.8	71.0	66.8
Above Normal (16%)	61.5	56.7	51.1	50.5	53.5	57.9	57.5	60.4	66.5	73.1	73.0	69.1
Below Normal (13%)	60.6	55.3	49.8	49.2	52.8	58.0	58.1	60.2	68.7	74.4	73.2	69.7
Dry (24%)	61.0	56.1	50.1	49.3	53.3	58.9	58.7	62.0	70.2	74.7	73.6	70.4
Critical (15%)	64.1	58.1	50.7	49.8	54.3	59.7	60.0	64.0	71.6	76.4	75.6	72.2

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-1.1**	0.3	0.2	0.1	**0.6**	0.2	**-3.5**	0.3	0.3	0.1	0.3	**0.6**
20%	**-1.9**	0.0	-0.1	0.0	0.3	0.2	**-3.9**	**-0.9**	0.4	0.2	0.3	0.4
30%	**-2.3**	0.1	-0.1	0.1	0.1	**0.5**	**-3.4**	**-1.1**	0.4	0.3	0.1	0.2
40%	**-2.8**	0.4	-0.4	0.0	0.2	0.5	**-2.5**	**-0.7**	0.5	0.1	0.1	0.3
50%	**-2.5**	0.1	-0.1	0.0	0.4	**0.6**	**-2.3**	**-1.1**	0.4	0.3	0.1	0.3
60%	**-2.5**	0.1	-0.1	0.0	0.4	0.5	**-0.9**	**-1.3**	0.0	0.1	0.0	0.4
70%	**-2.6**	0.0	0.0	0.1	0.1	-0.4	**-0.5**	**-0.8**	**1.7**	0.2	0.0	0.3
80%	**-2.5**	0.2	-0.2	0.1	0.1	**-1.7**	-0.4	**-0.8**	**1.7**	**0.5**	0.0	0.0
90%	**-2.5**	0.0	-0.2	0.0	0.2	**-2.1**	-0.3	**-0.6**	**2.4**	**-1.0**	0.0	-0.2
Long Term												
Full Simulation Period[b]	**-2.0**	0.1	-0.1	0.0	0.3	-0.1	**-1.9**	**-0.6**	**1.1**	0.4	0.2	0.3
Water Year Types[c]												
Wet (32%)	**-1.8**	0.2	0.0	0.1	0.2	**-0.9**	-0.3	**-0.8**	**2.5**	**0.7**	0.3	0.4
Above Normal (16%)	**-2.3**	0.1	-0.1	0.1	0.3	0.0	**-1.6**	**-0.8**	0.5	0.1	0.0	0.2
Below Normal (13%)	**-1.8**	0.2	-0.1	0.1	0.4	0.4	**-2.3**	**-0.6**	**0.9**	0.3	0.1	0.3
Dry (24%)	**-2.4**	0.1	-0.1	0.0	0.4	0.5	**-3.1**	**-0.5**	0.1	0.1	0.2	0.4
Critical (15%)	**-1.6**	0.0	-0.3	-0.1	0.0	0.0	**-3.5**	-0.3	0.4	**0.5**	0.4	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.10 San Joaquin River at Vernalis Flow

Table 5C.3.3.10.1 San Joaquin River at Vernalis, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,498	2,953	4,804	11,135	14,596	15,471	14,974	14,174	9,351	5,890	2,796	3,060
20%	3,161	2,777	2,857	4,812	10,143	10,197	10,637	8,318	4,690	2,628	2,589	2,654
30%	2,980	2,527	2,401	3,610	6,118	8,459	8,616	5,534	3,364	1,985	1,904	2,490
40%	2,796	2,395	2,215	2,629	4,232	5,570	7,564	4,609	2,947	1,735	1,666	2,125
50%	2,601	2,219	2,101	2,402	3,420	3,847	6,017	3,925	2,246	1,487	1,488	1,930
60%	2,401	2,169	2,046	2,293	2,683	3,459	4,832	3,062	1,859	1,366	1,403	1,835
70%	2,247	2,059	1,979	2,114	2,305	2,906	3,776	2,699	1,448	1,154	1,307	1,739
80%	1,994	1,951	1,829	1,884	2,150	2,371	2,789	2,153	1,293	1,087	1,202	1,611
90%	1,849	1,763	1,669	1,699	1,947	2,204	1,887	1,678	1,085	885	1,067	1,476
Long Term												
Full Simulation Period[b]	2,672	2,611	3,391	5,070	6,655	7,278	7,528	6,039	4,194	2,622	1,847	2,223
Water Year Types[c]												
Wet (23%)	2,918	3,513	6,545	11,446	15,776	16,863	15,423	14,628	11,335	6,676	3,135	3,416
Above Normal (24%)	2,700	2,416	2,663	4,883	6,881	7,536	8,542	5,264	3,280	1,989	1,975	2,345
Below Normal (10%)	2,538	2,249	3,661	3,507	3,651	4,149	6,337	4,140	2,076	1,463	1,446	1,837
Dry (16%)	2,767	2,569	2,232	2,402	2,549	3,241	3,996	2,805	1,680	1,254	1,347	1,776
Critical (27%)	2,426	2,168	1,915	1,877	2,090	2,288	2,307	1,929	1,115	926	1,060	1,487

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,015	3,156	4,932	11,157	14,594	15,467	14,666	14,360	10,139	5,612	2,740	3,146
20%	2,692	2,843	2,953	4,819	10,200	9,482	10,169	8,291	5,696	2,636	2,600	2,658
30%	2,520	2,663	2,541	3,655	6,300	7,933	8,421	5,676	3,488	1,990	1,897	2,503
40%	2,331	2,500	2,341	2,692	4,268	5,393	7,435	4,617	3,188	1,742	1,676	2,142
50%	2,157	2,386	2,257	2,544	3,420	3,883	6,016	4,043	2,349	1,506	1,500	1,944
60%	1,952	2,244	2,165	2,343	2,774	3,511	4,349	3,276	1,895	1,379	1,415	1,842
70%	1,752	2,141	2,027	2,153	2,443	2,963	3,119	2,891	1,485	1,170	1,321	1,743
80%	1,597	1,984	1,903	1,923	2,174	2,414	2,442	2,362	1,274	1,088	1,211	1,611
90%	1,411	1,793	1,699	1,733	1,945	2,230	1,779	1,890	1,085	941	1,071	1,478
Long Term												
Full Simulation Period[b]	2,241	2,721	3,492	5,136	6,700	7,131	7,255	6,101	4,547	2,625	1,838	2,238
Water Year Types[c]												
Wet (23%)	2,497	3,627	6,644	11,506	15,763	16,308	15,374	14,433	12,512	6,641	3,078	3,456
Above Normal (24%)	2,288	2,532	2,757	4,947	6,946	7,415	8,260	5,348	3,525	1,999	1,977	2,352
Below Normal (10%)	2,086	2,397	3,810	3,608	3,723	4,101	5,842	4,213	2,225	1,481	1,457	1,856
Dry (16%)	2,339	2,684	2,347	2,487	2,628	3,304	3,551	2,976	1,714	1,267	1,362	1,789
Critical (27%)	1,974	2,251	1,998	1,927	2,138	2,311	2,031	2,122	1,116	943	1,059	1,485

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-14%**	**7%**	3%	0%	0%	0%	-2%	1%	**8%**	-5%	-2%	3%
20%	**-15%**	2%	3%	0%	1%	**-7%**	-4%	0%	**21%**	0%	0%	0%
30%	**-15%**	**5%**	**6%**	1%	3%	**-6%**	-2%	3%	4%	0%	0%	1%
40%	**-17%**	4%	**6%**	2%	1%	-3%	-2%	0%	**8%**	0%	1%	1%
50%	**-17%**	**7%**	**7%**	**6%**	0%	1%	0%	3%	5%	1%	1%	1%
60%	**-19%**	3%	**6%**	2%	3%	2%	**-10%**	**7%**	2%	1%	1%	0%
70%	**-22%**	4%	2%	2%	**6%**	2%	**-17%**	**7%**	3%	1%	1%	0%
80%	**-20%**	2%	4%	2%	1%	2%	**-12%**	**10%**	-1%	0%	1%	0%
90%	**-24%**	2%	2%	2%	0%	1%	**-6%**	**13%**	0%	**6%**	0%	0%
Long Term												
Full Simulation Period[b]	**-16%**	4%	3%	1%	1%	-2%	-4%	1%	**8%**	0%	-1%	1%
Water Year Types[c]												
Wet (23%)	**-14%**	3%	2%	1%	0%	-3%	0%	-1%	**10%**	-1%	-2%	1%
Above Normal (24%)	**-15%**	5%	4%	1%	1%	-2%	-3%	2%	**7%**	0%	0%	0%
Below Normal (10%)	**-18%**	**7%**	4%	3%	2%	-1%	**-8%**	2%	**7%**	1%	1%	1%
Dry (16%)	**-15%**	4%	**5%**	4%	3%	2%	**-11%**	**6%**	2%	1%	1%	1%
Critical (27%)	**-19%**	4%	4%	3%	2%	1%	**-12%**	**10%**	0%	2%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.10.2 San Joaquin River at Vernalis, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,015	3,156	4,932	11,157	14,594	15,467	14,666	14,360	10,139	5,612	2,740	3,146
20%	2,692	2,843	2,953	4,819	10,200	9,482	10,169	8,291	5,696	2,636	2,600	2,658
30%	2,520	2,663	2,541	3,655	6,300	7,933	8,421	5,676	3,488	1,990	1,897	2,503
40%	2,331	2,500	2,341	2,692	4,268	5,393	7,435	4,617	3,188	1,742	1,676	2,142
50%	2,157	2,386	2,257	2,544	3,420	3,883	6,016	4,043	2,349	1,506	1,500	1,944
60%	1,952	2,244	2,165	2,343	2,774	3,511	4,349	3,276	1,895	1,379	1,415	1,842
70%	1,752	2,141	2,027	2,153	2,443	2,963	3,119	2,891	1,485	1,170	1,321	1,743
80%	1,597	1,984	1,903	1,923	2,174	2,414	2,442	2,362	1,274	1,088	1,211	1,611
90%	1,411	1,793	1,699	1,733	1,945	2,230	1,779	1,890	1,085	941	1,071	1,478
Long Term												
Full Simulation Period[b]	2,241	2,721	3,492	5,136	6,700	7,131	7,255	6,101	4,547	2,625	1,838	2,238
Water Year Types[c]												
Wet (23%)	2,497	3,627	6,644	11,506	15,763	16,308	15,374	14,433	12,512	6,641	3,078	3,456
Above Normal (24%)	2,288	2,532	2,757	4,947	6,946	7,415	8,260	5,348	3,525	1,999	1,977	2,352
Below Normal (10%)	2,086	2,397	3,810	3,608	3,723	4,101	5,842	4,213	2,225	1,481	1,457	1,856
Dry (16%)	2,339	2,684	2,347	2,487	2,628	3,304	3,551	2,976	1,714	1,267	1,362	1,789
Critical (27%)	1,974	2,251	1,998	1,927	2,138	2,311	2,031	2,122	1,116	943	1,059	1,485

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,498	2,953	4,804	11,135	14,596	15,471	14,974	14,174	9,351	5,890	2,796	3,060
20%	3,161	2,777	2,857	4,812	10,143	10,197	10,637	8,318	4,690	2,628	2,589	2,654
30%	2,980	2,527	2,401	3,610	6,118	8,459	8,616	5,534	3,364	1,985	1,904	2,490
40%	2,796	2,395	2,215	2,629	4,232	5,570	7,564	4,609	2,947	1,735	1,666	2,125
50%	2,601	2,219	2,101	2,402	3,420	3,847	6,017	3,925	2,246	1,487	1,488	1,930
60%	2,401	2,169	2,046	2,293	2,683	3,459	4,832	3,062	1,859	1,366	1,403	1,835
70%	2,247	2,059	1,979	2,114	2,305	2,906	3,776	2,699	1,448	1,154	1,307	1,739
80%	1,994	1,951	1,829	1,884	2,150	2,371	2,789	2,153	1,293	1,087	1,202	1,611
90%	1,849	1,763	1,669	1,699	1,947	2,204	1,887	1,678	1,085	885	1,067	1,476
Long Term												
Full Simulation Period[b]	2,672	2,611	3,391	5,070	6,655	7,278	7,528	6,039	4,194	2,622	1,847	2,223
Water Year Types[c]												
Wet (23%)	2,918	3,513	6,545	11,446	15,776	16,863	15,423	14,628	11,335	6,676	3,135	3,416
Above Normal (24%)	2,700	2,416	2,663	4,883	6,881	7,536	8,542	5,264	3,280	1,989	1,975	2,345
Below Normal (10%)	2,538	2,249	3,661	3,507	3,651	4,149	6,337	4,140	2,076	1,463	1,446	1,837
Dry (16%)	2,767	2,569	2,232	2,402	2,549	3,241	3,996	2,805	1,680	1,254	1,347	1,776
Critical (27%)	2,426	2,168	1,915	1,877	2,090	2,288	2,307	1,929	1,115	926	1,060	1,487

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**16%**	**-6%**	-3%	0%	0%	0%	2%	-1%	**-8%**	5%	2%	-3%
20%	**17%**	-2%	-3%	0%	-1%	**8%**	5%	0%	**-18%**	0%	0%	0%
30%	**18%**	**-5%**	**-6%**	-1%	-3%	**7%**	2%	-3%	-4%	0%	0%	-1%
40%	**20%**	-4%	**-5%**	-2%	-1%	3%	2%	0%	**-8%**	0%	-1%	-1%
50%	**21%**	**-7%**	**-7%**	**-6%**	0%	-1%	0%	-3%	-4%	-1%	-1%	-1%
60%	**23%**	-3%	**-6%**	-2%	-3%	-1%	**11%**	**-7%**	-2%	-1%	-1%	0%
70%	**28%**	-4%	-2%	-2%	**-6%**	-2%	**21%**	**-7%**	-2%	-1%	-1%	0%
80%	**25%**	-2%	-4%	-2%	-1%	-2%	**14%**	**-9%**	2%	0%	-1%	0%
90%	**31%**	-2%	-2%	-2%	0%	-1%	**6%**	**-11%**	0%	**-6%**	0%	0%
Long Term												
Full Simulation Period[b]	**19%**	-4%	-3%	-1%	-1%	2%	4%	-1%	**-8%**	0%	1%	-1%
Water Year Types[c]												
Wet (23%)	**17%**	-3%	-1%	-1%	0%	3%	0%	1%	**-9%**	1%	2%	-1%
Above Normal (24%)	**18%**	-5%	-3%	-1%	-1%	2%	3%	-2%	**-7%**	0%	0%	0%
Below Normal (10%)	**22%**	**-6%**	-4%	-3%	-2%	1%	**8%**	-2%	**-7%**	-1%	-1%	-1%
Dry (16%)	**18%**	-4%	-5%	-3%	-3%	-2%	**13%**	**-6%**	-2%	-1%	-1%	-1%
Critical (27%)	**23%**	-4%	-4%	-3%	-2%	-1%	**14%**	**-9%**	0%	-2%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.10.3 San Joaquin River at Vernalis, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,015	3,156	4,932	11,157	14,594	15,467	14,666	14,360	10,139	5,612	2,740	3,146
20%	2,692	2,843	2,953	4,819	10,200	9,482	10,169	8,291	5,696	2,636	2,600	2,658
30%	2,520	2,663	2,541	3,655	6,300	7,933	8,421	5,676	3,488	1,990	1,897	2,503
40%	2,331	2,500	2,341	2,692	4,268	5,393	7,435	4,617	3,188	1,742	1,676	2,142
50%	2,157	2,386	2,257	2,544	3,420	3,883	6,016	4,043	2,349	1,506	1,500	1,944
60%	1,952	2,244	2,165	2,343	2,774	3,511	4,349	3,276	1,895	1,379	1,415	1,842
70%	1,752	2,141	2,027	2,153	2,443	2,963	3,119	2,891	1,485	1,170	1,321	1,743
80%	1,597	1,984	1,903	1,923	2,174	2,414	2,442	2,362	1,274	1,088	1,211	1,611
90%	1,411	1,793	1,699	1,733	1,945	2,230	1,779	1,890	1,085	941	1,071	1,478
Long Term												
Full Simulation Period[b]	2,241	2,721	3,492	5,136	6,700	7,131	7,255	6,101	4,547	2,625	1,838	2,238
Water Year Types[c]												
Wet (23%)	2,497	3,627	6,644	11,506	15,763	16,308	15,374	14,433	12,512	6,641	3,078	3,456
Above Normal (24%)	2,288	2,532	2,757	4,947	6,946	7,415	8,260	5,348	3,525	1,999	1,977	2,352
Below Normal (10%)	2,086	2,397	3,810	3,608	3,723	4,101	5,842	4,213	2,225	1,481	1,457	1,856
Dry (16%)	2,339	2,684	2,347	2,487	2,628	3,304	3,551	2,976	1,714	1,267	1,362	1,789
Critical (27%)	1,974	2,251	1,998	1,927	2,138	2,311	2,031	2,122	1,116	943	1,059	1,485

Alternative 3

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,023	3,053	4,949	12,089	17,246	15,467	14,936	14,309	10,004	6,473	3,525	3,287
20%	2,667	2,830	2,938	4,833	10,213	9,874	10,251	7,931	4,627	2,495	2,587	2,623
30%	2,494	2,583	2,421	3,540	6,797	7,753	8,532	5,438	2,558	1,926	1,892	2,464
40%	2,328	2,478	2,304	2,753	4,210	5,305	7,580	4,344	2,294	1,722	1,667	2,125
50%	2,137	2,313	2,191	2,439	3,215	3,847	6,112	3,821	1,955	1,506	1,495	1,932
60%	1,956	2,244	2,140	2,236	2,668	3,440	4,501	2,907	1,700	1,361	1,415	1,838
70%	1,782	2,148	2,012	2,088	2,360	2,906	3,355	2,502	1,364	1,164	1,319	1,743
80%	1,609	1,974	1,886	1,824	2,090	2,371	2,581	2,158	1,241	1,026	1,211	1,612
90%	1,466	1,763	1,669	1,639	1,849	2,205	1,936	1,650	1,001	930	1,065	1,477
Long Term												
Full Simulation Period[b]	2,252	2,683	3,501	5,108	6,872	7,145	7,431	5,830	4,009	2,655	1,882	2,271
Water Year Types[c]												
Wet (23%)	2,505	3,604	6,760	11,512	16,584	16,445	15,425	14,237	11,476	6,916	3,267	3,610
Above Normal (24%)	2,310	2,488	2,775	4,925	6,937	7,444	8,476	5,078	2,579	1,910	1,972	2,341
Below Normal (10%)	2,067	2,299	3,711	3,708	3,857	4,057	6,015	3,856	1,865	1,472	1,454	1,834
Dry (16%)	2,346	2,646	2,309	2,419	2,607	3,241	3,785	2,611	1,568	1,253	1,360	1,782
Critical (27%)	1,991	2,227	1,974	1,842	2,043	2,273	2,247	1,874	1,080	912	1,067	1,497

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	-3%	0%	**8%**	**18%**	0%	2%	0%	-1%	**15%**	**29%**	4%
20%	-1%	0%	-1%	0%	0%	4%	1%	-4%	**-19%**	**-5%**	0%	-1%
30%	-1%	-3%	-5%	-3%	**8%**	-2%	1%	-4%	**-27%**	-3%	0%	-2%
40%	0%	-1%	-2%	2%	-1%	-2%	2%	**-6%**	**-28%**	-1%	-1%	-1%
50%	-1%	-3%	-3%	-4%	**-6%**	-1%	2%	**-5%**	**-17%**	0%	0%	-1%
60%	0%	0%	-1%	-5%	-4%	-2%	3%	**-11%**	**-10%**	-1%	0%	0%
70%	2%	0%	-1%	-3%	-3%	-2%	**8%**	**-13%**	**-8%**	0%	0%	0%
80%	1%	0%	-1%	**-5%**	-4%	-2%	**6%**	**-9%**	-3%	**-6%**	0%	0%
90%	4%	-2%	-2%	**-5%**	-5%	-1%	**9%**	**-13%**	**-8%**	-1%	-1%	0%
Long Term												
Full Simulation Period[b]	0%	-1%	0%	-1%	3%	0%	2%	-4%	**-12%**	1%	2%	1%
Water Year Types[c]												
Wet (23%)	0%	-1%	2%	0%	**5%**	1%	0%	-1%	**-8%**	4%	**6%**	4%
Above Normal (24%)	1%	-2%	1%	0%	0%	0%	3%	**-5%**	**-27%**	-4%	0%	0%
Below Normal (10%)	-1%	-4%	-3%	3%	4%	-1%	3%	**-8%**	**-16%**	-1%	0%	-1%
Dry (16%)	0%	-1%	-2%	-3%	-1%	-2%	**7%**	**-12%**	**-9%**	-1%	0%	0%
Critical (27%)	1%	-1%	-1%	-4%	-4%	-2%	**11%**	**-12%**	-3%	-3%	1%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.10.4 San Joaquin River at Vernalis, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,015	3,156	4,932	11,157	14,594	15,467	14,666	14,360	10,139	5,612	2,740	3,146
20%	2,692	2,843	2,953	4,819	10,200	9,482	10,169	8,291	5,696	2,636	2,600	2,658
30%	2,520	2,663	2,541	3,655	6,300	7,933	8,421	5,676	3,488	1,990	1,897	2,503
40%	2,331	2,500	2,341	2,692	4,268	5,393	7,435	4,617	3,188	1,742	1,676	2,142
50%	2,157	2,386	2,257	2,544	3,420	3,883	6,016	4,043	2,349	1,506	1,500	1,944
60%	1,952	2,244	2,165	2,343	2,774	3,511	4,349	3,276	1,895	1,379	1,415	1,842
70%	1,752	2,141	2,027	2,153	2,443	2,963	3,119	2,891	1,485	1,170	1,321	1,743
80%	1,597	1,984	1,903	1,923	2,174	2,414	2,442	2,362	1,274	1,088	1,211	1,611
90%	1,411	1,793	1,699	1,733	1,945	2,230	1,779	1,890	1,085	941	1,071	1,478
Long Term												
Full Simulation Period[b]	2,241	2,721	3,492	5,136	6,700	7,131	7,255	6,101	4,547	2,625	1,838	2,238
Water Year Types[c]												
Wet (23%)	2,497	3,627	6,644	11,506	15,763	16,308	15,374	14,433	12,512	6,641	3,078	3,456
Above Normal (24%)	2,288	2,532	2,757	4,947	6,946	7,415	8,260	5,348	3,525	1,999	1,977	2,352
Below Normal (10%)	2,086	2,397	3,810	3,608	3,723	4,101	5,842	4,213	2,225	1,481	1,457	1,856
Dry (16%)	2,339	2,684	2,347	2,487	2,628	3,304	3,551	2,976	1,714	1,267	1,362	1,789
Critical (27%)	1,974	2,251	1,998	1,927	2,138	2,311	2,031	2,122	1,116	943	1,059	1,485

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,495	2,953	4,804	11,129	14,597	15,473	14,976	14,176	9,351	5,773	2,776	3,084
20%	3,146	2,777	2,897	4,811	10,142	9,856	10,265	8,232	4,688	2,628	2,589	2,654
30%	2,938	2,527	2,401	3,610	6,118	8,461	8,576	5,670	3,364	1,985	1,904	2,488
40%	2,763	2,395	2,204	2,629	4,232	5,570	7,567	5,162	2,947	1,735	1,666	2,125
50%	2,588	2,219	2,101	2,402	3,420	3,846	6,110	4,183	2,219	1,484	1,488	1,930
60%	2,385	2,169	2,046	2,289	2,683	3,459	5,047	3,554	1,860	1,365	1,402	1,835
70%	2,196	2,059	1,979	2,083	2,303	2,906	4,317	2,916	1,447	1,155	1,307	1,739
80%	1,988	1,951	1,829	1,883	2,145	2,371	3,100	2,401	1,283	1,052	1,202	1,611
90%	1,849	1,763	1,669	1,699	1,947	2,204	2,461	2,245	1,000	885	1,025	1,431
Long Term												
Full Simulation Period[b]	2,660	2,609	3,371	5,071	6,639	7,235	7,686	6,290	4,174	2,597	1,818	2,213
Water Year Types[c]												
Wet (23%)	2,903	3,513	6,448	11,445	15,743	16,679	15,389	14,666	11,287	6,580	3,020	3,379
Above Normal (24%)	2,691	2,411	2,679	4,897	6,864	7,536	8,487	5,671	3,280	1,989	1,975	2,345
Below Normal (10%)	2,531	2,249	3,661	3,506	3,650	4,149	6,299	4,206	2,062	1,462	1,446	1,837
Dry (16%)	2,750	2,569	2,232	2,400	2,547	3,241	4,420	3,245	1,672	1,253	1,346	1,776
Critical (27%)	2,418	2,163	1,910	1,871	2,078	2,288	2,741	2,177	1,090	916	1,051	1,480

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**16%**	**-6%**	-3%	0%	0%	0%	2%	-1%	**-8%**	3%	1%	-2%
20%	**17%**	-2%	-2%	0%	-1%	4%	1%	-1%	**-18%**	0%	0%	0%
30%	**17%**	**-5%**	**-6%**	-1%	-3%	**7%**	2%	0%	-4%	0%	0%	-1%
40%	**19%**	-4%	**-6%**	-2%	-1%	3%	2%	**12%**	**-8%**	0%	-1%	-1%
50%	**20%**	**-7%**	**-7%**	**-6%**	0%	-1%	2%	3%	**-6%**	-1%	-1%	-1%
60%	**22%**	-3%	**-6%**	-2%	-3%	-1%	**16%**	**8%**	-2%	-1%	-1%	0%
70%	**25%**	-4%	-2%	-3%	**-6%**	-2%	**38%**	1%	-3%	-1%	-1%	0%
80%	**24%**	-2%	-4%	-2%	-1%	-2%	**27%**	2%	1%	-3%	-1%	0%
90%	**31%**	-2%	-2%	-2%	0%	-1%	**38%**	**19%**	**-8%**	**-6%**	-4%	-3%
Long Term												
Full Simulation Period[b]	**19%**	-4%	-3%	-1%	-1%	1%	**6%**	3%	**-8%**	-1%	-1%	-1%
Water Year Types[c]												
Wet (23%)	**16%**	-3%	-3%	-1%	0%	2%	0%	2%	**-10%**	-1%	-2%	-2%
Above Normal (24%)	**18%**	-5%	-3%	-1%	-1%	2%	3%	**6%**	**-7%**	-1%	0%	0%
Below Normal (10%)	**21%**	**-6%**	-4%	-3%	-2%	1%	**8%**	0%	**-7%**	-1%	-1%	-1%
Dry (16%)	**18%**	-4%	-5%	-3%	-3%	-2%	**24%**	**9%**	-2%	-1%	-1%	-1%
Critical (27%)	**22%**	-4%	-4%	-3%	-3%	-1%	**35%**	3%	-2%	-3%	-1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.3.11 Old and Middle River Flow

Table 5C.3.3.11.1 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

No Action Alternative

	Monthly Outflow Volume (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (32%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (16%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (13%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (24%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (15%)	253	296	418	723	861	747	559	410	348	249	235	179

Alternative 1

	Monthly Outflow Volume (TAF)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

Alternative 1 minus No Action Alternative

	Monthly Outflow Volume (Percent Change)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	**-42%**	0%	-1%	4%	3%	**6%**	**-5%**	**-11%**	-1%	**-12%**	-3%	**-78%**
20%	**-52%**	**-56%**	-5%	3%	0%	5%	**-9%**	**-8%**	**11%**	**-14%**	-3%	**-79%**
30%	**-54%**	**-60%**	**-5%**	**-10%**	**-7%**	**-6%**	**-17%**	**-21%**	**7%**	**-10%**	0%	**-74%**
40%	**-41%**	**-56%**	**-17%**	**-13%**	1%	-1%	**-19%**	**-20%**	**20%**	-1%	0%	**-65%**
50%	**-9%**	**-54%**	**-22%**	**-17%**	**-7%**	-3%	**-29%**	**-13%**	**18%**	-3%	0%	**-16%**
60%	0%	**-27%**	**6%**	**-21%**	**-16%**	**-8%**	**-23%**	**-8%**	**15%**	0%	0%	**-10%**
70%	0%	0%	0%	**-16%**	**-11%**	**-15%**	**-21%**	-5%	**6%**	0%	0%	0%
80%	0%	0%	0%	**-11%**	**-15%**	-4%	**-5%**	3%	**10%**	0%	**-6%**	0%
90%	**15%**	-1%	0%	**-17%**	**-11%**	**-9%**	**-6%**	-2%	**13%**	0%	**-10%**	0%
Long Term												
Full Simulation Period[b]	**-29%**	**-26%**	-1%	-5%	-2%	-1%	**-11%**	**-9%**	**9%**	**-8%**	-2%	**-58%**
Water Year Types[c]												
Wet (32%)	**-35%**	**-22%**	3%	-1%	0%	2%	**-8%**	**-9%**	**8%**	**-8%**	-1%	**-72%**
Above Normal (16%)	**-24%**	**-24%**	**-7%**	**-7%**	0%	2%	**-17%**	**-15%**	**16%**	**-10%**	-1%	**-66%**
Below Normal (13%)	**-38%**	**-33%**	**-6%**	**-18%**	1%	-3%	**-20%**	**-9%**	**20%**	**-14%**	0%	-3%
Dry (24%)	**-24%**	**-37%**	**-7%**	**-17%**	**-12%**	**-11%**	**-12%**	**-7%**	**5%**	-2%	**-6%**	0%
Critical (15%)	**-5%**	**-18%**	**-13%**	**-7%**	**-20%**	**-9%**	**-6%**	**-6%**	-1%	0%	-2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.11.2 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

No Action Alternative

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	614	893	4,094	6,333	7,834	5,445	4,160	2,848	1,180	763	277	1,161
20%	586	874	2,112	4,323	4,927	4,179	2,834	1,727	609	688	259	1,134
30%	576	825	1,003	3,149	3,624	2,834	1,795	1,200	548	573	246	909
40%	423	657	761	1,793	2,868	2,092	1,504	1,004	465	497	246	656
50%	270	586	611	1,299	2,037	1,676	1,197	843	431	492	246	261
60%	246	368	359	1,050	1,407	1,204	946	731	422	400	246	201
70%	246	268	315	800	1,023	1,061	758	592	408	307	246	179
80%	246	268	278	586	823	783	598	520	383	307	246	179
90%	184	210	277	486	633	662	564	446	334	246	240	179
Long Term												
Full Simulation Period[b]	401	686	1,416	2,720	3,186	2,697	1,812	1,281	648	495	258	565
Water Year Types[c]												
Wet (32%)	520	1,020	2,913	5,509	5,771	5,000	3,288	2,394	1,120	655	273	1,133
Above Normal (16%)	332	742	1,502	3,049	3,807	3,236	1,938	1,201	485	667	251	662
Below Normal (13%)	471	650	582	1,077	2,048	1,113	1,019	789	445	508	254	211
Dry (24%)	341	470	471	981	1,443	1,396	999	680	431	315	257	191
Critical (15%)	253	296	418	723	861	747	559	410	348	249	235	179

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	72%	0%	1%	-4%	-3%	-6%	5%	12%	1%	14%	3%	346%
20%	107%	128%	5%	-3%	0%	-5%	10%	9%	-10%	16%	3%	372%
30%	118%	152%	5%	11%	7%	7%	20%	26%	-7%	11%	0%	288%
40%	68%	126%	20%	15%	-1%	1%	24%	25%	-16%	1%	0%	189%
50%	10%	119%	28%	20%	7%	3%	40%	15%	-15%	4%	0%	19%
60%	0%	37%	-6%	26%	19%	9%	31%	8%	-13%	0%	0%	11%
70%	0%	0%	0%	19%	13%	18%	27%	5%	-6%	0%	0%	0%
80%	0%	0%	0%	13%	18%	4%	5%	-3%	-9%	0%	6%	0%
90%	-13%	1%	0%	20%	13%	10%	7%	2%	-12%	0%	11%	0%
Long Term												
Full Simulation Period[b]	40%	36%	1%	5%	2%	1%	12%	10%	-8%	8%	2%	139%
Water Year Types[c]												
Wet (32%)	53%	29%	-3%	1%	0%	-2%	9%	10%	-7%	8%	1%	255%
Above Normal (16%)	31%	31%	8%	7%	0%	-2%	20%	17%	-14%	11%	1%	195%
Below Normal (13%)	62%	50%	7%	23%	-1%	3%	25%	10%	-17%	16%	0%	3%
Dry (24%)	31%	59%	7%	20%	14%	13%	14%	7%	-5%	2%	6%	0%
Critical (15%)	5%	21%	15%	8%	25%	10%	6%	6%	1%	0%	2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.11.3 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

Alternative 3

Statistic	Monthly Outflow Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	298	902	4,155	6,646	7,924	5,788	3,812	2,471	1,066	729	265	261
20%	266	389	2,140	4,462	4,802	4,293	2,584	1,383	630	659	246	245
30%	257	319	1,154	3,104	3,795	2,714	1,525	913	572	575	246	235
40%	246	290	722	1,875	3,031	2,137	1,238	750	502	492	246	229
50%	246	268	480	1,398	2,079	1,678	867	704	477	492	246	222
60%	246	268	398	1,061	1,416	1,185	754	630	436	428	246	191
70%	246	268	336	768	1,078	1,032	601	579	422	307	246	179
80%	246	268	277	599	821	789	566	493	409	307	241	179
90%	185	208	277	497	634	654	512	437	351	246	222	179
Long Term												
Full Simulation Period[b]	277	506	1,465	2,772	3,236	2,711	1,617	1,122	656	490	252	240
Water Year Types[c]												
Wet (32%)	333	791	3,116	5,609	5,812	5,020	2,996	2,109	1,118	649	271	319
Above Normal (16%)	242	568	1,461	3,096	3,903	3,292	1,636	960	514	645	246	228
Below Normal (13%)	281	422	564	1,156	2,186	1,120	856	699	457	507	254	221
Dry (24%)	250	297	457	992	1,459	1,384	882	612	445	321	245	191
Critical (15%)	234	243	397	721	859	752	528	397	346	246	230	179

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-16%**	1%	2%	1%	-2%	0%	-3%	-3%	**-9%**	**9%**	-1%	0%
20%	**-6%**	2%	**7%**	0%	-3%	-2%	0%	**-13%**	**-7%**	**11%**	-2%	2%
30%	-3%	-3%	**21%**	**10%**	**12%**	2%	2%	-4%	-3%	**12%**	0%	0%
40%	-2%	0%	**14%**	**20%**	5%	4%	2%	**-6%**	**-10%**	0%	0%	1%
50%	0%	0%	1%	**29%**	**9%**	3%	1%	-4%	**-6%**	4%	0%	1%
60%	0%	0%	4%	**27%**	**20%**	**7%**	4%	**-7%**	**-10%**	**7%**	0%	**6%**
70%	0%	0%	**7%**	**14%**	**19%**	**14%**	1%	3%	-2%	0%	0%	0%
80%	0%	0%	0%	**16%**	**18%**	5%	0%	**-8%**	-3%	0%	4%	0%
90%	**-13%**	0%	0%	**23%**	**13%**	**9%**	-3%	0%	**-7%**	0%	3%	0%
Long Term												
Full Simulation Period[b]	-3%	0%	4%	**7%**	4%	1%	0%	-3%	**-7%**	**7%**	0%	1%
Water Year Types[c]												
Wet (32%)	-2%	0%	4%	3%	1%	-1%	0%	-3%	**-8%**	**7%**	0%	0%
Above Normal (16%)	-4%	0%	**5%**	**9%**	2%	-1%	1%	**-7%**	**-9%**	**7%**	-1%	1%
Below Normal (13%)	-4%	-3%	4%	**32%**	**6%**	4%	**5%**	-3%	**-14%**	**16%**	0%	**7%**
Dry (24%)	-4%	0%	4%	**22%**	**15%**	**12%**	0%	-4%	-2%	4%	1%	0%
Critical (15%)	-2%	0%	**9%**	**8%**	**25%**	**11%**	1%	3%	0%	-1%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.11.4 Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	357	895	4,054	6,567	8,061	5,795	3,950	2,541	1,167	670	268	260
20%	283	383	2,007	4,470	4,927	4,380	2,580	1,582	679	593	251	240
30%	264	327	950	2,828	3,382	2,653	1,494	954	588	515	246	234
40%	251	291	635	1,564	2,894	2,062	1,215	801	556	492	246	227
50%	246	268	477	1,080	1,904	1,621	855	734	507	475	246	219
60%	246	268	382	833	1,179	1,104	724	674	485	400	246	181
70%	246	268	314	673	908	901	597	563	433	307	246	179
80%	246	268	277	518	698	752	567	535	422	307	232	179
90%	211	208	277	405	562	601	528	437	377	246	215	179
Long Term												
Full Simulation Period[b]	286	506	1,408	2,595	3,126	2,682	1,611	1,161	705	458	252	237
Water Year Types[c]												
Wet (32%)	340	791	3,011	5,453	5,779	5,081	3,010	2,178	1,209	605	271	319
Above Normal (16%)	253	566	1,391	2,845	3,822	3,311	1,615	1,026	562	601	249	224
Below Normal (13%)	291	433	545	879	2,062	1,078	813	719	533	437	255	206
Dry (24%)	260	296	439	815	1,269	1,236	879	635	454	310	242	191
Critical (15%)	240	244	364	670	690	680	525	386	346	248	231	179

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (TAF)											
Probability of Exceedance[a]												
10%	623	960	4,115	6,339	7,831	5,439	4,160	2,849	1,180	767	284	1,161
20%	594	874	2,112	4,319	4,907	4,174	2,807	1,763	606	688	256	1,134
30%	576	830	1,008	3,149	3,653	2,835	1,798	1,237	524	593	246	910
40%	423	660	762	1,785	2,869	2,092	1,542	1,002	453	501	246	651
50%	257	586	616	1,301	2,053	1,666	1,234	873	423	492	246	255
60%	246	369	359	1,048	1,406	1,203	1,028	776	422	400	246	204
70%	246	268	310	800	1,025	1,057	817	629	401	308	246	179
80%	246	268	286	585	823	783	712	561	370	307	246	179
90%	184	211	277	486	633	662	623	462	330	246	230	179
Long Term												
Full Simulation Period[b]	401	690	1,413	2,714	3,184	2,695	1,848	1,312	642	500	257	565
Water Year Types[c]												
Wet (32%)	517	1,020	2,905	5,499	5,773	4,996	3,288	2,411	1,117	667	273	1,132
Above Normal (16%)	334	767	1,505	3,048	3,795	3,232	1,947	1,223	482	668	251	661
Below Normal (13%)	471	650	582	1,075	2,047	1,110	1,061	821	434	513	254	214
Dry (24%)	342	471	467	980	1,444	1,396	1,081	720	423	316	256	191
Critical (15%)	254	296	418	714	856	747	621	462	346	249	233	179

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Outflow Volume (Percent Change)											
Probability of Exceedance[a]												
10%	**75%**	**7%**	2%	-3%	-3%	**-6%**	**5%**	**12%**	1%	**14%**	**6%**	**346%**
20%	**110%**	**128%**	**5%**	-3%	0%	-5%	**9%**	**11%**	**-11%**	**16%**	2%	**372%**
30%	**118%**	**154%**	**6%**	**11%**	**8%**	**7%**	**20%**	**30%**	**-11%**	**15%**	0%	**288%**
40%	**68%**	**127%**	**20%**	**14%**	-1%	1%	**27%**	**25%**	**-19%**	2%	0%	**186%**
50%	5%	**119%**	**29%**	**20%**	**8%**	3%	**44%**	**19%**	**-17%**	4%	0%	**17%**
60%	0%	**38%**	**-6%**	**26%**	**19%**	**9%**	**42%**	**15%**	**-13%**	0%	0%	**13%**
70%	0%	0%	-1%	**19%**	**13%**	**17%**	**37%**	**12%**	**-7%**	0%	0%	0%
80%	0%	0%	3%	**13%**	**18%**	4%	**25%**	5%	**-12%**	0%	**6%**	0%
90%	**-13%**	1%	0%	**20%**	**13%**	**10%**	**18%**	**6%**	**-13%**	0%	**7%**	0%
Long Term												
Full Simulation Period[b]	**40%**	**36%**	0%	5%	2%	0%	**15%**	**13%**	**-9%**	**9%**	2%	**138%**
Water Year Types[c]												
Wet (32%)	**52%**	**29%**	-3%	1%	0%	-2%	**9%**	**11%**	**-8%**	**10%**	1%	**255%**
Above Normal (16%)	**32%**	**35%**	**8%**	**7%**	-1%	-2%	**21%**	**19%**	**-14%**	**11%**	1%	**195%**
Below Normal (13%)	**62%**	**50%**	**7%**	**22%**	-1%	3%	**31%**	**14%**	**-19%**	**17%**	0%	4%
Dry (24%)	**31%**	**59%**	**6%**	**20%**	**14%**	**13%**	**23%**	**13%**	**-7%**	2%	**6%**	0%
Critical (15%)	**6%**	**21%**	**15%**	**7%**	**24%**	**10%**	**18%**	**20%**	0%	0%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.12 X2 Position

Table 5C.3.3.12.1 X2, End of Month Position

No Action Alternative

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (16%)	81.0	79.3	75.9	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (13%)	89.1	87.6	78.8	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (24%)	91.5	86.9	75.4	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (15%)	93.6	93.6	87.8	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

Alternative 1

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

Alternative 1 minus No Action Alternative

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.7	-0.5	0.1	3.3	3.5	2.6	0.5	0.5	0.3	0.2	0.2	0.1
20%	0.1	-0.1	3.0	3.6	3.9	0.8	1.6	0.3	-0.2	-0.1	0.5	0.4
30%	-0.2	0.1	5.6	3.5	4.8	2.5	3.1	1.3	-0.4	0.0	0.6	0.4
40%	-0.1	2.7	6.1	5.3	2.2	2.0	3.0	3.0	-1.5	-0.4	0.3	0.0
50%	0.8	9.2	5.6	4.4	3.0	1.7	2.7	3.0	0.0	0.3	0.5	1.1
60%	9.3	8.6	2.7	3.4	0.5	-0.2	3.3	2.9	-0.4	1.0	0.1	8.0
70%	15.9	14.0	5.0	1.1	0.5	0.2	1.7	2.2	1.0	0.9	0.4	14.6
80%	15.6	13.9	3.6	0.7	-0.1	-0.2	0.9	1.0	1.6	0.4	1.3	14.4
90%	14.2	5.6	0.5	0.1	0.1	-0.2	0.5	1.2	0.4	0.1	0.8	13.8
Long Term												
Full Simulation Period[b]	5.8	5.3	3.1	2.4	1.8	0.9	1.7	1.8	-0.1	0.2	0.5	5.4
Water Year Types[c]												
Wet	13.9	11.9	4.7	0.9	0.4	0.0	1.3	1.9	-0.1	0.4	0.5	12.7
Above Normal	9.3	8.6	4.5	2.6	1.1	0.0	2.1	2.7	-0.2	0.3	0.7	7.2
Below Normal	0.3	1.0	1.8	4.2	2.1	0.8	2.3	2.0	-0.9	0.2	0.8	0.4
Dry	-0.2	0.3	1.5	3.5	3.2	2.2	1.9	1.4	0.1	-0.1	0.4	0.3
Critical	-0.5	-0.2	2.0	1.6	2.9	2.2	1.2	0.9	0.5	0.3	0.3	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and And Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.12.2 X2, End of Month Position

Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

No Action Alternative

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.4	93.6	90.8	84.0	77.3	75.9	78.1	81.0	83.1	86.5	89.7	91.9
20%	91.8	91.4	87.6	82.3	71.7	72.8	73.6	79.3	81.8	84.9	88.1	91.1
30%	91.6	90.9	83.9	79.8	67.2	65.7	70.0	77.3	81.0	84.3	87.5	90.6
40%	91.1	88.1	82.5	73.5	64.0	64.5	66.7	72.3	80.2	82.4	86.2	90.1
50%	89.7	81.1	81.1	71.2	58.5	59.9	64.7	69.9	77.8	80.6	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.2	58.0	60.9	66.3	76.6	78.1	84.6	81.0
70%	74.1	75.1	72.0	55.1	51.9	53.9	58.0	63.8	73.4	77.4	84.1	74.1
80%	74.0	74.0	62.2	51.3	49.4	50.6	53.8	59.1	69.8	76.8	82.7	74.0
90%	74.0	74.0	52.8	49.4	48.2	49.0	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	64.2	68.8	75.9	80.4	85.4	83.9
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.8	51.2	53.1	55.1	58.4	67.4	74.9	82.7	73.9
Above Normal (16%)	81.0	79.3	75.9	61.0	54.9	55.3	59.1	65.2	75.3	77.9	83.1	74.7
Below Normal (13%)	89.1	87.6	78.8	74.6	64.3	66.9	69.0	72.9	79.1	81.1	85.1	89.3
Dry (24%)	91.5	86.9	75.4	77.7	67.7	65.4	68.8	74.5	80.1	84.5	87.6	90.5
Critical (15%)	93.6	93.6	87.8	82.0	75.3	74.6	77.7	82.3	85.2	87.9	90.3	92.1

No Action Alternative minus Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.7**	**0.5**	-0.1	-3.3	-3.5	-2.6	-0.5	-0.5	-0.3	-0.2	-0.2	-0.1
20%	-0.1	**0.1**	-3.0	-3.6	-3.9	-0.8	-1.6	-0.3	**0.2**	**0.1**	-0.5	-0.4
30%	**0.2**	-0.1	-5.6	-3.5	-4.8	-2.5	-3.1	-1.3	**0.4**	0.0	-0.6	-0.4
40%	**0.1**	-2.7	-6.1	-5.3	-2.2	-2.0	-3.0	-3.0	**1.5**	**0.4**	-0.3	0.0
50%	-0.8	-9.2	-5.6	-4.4	-3.0	-1.7	-2.7	-3.0	0.0	-0.3	-0.5	-1.1
60%	-9.3	-8.6	-2.7	-3.4	-0.5	**0.2**	-3.3	-2.9	**0.4**	-1.0	-0.1	-8.0
70%	-15.9	-14.0	-5.0	-1.1	-0.5	-0.2	-1.7	-2.2	-1.0	-0.9	-0.4	-14.6
80%	-15.6	-13.9	-3.6	-0.7	**0.1**	**0.2**	-0.9	-1.0	-1.6	-0.4	-1.3	-14.4
90%	-14.2	-5.6	-0.5	-0.1	-0.1	**0.2**	-0.5	-1.2	-0.4	-0.1	-0.8	-13.8
Long Term												
Full Simulation Period[b]	-5.8	-5.3	-3.1	-2.4	-1.8	-0.9	-1.7	-1.8	**0.1**	-0.2	-0.5	-5.4
Water Year Types[c]												
Wet	-13.9	-11.9	-4.7	-0.9	-0.4	**0.0**	-1.3	-1.9	**0.1**	-0.4	-0.5	-12.7
Above Normal	-9.3	-8.6	-4.5	-2.6	-1.1	**0.0**	-2.1	-2.7	**0.2**	-0.3	-0.7	-7.2
Below Normal	-0.3	-1.0	-1.8	-4.2	-2.1	-0.8	-2.3	-2.0	**0.9**	-0.2	-0.8	-0.4
Dry	**0.2**	-0.3	-1.5	-3.5	-3.2	-2.2	-1.9	-1.4	-0.1	**0.1**	-0.4	-0.3
Critical	**0.5**	**0.2**	-2.0	-1.6	-2.9	-2.2	-1.2	-0.9	-0.5	-0.3	-0.3	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.12.3 X2, End of Month Position

Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

Alternative 3

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.6	90.8	86.1	77.8	75.8	78.2	81.5	83.2	86.4	90.0	92.2
20%	91.9	91.5	90.5	83.7	71.7	72.5	74.6	79.6	82.0	84.8	88.4	91.3
30%	91.6	91.1	89.4	81.5	67.6	66.1	71.3	78.4	81.0	84.3	87.7	90.8
40%	91.2	90.8	88.5	74.8	64.1	64.5	69.7	75.6	80.3	81.7	86.0	89.8
50%	90.7	90.6	86.7	71.8	58.8	60.0	67.3	73.1	78.8	80.7	84.9	89.3
60%	90.2	89.8	82.6	64.6	54.4	58.0	63.6	70.4	77.1	78.4	84.6	88.7
70%	89.9	89.0	74.2	55.1	52.2	54.4	59.9	66.8	75.1	77.8	84.2	88.4
80%	89.6	87.9	65.1	51.2	49.3	50.4	54.8	61.7	71.8	77.1	83.2	88.2
90%	88.2	79.6	53.0	49.5	48.1	48.8	50.4	54.8	64.9	75.0	82.4	87.6
Long Term												
Full Simulation Period[b]	90.1	87.8	79.0	68.5	61.2	61.4	65.5	70.8	76.5	80.5	85.6	89.1
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.3	54.8	51.3	53.1	56.5	60.8	68.3	75.1	82.9	86.6
Above Normal (16%)	90.3	88.0	80.0	61.5	54.9	55.0	60.9	68.4	76.2	78.0	83.4	81.8
Below Normal (13%)	89.2	88.8	80.2	75.4	64.0	66.6	70.5	74.9	79.6	81.0	85.1	89.2
Dry (24%)	91.4	87.4	76.4	78.8	67.9	65.5	69.9	76.0	80.4	84.3	87.8	90.8
Critical (15%)	93.4	93.7	89.3	82.7	75.6	74.6	78.1	82.8	85.4	88.0	90.5	92.3

Alternative 3 minus Second Basis of Comparison

Statistic	End of Month Position (km)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.5	0.5	-0.1	-1.2	-3.0	-2.7	-0.5	-0.1	-0.3	-0.3	0.1	0.2
20%	0.1	0.1	-0.1	-2.2	-3.9	-1.1	-0.6	0.1	0.4	0.0	-0.2	-0.2
30%	0.2	0.1	-0.1	-1.8	-4.4	-2.1	-1.8	-0.1	0.4	0.0	-0.4	-0.2
40%	0.2	0.0	-0.2	-4.0	-2.0	-2.1	0.0	0.3	1.6	-0.3	-0.5	-0.3
50%	0.2	0.3	0.0	-3.9	-2.6	-1.6	-0.2	0.3	1.0	-0.3	-0.4	-0.2
60%	-0.1	0.1	0.2	-3.1	-1.3	0.2	-0.5	1.2	0.9	-0.7	-0.1	-0.3
70%	-0.1	-0.1	-2.7	-1.1	-0.2	0.2	0.2	0.8	0.7	-0.5	-0.2	-0.2
80%	0.0	-0.1	-0.8	-0.8	0.0	0.1	0.1	1.5	0.3	-0.2	-0.8	-0.2
90%	0.0	0.0	-0.3	0.0	-0.2	0.0	0.0	0.2	1.0	0.2	-0.6	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.1	-0.5	-1.8	-1.7	-1.0	-0.4	0.2	0.7	-0.2	-0.3	-0.2
Water Year Types[c]												
Wet	0.0	0.0	-0.4	-0.9	-0.3	0.1	0.1	0.5	1.1	-0.1	-0.4	-0.1
Above Normal	0.0	0.1	-0.5	-2.1	-1.1	-0.2	-0.2	0.5	1.1	-0.2	-0.4	-0.1
Below Normal	-0.2	0.2	-0.5	-3.4	-2.4	-1.1	-0.8	0.1	1.4	-0.3	-0.7	-0.5
Dry	0.2	0.2	-0.5	-2.4	-2.9	-2.1	-0.8	0.1	0.3	-0.2	-0.2	-0.1
Critical	0.4	0.3	-0.6	-0.9	-2.5	-2.1	-0.7	-0.4	-0.3	-0.2	-0.1	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.12.4 X2, End of Month Position

Second Basis of Comparison

Statistic	End of Month Position (km) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	92.6	93.1	90.9	87.3	80.8	78.5	78.7	81.5	83.5	86.7	89.9	92.0
20%	91.9	91.4	90.6	85.8	75.6	73.6	75.2	79.5	81.6	84.8	88.6	91.5
30%	91.4	91.0	89.6	83.3	72.0	68.3	73.1	78.5	80.6	84.3	88.0	91.0
40%	91.0	90.8	88.6	78.8	66.2	66.5	69.7	75.3	78.7	82.0	86.6	90.1
50%	90.5	90.3	86.7	75.6	61.4	61.6	67.4	72.9	77.8	80.9	85.3	89.5
60%	90.3	89.6	82.5	67.7	55.7	57.8	64.1	69.2	76.2	79.1	84.7	89.0
70%	90.0	89.1	76.9	56.2	52.4	54.1	59.7	66.0	74.4	78.3	84.5	88.7
80%	89.6	88.0	65.9	52.0	49.3	50.4	54.7	60.2	71.4	77.3	84.0	88.4
90%	88.2	79.6	53.3	49.5	48.3	48.8	50.4	54.6	63.9	74.7	83.0	87.8
Long Term												
Full Simulation Period[b]	90.0	87.6	79.5	70.3	62.9	62.3	65.9	70.6	75.8	80.6	85.9	89.3
Water Year Types[c]												
Wet (32%)	87.8	84.8	75.8	55.7	51.6	53.0	56.4	60.2	67.2	75.2	83.3	86.7
Above Normal (16%)	90.3	87.9	80.5	63.6	56.0	55.2	61.2	67.9	75.1	78.2	83.8	81.9
Below Normal (13%)	89.4	88.6	80.6	78.7	66.4	67.6	71.3	74.9	78.2	81.3	85.9	89.7
Dry (24%)	91.2	87.2	76.9	81.1	70.8	67.5	70.7	75.9	80.2	84.4	88.1	90.9
Critical (15%)	93.1	93.4	89.8	83.6	78.1	76.7	78.8	83.3	85.7	88.2	90.6	92.3

Alternative 5

Statistic	End of Month Position (km) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	93.2	93.3	90.8	84.0	77.3	75.9	77.2	79.1	83.1	86.5	89.6	91.9
20%	91.9	91.5	87.6	82.3	71.7	72.8	72.5	77.9	81.4	84.9	88.1	91.1
30%	91.6	91.0	83.9	79.8	67.2	65.8	69.5	75.8	81.0	84.2	87.4	90.5
40%	91.0	88.0	82.4	73.5	63.9	64.5	66.4	71.5	79.6	82.3	86.1	90.0
50%	89.5	81.1	81.2	71.2	58.5	59.9	64.2	69.3	77.8	80.7	84.8	88.5
60%	81.0	81.0	79.7	64.4	55.1	57.9	60.8	66.4	76.6	78.2	84.6	81.0
70%	74.1	75.1	71.9	55.1	51.9	53.9	58.0	63.7	73.4	77.5	84.1	74.1
80%	74.0	74.1	62.2	51.3	49.4	50.6	53.5	58.9	69.8	76.8	82.6	74.0
90%	74.0	73.9	53.0	49.4	48.2	49.1	49.9	53.3	63.5	74.6	82.2	74.0
Long Term												
Full Simulation Period[b]	84.2	82.3	76.4	68.0	61.1	61.4	63.8	68.2	75.7	80.4	85.3	83.8
Water Year Types[c]												
Wet (32%)	73.9	72.9	71.1	54.7	51.2	53.1	55.1	58.2	67.3	74.7	82.6	73.9
Above Normal (16%)	81.0	79.2	75.9	60.9	54.9	55.3	59.0	65.0	75.2	77.9	83.1	74.8
Below Normal (13%)	89.1	87.2	78.6	74.6	64.3	66.9	68.4	72.1	79.0	81.1	85.0	89.3
Dry (24%)	91.4	87.0	75.4	77.7	67.7	65.4	67.9	73.4	79.8	84.5	87.6	90.5
Critical (15%)	93.5	93.5	87.9	82.1	75.5	74.6	76.7	80.8	84.5	87.7	90.2	92.1

Alternative 5 minus Second Basis of Comparison

Statistic	End of Month Position (km) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**0.6**	**0.2**	-0.1	-3.2	-3.5	-2.6	-1.5	-2.4	-0.4	-0.2	-0.3	-0.1
20%	0.0	**0.1**	-3.0	-3.6	-3.9	-0.8	-2.7	-1.6	-0.2	**0.1**	-0.4	-0.4
30%	**0.2**	**0.0**	-5.6	-3.5	-4.8	-2.5	-3.6	-2.7	**0.4**	-0.1	-0.6	-0.5
40%	**0.0**	-2.8	-6.3	-5.3	-2.2	-2.0	-3.2	-3.8	**0.9**	**0.3**	-0.5	-0.1
50%	-1.0	-9.2	-5.6	-4.4	-3.0	-1.7	-3.2	-3.5	0.0	-0.2	-0.5	-1.1
60%	-9.3	-8.7	-2.7	-3.3	-0.6	**0.1**	-3.4	-2.8	**0.3**	-0.9	-0.1	-8.0
70%	-16.0	-14.0	-5.1	-1.1	-0.5	-0.2	-1.7	-2.3	-1.0	-0.8	-0.4	-14.6
80%	-15.6	-13.9	-3.6	-0.8	**0.1**	**0.2**	-1.2	-1.3	-1.6	-0.5	-1.4	-14.4
90%	-14.2	-5.6	-0.3	-0.1	-0.1	**0.3**	-0.5	-1.2	-0.4	-0.1	-0.8	-13.8
Long Term												
Full Simulation Period[b]	-5.8	-5.4	-3.1	-2.3	-1.7	-0.9	-2.1	-2.4	-0.1	-0.3	-0.6	-5.4
Water Year Types[c]												
Wet	-13.9	-11.9	-4.7	-1.0	-0.4	**0.0**	-1.3	-2.0	**0.1**	-0.5	-0.6	-12.7
Above Normal	-9.3	-8.6	-4.5	-2.6	-1.1	**0.0**	-2.1	-2.9	**0.1**	-0.3	-0.7	-7.1
Below Normal	-0.3	-1.4	-2.0	-4.2	-2.1	-0.7	-2.9	-2.8	**0.8**	-0.2	-0.9	-0.4
Dry	**0.2**	-0.2	-1.5	-3.4	-3.1	-2.1	-2.8	-2.5	-0.3	**0.1**	-0.5	-0.4
Critical	**0.4**	**0.1**	-2.0	-1.5	-2.7	-2.1	-2.1	-2.5	-1.2	-0.5	-0.4	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) X2 is defined as the position of the 2% (grams of salt per kilogram of seawater) bottom salinity value along the axis of the estuary; measured in kilometers from the Golden Gate Bridge. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.13 Delta Outflow

Table 5C.3.3.13.1 Old and Middle River, Monthly Flow

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (32%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (16%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (13%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (24%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (15%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

Alternative 1

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

Alternative 1 minus No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	-569	-298	241	-575	850	-5,257	-4,408	-1,033	675	-426	109
20%	-3	-873	-1,370	-2,015	-1,094	107	-5,338	-4,202	-1,264	1,697	-599	39
30%	-156	-1,838	-1,673	-2,924	-1,545	-554	-5,589	-4,738	192	1,159	-67	-387
40%	-1,588	-1,993	-1,683	-3,042	-2,492	-512	-6,090	-4,781	-758	1,733	1,120	-644
50%	-1,975	-2,366	-2,302	-3,548	-2,641	-1,458	-6,475	-5,018	-1,490	1,362	2,016	-257
60%	-2,487	-2,692	-3,098	-3,848	-2,467	-806	-6,447	-5,034	-1,173	831	1,394	-433
70%	-2,822	-2,497	-1,913	-4,269	-3,323	-1,205	-6,682	-5,376	-1,016	809	656	-325
80%	-3,345	-1,773	29	-4,585	-3,873	-1,616	-6,640	-5,322	-1,534	550	489	-205
90%	-2,742	-28	16	-4,803	-4,509	-2,592	-6,744	-5,887	-1,936	471	400	-132
Long Term												
Full Simulation Period[b]	-1,504	-1,464	-1,201	-3,115	-2,301	-1,037	-6,300	-5,152	-1,034	958	486	-211
Water Year Types[c]												
Wet (32%)	-2,191	-1,882	-2,198	-3,084	-1,169	549	-10,005	-8,387	250	543	923	-320
Above Normal (16%)	-895	-1,086	-1,110	-4,566	-2,928	-1,155	-8,229	-6,173	-1,499	230	926	-344
Below Normal (13%)	-2,563	-2,142	-419	-4,210	-2,273	-1,582	-5,535	-4,638	-3,133	429	1,589	59
Dry (24%)	-1,026	-1,187	-495	-2,737	-3,259	-2,574	-3,489	-2,907	-1,241	2,073	-446	-186
Critical (15%)	-500	-809	-1,034	-1,237	-2,505	-1,287	-1,572	-1,247	-1,044	1,268	-394	-118

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.13.2 Old and Middle River, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

No Action Alternative

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,764	-3,724	-3,812	-2,823	-666	-969	3,205	2,797	-1,150	-4,130	-2,453	-3,775
20%	-4,076	-4,560	-4,673	-2,823	-1,771	-1,394	2,207	1,304	-1,570	-6,849	-4,032	-5,147
30%	-4,613	-5,156	-5,244	-3,355	-2,823	-2,738	1,632	561	-3,500	-7,647	-5,770	-6,006
40%	-4,820	-5,627	-5,871	-4,392	-3,314	-3,500	1,268	108	-3,500	-8,888	-7,996	-7,621
50%	-5,328	-6,320	-5,871	-4,710	-3,781	-3,500	612	-182	-3,500	-9,376	-9,956	-9,000
60%	-5,589	-6,564	-5,871	-5,000	-4,878	-4,568	-102	-483	-4,487	-9,746	-10,630	-9,256
70%	-6,253	-7,101	-7,413	-5,000	-5,000	-5,000	-448	-632	-5,000	-10,301	-10,737	-9,653
80%	-6,560	-8,185	-9,537	-5,000	-5,000	-5,000	-995	-1,129	-5,000	-10,602	-10,853	-9,884
90%	-7,404	-9,995	-9,681	-5,000	-5,000	-5,000	-1,247	-1,414	-5,000	-11,108	-11,083	-10,032
Long Term												
Full Simulation Period[b]	-5,476	-6,380	-6,228	-3,535	-2,905	-2,690	919	310	-3,577	-8,496	-7,975	-7,706
Water Year Types[c]												
Wet (32%)	-5,847	-7,229	-5,526	-1,900	-1,991	-1,552	3,110	2,011	-4,274	-8,957	-10,532	-9,358
Above Normal (16%)	-5,525	-6,801	-6,850	-3,699	-3,161	-4,176	1,196	412	-4,525	-9,151	-10,873	-9,542
Below Normal (13%)	-5,488	-6,749	-7,669	-4,380	-3,477	-3,919	165	-316	-3,445	-10,539	-9,624	-8,178
Dry (24%)	-5,440	-5,953	-6,676	-4,621	-3,573	-3,072	-670	-906	-3,350	-8,900	-4,745	-6,453
Critical (15%)	-4,671	-4,458	-5,006	-4,314	-2,968	-1,780	-786	-887	-1,539	-4,242	-3,168	-3,793

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-373	569	298	-241	575	-850	5,257	4,408	1,033	-675	426	-109
20%	3	873	1,370	2,015	1,094	-107	5,338	4,202	1,264	-1,697	599	-39
30%	156	1,838	1,673	2,924	1,545	554	5,589	4,738	-192	-1,159	67	387
40%	1,588	1,993	1,683	3,042	2,492	512	6,090	4,781	758	-1,733	-1,120	644
50%	1,975	2,366	2,302	3,548	2,641	1,458	6,475	5,018	1,490	-1,362	-2,016	257
60%	2,487	2,692	3,098	3,848	2,467	806	6,447	5,034	1,173	-831	-1,394	433
70%	2,822	2,497	1,913	4,269	3,323	1,205	6,682	5,376	1,016	-809	-656	325
80%	3,345	1,773	-29	4,585	3,873	1,616	6,640	5,322	1,534	-550	-489	205
90%	2,742	28	-16	4,803	4,509	2,592	6,744	5,887	1,936	-471	-400	132
Long Term												
Full Simulation Period[b]	1,504	1,464	1,201	3,115	2,301	1,037	6,300	5,152	1,034	-958	-486	211
Water Year Types[c]												
Wet (32%)	2,191	1,882	2,198	3,084	1,169	-549	10,005	8,387	-250	-543	-923	320
Above Normal (16%)	895	1,086	1,110	4,566	2,928	1,155	8,229	6,173	1,499	-230	-926	344
Below Normal (13%)	2,563	2,142	419	4,210	2,273	1,582	5,535	4,638	3,133	-429	-1,589	-59
Dry (24%)	1,026	1,187	495	2,737	3,259	2,574	3,489	2,907	1,241	-2,073	446	186
Critical (15%)	500	809	1,034	1,237	2,505	1,287	1,572	1,247	1,044	-1,268	394	118

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.13.3 Old and Middle River, Monthly Flow

Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

Alternative 3

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,471	-4,154	-3,935	-2,361	-447	-819	405	-673	-2,098	-3,660	-3,007	-3,495
20%	-4,101	-5,233	-5,184	-3,500	-1,896	-1,347	-946	-1,150	-4,287	-5,775	-4,278	-5,225
30%	-4,803	-6,947	-6,403	-3,500	-2,838	-2,283	-1,200	-1,150	-4,625	-7,093	-6,258	-6,437
40%	-5,638	-7,541	-6,403	-3,500	-3,500	-3,500	-2,086	-2,560	-5,017	-8,012	-7,669	-8,402
50%	-7,049	-8,326	-6,403	-5,000	-3,500	-3,500	-2,787	-3,326	-5,526	-8,990	-9,396	-9,192
60%	-8,252	-9,400	-6,811	-5,000	-4,273	-3,616	-3,368	-3,500	-5,750	-9,549	-9,845	-9,680
70%	-8,982	-9,810	-7,677	-5,000	-5,000	-5,061	-3,526	-3,500	-5,750	-10,046	-10,212	-9,842
80%	-9,734	-9,990	-8,823	-5,000	-5,621	-6,252	-4,031	-4,451	-6,160	-10,767	-10,624	-10,044
90%	-10,085	-10,084	-9,552	-6,976	-7,500	-7,499	-4,474	-5,149	-7,011	-11,148	-10,797	-10,177
Long Term												
Full Simulation Period[b]	-6,888	-7,771	-6,494	-3,764	-3,283	-3,072	-2,176	-2,623	-4,997	-8,112	-7,831	-7,917
Water Year Types[c]												
Wet (32%)	-7,965	-9,052	-5,964	-2,522	-2,581	-1,646	-1,367	-2,399	-5,476	-8,581	-9,731	-9,555
Above Normal (16%)	-6,452	-8,078	-6,997	-3,789	-4,137	-5,220	-3,630	-4,226	-5,981	-9,160	-10,444	-9,839
Below Normal (13%)	-7,685	-8,790	-7,868	-4,451	-3,689	-4,765	-2,676	-2,885	-5,409	-10,929	-10,032	-8,880
Dry (24%)	-6,546	-7,086	-6,848	-4,588	-3,582	-3,358	-2,517	-2,670	-4,927	-8,172	-5,079	-6,457
Critical (15%)	-4,869	-4,871	-5,252	-4,429	-3,011	-1,804	-1,328	-1,054	-2,628	-3,280	-3,450	-3,839

Alternative 3 minus Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-79	139	175	220	794	-701	2,456	938	85	-205	-127	172
20%	-22	200	858	1,338	969	-61	2,185	1,747	-1,453	-623	353	-118
30%	-34	47	514	2,779	1,529	1,009	2,757	3,027	-1,317	-605	-421	-43
40%	771	79	1,151	3,934	2,306	512	2,735	2,112	-759	-857	-793	-137
50%	254	360	1,769	3,257	2,922	1,458	3,077	1,874	-536	-976	-1,455	64
60%	-177	-144	2,158	3,848	3,072	1,757	3,181	2,017	-90	-635	-609	10
70%	93	-213	1,648	4,269	3,323	1,144	3,605	2,508	266	-553	-131	136
80%	171	-31	685	4,585	3,252	365	3,604	1,999	375	-715	-259	45
90%	61	-61	112	2,827	2,009	93	3,517	2,153	-75	-511	-114	-14
Long Term												
Full Simulation Period[b]	92	73	934	2,886	1,923	656	3,205	2,219	-386	-574	-342	0
Water Year Types[c]												
Wet (32%)	73	60	1,759	2,463	579	-642	5,528	3,977	-1,453	-167	-123	124
Above Normal (16%)	-32	-191	963	4,477	1,952	111	3,403	1,535	43	-240	-497	48
Below Normal (13%)	366	101	220	4,139	2,061	736	2,695	2,069	1,169	-818	-1,997	-762
Dry (24%)	-80	54	323	2,770	3,249	2,288	1,642	1,144	-336	-1,345	112	182
Critical (15%)	302	395	789	1,123	2,462	1,263	1,030	1,081	-45	-307	112	73

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.13.4 Old and Middle River, Monthly Flow

Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,392	-4,293	-4,109	-2,581	-1,241	-119	-2,051	-1,611	-2,184	-3,454	-2,880	-3,666
20%	-4,079	-5,433	-6,043	-4,838	-2,865	-1,287	-3,131	-2,897	-2,834	-5,152	-4,631	-5,107
30%	-4,769	-6,994	-6,917	-6,279	-4,367	-3,292	-3,957	-4,177	-3,308	-6,488	-5,837	-6,393
40%	-6,409	-7,620	-7,554	-7,434	-5,806	-4,012	-4,821	-4,673	-4,258	-7,155	-6,876	-8,264
50%	-7,303	-8,686	-8,173	-8,257	-6,422	-4,958	-5,864	-5,200	-4,990	-8,014	-7,941	-9,257
60%	-8,076	-9,256	-8,969	-8,848	-7,346	-5,373	-6,549	-5,517	-5,660	-8,914	-9,236	-9,689
70%	-9,075	-9,598	-9,326	-9,269	-8,323	-6,205	-7,131	-6,008	-6,016	-9,492	-10,081	-9,977
80%	-9,905	-9,959	-9,508	-9,585	-8,873	-6,616	-7,635	-6,451	-6,534	-10,052	-10,364	-10,089
90%	-10,146	-10,023	-9,665	-9,803	-9,509	-7,592	-7,991	-7,302	-6,936	-10,637	-10,683	-10,163
Long Term												
Full Simulation Period[b]	-6,980	-7,844	-7,429	-6,650	-5,206	-3,727	-5,381	-4,842	-4,611	-7,538	-7,489	-7,917
Water Year Types[c]												
Wet (32%)	-8,038	-9,112	-7,723	-4,985	-3,160	-1,004	-6,895	-6,376	-4,024	-8,414	-9,609	-9,678
Above Normal (16%)	-6,419	-7,887	-7,960	-8,266	-6,089	-5,331	-7,034	-5,761	-6,024	-8,921	-9,947	-9,886
Below Normal (13%)	-8,051	-8,891	-8,088	-8,590	-5,749	-5,501	-5,370	-4,954	-6,578	-10,111	-8,035	-8,118
Dry (24%)	-6,466	-7,140	-7,171	-7,358	-6,832	-5,646	-4,159	-3,813	-4,591	-6,827	-5,191	-6,639
Critical (15%)	-5,171	-5,266	-6,040	-5,551	-5,474	-3,067	-2,358	-2,134	-2,583	-2,973	-3,561	-3,911

Alternative 5

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3,722	-3,722	-3,826	-2,823	-641	-965	3,206	2,797	-1,150	-4,455	-3,295	-3,913
20%	-4,102	-4,558	-4,737	-2,823	-1,771	-1,394	2,134	1,335	-2,319	-6,620	-4,451	-5,247
30%	-4,583	-5,162	-5,150	-3,355	-2,820	-2,738	1,566	712	-3,500	-8,001	-6,361	-6,304
40%	-4,858	-5,603	-5,871	-4,378	-3,267	-3,500	1,270	568	-3,500	-9,172	-8,612	-7,552
50%	-5,145	-6,098	-5,871	-4,710	-3,513	-3,500	623	381	-3,500	-9,522	-10,244	-8,864
60%	-5,368	-6,494	-5,871	-5,000	-4,878	-4,568	381	381	-4,467	-9,822	-10,615	-9,232
70%	-6,237	-7,087	-7,453	-5,000	-5,000	-5,000	381	381	-5,000	-10,430	-10,756	-9,654
80%	-6,583	-8,086	-9,466	-5,000	-5,000	-5,000	381	381	-5,000	-10,694	-10,844	-9,915
90%	-7,355	-9,871	-9,681	-5,000	-5,000	-5,000	381	381	-5,000	-11,168	-11,076	-10,031
Long Term												
Full Simulation Period[b]	-5,443	-6,337	-6,246	-3,551	-2,904	-2,710	1,482	1,034	-3,631	-8,687	-8,239	-7,714
Water Year Types[c]												
Wet (32%)	-5,812	-7,354	-5,572	-1,900	-1,926	-1,598	3,122	2,182	-4,275	-8,965	-10,573	-9,193
Above Normal (16%)	-5,543	-6,368	-6,838	-3,716	-3,222	-4,174	1,292	780	-4,521	-9,187	-10,817	-9,491
Below Normal (13%)	-5,418	-6,748	-7,637	-4,380	-3,554	-3,971	718	468	-3,444	-10,623	-9,770	-8,460
Dry (24%)	-5,380	-5,893	-6,731	-4,620	-3,578	-3,074	565	453	-3,523	-9,446	-5,313	-6,571
Critical (15%)	-4,661	-4,461	-4,983	-4,409	-2,957	-1,770	363	310	-1,623	-4,501	-3,860	-3,805

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-331	571	284	-241	600	-846	5,257	4,408	1,033	-1,001	-415	-247
20%	-23	875	1,306	2,015	1,094	-107	5,265	4,233	516	-1,468	180	-140
30%	186	1,832	1,767	2,924	1,548	554	5,522	4,889	-192	-1,514	-524	89
40%	1,551	2,016	1,683	3,056	2,539	512	6,091	5,240	758	-2,017	-1,736	712
50%	2,158	2,588	2,302	3,548	2,909	1,458	6,487	5,582	1,490	-1,507	-2,303	393
60%	2,707	2,762	3,098	3,848	2,467	806	6,930	5,899	1,193	-907	-1,378	458
70%	2,838	2,511	1,873	4,269	3,323	1,205	7,512	6,390	1,016	-937	-675	323
80%	3,322	1,872	42	4,585	3,873	1,616	8,016	6,832	1,534	-642	-479	174
90%	2,791	152	-16	4,803	4,509	2,592	8,372	7,683	1,936	-531	-393	132
Long Term												
Full Simulation Period[b]	1,537	1,508	1,182	3,099	2,302	1,017	6,863	5,876	980	-1,149	-750	203
Water Year Types[c]												
Wet (32%)	2,226	1,758	2,151	3,084	1,234	-595	10,017	8,558	-251	-552	-964	485
Above Normal (16%)	876	1,519	1,122	4,550	2,867	1,158	8,325	6,541	1,503	-266	-871	395
Below Normal (13%)	2,633	2,144	450	4,210	2,196	1,530	6,088	5,422	3,134	-512	-1,735	-342
Dry (24%)	1,086	1,247	439	2,738	3,254	2,573	4,724	4,266	1,068	-2,620	-122	68
Critical (15%)	510	805	1,058	1,142	2,516	1,296	2,721	2,445	961	-1,528	-298	107

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.14 Exports through Jones and Banks Pumping Plants

Table 5C.3.3.14.1 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

No Action Alternative

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (32%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (16%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (13%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (24%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (15%)	314	293	384	349	250	179	93	90	64	223	176	242

Alternative 1

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

Alternative 1 minus No Action Alternative

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	34%	0%	2%	33%	19%	4%	117%	115%	9%	-3%	-4%	0%
20%	50%	17%	1%	57%	29%	-2%	178%	178%	27%	-2%	-4%	1%
30%	44%	36%	5%	75%	49%	10%	202%	203%	25%	-2%	-3%	3%
40%	38%	41%	29%	77%	50%	13%	210%	238%	30%	-6%	-10%	7%
50%	32%	42%	38%	80%	45%	20%	204%	229%	54%	-13%	-26%	5%
60%	29%	34%	26%	60%	43%	39%	166%	204%	74%	-19%	-14%	7%
70%	3%	34%	22%	50%	43%	48%	128%	162%	66%	-20%	-1%	3%
80%	-5%	17%	32%	56%	56%	32%	80%	96%	17%	-33%	17%	1%
90%	-16%	15%	13%	40%	103%	91%	22%	-13%	199%	-31%	14%	-7%
Long Term												
Full Simulation Period[b]	24%	22%	16%	50%	36%	15%	127%	120%	28%	-11%	-6%	3%
Water Year Types[c]												
Wet (32%)	34%	25%	27%	41%	13%	-9%	134%	108%	2%	-5%	-9%	3%
Above Normal (16%)	14%	16%	14%	77%	46%	15%	247%	244%	32%	-3%	-9%	4%
Below Normal (13%)	42%	31%	6%	74%	40%	27%	151%	204%	98%	-4%	-17%	-1%
Dry (24%)	16%	19%	7%	48%	64%	55%	69%	81%	41%	-25%	10%	3%
Critical (15%)	8%	18%	19%	24%	62%	49%	44%	34%	104%	-38%	15%	3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.14.2 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

No Action Alternative

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	517	671	721	604	611	675	242	240	509	714	724	671
20%	454	572	717	490	532	617	181	151	359	708	724	664
30%	434	479	685	427	448	508	158	127	340	694	715	651
40%	400	443	558	419	409	479	138	104	318	667	707	623
50%	370	415	494	406	380	424	128	97	253	634	692	604
60%	336	381	477	396	363	349	121	92	207	588	519	509
70%	310	347	454	377	325	312	113	92	192	501	371	410
80%	286	302	379	321	267	283	104	92	150	444	240	335
90%	250	251	335	280	165	159	89	92	43	232	141	243
Long Term												
Full Simulation Period[b]	378	430	527	426	395	423	154	140	276	558	521	514
Water Year Types[c]												
Wet (32%)	410	497	564	513	537	594	204	207	445	669	717	638
Above Normal (16%)	376	450	562	406	401	496	130	105	315	587	709	628
Below Normal (13%)	386	456	590	387	354	394	134	100	209	657	622	542
Dry (24%)	374	398	510	392	315	318	153	126	194	541	296	426
Critical (15%)	314	293	384	349	250	179	93	90	64	223	176	242

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-25%	0%	-2%	-25%	-16%	-4%	-54%	-53%	-8%	3%	4%	0%
20%	-33%	-15%	-1%	-36%	-22%	2%	-64%	-64%	-21%	2%	4%	-1%
30%	-31%	-27%	-5%	-43%	-33%	-9%	-67%	-67%	-20%	2%	3%	-3%
40%	-28%	-29%	-22%	-43%	-33%	-12%	-68%	-70%	-23%	7%	12%	-7%
50%	-24%	-30%	-28%	-44%	-31%	-17%	-67%	-70%	-35%	15%	34%	-5%
60%	-22%	-26%	-21%	-38%	-30%	-28%	-62%	-67%	-43%	24%	16%	-7%
70%	-3%	-25%	-18%	-33%	-30%	-32%	-56%	-62%	-40%	24%	1%	-2%
80%	5%	-14%	-24%	-36%	-36%	-24%	-44%	-49%	-14%	48%	-15%	-1%
90%	19%	-13%	-11%	-29%	-51%	-48%	-18%	15%	-67%	45%	-13%	7%
Long Term												
Full Simulation Period[b]	-20%	-18%	-14%	-33%	-27%	-13%	-56%	-55%	-22%	13%	7%	-3%
Water Year Types[c]												
Wet (32%)	-25%	-20%	-21%	-29%	-12%	9%	-57%	-52%	-2%	6%	10%	-3%
Above Normal (16%)	-12%	-14%	-12%	-43%	-31%	-13%	-71%	-71%	-24%	3%	9%	-3%
Below Normal (13%)	-30%	-23%	-5%	-43%	-29%	-21%	-60%	-67%	-50%	4%	20%	1%
Dry (24%)	-14%	-16%	-7%	-32%	-39%	-36%	-41%	-45%	-29%	34%	-9%	-3%
Critical (15%)	-8%	-15%	-16%	-19%	-38%	-33%	-31%	-25%	-51%	60%	-13%	-3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.14.3 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

Alternative 3

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	718	653	725	722	547	563	667	694	694	671
20%	673	671	691	565	603	622	510	496	461	694	694	671
30%	627	652	628	440	524	577	465	452	399	694	694	671
40%	552	627	583	422	449	532	437	386	373	680	694	657
50%	476	571	546	411	393	460	369	329	355	628	624	640
60%	382	501	523	395	365	351	320	281	338	566	502	572
70%	322	467	505	377	320	316	255	230	311	448	396	417
80%	265	346	479	328	264	288	187	124	252	382	268	344
90%	218	276	378	304	202	159	124	102	138	190	170	228
Long Term												
Full Simulation Period[b]	465	520	549	442	426	445	353	330	362	533	513	529
Water Year Types[c]												
Wet (32%)	544	615	601	559	594	589	494	490	519	648	667	654
Above Normal (16%)	430	533	574	414	469	566	441	413	397	586	680	647
Below Normal (13%)	524	587	607	394	373	448	312	266	330	683	650	588
Dry (24%)	440	471	523	389	314	337	270	242	292	492	318	426
Critical (15%)	321	319	401	355	251	180	127	100	131	158	196	245

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	-3%	**-19%**	0%	3%	4%	**9%**	**20%**	0%	0%	0%
20%	-1%	0%	-5%	**-27%**	**-12%**	2%	1%	**18%**	1%	0%	0%	0%
30%	0%	0%	**-13%**	**-41%**	**-21%**	3%	-3%	**17%**	**-6%**	2%	0%	0%
40%	0%	1%	**-19%**	**-43%**	**-27%**	-2%	2%	**10%**	**-9%**	**9%**	**9%**	-2%
50%	-3%	-3%	**-20%**	**-44%**	**-29%**	**-10%**	**-5%**	3%	**-9%**	**14%**	**21%**	1%
60%	**-12%**	-2%	**-13%**	**-38%**	**-30%**	**-28%**	0%	0%	**-6%**	**19%**	**13%**	5%
70%	1%	0%	**-9%**	**-33%**	**-31%**	**-31%**	-1%	-5%	-3%	**11%**	**7%**	-1%
80%	-3%	-2%	-4%	**-34%**	**-37%**	**-23%**	0%	**-31%**	**43%**	**27%**	-5%	1%
90%	4%	-4%	0%	**-22%**	**-40%**	**-48%**	**14%**	**26%**	**8%**	**19%**	**5%**	1%
Long Term												
Full Simulation Period[b]	-1%	-1%	**-10%**	**-31%**	**-21%**	**-9%**	1%	**7%**	3%	**8%**	5%	0%
Water Year Types[c]												
Wet (32%)	-1%	-1%	**-16%**	**-23%**	-2%	**9%**	4%	**14%**	**14%**	3%	2%	-1%
Above Normal (16%)	0%	2%	**-10%**	**-42%**	**-20%**	-1%	-3%	**14%**	-4%	2%	**5%**	-1%
Below Normal (13%)	-4%	-1%	-3%	**-42%**	**-25%**	**-10%**	**-7%**	**-12%**	**-20%**	**9%**	**26%**	**9%**
Dry (24%)	1%	-1%	-4%	**-33%**	**-39%**	**-32%**	4%	**6%**	**6%**	**22%**	-2%	-3%
Critical (15%)	**-6%**	**-7%**	**-12%**	**-18%**	**-38%**	**-32%**	-5%	**-17%**	0%	**14%**	-3%	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.14.4 Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	694	671	739	803	727	703	526	515	555	694	694	671
20%	680	671	724	769	686	608	503	420	455	694	694	671
30%	627	652	719	747	668	560	477	387	425	680	694	671
40%	553	623	718	741	614	542	427	351	412	624	634	669
50%	489	591	683	730	552	509	390	319	389	551	515	635
60%	433	513	601	635	519	486	321	281	361	474	446	545
70%	318	464	553	565	465	461	258	242	320	404	369	420
80%	273	352	500	499	416	374	188	181	176	300	281	340
90%	209	288	378	391	335	304	109	80	128	160	161	226
Long Term												
Full Simulation Period[b]	471	525	612	638	538	489	351	308	352	494	489	528
Water Year Types[c]												
Wet (32%)	549	619	716	724	609	543	476	430	456	632	655	660
Above Normal (16%)	428	521	641	716	584	570	453	363	415	572	647	651
Below Normal (13%)	548	595	623	674	497	500	337	304	414	629	517	539
Dry (24%)	435	475	546	579	518	493	259	228	274	403	325	438
Critical (15%)	340	345	455	433	406	266	134	121	132	139	203	249

Alternative 5

Statistic	Monthly Export Volume (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	514	671	721	604	613	677	223	218	509	714	724	671
20%	454	553	717	490	528	612	165	127	359	709	724	662
30%	429	479	685	427	448	528	134	91	340	696	715	648
40%	378	443	558	419	416	479	122	83	318	678	705	626
50%	360	408	496	405	380	424	111	71	251	646	693	598
60%	334	375	481	396	363	349	97	50	207	606	571	508
70%	311	347	452	377	323	312	80	38	193	568	401	415
80%	289	302	387	319	267	283	45	23	178	445	278	347
90%	245	250	337	280	165	159	30	7	42	271	192	254
Long Term												
Full Simulation Period[b]	376	427	528	427	394	423	122	99	279	570	538	514
Water Year Types[c]												
Wet (32%)	408	505	564	514	532	592	202	202	444	667	718	627
Above Normal (16%)	376	423	561	407	405	496	127	92	315	590	705	625
Below Normal (13%)	381	456	588	387	359	397	103	55	208	663	632	561
Dry (24%)	370	394	513	392	315	318	80	41	205	577	333	433
Critical (15%)	313	293	382	355	249	179	34	20	69	239	222	243

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-26%**	0%	-2%	**-25%**	**-16%**	-4%	**-58%**	**-58%**	**-8%**	3%	4%	0%
20%	**-33%**	**-18%**	-1%	**-36%**	**-23%**	1%	**-67%**	**-70%**	**-21%**	2%	4%	-1%
30%	**-32%**	**-26%**	-5%	**-43%**	**-33%**	**-6%**	**-72%**	**-77%**	**-20%**	2%	3%	-4%
40%	**-32%**	**-29%**	**-22%**	**-43%**	**-32%**	**-12%**	**-71%**	**-77%**	**-23%**	**9%**	**11%**	**-6%**
50%	**-26%**	**-31%**	**-27%**	**-45%**	**-31%**	**-17%**	**-71%**	**-78%**	**-35%**	**17%**	**35%**	**-6%**
60%	**-23%**	**-27%**	**-20%**	**-38%**	**-30%**	**-28%**	**-70%**	**-82%**	**-43%**	**28%**	**28%**	**-7%**
70%	-2%	**-25%**	**-18%**	**-33%**	**-30%**	**-32%**	**-69%**	**-84%**	**-40%**	**41%**	**9%**	-1%
80%	**6%**	**-14%**	**-23%**	**-36%**	**-36%**	**-24%**	**-76%**	**-87%**	1%	**49%**	-1%	2%
90%	**17%**	**-13%**	**-11%**	**-29%**	**-51%**	**-48%**	**-72%**	**-91%**	**-67%**	**69%**	**19%**	**12%**
Long Term												
Full Simulation Period[b]	**-20%**	**-19%**	**-14%**	**-33%**	**-27%**	**-13%**	**-65%**	**-68%**	**-21%**	**15%**	**10%**	-3%
Water Year Types[c]												
Wet (32%)	**-26%**	**-19%**	**-21%**	**-29%**	**-13%**	**9%**	**-58%**	**-53%**	-3%	**6%**	**10%**	-5%
Above Normal (16%)	**-12%**	**-19%**	**-12%**	**-43%**	**-31%**	**-13%**	**-72%**	**-75%**	**-24%**	3%	**9%**	-4%
Below Normal (13%)	**-30%**	**-23%**	**-6%**	**-43%**	**-28%**	**-21%**	**-69%**	**-82%**	**-50%**	**5%**	**22%**	4%
Dry (24%)	**-15%**	**-17%**	**-6%**	**-32%**	**-39%**	**-36%**	**-69%**	**-82%**	**-25%**	**43%**	2%	-1%
Critical (15%)	**-8%**	**-15%**	**-16%**	**-18%**	**-39%**	**-33%**	**-75%**	**-83%**	**-48%**	**72%**	**10%**	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.15 CVP Deliveries

Table 5C.3.3.15.1.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

					Alternative 1	No Action Alternative	Alternative 1 minus No Action Alternative
Water Supply Reliability							
Sacramento River Hydrologic Region							
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,859	-1
				Dry	1,905	1,906	0
				Critical	1,734	1,737	-3
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	146	8
				Dry	151	146	6
				Critical	105	102	3
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	207	7
				Dry	192	186	6
				Critical	152	152	0
	CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	221	185	36
				Dry	124	86	39
				Critical	38	24	14
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)							
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
				Dry	875	875	0
				Critical	741	741	0
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
				Dry	268	269	0
				Critical	224	224	0
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
				Dry	0	0	0
				Critical	0	0	0
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	350	269	82
				Dry	206	140	67
				Critical	65	41	24
San Francisco Bay Hydrologic Region							
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	289	275	13
				Dry	284	274	10
				Critical	270	264	6
	CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	43	33	11
				Dry	25	17	8
				Critical	8	5	3
Central Coast Hydrologic Region							
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)							
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
				Dry	12	12	0
				Critical	10	10	0
	CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	715	545	169
				Dry	430	288	143
				Critical	137	85	51
Total For All Regions							
	Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,971	4,646	325
				Dry	4,475	4,198	277
				Critical	3,484	3,385	99

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

Table 5C.3.3.15.1.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 1	No Action Alternative	Alternative 1 minus No Action Alternative
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	221	185	36
			Dry	124	86	39
			Critical	38	24	14
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	486	467	19
			Dry	461	447	14
			Critical	410	405	5
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	120	113	8
			Dry	105	97	9
			Critical	80	75	6
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,859	-1
			Dry	1,905	1,906	0
			Critical	1,734	1,737	-3
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	146	8
			Dry	151	146	6
			Critical	105	102	3
Total CVP North of Delta						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,720	2,658	62
			Dry	2,642	2,584	58
			Critical	2,287	2,268	19
South of Delta (Does not include Eastside Contractors deliveries)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,108	847	262
			Dry	662	445	218
			Critical	210	131	78
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	15	2
			Dry	15	14	1
			Critical	12	11	1
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	268	269	0
			Critical	224	224	0
Total CVP South of Delta (Does not include Eastside Contractors deliveries)						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,386	1,123	263
			Dry	946	727	219
			Critical	445	366	79
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	510	508	2
			Dry	524	524	0
			Critical	460	445	16
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	108	104	5
			Dry	87	84	2
			Critical	4	4	0
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	618	611	7
			Dry	611	608	2
			Critical	465	449	16

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Contra Costa Water District accounted for as part of North of Delta deliveries.

Table 5C.3.3.15.2.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				No Action Alternative	Second Basis of Comparison	No Action Alternative minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,859	1,858	1
			Dry	1,906	1,905	0
			Critical	1,737	1,734	3
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
			Dry	146	151	-6
			Critical	102	105	-3
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	207	214	-7
			Dry	186	192	-6
			Critical	152	152	0
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	185	221	-36
			Dry	86	124	-39
			Critical	24	38	-14
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	269	268	0
			Critical	224	224	0
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	269	350	-82
			Dry	140	206	-67
			Critical	41	65	-24
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	275	289	-13
			Dry	274	284	-10
			Critical	264	270	-6
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	33	43	-11
			Dry	17	25	-8
			Critical	5	8	-3
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	545	715	-169
			Dry	288	430	-143
			Critical	85	137	-51
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,646	4,971	-325
			Dry	4,198	4,475	-277
			Critical	3,385	3,484	-99

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

Table 5C.3.3.15.2.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				No Action Alternative	Second Basis of Comparison	No Action Alternative minus Second Basis of Comparison
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	185	221	-36
			Dry	86	124	-39
			Critical	24	38	-14
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	467	486	-19
			Dry	447	461	-14
			Critical	405	410	-5
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	113	120	-8
			Dry	97	105	-9
			Critical	75	80	-6
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,859	1,858	1
			Dry	1,906	1,905	0
			Critical	1,737	1,734	3
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-8
			Dry	146	151	-6
			Critical	102	105	-3
Total CVP North of Delta						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,658	2,720	-62
			Dry	2,584	2,642	-58
			Critical	2,268	2,287	-19
South of Delta (Does not include Eastside Contractors deliveries)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	847	1,108	-262
			Dry	445	662	-218
			Critical	131	210	-78
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	15	17	-2
			Dry	14	15	-1
			Critical	11	12	-1
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	269	268	0
			Critical	224	224	0
Total CVP South of Delta (Does not include Eastside Contractors deliveries)						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,123	1,386	-263
			Dry	727	946	-219
			Critical	366	445	-79
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	508	510	-2
			Dry	524	524	0
			Critical	445	460	-16
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	104	108	-5
			Dry	84	87	-2
			Critical	4	4	0
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	611	618	-7
			Dry	608	611	-2
			Critical	449	465	-16

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Contra Costa Water District accounted for as part of North of Delta deliveries.

Table 5C.3.3.15.3.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 3	Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,858	2
			Dry	1,906	1,905	0
			Critical	1,742	1,734	8
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	155	-1
			Dry	149	151	-2
			Critical	103	105	-2
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	214	-1
			Dry	192	192	0
			Critical	152	152	1
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	209	221	-12
			Dry	111	124	-13
			Critical	31	38	-7
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	269	268	0
			Critical	224	224	0
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	342	350	-9
			Dry	185	206	-21
			Critical	53	65	-12
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	286	289	-3
			Dry	283	284	-1
			Critical	267	270	-4
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	42	43	-1
			Dry	23	25	-2
			Critical	6	8	-2
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	696	715	-19
			Dry	387	430	-43
			Critical	108	137	-28
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,927	4,971	-44
			Dry	4,392	4,475	-82
			Critical	3,437	3,484	-46

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

Table 5C.3.3.15.3.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 3	Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	209	221	-12
			Dry	111	124	-13
			Critical	31	38	-7
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	483	486	-3
			Dry	460	461	-1
			Critical	408	410	-3
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	118	120	-2
			Dry	104	105	-2
			Critical	78	80	-3
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,860	1,858	2
			Dry	1,906	1,905	0
			Critical	1,742	1,734	8
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	153	155	-1
			Dry	149	151	-2
			Critical	103	105	-2
Total CVP North of Delta						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,706	2,720	-15
			Dry	2,626	2,642	-16
			Critical	2,284	2,287	-4
South of Delta (Does not include Eastside Contractors deliveries)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,079	1,108	-29
			Dry	596	662	-67
			Critical	168	210	-42
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	17	0
			Dry	15	15	0
			Critical	11	12	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	269	268	0
			Critical	224	224	0
Total CVP South of Delta (Does not include Eastside Contractors deliveries)						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,357	1,386	-29
			Dry	879	946	-66
			Critical	403	445	-43
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	513	510	3
			Dry	524	524	0
			Critical	478	460	17
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	123	108	15
			Dry	109	87	22
			Critical	36	4	32
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	636	618	18
			Dry	633	611	22
			Critical	514	465	50

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Contra Costa Water District accounted for as part of North of Delta deliveries.

Table 5C.3.3.15.4.1 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 5	Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,858	3
			Dry	1,906	1,905	0
			Critical	1,747	1,734	13
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-9
			Dry	145	151	-6
			Critical	103	105	-2
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	207	214	-7
			Dry	186	192	-6
			Critical	152	152	0
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	185	221	-36
			Dry	85	124	-39
			Critical	24	38	-14
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0
			Dry	875	875	0
			Critical	741	741	0
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	269	268	0
			Critical	222	224	-2
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0
			Dry	0	0	0
			Critical	0	0	0
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	264	350	-87
			Dry	135	206	-71
			Critical	40	65	-25
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	275	289	-13
			Dry	275	284	-9
			Critical	264	270	-6
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	32	43	-11
			Dry	17	25	-8
			Critical	5	8	-3
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0
			Dry	12	12	0
			Critical	10	10	0
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	538	715	-176
			Dry	281	430	-149
			Critical	85	137	-52
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,634	4,971	-337
			Dry	4,186	4,475	-288
			Critical	3,393	3,484	-91

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

Table 5C.3.3.15.4.2 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

				Alternative 5	Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Water Supply Reliability						
North of Delta						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	185	221	-36
			Dry	85	124	-39
			Critical	24	38	-14
CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	467	486	-18
			Dry	447	461	-13
			Critical	405	410	-5
CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	112	120	-8
			Dry	96	105	-9
			Critical	74	80	-7
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,861	1,858	3
			Dry	1,906	1,905	0
			Critical	1,747	1,734	13
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	146	155	-9
			Dry	145	151	-6
			Critical	103	105	-2
Total CVP North of Delta						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	2,660	2,720	-60
			Dry	2,584	2,642	-58
			Critical	2,279	2,287	-8
South of Delta (Does not include Eastside Contractors deliveries)						
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	834	1,108	-274
			Dry	433	662	-229
			Critical	130	210	-80
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	15	17	-2
			Dry	14	15	-1
			Critical	11	12	-1
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	261	261	0
			Dry	269	268	0
			Critical	222	224	-2
Total CVP South of Delta (Does not include Eastside Contractors deliveries)						
Total CVP Ag, M&I, Settlement, and Refuge Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,110	1,386	-276
			Dry	715	946	-230
			Critical	363	445	-83
Eastside Contractors deliveries						
Water Rights	Delivery (annual average)	(TAF/year)	Long Term	502	510	-8
			Dry	524	524	0
			Critical	406	460	-55
CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	100	108	-8
			Dry	69	87	-18
			Critical	8	4	4
Total Eastside Contractors Deliveries						
Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	602	618	-16
			Dry	593	611	-18
			Critical	414	465	-50

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 6) Contra Costa Water District accounted for as part of North of Delta deliveries.

Table 5C.3.3.15.5 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

	Stanislaus Deliveries		Difference from No Action Alternative		Difference from Second Basis of Comparison	
	CVP	Water Rights	CVP	Water Rights	CVP	Water Rights
	(TAF)	(TAF)	(TAF)	(TAF)	(TAF)	(TAF)
No Action Alternative	103.5	507.8				
Second Basis of Comparison	108.1	510.1	4.5	2.3		
Alternative 2	103.5	507.8			-4.5	-2.3
Alternative 3	123.2	512.7	19.6	4.9	15.1	2.6
Alternative 5	99.7	502.1	-3.8	-5.7	-8.4	-8.1

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.3.16 CVP Total Generating Capacity

Table 5C.3.3.16.1 CVP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

Alternative 1

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

Alternative 1 minus No Action Alternative

Statistic	Monthly Capacity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5%	4%	2%	2%	1%	2%	3%	3%	2%	1%	5%	5%
20%	6%	4%	3%	2%	2%	3%	3%	3%	1%	-1%	3%	4%
30%	5%	4%	4%	3%	2%	3%	4%	1%	1%	0%	1%	3%
40%	4%	6%	4%	3%	3%	4%	4%	2%	1%	0%	2%	1%
50%	2%	5%	4%	5%	4%	4%	4%	2%	0%	0%	2%	2%
60%	2%	5%	5%	4%	4%	5%	4%	3%	1%	0%	0%	1%
70%	1%	3%	4%	3%	3%	4%	4%	3%	2%	1%	0%	1%
80%	2%	2%	4%	4%	3%	4%	5%	2%	4%	3%	4%	2%
90%	5%	5%	2%	6%	6%	3%	5%	3%	11%	9%	9%	3%
Long Term												
Full Simulation Period[b]	4%	4%	4%	3%	3%	4%	4%	3%	2%	2%	3%	3%
Water Year Types[c]												
Wet (32%)	4%	4%	3%	2%	2%	3%	3%	2%	1%	0%	3%	4%
Above Normal (16%)	4%	5%	4%	3%	2%	3%	4%	2%	1%	0%	1%	2%
Below Normal (13%)	5%	6%	5%	4%	4%	5%	5%	3%	2%	0%	0%	0%
Dry (24%)	2%	3%	3%	3%	3%	4%	4%	3%	2%	2%	2%	2%
Critical (15%)	6%	6%	6%	5%	7%	5%	5%	5%	8%	14%	12%	10%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.16.2 CVP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Capacity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4%	-4%	-2%	-2%	-1%	-2%	-3%	-3%	-2%	-1%	-5%	-5%
20%	**-5%**	-4%	-3%	-2%	-2%	-3%	-3%	-3%	-1%	1%	-3%	-4%
30%	**-5%**	-4%	-4%	-3%	-2%	-3%	-3%	-1%	-1%	0%	-1%	-3%
40%	-4%	**-5%**	-4%	-3%	-3%	-4%	-3%	-2%	-1%	0%	-2%	-1%
50%	-2%	-4%	-4%	-4%	-4%	-4%	-4%	-2%	0%	0%	-2%	-2%
60%	-2%	-5%	**-5%**	-4%	-3%	-4%	-3%	-3%	-1%	0%	0%	-1%
70%	-1%	-3%	-4%	-3%	-3%	-4%	-4%	-3%	-2%	-1%	0%	-1%
80%	-2%	-2%	-4%	-4%	-3%	-4%	-4%	-2%	-3%	-3%	-4%	-2%
90%	**-5%**	-5%	-2%	**-5%**	**-6%**	-3%	-4%	-3%	**-10%**	**-8%**	**-8%**	-3%
Long Term												
Full Simulation Period[b]	-4%	-4%	-4%	-3%	-3%	-3%	-4%	-3%	-2%	-2%	-3%	-3%
Water Year Types[c]												
Wet (32%)	-3%	-3%	-3%	-2%	-2%	-3%	-3%	-2%	-1%	0%	-3%	-4%
Above Normal (16%)	-4%	-4%	-4%	-3%	-2%	-3%	-4%	-2%	-1%	0%	-1%	-2%
Below Normal (13%)	-5%	**-5%**	-5%	-4%	-4%	-4%	-4%	-3%	-2%	0%	0%	0%
Dry (24%)	-2%	-3%	-3%	-3%	-3%	-4%	-4%	-3%	-2%	-2%	-2%	-2%
Critical (15%)	**-6%**	**-5%**	**-6%**	-5%	**-6%**	-5%	-5%	-5%	**-7%**	**-12%**	**-10%**	**-9%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.16.3 CVP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

Alternative 3

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,778	1,818	1,852	1,884	1,910	1,945	1,947	1,910	1,837	1,777	1,759	1,753
20%	1,749	1,789	1,828	1,860	1,894	1,930	1,930	1,883	1,766	1,692	1,687	1,696
30%	1,708	1,772	1,814	1,851	1,884	1,900	1,895	1,828	1,717	1,654	1,633	1,659
40%	1,663	1,741	1,781	1,838	1,866	1,882	1,849	1,777	1,670	1,601	1,604	1,600
50%	1,609	1,689	1,744	1,800	1,840	1,851	1,821	1,760	1,644	1,572	1,554	1,569
60%	1,579	1,639	1,695	1,748	1,797	1,814	1,781	1,711	1,603	1,542	1,511	1,510
70%	1,499	1,557	1,632	1,703	1,768	1,784	1,755	1,665	1,567	1,487	1,453	1,465
80%	1,394	1,457	1,570	1,624	1,708	1,738	1,707	1,620	1,506	1,408	1,378	1,372
90%	1,231	1,365	1,434	1,496	1,518	1,545	1,519	1,453	1,343	1,229	1,190	1,181
Long Term												
Full Simulation Period[b]	1,551	1,613	1,676	1,732	1,777	1,794	1,775	1,705	1,592	1,512	1,486	1,493
Water Year Types[c]												
Wet (32%)	1,690	1,756	1,806	1,856	1,894	1,929	1,928	1,885	1,791	1,730	1,713	1,716
Above Normal (16%)	1,527	1,640	1,746	1,802	1,852	1,875	1,862	1,786	1,679	1,615	1,591	1,589
Below Normal (13%)	1,629	1,676	1,751	1,790	1,829	1,832	1,788	1,718	1,607	1,529	1,504	1,501
Dry (24%)	1,504	1,551	1,612	1,686	1,748	1,768	1,745	1,660	1,555	1,479	1,459	1,475
Critical (15%)	1,283	1,319	1,355	1,411	1,444	1,422	1,386	1,288	1,113	967	909	930

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Capacity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1%	1%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%
20%	1%	0%	0%	0%	0%	0%	1%	1%	2%	1%	1%	1%
30%	1%	0%	0%	0%	0%	0%	0%	1%	1%	2%	2%	1%
40%	1%	1%	0%	0%	0%	0%	0%	0%	1%	1%	2%	2%
50%	2%	0%	0%	-1%	0%	0%	-1%	1%	2%	1%	1%	2%
60%	1%	1%	-1%	-1%	-1%	-1%	0%	1%	1%	2%	2%	1%
70%	1%	-1%	-1%	-1%	0%	0%	0%	0%	1%	1%	1%	1%
80%	1%	0%	0%	-1%	-1%	-1%	0%	0%	1%	1%	-1%	0%
90%	3%	0%	0%	-3%	-3%	-1%	0%	2%	1%	1%	1%	4%
Long Term												
Full Simulation Period[b]	1%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%
Water Year Types[c]												
Wet (32%)	1%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%
Above Normal (16%)	0%	-1%	0%	0%	0%	0%	0%	0%	2%	2%	1%	2%
Below Normal (13%)	1%	0%	0%	0%	0%	0%	-1%	0%	1%	2%	2%	1%
Dry (24%)	2%	1%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%
Critical (15%)	3%	2%	1%	0%	-1%	0%	1%	2%	1%	2%	1%	3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.16.4 CVP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

Alternative 5

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,693	1,746	1,805	1,849	1,882	1,891	1,879	1,849	1,777	1,748	1,671	1,650
20%	1,635	1,721	1,772	1,829	1,859	1,867	1,843	1,806	1,725	1,690	1,624	1,612
30%	1,599	1,680	1,744	1,797	1,836	1,839	1,816	1,766	1,655	1,616	1,576	1,579
40%	1,566	1,638	1,710	1,767	1,801	1,801	1,785	1,732	1,619	1,571	1,538	1,547
50%	1,538	1,596	1,668	1,726	1,775	1,774	1,737	1,700	1,598	1,555	1,504	1,510
60%	1,516	1,552	1,617	1,687	1,737	1,733	1,701	1,643	1,537	1,484	1,460	1,457
70%	1,458	1,512	1,571	1,650	1,694	1,699	1,673	1,596	1,506	1,415	1,413	1,413
80%	1,327	1,399	1,504	1,574	1,644	1,639	1,616	1,532	1,439	1,324	1,302	1,310
90%	1,044	1,242	1,372	1,427	1,440	1,483	1,450	1,351	1,173	1,061	1,046	1,029
Long Term												
Full Simulation Period[b]	1,460	1,532	1,603	1,672	1,716	1,717	1,692	1,633	1,525	1,450	1,410	1,410
Water Year Types[c]												
Wet (32%)	1,609	1,690	1,755	1,819	1,856	1,873	1,858	1,830	1,748	1,715	1,641	1,625
Above Normal (16%)	1,458	1,576	1,671	1,757	1,808	1,806	1,785	1,735	1,624	1,577	1,536	1,532
Below Normal (13%)	1,504	1,559	1,648	1,712	1,755	1,743	1,710	1,653	1,546	1,474	1,465	1,468
Dry (24%)	1,428	1,478	1,545	1,622	1,676	1,686	1,657	1,585	1,485	1,403	1,383	1,391
Critical (15%)	1,152	1,205	1,253	1,308	1,344	1,310	1,274	1,159	985	793	768	794

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Capacity (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4%	-3%	-3%	-2%	-1%	-3%	-3%	-3%	-3%	-1%	-5%	-5%
20%	-6%	-4%	-3%	-2%	-2%	-3%	-3%	-3%	-1%	1%	-3%	-4%
30%	-5%	-5%	-4%	-3%	-2%	-3%	-4%	-2%	-2%	0%	-2%	-4%
40%	-5%	-5%	-4%	-4%	-3%	-4%	-4%	-2%	-2%	-1%	-2%	-2%
50%	-3%	-5%	-5%	-5%	-4%	-4%	-5%	-3%	-1%	0%	-2%	-2%
60%	-3%	-5%	-5%	-5%	-4%	-5%	-5%	-3%	-3%	-2%	-2%	-2%
70%	-2%	-4%	-5%	-4%	-4%	-5%	-5%	-4%	-3%	-4%	-2%	-2%
80%	-4%	-4%	-5%	-4%	-4%	-6%	-6%	-5%	-3%	-5%	-6%	-5%
90%	-13%	-9%	-4%	-7%	-8%	-4%	-5%	-6%	-12%	-13%	-12%	-9%
Long Term												
Full Simulation Period[b]	-5%	-5%	-4%	-4%	-4%	-4%	-4%	-4%	-3%	-3%	-4%	-4%
Water Year Types[c]												
Wet (32%)	-4%	-4%	-3%	-2%	-2%	-3%	-3%	-2%	-1%	0%	-3%	-4%
Above Normal (16%)	-4%	-5%	-4%	-3%	-3%	-4%	-4%	-2%	-2%	0%	-2%	-2%
Below Normal (13%)	-6%	-7%	-6%	-4%	-4%	-5%	-5%	-4%	-3%	-1%	-1%	-1%
Dry (24%)	-3%	-4%	-4%	-4%	-4%	-5%	-5%	-4%	-3%	-4%	-4%	-5%
Critical (15%)	-8%	-7%	-7%	-8%	-8%	-8%	-7%	-8%	-11%	-16%	-15%	-12%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.17 CVP Total Generation

Table 5C.3.3.17.1 CVP Total Generation, Monthly Generation

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

Alternative 1

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

Alternative 1 minus No Action Alternative

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2%	**-29%**	3%	0%	2%	1%	-1%	2%	**12%**	3%	**9%**	**-30%**
20%	**-9%**	**-33%**	**29%**	**19%**	2%	3%	-1%	4%	**14%**	4%	**7%**	**-38%**
30%	**-8%**	**-25%**	1%	**15%**	**-5%**	-2%	-2%	4%	**11%**	4%	**6%**	**-29%**
40%	**-8%**	**-20%**	2%	**13%**	**17%**	-4%	-3%	**6%**	**11%**	**7%**	**7%**	**-24%**
50%	**-12%**	**-12%**	4%	**5%**	**7%**	1%	-2%	**6%**	**9%**	**6%**	**6%**	**-13%**
60%	**-12%**	-2%	1%	-1%	1%	0%	-4%	**6%**	**12%**	4%	**5%**	-2%
70%	-4%	3%	1%	3%	0%	4%	-2%	**7%**	**11%**	5%	**6%**	3%
80%	**-8%**	-2%	3%	4%	2%	2%	0%	**6%**	**11%**	4%	4%	4%
90%	-4%	**6%**	**7%**	1%	5%	0%	0%	**9%**	**11%**	-1%	**8%**	1%
Long Term												
Full Simulation Period[b]	**-6%**	**-16%**	**7%**	**6%**	3%	2%	-3%	5%	**11%**	4%	**6%**	**-19%**
Water Year Types[c]												
Wet (32%)	**-6%**	**-15%**	**11%**	4%	1%	-1%	-4%	1%	**12%**	2%	**6%**	**-33%**
Above Normal (16%)	**-8%**	**-18%**	**-6%**	**13%**	**6%**	**8%**	**-8%**	**6%**	**14%**	5%	**8%**	**-19%**
Below Normal (13%)	**-9%**	**-14%**	**7%**	**24%**	**5%**	**12%**	1%	**9%**	**13%**	**7%**	**9%**	**6%**
Dry (24%)	-4%	**-21%**	2%	-2%	4%	-1%	0%	**7%**	**6%**	5%	1%	2%
Critical (15%)	-2%	-3%	**9%**	0%	-4%	4%	5%	**6%**	**9%**	3%	**7%**	**6%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.17.2 CVP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2%	**40%**	-3%	0%	-2%	-1%	1%	-1%	**-11%**	-3%	**-8%**	**43%**
20%	**10%**	**49%**	**-22%**	**-16%**	-2%	-2%	1%	-4%	**-12%**	-4%	**-6%**	**61%**
30%	**8%**	**33%**	-1%	**-13%**	**6%**	2%	2%	-4%	**-10%**	-4%	**-6%**	**40%**
40%	**9%**	**25%**	-2%	**-11%**	**-14%**	4%	3%	**-6%**	**-10%**	**-7%**	**-7%**	**31%**
50%	**14%**	**13%**	-4%	-5%	**-7%**	-1%	2%	**-6%**	**-9%**	**-6%**	**-6%**	**15%**
60%	**13%**	2%	-1%	1%	-1%	0%	4%	**-6%**	**-10%**	-4%	-5%	3%
70%	5%	-3%	-1%	-3%	0%	-4%	2%	**-7%**	**-10%**	-5%	**-5%**	-3%
80%	**8%**	2%	-2%	-4%	-2%	-2%	0%	**-6%**	**-10%**	-4%	-3%	-4%
90%	5%	**-5%**	**-7%**	-1%	-5%	0%	0%	**-9%**	**-10%**	1%	**-8%**	-1%
Long Term												
Full Simulation Period[b]	**7%**	**19%**	**-6%**	**-6%**	-3%	-2%	3%	-4%	**-10%**	-4%	**-5%**	**23%**
Water Year Types[c]												
Wet (32%)	**7%**	**18%**	**-10%**	-4%	-1%	1%	5%	-1%	**-11%**	-2%	**-5%**	**50%**
Above Normal (16%)	**9%**	**22%**	**6%**	**-12%**	**-5%**	**-7%**	**8%**	**-6%**	**-12%**	-4%	**-8%**	**23%**
Below Normal (13%)	**10%**	**17%**	**-7%**	**-19%**	**-5%**	**-11%**	-1%	**-8%**	**-12%**	**-6%**	**-8%**	**-5%**
Dry (24%)	5%	**27%**	-2%	2%	-4%	1%	0%	**-6%**	**-6%**	-5%	-1%	-2%
Critical (15%)	2%	3%	**-8%**	0%	4%	-4%	-4%	**-5%**	**-8%**	-2%	**-7%**	**-6%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.17.3 CVP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

Alternative 3

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	306	662	691	701	710	489	598	648	775	610	459
20%	342	256	426	590	650	583	393	551	635	759	578	387
30%	314	227	242	427	458	367	360	507	590	741	557	358
40%	275	216	199	254	283	258	330	493	564	720	538	328
50%	245	204	181	203	220	223	314	469	548	678	525	302
60%	222	180	170	173	179	192	291	442	518	657	513	279
70%	202	164	149	156	142	171	271	421	511	624	482	257
80%	176	145	133	134	128	153	250	363	453	561	445	227
90%	158	124	113	122	109	136	222	300	381	474	387	191
Long Term												
Full Simulation Period[b]	262	215	279	333	336	335	338	462	542	658	512	314
Water Year Types[c]												
Wet (32%)	298	268	493	584	537	551	430	562	593	712	576	407
Above Normal (16%)	249	222	245	350	477	401	346	482	580	736	550	341
Below Normal (13%)	284	211	187	228	283	245	332	476	580	711	557	347
Dry (24%)	256	184	162	175	146	180	265	416	532	635	471	251
Critical (15%)	189	150	132	130	113	139	253	285	373	445	360	160

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	4%	1%	0%	2%	1%	1%	-4%	**-7%**	0%	-4%	4%
20%	1%	0%	-2%	1%	2%	0%	0%	-4%	-3%	0%	-2%	5%
30%	4%	-3%	0%	-3%	3%	3%	3%	**-5%**	**-5%**	1%	-2%	**7%**
40%	2%	-2%	3%	-4%	-1%	1%	2%	-3%	**-6%**	1%	-2%	4%
50%	4%	0%	-1%	-4%	0%	-4%	0%	-5%	-5%	-1%	0%	2%
60%	5%	0%	1%	-2%	2%	-1%	1%	**-6%**	**-6%**	1%	2%	0%
70%	1%	-2%	1%	0%	1%	-3%	-2%	**-5%**	-4%	-1%	1%	0%
80%	2%	**5%**	-1%	**-6%**	-4%	-1%	1%	-3%	**-6%**	-2%	2%	1%
90%	4%	-1%	1%	0%	**-6%**	-4%	2%	**-6%**	-2%	1%	-1%	3%
Long Term												
Full Simulation Period[b]	2%	0%	1%	-1%	2%	0%	1%	-4%	-5%	0%	0%	3%
Water Year Types[c]												
Wet (32%)	0%	-1%	1%	0%	3%	0%	1%	-4%	**-7%**	2%	1%	2%
Above Normal (16%)	2%	3%	0%	-3%	0%	1%	1%	**-6%**	**-6%**	-1%	-4%	0%
Below Normal (13%)	1%	-5%	0%	-1%	1%	-1%	3%	-4%	**-5%**	-2%	-3%	**14%**
Dry (24%)	**5%**	1%	3%	-2%	-3%	0%	1%	-4%	-2%	0%	2%	0%
Critical (15%)	**5%**	4%	-2%	-3%	**6%**	-1%	0%	0%	-1%	1%	1%	4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.17.4 CVP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

Alternative 5

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	404	410	647	689	671	694	491	627	618	752	574	628
20%	365	380	341	486	622	563	404	562	578	722	553	598
30%	328	316	236	381	459	362	368	513	557	705	534	468
40%	284	281	188	233	245	266	334	482	541	660	514	418
50%	269	226	173	201	205	229	327	460	525	648	498	351
60%	244	182	163	178	173	199	304	439	493	634	471	277
70%	220	161	145	153	139	170	281	412	472	601	451	248
80%	183	140	131	137	127	151	258	343	432	548	416	217
90%	155	113	102	120	108	136	233	308	350	463	365	184
Long Term												
Full Simulation Period[b]	273	254	258	317	321	328	348	463	509	628	485	378
Water Year Types[c]												
Wet (32%)	313	320	438	558	512	554	446	585	567	685	538	598
Above Normal (16%)	266	254	259	321	454	368	370	489	542	708	523	419
Below Normal (13%)	307	257	173	186	265	221	334	458	533	675	520	294
Dry (24%)	254	231	153	183	145	183	273	404	505	604	459	247
Critical (15%)	192	149	120	135	110	132	250	270	336	414	337	153

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3%	**39%**	-2%	0%	-2%	-1%	1%	0%	**-11%**	-3%	**-10%**	**42%**
20%	**8%**	**48%**	**-22%**	**-17%**	-2%	-4%	3%	-2%	**-12%**	-5%	**-6%**	**62%**
30%	**8%**	**36%**	-2%	**-13%**	3%	1%	**5%**	-4%	**-11%**	-4%	**-6%**	**40%**
40%	**6%**	**28%**	-3%	**-12%**	**-14%**	4%	3%	-5%	**-10%**	**-7%**	**-6%**	**33%**
50%	**14%**	**11%**	**-5%**	-5%	**-7%**	-1%	4%	**-7%**	**-9%**	**-5%**	**-5%**	**18%**
60%	**15%**	1%	-4%	1%	-1%	3%	**5%**	**-7%**	**-11%**	-3%	**-6%**	0%
70%	**10%**	-4%	-2%	-2%	-2%	-4%	2%	**-7%**	**-11%**	-4%	**-5%**	-4%
80%	**6%**	1%	-2%	-4%	-4%	-2%	4%	**-8%**	**-10%**	-4%	-5%	-4%
90%	2%	**-9%**	**-9%**	-1%	**-6%**	-3%	**7%**	-3%	**-10%**	-2%	**-6%**	-1%
Long Term												
Full Simulation Period[b]	**6%**	**18%**	**-7%**	**-6%**	-3%	-2%	4%	-4%	**-10%**	-4%	**-6%**	**24%**
Water Year Types[c]												
Wet (32%)	**6%**	**19%**	**-11%**	-4%	-2%	1%	4%	0%	**-11%**	-2%	**-6%**	**50%**
Above Normal (16%)	**8%**	**18%**	**6%**	**-11%**	**-5%**	**-7%**	**8%**	-5%	**-12%**	-4%	**-8%**	**23%**
Below Normal (13%)	**9%**	**16%**	**-7%**	**-20%**	**-5%**	**-10%**	3%	**-8%**	**-13%**	**-7%**	**-10%**	-4%
Dry (24%)	4%	**26%**	-3%	3%	-4%	1%	4%	**-7%**	**-7%**	**-5%**	-1%	-2%
Critical (15%)	**7%**	3%	**-10%**	0%	3%	**-6%**	-1%	**-6%**	**-11%**	**-6%**	**-5%**	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.18 CVP Total Energy Use

Table 5C.3.3.18.1 CVP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Energy Use (GWh)											
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Energy Use (GWh)											
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Energy Use (Percent Change)											
Probability of Exceedance[a]												
10%	23%	-12%	6%	13%	26%	-3%	39%	31%	-11%	6%	37%	3%
20%	27%	-6%	7%	27%	12%	-8%	89%	41%	2%	12%	27%	3%
30%	38%	-1%	11%	40%	24%	-7%	113%	44%	10%	19%	16%	3%
40%	26%	4%	16%	43%	41%	-19%	116%	38%	17%	23%	18%	10%
50%	4%	18%	18%	45%	44%	-8%	112%	33%	34%	26%	22%	20%
60%	0%	17%	17%	50%	36%	3%	92%	36%	34%	28%	16%	17%
70%	-8%	18%	10%	58%	17%	2%	69%	25%	46%	17%	9%	19%
80%	-20%	24%	15%	51%	17%	13%	44%	11%	28%	23%	6%	18%
90%	-38%	14%	17%	15%	-13%	34%	4%	8%	23%	2%	7%	10%
Long Term												
Full Simulation Period[b]	11%	4%	13%	37%	26%	-2%	67%	26%	9%	17%	21%	13%
Water Year Types[c]												
Wet (32%)	22%	5%	19%	35%	12%	-23%	54%	18%	-10%	9%	26%	17%
Above Normal (16%)	2%	-3%	11%	56%	41%	-10%	118%	42%	18%	30%	25%	34%
Below Normal (13%)	17%	10%	12%	48%	24%	11%	104%	56%	38%	38%	30%	2%
Dry (24%)	12%	0%	3%	32%	35%	30%	44%	20%	32%	19%	4%	4%
Critical (15%)	-18%	6%	19%	22%	51%	64%	46%	15%	34%	-9%	12%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.18.2 CVP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-19%	14%	-5%	-12%	-20%	3%	-28%	-24%	12%	-5%	-27%	-3%
20%	-21%	7%	-7%	-22%	-10%	9%	-47%	-29%	-2%	-11%	-21%	-2%
30%	-28%	1%	-10%	-28%	-20%	7%	-53%	-31%	-9%	-16%	-14%	-3%
40%	-21%	-4%	-14%	-30%	-29%	23%	-54%	-28%	-15%	-19%	-15%	-9%
50%	-4%	-15%	-15%	-31%	-30%	8%	-53%	-25%	-26%	-21%	-18%	-17%
60%	0%	-15%	-15%	-33%	-26%	-3%	-48%	-27%	-25%	-22%	-14%	-15%
70%	9%	-16%	-9%	-37%	-15%	-2%	-41%	-20%	-31%	-14%	-8%	-16%
80%	25%	-19%	-13%	-34%	-15%	-12%	-30%	-10%	-22%	-19%	-6%	-15%
90%	62%	-12%	-15%	-13%	15%	-26%	-4%	-7%	-19%	-2%	-6%	-9%
Long Term												
Full Simulation Period[b]	-10%	-3%	-11%	-27%	-21%	2%	-40%	-21%	-8%	-15%	-18%	-12%
Water Year Types[c]												
Wet (32%)	-18%	-5%	-16%	-26%	-10%	30%	-35%	-15%	11%	-9%	-20%	-15%
Above Normal (16%)	-2%	3%	-10%	-36%	-29%	11%	-54%	-30%	-15%	-23%	-20%	-26%
Below Normal (13%)	-14%	-9%	-11%	-32%	-19%	-10%	-51%	-36%	-28%	-28%	-23%	-2%
Dry (24%)	-11%	0%	-3%	-24%	-26%	-23%	-30%	-17%	-24%	-16%	-4%	-4%
Critical (15%)	22%	-6%	-16%	-18%	-34%	-39%	-31%	-13%	-25%	10%	-11%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.18.3 CVP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

Alternative 3

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	143	149	161	165	151	147	87	99	142	154	156	139
20%	124	140	157	131	142	139	82	89	122	146	134	112
30%	119	138	154	120	126	100	81	79	106	139	132	107
40%	108	128	143	117	105	78	79	72	100	128	128	106
50%	86	118	140	110	91	72	72	66	91	118	113	105
60%	70	107	131	104	75	64	64	53	80	103	99	95
70%	63	95	122	93	65	62	46	40	59	87	83	85
80%	52	82	102	84	54	51	35	30	41	71	62	63
90%	46	66	73	76	31	24	23	23	24	46	41	45
Long Term												
Full Simulation Period[b]	91	113	129	109	95	85	62	62	85	109	106	97
Water Year Types[c]												
Wet (32%)	101	130	144	128	135	108	83	87	125	139	140	113
Above Normal (16%)	83	113	122	93	96	125	77	74	105	115	121	111
Below Normal (13%)	94	130	144	111	85	78	56	58	86	123	117	126
Dry (24%)	97	104	126	108	75	65	49	44	54	98	75	74
Critical (15%)	64	78	97	85	53	31	30	25	27	43	55	58

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4%	-1%	-1%	-5%	**-18%**	2%	**5%**	**11%**	**24%**	-5%	**-14%**	**27%**
20%	2%	-1%	-1%	**-21%**	-5%	**9%**	1%	**38%**	**17%**	**-7%**	**-13%**	4%
30%	2%	0%	-2%	**-27%**	**-12%**	-1%	2%	**34%**	**11%**	-4%	0%	1%
40%	**13%**	-5%	**-8%**	**-28%**	**-25%**	-2%	**6%**	**34%**	**10%**	**-9%**	0%	0%
50%	**15%**	-4%	**-8%**	**-31%**	**-32%**	4%	4%	**40%**	3%	**-10%**	**-8%**	0%
60%	5%	-2%	**-9%**	**-34%**	**-35%**	-4%	**9%**	**19%**	3%	**-14%**	**-9%**	**7%**
70%	**10%**	-1%	-3%	**-39%**	**-23%**	0%	**-6%**	5%	**-9%**	**-12%**	-4%	**5%**
80%	**14%**	3%	**-8%**	**-32%**	-2%	-2%	-2%	**5%**	-4%	**-16%**	-1%	**-8%**
90%	**36%**	0%	**-16%**	**-7%**	**12%**	**-21%**	**6%**	0%	**-7%**	**8%**	**7%**	**-7%**
Long Term												
Full Simulation Period[b]	**7%**	-1%	-5%	**-27%**	**-17%**	2%	4%	**22%**	**10%**	**-8%**	**-6%**	5%
Water Year Types[c]												
Wet (32%)	1%	-1%	**-7%**	**-24%**	-3%	**15%**	**8%**	**26%**	**23%**	-4%	**-6%**	2%
Above Normal (16%)	**10%**	-3%	**-10%**	**-38%**	**-25%**	**33%**	-2%	**29%**	5%	**-11%**	**-10%**	**-5%**
Below Normal (13%)	2%	-3%	-2%	**-30%**	**-18%**	**-8%**	**-9%**	**13%**	2%	**-16%**	**-15%**	**34%**
Dry (24%)	**13%**	1%	2%	**-24%**	**-28%**	**-21%**	**12%**	**20%**	-2%	**-8%**	**11%**	-1%
Critical (15%)	**20%**	0%	**-8%**	**-18%**	**-33%**	**-39%**	0%	-2%	**-11%**	**-7%**	**-12%**	4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.18.4 CVP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

Alternative 5

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	106	174	154	153	146	153	59	68	128	155	132	106
20%	94	153	151	134	134	138	41	44	103	140	121	105
30%	85	140	142	120	116	109	35	40	86	122	113	102
40%	75	126	135	114	104	99	32	37	77	115	110	95
50%	72	106	128	110	94	75	30	33	65	105	102	90
60%	69	92	123	104	86	65	29	30	57	94	94	76
70%	63	74	115	95	71	61	24	22	46	88	80	70
80%	59	65	92	83	46	48	18	16	32	74	63	58
90%	54	56	68	71	32	22	13	12	24	50	49	47
Long Term												
Full Simulation Period[b]	76	110	121	109	92	86	33	36	71	103	95	82
Water Year Types[c]												
Wet (32%)	81	129	131	125	124	123	50	58	113	132	119	93
Above Normal (16%)	75	112	122	100	90	104	35	40	84	100	107	86
Below Normal (13%)	76	122	132	107	90	77	28	30	62	106	100	96
Dry (24%)	74	101	121	108	77	64	23	21	43	96	71	74
Critical (15%)	69	73	86	88	54	30	13	13	22	56	64	56

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Energy Use (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-23%	16%	-5%	-12%	-20%	6%	-29%	-25%	12%	-4%	-27%	-3%
20%	-22%	9%	-5%	-20%	-10%	8%	-49%	-32%	-1%	-10%	-22%	-2%
30%	-27%	1%	-10%	-27%	-19%	8%	-56%	-32%	-10%	-16%	-15%	-4%
40%	-21%	-6%	-13%	-30%	-25%	23%	-57%	-32%	-16%	-18%	-14%	-10%
50%	-3%	-15%	-16%	-31%	-30%	9%	-56%	-31%	-26%	-20%	-17%	-14%
60%	4%	-16%	-15%	-34%	-26%	-3%	-51%	-33%	-26%	-21%	-14%	-15%
70%	11%	-23%	-9%	-37%	-15%	-3%	-52%	-41%	-29%	-10%	-7%	-14%
80%	28%	-19%	-17%	-33%	-16%	-8%	-49%	-44%	-26%	-13%	0%	-16%
90%	60%	-16%	-21%	-13%	17%	-26%	-41%	-49%	-8%	17%	27%	-4%
Long Term												
Full Simulation Period[b]	-10%	-4%	-11%	-27%	-20%	2%	-46%	-29%	-8%	-13%	-16%	-11%
Water Year Types[c]												
Wet (32%)	-19%	-2%	-16%	-26%	-11%	30%	-36%	-15%	10%	-9%	-20%	-16%
Above Normal (16%)	0%	-4%	-10%	-34%	-30%	11%	-55%	-31%	-16%	-23%	-21%	-26%
Below Normal (13%)	-17%	-9%	-11%	-32%	-14%	-9%	-54%	-43%	-27%	-28%	-27%	3%
Dry (24%)	-13%	-2%	-2%	-25%	-26%	-23%	-48%	-42%	-21%	-10%	5%	-2%
Critical (15%)	29%	-6%	-18%	-16%	-31%	-40%	-56%	-48%	-26%	21%	1%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.19 CVP Net Energy Use

Table 5C.3.3.19.1 CVP Net Generation, Monthly Net Generation

No Action Alternative

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

Alternative 1

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

Alternative 1 minus No Action Alternative

	Monthly Net Generation (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-12%	-37%	0%	0%	0%	0%	-10%	0%	11%	-4%	1%	-45%
20%	-16%	-40%	25%	11%	-1%	9%	-9%	1%	15%	0%	4%	-48%
30%	-22%	-47%	-1%	12%	-17%	10%	-9%	3%	11%	1%	3%	-38%
40%	-20%	-46%	0%	-8%	28%	11%	-10%	4%	14%	4%	1%	-37%
50%	-19%	-28%	-12%	-25%	4%	3%	-10%	5%	11%	2%	0%	-17%
60%	-2%	-22%	-22%	-57%	-22%	-1%	-12%	2%	10%	2%	3%	-5%
70%	3%	-17%	-19%	-64%	-26%	-1%	-14%	0%	11%	3%	1%	-2%
80%	-11%	-10%	-32%	-84%	-63%	-10%	-14%	5%	8%	3%	2%	3%
90%	7%	-19%	1388%	-134%	-120%	-10%	-18%	11%	9%	0%	6%	-5%
Long Term												
Full Simulation Period[b]	-13%	-31%	2%	-10%	-6%	3%	-11%	2%	11%	1%	2%	-28%
Water Year Types[c]												
Wet (32%)	-16%	-29%	8%	-5%	-2%	5%	-12%	-1%	17%	0%	0%	-43%
Above Normal (16%)	-12%	-31%	-20%	-5%	-3%	15%	-21%	3%	13%	0%	4%	-33%
Below Normal (13%)	-18%	-36%	-7%	-8%	-3%	12%	-9%	5%	10%	1%	4%	7%
Dry (24%)	-11%	-38%	0%	-52%	-32%	-18%	-6%	6%	4%	2%	1%	1%
Critical (15%)	7%	-12%	-18%	-38%	-53%	-14%	1%	5%	7%	4%	6%	11%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.19.2 CVP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Net Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14%	59%	0%	0%	0%	0%	11%	0%	-10%	4%	-1%	81%
20%	18%	66%	-20%	-10%	1%	-8%	10%	-1%	-13%	0%	-4%	92%
30%	27%	90%	1%	-11%	21%	-9%	10%	-3%	-10%	-1%	-2%	61%
40%	25%	86%	0%	8%	-22%	-10%	12%	-4%	-13%	-4%	-1%	58%
50%	24%	39%	14%	34%	-3%	-3%	12%	-4%	-10%	-2%	0%	20%
60%	2%	29%	29%	134%	27%	1%	13%	-2%	-9%	-2%	-3%	5%
70%	-3%	21%	24%	176%	34%	1%	16%	0%	-10%	-3%	-1%	2%
80%	12%	12%	47%	513%	167%	11%	16%	-4%	-7%	-3%	-2%	-3%
90%	-7%	24%	-93%	-394%	-606%	11%	22%	-10%	-9%	0%	-6%	6%
Long Term												
Full Simulation Period[b]	15%	44%	-2%	11%	7%	-3%	12%	-2%	-10%	-1%	-2%	38%
Water Year Types[c]												
Wet (32%)	19%	40%	-8%	5%	2%	-4%	13%	1%	-15%	0%	0%	74%
Above Normal (16%)	14%	44%	25%	5%	3%	-13%	27%	-3%	-11%	0%	-4%	49%
Below Normal (13%)	22%	57%	8%	9%	3%	-11%	10%	-5%	-9%	-1%	-3%	-7%
Dry (24%)	13%	61%	0%	110%	47%	22%	7%	-5%	-4%	-2%	-1%	-1%
Critical (15%)	-6%	14%	22%	62%	111%	16%	-1%	-5%	-7%	-4%	-6%	-10%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.19.3 CVP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

Alternative 3

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	291	182	530	558	606	583	437	534	563	674	481	336
20%	235	125	266	480	511	511	316	479	531	638	465	266
30%	193	104	114	332	334	287	298	459	508	622	441	246
40%	173	91	74	160	183	189	268	439	473	596	424	216
50%	158	77	52	112	122	150	251	392	448	544	409	205
60%	147	66	39	72	84	122	229	374	433	528	387	195
70%	133	60	25	51	71	106	216	348	411	506	374	181
80%	113	52	12	36	56	92	200	316	387	469	362	155
90%	88	31	-6	18	41	71	174	260	340	397	326	104
Long Term												
Full Simulation Period[b]	172	102	150	224	241	250	275	400	457	549	406	217
Water Year Types[c]												
Wet (32%)	197	137	349	456	402	443	347	475	467	572	436	294
Above Normal (16%)	166	109	123	257	381	276	269	408	475	621	429	230
Below Normal (13%)	190	81	42	117	198	167	276	418	493	588	440	221
Dry (24%)	160	81	36	67	71	115	217	372	478	537	396	177
Critical (15%)	125	73	35	45	60	108	223	260	346	402	305	101

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Net Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2%	**13%**	1%	0%	**7%**	4%	**8%**	-5%	**-6%**	**6%**	0%	**15%**
20%	-2%	**-5%**	-2%	**16%**	**5%**	**6%**	-2%	**-8%**	**-8%**	3%	0%	4%
30%	-1%	2%	0%	**16%**	**13%**	-1%	1%	-5%	-4%	3%	1%	**8%**
40%	0%	5%	2%	**18%**	**-12%**	1%	-2%	-5%	**-8%**	3%	1%	-1%
50%	-3%	-4%	**19%**	**44%**	**7%**	-3%	-2%	**-12%**	**-8%**	-1%	1%	0%
60%	-3%	**-12%**	**18%**	**138%**	**13%**	**-7%**	-4%	**-9%**	**-8%**	2%	-2%	3%
70%	-4%	2%	3%	**181%**	**36%**	-3%	1%	**-9%**	**-10%**	3%	1%	1%
80%	**6%**	4%	-5%	**490%**	**174%**	**7%**	3%	**-8%**	**-5%**	1%	2%	0%
90%	-4%	-3%	**-44%**	**-317%**	**-682%**	**10%**	**7%**	**-11%**	**-6%**	0%	2%	**6%**
Long Term												
Full Simulation Period[b]	0%	2%	**6%**	**20%**	**12%**	0%	0%	**-7%**	**-7%**	2%	1%	2%
Water Year Types[c]												
Wet (32%)	0%	0%	4%	**10%**	**5%**	-3%	-1%	**-8%**	**-12%**	4%	3%	2%
Above Normal (16%)	-2%	**10%**	**13%**	**22%**	**9%**	**-9%**	2%	**-10%**	**-8%**	2%	-2%	3%
Below Normal (13%)	1%	**-7%**	**7%**	**61%**	**13%**	3%	**6%**	**-6%**	**-6%**	2%	0%	4%
Dry (24%)	1%	1%	**6%**	**89%**	**54%**	**18%**	-1%	**-6%**	-2%	1%	0%	1%
Critical (15%)	-1%	**9%**	**24%**	**51%**	**113%**	**21%**	0%	0%	0%	2%	4%	3%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5C.3.3.19.4 CVP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

Alternative 5

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	323	255	511	557	567	559	451	559	528	654	468	527
20%	285	219	219	356	495	444	360	514	496	620	442	495
30%	233	186	113	253	363	270	330	469	475	589	426	365
40%	217	160	72	146	159	168	310	447	450	551	415	343
50%	194	116	48	104	107	148	294	426	437	531	402	243
60%	158	99	39	72	92	131	274	409	424	509	377	199
70%	134	71	28	52	67	105	254	389	404	485	366	177
80%	110	57	18	38	52	84	237	323	368	425	346	146
90%	84	31	-2	25	35	72	210	288	322	396	304	107
Long Term												
Full Simulation Period[b]	197	144	137	208	229	242	315	427	438	524	390	296
Water Year Types[c]												
Wet (32%)	233	191	307	433	388	431	397	527	454	553	419	506
Above Normal (16%)	190	142	136	221	364	264	335	449	458	608	416	333
Below Normal (13%)	230	135	42	79	175	144	305	428	471	569	420	198
Dry (24%)	179	130	32	75	67	119	250	383	461	508	388	173
Critical (15%)	123	76	34	47	56	102	237	257	314	358	273	97

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Net Generation (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	13%	58%	-3%	0%	0%	0%	12%	0%	-12%	3%	-2%	81%
20%	19%	65%	-20%	-14%	2%	-8%	11%	-1%	-14%	0%	-4%	94%
30%	19%	81%	-1%	-12%	23%	-6%	11%	-3%	-10%	-2%	-3%	60%
40%	25%	83%	-1%	8%	-23%	-11%	14%	-3%	-13%	-5%	-2%	58%
50%	20%	44%	10%	33%	-6%	-5%	15%	-4%	-10%	-3%	-1%	19%
60%	4%	32%	19%	138%	24%	0%	15%	-1%	-9%	-2%	-4%	5%
70%	-3%	21%	14%	182%	27%	-3%	19%	1%	-11%	-2%	-1%	-1%
80%	3%	14%	46%	522%	159%	-2%	23%	-6%	-10%	-8%	-3%	-6%
90%	-8%	-4%	-82%	-404%	-603%	10%	29%	-1%	-11%	0%	-5%	9%
Long Term												
Full Simulation Period[b]	14%	44%	-3%	11%	6%	-4%	15%	-1%	-11%	-2%	-3%	39%
Water Year Types[c]												
Wet (32%)	18%	39%	-9%	5%	2%	-5%	13%	2%	-15%	0%	-1%	75%
Above Normal (16%)	12%	44%	25%	4%	4%	-13%	27%	-1%	-11%	-1%	-5%	48%
Below Normal (13%)	22%	55%	5%	8%	0%	-11%	17%	-4%	-11%	-1%	-4%	-7%
Dry (24%)	14%	63%	-6%	113%	47%	22%	14%	-4%	-5%	-4%	-2%	-1%
Critical (15%)	-3%	14%	21%	57%	99%	14%	6%	-1%	-9%	-9%	-7%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

5C.3.3.20 Stanislaus River Percent Mortality – Fall-run Chinook Salmon

Table 5C.3.3.20 Stanislaus River Percent Mortality - Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	7.0	---	-0.4
Wet	1.6	---	0.1
Above Normal	5.3	---	-0.1
Below Normal	4.4	---	0.3
Dry	4.9	---	-0.3
Critical	14.4	---	-1.5
Second Basis of Comparison			
Long-term Average	7.4	0.4	
Wet	1.5	-0.1	---
Above Normal	5.4	0.1	---
Below Normal	4.1	-0.3	---
Dry	5.1	0.3	---
Critical	15.9	1.5	---
Alternative 3			
Long-term Average	6.2	-0.8	-1.2
Wet	1.6	0.0	0.1
Above Normal	4.0	-1.3	-1.4
Below Normal	3.8	-0.6	-0.3
Dry	4.2	-0.7	-0.9
Critical	13.4	-1.0	-2.5
Alternative 5			
Long-term Average	8.5	1.5	1.0
Wet	1.8	0.2	0.3
Above Normal	6.4	1.1	1.0
Below Normal	6.1	1.6	2.0
Dry	7.0	2.2	1.9
Critical	16.9	2.5	1.0

Notes: All results are based on the 82-year simulation period. The water year types are defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

5C.3.3.21 New Melones Large Mouth Bass Nest Survival Percentage

Table 5C.3.3.21.1 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	66	38	80
20%	100	100	100	100	100	100	100	100	100	49	30	64
30%	84	100	100	100	100	100	100	100	100	31	25	59
40%	74	100	100	100	100	100	100	100	100	25	23	57
50%	67	100	100	100	100	100	80	100	98	22	20	55
60%	59	100	100	100	100	100	72	100	63	18	19	50
70%	50	100	100	100	100	100	49	40	42	13	16	43
80%	43	100	100	100	100	100	27	29	27	10	12	38
90%	29	100	100	100	100	100	13	14	15	1	4	34
Long Term												
Full Simulation Period[b]	66	99	100	100	97	95	68	72	69	29	23	54
Water Year Types[c]												
Wet (23%)	67	100	100	100	96	94	83	98	95	47	24	51
Above Normal (24%)	74	100	100	100	100	100	88	100	72	26	20	60
Below Normal (10%)	60	100	100	100	98	95	58	65	61	22	19	58
Dry (16%)	63	99	100	100	97	98	66	51	54	14	16	49
Critical (27%)	65	97	100	100	93	87	29	25	43	28	37	58

Alternative 1

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	61	34	81
20%	100	100	100	100	100	100	100	100	100	43	30	64
30%	100	100	100	100	100	100	100	100	100	31	26	60
40%	100	100	100	100	100	100	100	100	100	27	24	56
50%	100	100	100	100	100	100	100	100	68	24	21	55
60%	100	100	100	100	100	100	98	100	51	21	18	49
70%	100	100	100	100	100	100	81	33	32	17	14	45
80%	91	100	100	100	100	100	52	21	25	12	10	39
90%	80	98	100	100	100	100	40	9	16	5	5	31
Long Term												
Full Simulation Period[b]	95	98	100	100	96	97	82	69	64	29	22	54
Water Year Types[c]												
Wet (23%)	98	100	100	100	96	97	92	98	82	45	24	51
Above Normal (24%)	95	98	100	100	100	100	95	100	69	25	20	59
Below Normal (10%)	93	100	100	100	98	100	79	63	55	25	19	56
Dry (16%)	91	98	100	100	95	98	84	46	54	15	16	51
Critical (27%)	93	96	100	100	94	87	44	19	43	24	30	61

Alternative 1 minus No Action Alternative

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-8%	-9%	1%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-14%	1%	0%
30%	19%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	3%	1%
40%	35%	0%	0%	0%	0%	0%	0%	0%	0%	6%	5%	0%
50%	48%	0%	0%	0%	0%	0%	26%	0%	-30%	5%	3%	0%
60%	70%	0%	0%	0%	0%	0%	37%	0%	-20%	15%	-4%	0%
70%	99%	0%	0%	0%	0%	0%	64%	-18%	-22%	34%	-16%	4%
80%	113%	0%	0%	0%	0%	0%	95%	-27%	-9%	16%	-17%	2%
90%	180%	-2%	0%	0%	0%	0%	219%	-36%	8%	302%	48%	-9%
Long Term												
Full Simulation Period[b]	44%	-1%	0%	0%	0%	2%	20%	-3%	-8%	-1%	-5%	1%
Water Year Types[c]												
Wet (23%)	48%	0%	0%	0%	0%	4%	11%	0%	-13%	-4%	-1%	-2%
Above Normal (24%)	29%	-1%	0%	0%	0%	0%	9%	0%	-5%	-4%	-2%	-2%
Below Normal (10%)	55%	0%	0%	0%	0%	5%	36%	-4%	-9%	15%	-4%	-2%
Dry (16%)	44%	-1%	0%	0%	-2%	0%	28%	-9%	0%	12%	2%	3%
Critical (27%)	44%	-2%	0%	0%	0%	0%	53%	-23%	0%	-12%	-18%	7%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.21.2 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	61	34	81
20%	100	100	100	100	100	100	100	100	100	43	30	64
30%	100	100	100	100	100	100	100	100	100	31	26	60
40%	100	100	100	100	100	100	100	100	100	27	24	56
50%	100	100	100	100	100	100	100	100	68	24	21	55
60%	100	100	100	100	100	100	98	100	51	21	18	49
70%	100	100	100	100	100	100	81	33	32	17	14	45
80%	91	100	100	100	100	100	52	21	25	12	10	39
90%	80	98	100	100	100	100	40	9	16	5	5	31
Long Term												
Full Simulation Period[b]	95	98	100	100	96	97	82	69	64	29	22	54
Water Year Types[c]												
Wet (23%)	98	100	100	100	96	97	92	98	82	45	24	51
Above Normal (24%)	95	98	100	100	100	100	95	100	69	25	20	59
Below Normal (10%)	93	100	100	100	98	100	79	63	55	25	19	56
Dry (16%)	91	98	100	100	95	98	84	46	54	15	16	51
Critical (27%)	93	96	100	100	94	87	44	19	43	24	30	61

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	66	38	80
20%	100	100	100	100	100	100	100	100	100	49	30	64
30%	84	100	100	100	100	100	100	100	100	31	25	59
40%	74	100	100	100	100	100	100	100	100	25	23	57
50%	67	100	100	100	100	100	80	100	98	22	20	55
60%	59	100	100	100	100	100	72	100	63	18	19	50
70%	50	100	100	100	100	100	49	40	42	13	16	43
80%	43	100	100	100	100	100	27	29	27	10	12	38
90%	29	100	100	100	100	100	13	14	15	1	4	34
Long Term												
Full Simulation Period[b]	66	99	100	100	97	95	68	72	69	29	23	54
Water Year Types[c]												
Wet (23%)	67	100	100	100	96	94	83	98	95	47	24	51
Above Normal (24%)	74	100	100	100	100	100	88	100	72	26	20	60
Below Normal (10%)	60	100	100	100	98	95	58	65	61	22	19	58
Dry (16%)	63	99	100	100	97	98	66	51	54	14	16	49
Critical (27%)	65	97	100	100	93	87	29	25	43	28	37	58

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	10%	-1%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	16%	-1%	0%
30%	-16%	0%	0%	0%	0%	0%	0%	0%	0%	2%	-3%	-1%
40%	-26%	0%	0%	0%	0%	0%	0%	0%	0%	-5%	-5%	0%
50%	-33%	0%	0%	0%	0%	0%	-20%	0%	44%	-5%	-3%	0%
60%	-41%	0%	0%	0%	0%	0%	-27%	0%	25%	-13%	4%	0%
70%	-50%	0%	0%	0%	0%	0%	-39%	22%	29%	-25%	19%	-4%
80%	-53%	0%	0%	0%	0%	0%	-49%	37%	10%	-14%	21%	-1%
90%	-64%	2%	0%	0%	0%	0%	-69%	56%	-7%	-75%	-32%	10%
Long Term												
Full Simulation Period[b]	-31%	1%	0%	0%	0%	-2%	-17%	3%	8%	1%	5%	-1%
Water Year Types[c]												
Wet (23%)	-32%	0%	0%	0%	0%	-3%	-10%	0%	16%	4%	1%	2%
Above Normal (24%)	-22%	1%	0%	0%	0%	0%	-8%	0%	5%	4%	2%	2%
Below Normal (10%)	-35%	0%	0%	0%	0%	-5%	-26%	4%	10%	-13%	4%	2%
Dry (16%)	-31%	1%	0%	0%	2%	0%	-22%	10%	0%	-11%	-2%	-3%
Critical (27%)	-31%	2%	0%	0%	0%	0%	-35%	30%	0%	13%	21%	-6%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.21.3 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	61	34	81
20%	100	100	100	100	100	100	100	100	100	43	30	64
30%	100	100	100	100	100	100	100	100	100	31	26	60
40%	100	100	100	100	100	100	100	100	100	27	24	56
50%	100	100	100	100	100	100	100	100	68	24	21	55
60%	100	100	100	100	100	100	98	100	51	21	18	49
70%	100	100	100	100	100	100	81	33	32	17	14	45
80%	91	100	100	100	100	100	52	21	25	12	10	39
90%	80	98	100	100	100	100	40	9	16	5	5	31
Long Term												
Full Simulation Period[b]	95	98	100	100	96	97	82	69	64	29	22	54
Water Year Types[c]												
Wet (23%)	98	100	100	100	96	97	92	98	82	45	24	51
Above Normal (24%)	95	98	100	100	100	100	95	100	69	25	20	59
Below Normal (10%)	93	100	100	100	98	100	79	63	55	25	19	56
Dry (16%)	91	98	100	100	95	98	84	46	54	15	16	51
Critical (27%)	93	96	100	100	94	87	44	19	43	24	30	61

Alternative 3

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	43	78
20%	100	100	100	100	100	100	100	100	100	57	37	69
30%	100	100	100	100	100	100	100	100	100	43	29	61
40%	100	100	100	100	100	100	100	100	100	31	27	56
50%	100	100	100	100	100	100	97	100	100	24	23	55
60%	100	100	100	100	100	100	75	92	55	21	20	48
70%	100	100	100	100	100	100	57	44	35	18	18	42
80%	94	100	100	100	100	100	43	21	28	11	11	31
90%	84	100	100	100	100	100	23	0	14	0	0	23
Long Term												
Full Simulation Period[b]	95	99	99	100	99	96	73	70	67	35	24	51
Water Year Types[c]												
Wet (23%)	99	100	100	100	96	98	92	91	77	66	30	53
Above Normal (24%)	98	99	100	100	100	100	94	100	90	34	22	58
Below Normal (10%)	96	100	91	100	100	100	62	73	64	23	18	56
Dry (16%)	89	100	100	100	100	98	68	46	59	16	20	42
Critical (27%)	94	97	100	100	100	83	30	30	40	15	25	50

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	64%	27%	-3%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	34%	22%	8%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	39%	14%	3%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	18%	13%	0%
50%	0%	0%	0%	0%	0%	0%	-3%	0%	47%	1%	9%	0%
60%	0%	0%	0%	0%	0%	0%	-23%	-8%	8%	-2%	11%	-3%
70%	0%	0%	0%	0%	0%	0%	-29%	34%	8%	4%	32%	-6%
80%	3%	0%	0%	0%	0%	0%	-18%	-4%	11%	-2%	9%	-19%
90%	5%	2%	0%	0%	0%	0%	-43%	-96%	-14%	-100%	-99%	-24%
Long Term												
Full Simulation Period[b]	0%	1%	-1%	0%	3%	0%	-10%	1%	6%	22%	11%	-6%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	0%	-7%	-6%	45%	25%	5%
Above Normal (24%)	3%	1%	0%	0%	0%	0%	-1%	0%	31%	38%	10%	-1%
Below Normal (10%)	3%	0%	-9%	0%	2%	0%	-21%	15%	15%	-10%	-2%	0%
Dry (16%)	-3%	2%	0%	0%	5%	0%	-20%	1%	8%	2%	21%	-17%
Critical (27%)	1%	1%	0%	0%	7%	-4%	-31%	56%	-5%	-37%	-16%	-18%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.21.4 New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	61	34	81
20%	100	100	100	100	100	100	100	100	100	43	30	64
30%	100	100	100	100	100	100	100	100	100	31	26	60
40%	100	100	100	100	100	100	100	100	100	27	24	56
50%	100	100	100	100	100	100	100	100	68	24	21	55
60%	100	100	100	100	100	100	98	100	51	21	18	49
70%	100	100	100	100	100	100	81	33	32	17	14	45
80%	91	100	100	100	100	100	52	21	25	12	10	39
90%	80	98	100	100	100	100	40	9	16	5	5	31
Long Term												
Full Simulation Period[b]	95	98	100	100	96	97	82	69	64	29	22	54
Water Year Types[c]												
Wet (23%)	98	100	100	100	96	97	92	98	82	45	24	51
Above Normal (24%)	95	98	100	100	100	100	95	100	69	25	20	59
Below Normal (10%)	93	100	100	100	98	100	79	63	55	25	19	56
Dry (16%)	91	98	100	100	95	98	84	46	54	15	16	51
Critical (27%)	93	96	100	100	94	87	44	19	43	24	30	61

Alternative 5

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	75	36	98
20%	100	100	100	100	100	100	100	100	100	42	24	62
30%	88	100	100	100	100	100	100	100	100	30	22	57
40%	75	100	100	100	100	100	100	100	100	23	20	55
50%	69	100	100	100	100	100	72	100	100	20	19	50
60%	57	100	100	100	100	100	43	60	79	16	16	44
70%	51	100	100	100	100	100	24	29	43	12	11	39
80%	46	100	100	100	100	100	10	1	25	5	5	35
90%	35	100	100	100	100	95	0	0	7	0	0	13
Long Term												
Full Simulation Period[b]	67	100	100	100	98	95	60	64	70	28	21	50
Water Year Types[c]												
Wet (23%)	71	100	100	100	96	95	87	93	97	41	19	47
Above Normal (24%)	73	99	100	100	100	100	79	94	61	21	17	53
Below Normal (10%)	58	100	100	100	98	95	50	58	59	18	14	44
Dry (16%)	58	99	100	100	100	98	45	37	52	10	13	45
Critical (27%)	73	100	100	100	99	85	14	19	60	44	50	67

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	22%	5%	21%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-20%	-3%
30%	-12%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-15%	-4%
40%	-25%	0%	0%	0%	0%	0%	0%	0%	0%	-13%	-17%	-2%
50%	-31%	0%	0%	0%	0%	0%	-28%	0%	47%	-17%	-12%	-9%
60%	-43%	0%	0%	0%	0%	0%	-56%	-40%	56%	-24%	-8%	-11%
70%	-49%	0%	0%	0%	0%	0%	-70%	-11%	33%	-30%	-18%	-13%
80%	-50%	0%	0%	0%	0%	0%	-81%	-94%	0%	-61%	-46%	-9%
90%	-57%	2%	0%	0%	0%	-5%	-100%	-100%	-56%	-98%	-99%	-58%
Long Term												
Full Simulation Period[b]	-29%	1%	0%	0%	2%	-2%	-27%	-8%	9%	-5%	-2%	-8%
Water Year Types[c]												
Wet (23%)	-28%	0%	0%	0%	0%	-3%	-5%	-5%	19%	-9%	-19%	-8%
Above Normal (24%)	-23%	1%	0%	0%	0%	0%	-17%	-6%	-12%	-16%	-14%	-10%
Below Normal (10%)	-38%	0%	0%	0%	0%	-5%	-37%	-8%	6%	-29%	-26%	-22%
Dry (16%)	-36%	1%	0%	0%	5%	0%	-47%	-19%	-3%	-35%	-23%	-11%
Critical (27%)	-21%	5%	0%	0%	5%	-1%	-69%	-1%	40%	82%	66%	9%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.3.22 New Melones Small Mouth Bass Nest Survival Percentage

Table 5C.3.3.22.1 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	56	32	67
20%	84	100	100	100	100	100	100	100	100	42	26	54
30%	71	100	100	100	100	100	100	100	100	27	22	50
40%	62	100	100	100	100	100	100	100	100	22	20	48
50%	57	100	100	100	100	100	67	100	86	20	18	46
60%	50	100	100	100	100	100	60	91	53	16	17	42
70%	43	100	100	100	100	100	42	34	35	12	15	37
80%	37	100	100	100	100	100	23	25	24	9	11	33
90%	25	100	100	100	100	85	12	13	14	2	4	29
Long Term												
Full Simulation Period[b]	58	98	100	100	96	94	65	70	66	26	21	47
Water Year Types[c]												
Wet (23%)	59	100	100	100	96	93	81	97	93	42	21	43
Above Normal (24%)	64	98	100	100	100	100	86	99	68	22	18	52
Below Normal (10%)	54	100	100	100	97	94	55	63	59	19	17	50
Dry (16%)	55	97	100	100	97	98	59	48	50	12	15	43
Critical (27%)	58	95	100	99	92	82	26	23	40	25	36	53

Alternative 1

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	51	30	68
20%	100	100	100	100	100	100	100	100	100	36	26	54
30%	100	100	100	100	100	100	100	100	100	26	22	50
40%	100	100	100	100	100	100	100	100	100	23	21	48
50%	100	100	100	100	100	100	100	100	57	21	19	46
60%	92	100	100	100	100	100	82	96	43	18	16	42
70%	87	100	100	100	100	100	68	28	28	15	12	38
80%	76	91	100	100	100	100	44	19	22	11	9	33
90%	67	82	100	100	100	100	35	8	14	5	6	26
Long Term												
Full Simulation Period[b]	89	95	100	100	96	96	77	68	61	26	19	47
Water Year Types[c]												
Wet (23%)	93	100	100	100	96	97	88	98	79	41	21	43
Above Normal (24%)	91	95	100	100	100	100	94	100	65	22	18	51
Below Normal (10%)	84	98	100	100	97	100	73	61	53	22	17	49
Dry (16%)	84	92	100	100	95	97	78	44	50	14	15	44
Critical (27%)	92	90	100	99	92	82	39	18	40	22	29	56

Alternative 1 minus No Action Alternative

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-8%**	**-9%**	1%
20%	**19%**	0%	0%	0%	0%	0%	0%	0%	0%	**-13%**	1%	0%
30%	**42%**	0%	0%	0%	0%	0%	0%	0%	0%	-2%	3%	1%
40%	**61%**	0%	0%	0%	0%	0%	0%	0%	0%	**5%**	**5%**	0%
50%	**76%**	0%	0%	0%	0%	0%	**50%**	0%	**-34%**	**5%**	3%	0%
60%	**84%**	0%	0%	0%	0%	0%	**37%**	**6%**	**-20%**	**14%**	-4%	0%
70%	**104%**	0%	0%	0%	0%	0%	**63%**	**-18%**	**-22%**	**30%**	**-15%**	4%
80%	**109%**	**-9%**	0%	0%	0%	0%	**90%**	**-26%**	**-9%**	**14%**	**-15%**	1%
90%	**171%**	**-18%**	0%	0%	0%	**18%**	**196%**	**-33%**	**7%**	**136%**	**34%**	**-9%**
Long Term												
Full Simulation Period[b]	**54%**	-3%	0%	0%	0%	2%	**20%**	-3%	**-8%**	-1%	**-5%**	1%
Water Year Types[c]												
Wet (23%)	**59%**	0%	0%	0%	0%	4%	**9%**	0%	**-15%**	-3%	0%	-1%
Above Normal (24%)	**41%**	-2%	0%	0%	0%	0%	**10%**	0%	-4%	-4%	-2%	-2%
Below Normal (10%)	**57%**	-2%	0%	0%	0%	**6%**	**34%**	-3%	**-10%**	**14%**	-3%	-2%
Dry (16%)	**52%**	**-5%**	0%	0%	-2%	-1%	**32%**	**-8%**	0%	**11%**	2%	3%
Critical (27%)	**58%**	**-5%**	0%	0%	0%	0%	**51%**	**-22%**	1%	**-11%**	**-19%**	**6%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.22.2 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	51	30	68
20%	100	100	100	100	100	100	100	100	100	36	26	54
30%	100	100	100	100	100	100	100	100	100	26	22	50
40%	100	100	100	100	100	100	100	100	100	23	21	48
50%	100	100	100	100	100	100	100	100	57	21	19	46
60%	92	100	100	100	100	100	82	96	43	18	16	42
70%	87	100	100	100	100	100	68	28	28	15	12	38
80%	76	91	100	100	100	100	44	19	22	11	9	33
90%	67	82	100	100	100	100	35	8	14	5	6	26
Long Term												
Full Simulation Period[b]	89	95	100	100	96	96	77	68	61	26	19	47
Water Year Types[c]												
Wet (23%)	93	100	100	100	96	97	88	98	79	41	21	43
Above Normal (24%)	91	95	100	100	100	100	94	100	65	22	18	51
Below Normal (10%)	84	98	100	100	97	100	73	61	53	22	17	49
Dry (16%)	84	92	100	100	95	97	78	44	50	14	15	44
Critical (27%)	92	90	100	99	92	82	39	18	40	22	29	56

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	56	32	67
20%	84	100	100	100	100	100	100	100	100	42	26	54
30%	71	100	100	100	100	100	100	100	100	27	22	50
40%	62	100	100	100	100	100	100	100	100	22	20	48
50%	57	100	100	100	100	100	67	100	86	20	18	46
60%	50	100	100	100	100	100	60	91	53	16	17	42
70%	43	100	100	100	100	100	42	34	35	12	15	37
80%	37	100	100	100	100	100	23	25	24	9	11	33
90%	25	100	100	100	100	85	12	13	14	2	4	29
Long Term												
Full Simulation Period[b]	58	98	100	100	96	94	65	70	66	26	21	47
Water Year Types[c]												
Wet (23%)	59	100	100	100	96	93	81	97	93	42	21	43
Above Normal (24%)	64	98	100	100	100	100	86	99	68	22	18	52
Below Normal (10%)	54	100	100	100	97	94	55	63	59	19	17	50
Dry (16%)	55	97	100	100	97	98	59	48	50	12	15	43
Critical (27%)	58	95	100	99	92	82	26	23	40	25	36	53

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**8%**	**10%**	-1%
20%	**-16%**	0%	0%	0%	0%	0%	0%	0%	0%	**16%**	-1%	0%
30%	**-29%**	0%	0%	0%	0%	0%	0%	0%	0%	2%	-3%	-1%
40%	**-38%**	0%	0%	0%	0%	0%	0%	0%	0%	-5%	-5%	0%
50%	**-43%**	0%	0%	0%	0%	0%	**-33%**	0%	**51%**	-5%	-3%	0%
60%	**-46%**	0%	0%	0%	0%	0%	**-27%**	**-5%**	**25%**	**-12%**	4%	0%
70%	**-51%**	0%	0%	0%	0%	0%	**-38%**	**21%**	**27%**	**-23%**	**17%**	-3%
80%	**-52%**	**10%**	0%	0%	0%	0%	**-47%**	**34%**	**10%**	**-12%**	**18%**	-1%
90%	**-63%**	**22%**	0%	0%	0%	**-15%**	**-66%**	**48%**	**-7%**	**-58%**	**-25%**	**10%**
Long Term												
Full Simulation Period[b]	**-35%**	3%	0%	0%	0%	-2%	**-17%**	3%	**9%**	1%	**6%**	-1%
Water Year Types[c]												
Wet (23%)	**-37%**	0%	0%	0%	0%	-4%	**-9%**	0%	**17%**	3%	0%	1%
Above Normal (24%)	**-29%**	2%	0%	0%	0%	0%	**-9%**	0%	4%	4%	2%	2%
Below Normal (10%)	**-37%**	2%	0%	0%	0%	**-6%**	**-25%**	3%	**11%**	**-12%**	3%	2%
Dry (16%)	**-34%**	**5%**	0%	0%	2%	1%	**-24%**	**8%**	0%	**-10%**	-2%	-3%
Critical (27%)	**-37%**	**5%**	0%	0%	0%	0%	**-34%**	**28%**	-1%	**13%**	**24%**	**-6%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.22.3 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	51	30	68
20%	100	100	100	100	100	100	100	100	100	36	26	54
30%	100	100	100	100	100	100	100	100	100	26	22	50
40%	100	100	100	100	100	100	100	100	100	23	21	48
50%	100	100	100	100	100	100	100	100	57	21	19	46
60%	92	100	100	100	100	100	82	96	43	18	16	42
70%	87	100	100	100	100	100	68	28	28	15	12	38
80%	76	91	100	100	100	100	44	19	22	11	9	33
90%	67	82	100	100	100	100	35	8	14	5	6	26
Long Term												
Full Simulation Period[b]	89	95	100	100	96	96	77	68	61	26	19	47
Water Year Types[c]												
Wet (23%)	93	100	100	100	96	97	88	98	79	41	21	43
Above Normal (24%)	91	95	100	100	100	100	94	100	65	22	18	51
Below Normal (10%)	84	98	100	100	97	100	73	61	53	22	17	49
Dry (16%)	84	92	100	100	95	97	78	44	50	14	15	44
Critical (27%)	92	90	100	99	92	82	39	18	40	22	29	56

Alternative 3

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	37	66
20%	100	100	100	100	100	100	100	100	100	48	31	58
30%	100	100	100	100	100	100	100	100	100	36	25	52
40%	100	100	100	100	100	100	100	100	100	27	23	48
50%	99	100	100	100	100	100	81	100	100	21	20	46
60%	97	100	100	100	100	100	63	81	46	18	18	41
70%	84	100	100	100	100	100	48	38	30	16	16	36
80%	79	100	100	100	100	100	36	18	24	11	10	27
90%	70	88	100	100	100	100	20	0	13	0	0	20
Long Term												
Full Simulation Period[b]	90	98	99	100	99	96	70	69	65	32	21	44
Water Year Types[c]												
Wet (23%)	94	100	100	100	96	98	89	90	77	62	26	45
Above Normal (24%)	93	98	100	100	100	100	93	100	88	30	19	50
Below Normal (10%)	90	100	91	100	100	100	57	69	61	20	16	49
Dry (16%)	81	96	100	100	100	97	62	44	54	14	18	37
Critical (27%)	90	92	100	100	99	79	27	27	37	13	23	44

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	94%	26%	-3%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	33%	21%	7%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	37%	13%	2%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%	12%	0%
50%	-1%	0%	0%	0%	0%	0%	-19%	0%	74%	1%	9%	0%
60%	6%	0%	0%	0%	0%	0%	-23%	-16%	8%	-2%	11%	-3%
70%	-4%	0%	0%	0%	0%	0%	-29%	32%	8%	3%	29%	-6%
80%	3%	10%	0%	0%	0%	0%	-18%	-4%	11%	-2%	8%	-18%
90%	5%	8%	0%	0%	0%	0%	-42%	-95%	-12%	-91%	-97%	-23%
Long Term												
Full Simulation Period[b]	1%	2%	-1%	0%	3%	0%	-10%	1%	7%	25%	8%	-6%
Water Year Types[c]												
Wet (23%)	1%	0%	0%	0%	0%	0%	1%	-7%	-3%	53%	24%	4%
Above Normal (24%)	3%	3%	0%	0%	0%	0%	-2%	0%	35%	37%	8%	-1%
Below Normal (10%)	7%	2%	-9%	0%	3%	0%	-23%	15%	16%	-10%	-3%	0%
Dry (16%)	-4%	4%	0%	0%	5%	0%	-20%	0%	7%	1%	19%	-16%
Critical (27%)	-2%	3%	0%	1%	8%	-4%	-30%	51%	-8%	-40%	-19%	-22%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.22.4 New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Survival)											
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	51	30	68
20%	100	100	100	100	100	100	100	100	100	36	26	54
30%	100	100	100	100	100	100	100	100	100	26	22	50
40%	100	100	100	100	100	100	100	100	100	23	21	48
50%	100	100	100	100	100	100	100	100	57	21	19	46
60%	92	100	100	100	100	100	82	96	43	18	16	42
70%	87	100	100	100	100	100	68	28	28	15	12	38
80%	76	91	100	100	100	100	44	19	22	11	9	33
90%	67	82	100	100	100	100	35	8	14	5	6	26
Long Term												
Full Simulation Period[b]	89	95	100	100	96	96	77	68	61	26	19	47
Water Year Types[c]												
Wet (23%)	93	100	100	100	96	97	88	98	79	41	21	43
Above Normal (24%)	91	95	100	100	100	100	94	100	65	22	18	51
Below Normal (10%)	84	98	100	100	97	100	73	61	53	22	17	49
Dry (16%)	84	92	100	100	95	97	78	44	50	14	15	44
Critical (27%)	92	90	100	99	92	82	39	18	40	22	29	56

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Survival)											
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	63	31	88
20%	87	100	100	100	100	100	100	100	100	36	21	53
30%	74	100	100	100	100	100	100	100	100	26	19	48
40%	63	100	100	100	100	100	100	100	100	20	17	47
50%	58	100	100	100	100	100	60	100	100	18	17	42
60%	48	100	100	100	100	100	37	51	66	14	15	37
70%	43	100	100	100	100	100	21	25	37	11	10	34
80%	39	100	100	100	100	100	9	2	22	5	6	30
90%	30	100	100	100	100	80	0	0	7	0	1	12
Long Term												
Full Simulation Period[b]	59	99	100	100	98	94	57	62	67	25	20	44
Water Year Types[c]												
Wet (23%)	61	100	100	100	96	95	84	90	94	36	17	40
Above Normal (24%)	65	98	100	100	100	100	76	93	58	18	15	46
Below Normal (10%)	51	100	100	100	97	94	47	56	57	16	12	39
Dry (16%)	52	97	100	100	100	97	43	36	49	9	12	39
Critical (27%)	68	98	100	100	98	81	13	19	58	43	50	63

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**22%**	**5%**	**29%**
20%	**-13%**	0%	0%	0%	0%	0%	0%	0%	0%	-2%	**-20%**	-3%
30%	**-26%**	0%	0%	0%	0%	0%	0%	0%	0%	-1%	**-15%**	-4%
40%	**-37%**	0%	0%	0%	0%	0%	0%	0%	0%	**-12%**	**-16%**	-2%
50%	**-42%**	0%	0%	0%	0%	0%	**-40%**	0%	**74%**	**-16%**	**-11%**	**-8%**
60%	**-47%**	0%	0%	0%	0%	0%	**-56%**	**-48%**	**54%**	**-22%**	**-7%**	**-11%**
70%	**-51%**	0%	0%	0%	0%	0%	**-69%**	**-11%**	**32%**	**-28%**	**-17%**	**-12%**
80%	**-49%**	**10%**	0%	0%	0%	0%	**-79%**	**-88%**	0%	**-54%**	**-40%**	**-9%**
90%	**-56%**	**22%**	0%	0%	0%	**-20%**	**-100%**	**-100%**	**-51%**	**-96%**	**-78%**	**-55%**
Long Term												
Full Simulation Period[b]	**-34%**	3%	0%	0%	2%	-2%	**-26%**	**-9%**	**11%**	-3%	0%	**-7%**
Water Year Types[c]												
Wet (23%)	**-34%**	0%	0%	0%	0%	-3%	-5%	**-7%**	**19%**	**-10%**	**-19%**	**-7%**
Above Normal (24%)	**-28%**	2%	0%	0%	0%	0%	**-19%**	**-7%**	**-11%**	**-16%**	**-13%**	**-9%**
Below Normal (10%)	**-39%**	2%	0%	0%	0%	**-6%**	**-37%**	**-7%**	**8%**	**-28%**	**-25%**	**-21%**
Dry (16%)	**-39%**	**5%**	0%	0%	**5%**	0%	**-45%**	**-19%**	-3%	**-34%**	**-22%**	**-11%**
Critical (27%)	**-26%**	**10%**	0%	1%	**6%**	-1%	**-67%**	**5%**	**45%**	**92%**	**72%**	**12%**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

5C.3.3.23 New Melones Spotted Bass Nest Survival Percentage

Table 5C.3.3.23.1 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Survival)											
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	100	100
20%	100	100	100	100	100	100	100	100	100	100	91	100
30%	100	100	100	100	100	100	100	100	100	93	85	100
40%	100	100	100	100	100	100	100	100	100	85	81	100
50%	100	100	100	100	100	100	100	100	100	81	78	100
60%	100	100	100	100	100	100	100	100	100	75	76	100
70%	100	100	100	100	100	100	100	100	100	68	73	100
80%	100	100	100	100	100	100	87	91	88	64	66	100
90%	90	100	100	100	100	100	68	69	71	51	55	97
Long Term												
Full Simulation Period[b]	94	100	100	100	99	99	90	91	91	77	76	97
Water Year Types[c]												
Wet (23%)	88	100	100	100	98	96	88	100	96	84	79	96
Above Normal (24%)	99	100	100	100	100	100	98	100	99	77	78	100
Below Normal (10%)	91	100	100	100	100	100	90	90	94	80	77	99
Dry (16%)	97	100	100	100	100	100	97	92	89	69	72	99
Critical (27%)	99	100	100	100	100	100	73	62	72	75	75	94

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Survival)											
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	98	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	86	100
40%	100	100	100	100	100	100	100	100	100	87	83	100
50%	100	100	100	100	100	100	100	100	100	83	79	100
60%	100	100	100	100	100	100	100	100	100	79	75	100
70%	100	100	100	100	100	100	100	96	95	74	69	100
80%	100	100	100	100	100	100	100	80	85	66	63	100
90%	100	100	100	100	100	100	100	62	72	57	57	93
Long Term												
Full Simulation Period[b]	100	100	100	100	98	100	98	89	92	80	77	98
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	99	93	83	96
Above Normal (24%)	100	100	100	100	100	100	100	100	96	78	77	100
Below Normal (10%)	100	100	100	100	100	100	100	90	92	84	76	99
Dry (16%)	100	100	100	100	97	100	100	87	90	71	73	99
Critical (27%)	98	100	100	100	100	100	87	56	78	62	71	96

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Percentage (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	1%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	1%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	-1%	0%
70%	0%	0%	0%	0%	0%	0%	0%	-4%	-5%	**9%**	**-5%**	0%
80%	0%	0%	0%	0%	0%	0%	**15%**	**-12%**	-4%	4%	-4%	0%
90%	**11%**	0%	0%	0%	0%	0%	**48%**	**-10%**	2%	**10%**	4%	-5%
Long Term												
Full Simulation Period[b]	**6%**	0%	0%	0%	-1%	1%	**9%**	-2%	1%	3%	1%	0%
Water Year Types[c]												
Wet (23%)	**13%**	0%	0%	0%	-1%	4%	**13%**	0%	3%	**11%**	**6%**	0%
Above Normal (24%)	1%	0%	0%	0%	0%	0%	2%	0%	-3%	1%	-1%	0%
Below Normal (10%)	**10%**	0%	0%	0%	0%	0%	**11%**	-1%	-2%	**5%**	-1%	0%
Dry (16%)	3%	0%	0%	0%	-3%	0%	3%	**-5%**	1%	3%	1%	0%
Critical (27%)	-1%	0%	0%	0%	0%	0%	**20%**	**-10%**	**9%**	**-17%**	-4%	2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.23.2 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	98	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	86	100
40%	100	100	100	100	100	100	100	100	100	87	83	100
50%	100	100	100	100	100	100	100	100	100	83	79	100
60%	100	100	100	100	100	100	100	100	100	79	75	100
70%	100	100	100	100	100	100	100	96	95	74	69	100
80%	100	100	100	100	100	100	100	80	85	66	63	100
90%	100	100	100	100	100	100	100	62	72	57	57	93
Long Term												
Full Simulation Period[b]	100	100	100	100	98	100	98	89	92	80	77	98
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	99	93	83	96
Above Normal (24%)	100	100	100	100	100	100	100	100	96	78	77	100
Below Normal (10%)	100	100	100	100	100	100	100	90	92	84	76	99
Dry (16%)	100	100	100	100	97	100	100	87	90	71	73	99
Critical (27%)	98	100	100	100	100	100	87	56	78	62	71	96

No Action Alternative

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	100	100
20%	100	100	100	100	100	100	100	100	100	100	91	100
30%	100	100	100	100	100	100	100	100	100	93	85	100
40%	100	100	100	100	100	100	100	100	100	85	81	100
50%	100	100	100	100	100	100	100	100	100	81	78	100
60%	100	100	100	100	100	100	100	100	100	75	76	100
70%	100	100	100	100	100	100	100	100	100	68	73	100
80%	100	100	100	100	100	100	87	91	88	64	66	100
90%	90	100	100	100	100	100	68	69	71	51	55	97
Long Term												
Full Simulation Period[b]	94	100	100	100	99	99	90	91	91	77	76	97
Water Year Types[c]												
Wet (23%)	88	100	100	100	98	96	88	100	96	84	79	96
Above Normal (24%)	99	100	100	100	100	100	98	100	99	77	78	100
Below Normal (10%)	91	100	100	100	100	100	90	90	94	80	77	99
Dry (16%)	97	100	100	100	100	100	97	92	89	69	72	99
Critical (27%)	99	100	100	100	100	100	73	62	72	75	75	94

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	-1%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-2%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-2%	-1%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-5%	2%	0%
70%	0%	0%	0%	0%	0%	0%	0%	4%	**5%**	**-8%**	**5%**	0%
80%	0%	0%	0%	0%	0%	0%	**-13%**	**14%**	4%	-3%	5%	0%
90%	**-10%**	0%	0%	0%	0%	0%	**-32%**	**11%**	-2%	**-9%**	-4%	5%
Long Term												
Full Simulation Period[b]	**-6%**	0%	0%	0%	1%	-1%	**-8%**	2%	-1%	-3%	-1%	0%
Water Year Types[c]												
Wet (23%)	**-12%**	0%	0%	0%	1%	-4%	**-12%**	0%	-3%	**-10%**	**-5%**	0%
Above Normal (24%)	-1%	0%	0%	0%	0%	0%	-2%	0%	3%	-1%	1%	0%
Below Normal (10%)	**-9%**	0%	0%	0%	0%	0%	**-10%**	1%	2%	**-5%**	1%	0%
Dry (16%)	-3%	0%	0%	0%	3%	0%	-3%	**5%**	-1%	-3%	-1%	0%
Critical (27%)	1%	0%	0%	0%	0%	0%	**-17%**	**11%**	**-8%**	**21%**	5%	-2%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.23.3 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	98	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	86	100
40%	100	100	100	100	100	100	100	100	100	87	83	100
50%	100	100	100	100	100	100	100	100	100	83	79	100
60%	100	100	100	100	100	100	100	100	100	79	75	100
70%	100	100	100	100	100	100	100	96	95	74	69	100
80%	100	100	100	100	100	100	100	80	85	66	63	100
90%	100	100	100	100	100	100	100	62	72	57	57	93
Long Term												
Full Simulation Period[b]	100	100	100	100	98	100	98	89	92	80	77	98
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	99	93	83	96
Above Normal (24%)	100	100	100	100	100	100	100	100	96	78	77	100
Below Normal (10%)	100	100	100	100	100	100	100	90	92	84	76	99
Dry (16%)	100	100	100	100	97	100	100	87	90	71	73	99
Critical (27%)	98	100	100	100	100	100	87	56	78	62	71	96

Alternative 3

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	100	100
20%	100	100	100	100	100	100	100	100	100	100	100	100
30%	100	100	100	100	100	100	100	100	100	100	91	100
40%	100	100	100	100	100	100	100	100	100	94	87	100
50%	100	100	100	100	100	100	100	100	100	83	82	100
60%	100	100	100	100	100	100	100	100	100	79	78	100
70%	100	100	100	100	100	100	100	100	98	75	75	100
80%	100	100	100	100	100	100	100	79	88	66	65	94
90%	100	100	100	100	100	100	82	38	69	48	38	82
Long Term												
Full Simulation Period[b]	100	100	99	100	99	99	94	86	88	78	75	91
Water Year Types[c]												
Wet (23%)	100	100	100	100	98	100	100	92	77	98	87	98
Above Normal (24%)	100	100	100	100	100	100	100	100	99	80	68	92
Below Normal (10%)	100	100	91	100	100	100	90	95	97	69	66	98
Dry (16%)	100	100	100	100	100	100	93	73	93	67	74	79
Critical (27%)	100	100	100	100	100	92	79	71	83	63	70	89

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	6%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	5%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	4%	0%
70%	0%	0%	0%	0%	0%	0%	0%	4%	3%	1%	9%	0%
80%	0%	0%	0%	0%	0%	0%	0%	-1%	5%	0%	2%	-6%
90%	0%	0%	0%	0%	0%	0%	-18%	-39%	-4%	-14%	-34%	-11%
Long Term												
Full Simulation Period[b]	0%	0%	-1%	0%	1%	-1%	-4%	-3%	-5%	-2%	-2%	-7%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	1%	0%	0%	-8%	-22%	5%	5%	3%
Above Normal (24%)	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%	-13%	-8%
Below Normal (10%)	0%	0%	-9%	0%	0%	0%	-10%	6%	5%	-18%	-12%	-1%
Dry (16%)	0%	0%	0%	0%	3%	0%	-7%	-15%	4%	-6%	2%	-21%
Critical (27%)	2%	0%	0%	0%	0%	-8%	-10%	26%	5%	1%	-3%	-7%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.23.4 New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	98	100
20%	100	100	100	100	100	100	100	100	100	100	92	100
30%	100	100	100	100	100	100	100	100	100	93	86	100
40%	100	100	100	100	100	100	100	100	100	87	83	100
50%	100	100	100	100	100	100	100	100	100	83	79	100
60%	100	100	100	100	100	100	100	100	100	79	75	100
70%	100	100	100	100	100	100	100	96	95	74	69	100
80%	100	100	100	100	100	100	100	80	85	66	63	100
90%	100	100	100	100	100	100	100	62	72	57	57	93
Long Term												
Full Simulation Period[b]	100	100	100	100	98	100	98	89	92	80	77	98
Water Year Types[c]												
Wet (23%)	100	100	100	100	97	100	100	100	99	93	83	96
Above Normal (24%)	100	100	100	100	100	100	100	100	96	78	77	100
Below Normal (10%)	100	100	100	100	100	100	100	90	92	84	76	99
Dry (16%)	100	100	100	100	97	100	100	87	90	71	73	99
Critical (27%)	98	100	100	100	100	100	87	56	78	62	71	96

Alternative 5

Statistic	Monthly Percentage (Percent Survival)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	100	100	100	100	100	100	100	100	99	100
20%	100	100	100	100	100	100	100	100	100	100	83	100
30%	100	100	100	100	100	100	100	100	100	92	80	100
40%	100	100	100	100	100	100	100	100	100	82	77	100
50%	100	100	100	100	100	100	100	100	100	78	76	100
60%	100	100	100	100	100	100	100	100	100	72	73	100
70%	100	100	100	100	100	100	84	91	100	67	65	100
80%	100	100	100	100	100	100	63	52	84	56	57	99
90%	98	100	100	100	100	100	27	9	60	33	50	68
Long Term												
Full Simulation Period[b]	96	100	100	100	99	100	81	80	88	72	71	91
Water Year Types[c]												
Wet (23%)	99	100	100	100	97	99	99	100	100	90	76	94
Above Normal (24%)	99	100	100	100	100	100	90	100	76	66	74	92
Below Normal (10%)	87	100	100	100	100	100	78	74	92	65	65	79
Dry (16%)	93	100	100	100	100	100	78	71	85	56	59	93
Critical (27%)	97	100	100	100	100	100	38	38	80	73	80	92

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Percentage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-9%**	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	**-7%**	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-6%**	**-7%**	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-7%**	-4%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**-9%**	-3%	0%
70%	0%	0%	0%	0%	0%	0%	**-16%**	**-5%**	**5%**	**-10%**	**-5%**	0%
80%	0%	0%	0%	0%	0%	0%	**-37%**	**-35%**	0%	**-15%**	**-10%**	-1%
90%	-2%	0%	0%	0%	0%	0%	**-73%**	**-85%**	**-17%**	**-41%**	**-13%**	**-27%**
Long Term												
Full Simulation Period[b]	-4%	0%	0%	0%	1%	0%	**-18%**	**-10%**	-4%	**-9%**	**-8%**	**-7%**
Water Year Types[c]												
Wet (23%)	-1%	0%	0%	0%	-1%	-1%	-1%	0%	1%	-3%	**-8%**	-1%
Above Normal (24%)	-1%	0%	0%	0%	0%	0%	**-10%**	0%	**-21%**	**-16%**	-5%	**-8%**
Below Normal (10%)	**-13%**	0%	0%	0%	0%	0%	**-22%**	**-18%**	-1%	**-22%**	**-15%**	**-20%**
Dry (16%)	**-7%**	0%	0%	0%	3%	0%	**-22%**	**-18%**	**-6%**	**-21%**	**-18%**	**-6%**
Critical (27%)	-1%	0%	0%	0%	0%	0%	**-57%**	**-31%**	2%	**18%**	**13%**	-4%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5C.3.3.24 Temperature Threshold Exceedances

Species	Lifestage	River	Reach	Water Year Type	Month	Temperature Objective (Degree F)	Temperature Objective Reference[1]	No Action Alternative	Second Basis of Comparison (Alternative 1)	Alternative 3	Alternative 5	Alternative 1 minus No Action Alternative	No Action Alternative minus Second Basis of Comparison	Alternative 3 minus Second Basis of Comparison	Alternative 5 minus Second Basis of Comparison
Steelhead	Adult Migration	Stanislaus	Orange Blossom Bridge	All	October	56	NMFS BiOp 2009	57%	85%	87%	58%	**28%**	**-28%**	2%	**-27%**
Steelhead	Adult Migration	Stanislaus	Orange Blossom Bridge	All	November	56	NMFS BiOp 2009	33%	28%	24%	36%	-5%	5%	-4%	**8%**
Steelhead	Adult Migration	Stanislaus	Orange Blossom Bridge	All	December	56	NMFS BiOp 2009	0%	0%	0%	3%	0%	0%	0%	3%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	January	52	NMFS BiOp 2009	0%	2%	2%	2%	2%	-2%	0%	0%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	February	52	NMFS BiOp 2009	0%	2%	2%	0%	2%	-2%	0%	-2%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	March	52	NMFS BiOp 2009	8%	9%	12%	8%	1%	-1%	3%	-1%
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	April	52	NMFS BiOp 2009	33%	31%	30%	37%	-2%	2%	-1%	**6%**
Steelhead	Smoltification	Stanislaus	Knights Ferry (*Used Below Goodwin Dam)	All	May	52	NMFS BiOp 2009	63%	66%	63%	68%	3%	-3%	-3%	2%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	January	57	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	February	57	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	March	57	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	April	57	NMFS BiOp 2009	2%	8%	3%	0%	**6%**	**-6%**	-4%	**-8%**
Steelhead	Smoltification	Stanislaus	Orange Blossom Bridge	All	May	57	NMFS BiOp 2009	18%	10%	17%	8%	**-8%**	**8%**	**7%**	-3%
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	January	55	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	February	55	NMFS BiOp 2009	0%	0%	1%	0%	0%	0%	1%	0%
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	March	55	NMFS BiOp 2009	21%	16%	25%	21%	**-5%**	**5%**	**8%**	4%
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	April	55	NMFS BiOp 2009	16%	34%	17%	7%	**17%**	**-17%**	**-16%**	**-26%**
Steelhead	Spawning	Stanislaus	Orange Blossom Bridge	All	May	55	NMFS BiOp 2009	49%	43%	53%	40%	**-5%**	**5%**	**10%**	-3%
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	June	65	NMFS BiOp 2009	6%	2%	4%	6%	-3%	3%	2%	3%
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	July	65	NMFS BiOp 2009	16%	16%	19%	21%	-1%	1%	4%	**6%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	August	65	NMFS BiOp 2009	15%	13%	9%	21%	-2%	2%	-4%	**8%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	September	65	NMFS BiOp 2009	11%	10%	7%	18%	0%	0%	-3%	**8%**
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	October	65	NMFS BiOp 2009	7%	8%	4%	11%	1%	-1%	-4%	3%
Steelhead	Rearing	Stanislaus	Orange Blossom Bridge	All	November	65	NMFS BiOp 2009	0%	0%	0%	0%	0%	0%	0%	0%

[1]See Appendix 9N, Section C for the full reference

Table 5C.3.3.25 CVP Annual Power Generation Summary

				No Action Alternative	Second Basis of Comparison (Alternative 1)	Alternative 3	Alternative 5	Alternative 1 vs. No Action Altenative (Percent Difference)	No Action Alternative vs. Second Basis of Comparison (Percent Difference)	Alternative 3 vs. Second Basis of Comparison (Percent Difference)	Alternative 5 vs. Second Basis of Comparison (Percent Difference)
CVP Generation Facilities											
Capacity	At load center	(MW)	Long Term	1,583	1,633	1,642	1,568	3%	-3%	1%	-4%
			Dry and Critical	1,203	1,277	1,291	1,173	**6%**	**-6%**	1%	**-8%**
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,558	4,604	4,582	4,552	1%	-1%	0%	-1%
			Dry and Critical	2,696	2,773	2,798	2,684	3%	-3%	1%	-3%
CVP Pumping Facilities											
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,113	1,289	1,238	1,110	**16%**	**-14%**	-4%	**-14%**
			Dry and Critical	699	773	715	699	**11%**	**-10%**	**-8%**	**-10%**
All CVP Facilities											
Net Generation	Total of all Facilities	(GWh)	Long Term	3,445	3,315	3,344	3,442	-4%	4%	1%	4%
			Dry and Critical	1,997	2,000	2,084	1,986	0%	0%	4%	-1%

Notes: 1) Long-term Average is the average quantity for the 82-year simulation period. 2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030. 3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in text. 5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in text.

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Appendix 5D

Municipal and Industrial Water Demands and Supplies

5D.1 Introduction

Most water supply agencies in California that serve more than 3,000 connections or more than 3,000 acre-feet of water prepare Urban Water Management Plans (UWMPs) for submittal to the California Department of Water Resources. The UWMPs include water demand and water supply projections through at least 2030. The future water demands include assumptions for implementation of water conservation measures to meet the statewide mandate to reduce municipal and industrial (M&I) water demand by 20 percent by 2020.

Information from the UWMPs for Central Valley Project (CVP) and State Water Project (SWP) water users was used as input information in the CWEST model (see Appendix 19A, CWEST Model) to project M&I water supply economic changes. For small water users that did not prepare a UWMP, information was obtained from water master plans and integrated regional water management plans. This information is summarized in the following sections of this appendix. The tabular format is consistent for each water user and was established to be consistent with the input files for the CWEST model; therefore, there are rows in the tabular format that are not used for some M&I water users.

5D.2 Central Valley Region

This section includes summaries of water demand and water supply projections for M&I users of CVP and SWP water supplies in the Central Valley Region, including water rights users on the Sacramento and American rivers. The M&I water users are generally organized geographically in this section from north to south. See Tables 5D.1 through 5D.31.

Table 5D.1 Bella Vista Water District (BVWD)

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	14,567	BVWD serves portions of Redding. Assumed growth rate from City of Redding *2010 Urban Water Management Plan.*
Water Sales to Others	–	–
Total Demand	**14,567**	–
Water Supplies for No Action Alternative (NAA)		
CVP Water Supplies	14,445	CVP Water Service Contract 24,578 acre-feet, includes 24,000 acre-feet (14-06-200-851A-LTR1) and 578 acre-feet assigned from Shasta County Water Agency initial CVP Water Service Contract (14-06-200-3464A-LTR1).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	122	Assumed no increase in wells.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**14,567**	–
Possible Future Water Supplies		**–**
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	–	–

Table 5D.2 Centerville Community Services District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	3,185	–
Water Sales to Others	–	–
Total Demand	**3,185**	–
Water Supplies for NAA		
CVP Water Supplies	3,185	CVP Water Exchange Contract 900 acre-feet (pre-1914 water right on Clear Creek) and CVP Water Service Contract 2,900 acre-feet, (14-06-200-3367A-LTR1).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**3,185**	–
Possible Future Water Supplies	**–**	**–**
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	–	–
Other Information	–	Sanitary Survey states that 25% of 35-mgd Water Treatment Plant is owned by Centerville Community Services District (Redding Area Water Suppliers. 2011. *Redding Area Watershed Sanitary Survey)*.

Note:
mgd = million gallons per day

1 **Table 5D.3 City of Shasta Lake**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	2,455	City of Shasta Lake. 2014. *2010 Urban Water Management Plan, Administrative Draft*. July.
Water Sales to Others	470	–
Total Demand	**2,925**	–
Water Supplies for NAA		
CVP Water Supplies	2,885	CVP Water Exchange Contract 900 acre-feet (pre-1914 water right on Clear Creek) and CVP Water Service Contract 2,900 acre-feet, (14-06-200-3367A-LTR1).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	112	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**2,997**	
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Other Information	–	Supplies do not include transfers not approved by Reclamation due to cold water pool issues: Anderson-Cottonwood Irrigation District 2,000 acre-feet, MCM Properties at 325 acre-feet. Future project would develop facilities that would allow these transfers and result in 2,325 acre-feet normal year and 2,093 acre-feet in 3rd multiple dry years per 2010 UWMP (with reference to support from Reclamation).
Total Potential Future Water Supplies	**2,997**	–

1 **Table 5D.4 Clear Creek Community Services District (CCCSD)**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	7,410	CCCSD serves areas near Redding. Assumed growth rate from City of Redding *2010 Urban Water Management Plan.*
Water Sales to Others	–	–
Total Demand	**7,410**	–
Water Supplies for NAA		
CVP Water Supplies	7,410	CVP Water Service Contract 15,300 acre-feet, (14-06-200-4894A-LTR1).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**7,410**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	–	–
Other Information	–	Sanitary Survey states that 25% of 35-mgd Water Treatment Plant is owned by Centerville Community Services District (Redding Area Water Suppliers. 2011. *Redding Area Watershed Sanitary Survey)*.

Table 5D.5 City of Redding

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	27,852	City of Redding. 2012. *2010 Urban Water Management Plan*. July 17.
Water Sales to Others	–	–
Total Demand	**27,852**	–
Water Supplies for NAA		
CVP Water Supplies	27,140	CVP Sacramento River Settlement Contract 21,000 acre-feet. CVP Water Service Contract (Buckeye Zone) 6,140 acre-feet (14-06-200-5272A-LTR1).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	13,405	Increased supply from new wells.
Recycled Wastewater	19	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**40,564**	–
Possible Future Water Supplies	–	Not quantified. Historical transfers up to 4,000 acre-feet (3,000 acre-feet during drought) from Anderson-Cottonwood Irrigation District.
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	–	–

1 **Table 5D.6 Mountain Gate Community Services District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	2,180	Assume full use of CVP water supplies.
Water Sales to Others	–	–
Total Demand	**2,180**	
Water Supplies for NAA		
CVP Water Supplies	1,350	Assume full use of CVP water supplies.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	830	Assume no increase in wells.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**2,180**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**2,180**	–

1 **Table 5D.7 Shasta Community Services District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	1,000	Assume full use of CVP water supplies.
Water Sales to Others	–	–
Total Demand	**1,000**	–
Water Supplies for NAA		
CVP Water Supplies	1,000	Assume full use of CVP water supplies.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**1,000**	
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**1,000**	–

Table 5D.8 Shasta County Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	1,022	Assume full use of CVP water supplies.
Water Sales to Others	–	–
Total Demand	**1,022**	–
Water Supplies for NAA		
CVP Water Supplies	1,022	Assume full use of CVP water supplies.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**1,022**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**1,022**	–

Table 5D.9 City of Yuba City

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	29,041	Yuba City. 2011. *2010 Urban Water Management Plan, Public Review Document*. June.
Water Sales to Others	–	–
Total Demand	**29,041**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	8,000	SWP Contract 9,600 acre-feet. Long-term average based on Department of Water Resources. 2013. *Final Initial Study/Negative Declaration State Water Project Supply Allocation Settlement Agreement*. September.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	15,500	Up to 6,500 acre-feet State Water Resources Control Board (SWRCB) Permit 14045. Up to 9,000 acre-feet SWRCB Permit 18558.
Groundwater	3,248	In the future, a second well could be constructed for 4 mgd; assume 4,500 acre-feet based on same production as existing well.
Recycled Wastewater	–	Reclamation use is limited to 140 acre-feet of landscape irrigation at the Wastewater Treatment Facility.
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	4,500	Up to 4,500 acre-feet from North Yuba Water District.
Conservation	–	–
Total Water Supplies for NAA	**31,248**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**31,248**	–

Table 5D.10 City of West Sacramento

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	20,123	City of West Sacramento. 2011. *2010 Urban Water Management Plan, Public Review Document*. October.
Water Sales to Others	–	–
Total Demand	**20,123**	
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	23,600	CVP Sacramento River Settlement Contract 23,600 acre-feet (0-07-20-W0187) in accordance with Appropriative Water Right on Sacramento River (State Water Resources Control Board Permit Number 18150).
Other Imported Water Supplies	–	–
Local Surface Water Supplies	5,000	5,000 acre-feet as part of North Delta Water Agency water rights, in accordance with agreements with the State of California.
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**28,600**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**28,600**	–

Table 5D.11 El Dorado County Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	12,054	11,741 acre-feet for Georgetown Divide Public Utility District and 313 acre-feet for Grizzly Flats Community Service District (including County areas) per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October. Includes agricultural expansion for trees, vines, and pasture. Remaining areas of community development within El Dorado Irrigation District (EID).
Water Sales to Others	–	–
Total Demand	**12,054**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	12,200	12,200 acre-feet from Stumpy Meadows Reservoir on Pilot Creek per Georgetown Divide Public Utility District. 2011. *2010 Urban Water Management Plan*. July 22.
Groundwater	150	150 acre-feet for Grizzly Flats Community Service District per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**12,350**	–

Items	Water Demand and Supplies (acre-feet)	Notes
Possible Future Water Supplies	–	9,000 acre-feet of the 15,000-acre-foot CVP water service contract authorized by Public Law 101-514 (also known as "Fazio Water") for Georgetown Divide Public Utility District per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October. Assumed that 6,000 acre-feet would be used by EID. 150 acre-feet from a new reservoir (not planned) per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October. 670 acre-feet from lining canals in Georgetown Divide Public Utilities District per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October. 40,000 acre-feet from water rights applications State Water Resources Control Board Filed Applications Nos. 5644 and 5645 for storage of water from Sacramento Municipal Utility District (SMUD) Upper American River Project and diversion at Folsom Lake with an exchange with an upstream water rights holder. To be shared with EID. Per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October. 10,300 acre-feet from diversion of water from South Fork of the Rubicon River with a negotiation under the El Dorado-SMUD Cooperation Agreement per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October. 1,000 acre-feet from dry year conservation efforts per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October.

Items	Water Demand and Supplies (acre-feet)	Notes
Subtotal Possible Future Water Supplies	**9,000**	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**21,350**	It is assumed that not all future projects would be implemented. Therefore, total potential future water supplies would be substantially less.

1 **Table 5D.12 El Dorado Irrigation District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	55,709	Per El Dorado Irrigation District. 2011. *Urban Water Management Plan, 2010 Update*. July.
Water Sales to Others	1,330	–
Total Demand	**57,039**	–
Water Supplies for NAA		
CVP Water Supplies	7,550	CVP Water Service Contract (C 14-06-200-1357A-LTR1) 7,550 acre-feet diverted from Folsom Lake for portion of El Dorado Hills per El Dorado Irrigation District. 2011. *Urban Water Management Plan, 2010 Update*. July.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	59,640	23,000 acre-feet from Jenkinson Lake on Park Creek (actually 33,400 acre-foot water right L11835 and L11836, with restriction of 23,000 acre-feet/two years). 4,560 acre-feet from Weber Creek (Farmer's Free Ditch) and Reservoir, Slab Creek (Summerfield Ditch), and Hangtown Creek (Gold Hill Ditch) diverted from Folsom Lake using a 40-year Warren Act Contract (signed March 1, 2011). 17,000 acre-foot El Dorado Hydroelectric Project 184 at Folsom Lake under State Water Resources Control Board Permit 21112. 15,080 acre-feet from Project 184 at El Dorado Forebay pre-1914 water rights. El Dorado Irrigation District. 2011. *Urban Water Management Plan, 2010 Update*. July; and El Dorado Irrigation District. 2012. *United States Bureau of Reclamation Five-Year Water Management Plan, 2010 Update*. July. El Dorado Irrigation District (EID) acquired Project 184 from Pacific Gas & Electric Company in 1999 with water rights from the South Fork American River and conveyed in the El Dorado Canal to El Dorado Forebay and Jenkinson Lake; however, needs a Warren Act Contract to divert at Folsom Reservoir.

Items	Water Demand and Supplies (acre-feet)	Notes
Local Surface Water Supplies (continued)		Jenkinson Lake supply could be reduced from 23,000 to 20,920 acre-feet per El Dorado Irrigation District. 2013. *2013 Water Resources and Service Reliability Report* August 12.
Groundwater	–	–
Recycled Wastewater	3,804	3,804 acre-feet per El Dorado Irrigation District. 2011. *Urban Water Management Plan, 2010 Update*. July.
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**70,994**	–
Possible Future Water Supplies	**47,500**	Up to 40,000 acre-feet under the Sacramento Municipal Utility District (SMUD)-El Dorado Agreement from SMUD reservoirs per El Dorado Irrigation District. 2011. *Urban Water Management Plan, 2010 Update*. July. 7,500 acre-feet of the 15,000-acre-foot CVP water service contract authorized by Public Law 101-514 (also known as "Fazio Water") per El Dorado Irrigation District. 2011. *Urban Water Management Plan, 2010 Update*. July. However, the available supply may only be 6,000 acre-feet per El Dorado County Water Agency. 2014. *Water Resources Development & Management Plan (December 2007) 2014 West Slope Update, Final Draft*. October.
Subtotal Possible Future Water Supplies	**47,500**	–
Total Potential Future Water Supplies	**118,494**	–

Table 5D.13 City of Folsom

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	36,259	City of Folsom. 2011. *2010 Urban Water Management Plan*. June.
Water Sales to Others	–	–
Total Demand	**36,259**	–
Water Supplies for NAA		
CVP Water Supplies	7,000	7,000 acre-foot Water Service Contract (C 6-07-20-W1372) under Public Law 101-514 (Fazio Water).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	28,540	22,000 acre-feet pre-1914 water right diverted from South Fork American River at Folsom Lake and Folsom Canal. 5,000 acre-feet pre-1914 diverted from South Fork American River at Folsom Lake and Folsom Canal. 1,540 acre-feet from American River at Folsom Lake purchased from San Juan Water District for use in the Ashland Service Area.
Groundwater	3,250	Groundwater extraction and treatment produced by Aerojet groundwater cleanup process.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**38,790**	–
Possible Future Water Supplies	8,000	8,000 acre-feet purchase water from Natomas Central Mutual Water Company Sacramento Settlement Contract (14-06-200-885A) to be diverted at Freeport on the Sacramento River and conveyance to Folsom South area in accordance with the City of Folsom-Sacramento County Water Agency Memorandum of Agreement.
Subtotal Possible Future Water Supplies	**8,000**	–
Total Potential Future Water Supplies	**46,790**	–

Table 5D.14 Placer County Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	109,130	46,701 acre-feet domestic and 62,429 acre-feet irrigation per Placer County Water Agency. 2011. *2010 Urban Water Management Plan*. June 16.
Water Sales to Others	109,871	29,805 acre-foot sale of treated water to Lincoln, Cal-Am Water Company, and others. 79,411 acre-foot sale of untreated water to San Juan Water District, Roseville, and Sacramento Suburban Water District. 571 acre-foot sale of untreated water to Alpine Meadows Water Association, Dutch Flt Water, Heather Glen Community Services District, Meadow Vista County Water District, and Weimar Water Company.
Total Demand	**219,001**	–
Water Supplies for NAA		
CVP Water Supplies	35,000	35,000 acre-foot CVP Water Service Contract (14-06-200-5082A) diverted from the American River upstream of and from Folsom Lake.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	248,800	125,400 af purchase from Pacific Gas & Electric Company under two pre-1914 water rights on the Yuba and Bear rivers. 120,000 acre-foot water right on the American River for the Middle Fork Project diverted from the American River upstream of and from Folsom Lake. Used by San Juan Water District, Sacramento Suburban Water District, Rio Linda/Elverta Community Water District, and Roseville. 12,000 acre-foot purchase from South Sutter Water District (SSWD) is only available when SSWD purchases surplus water from Nevada Irrigation District and not considered part of long-term supplies. Assumed average of 3,400 acre-feet/year from four pre-1914 appropriative water rights on Canyon Creek, tributary to Auburn Ravine, South Fork Dry Creek tributary to Coon Creek, and North Fork Dry Creek tributary to Coon Creek.
Groundwater	707	Limited groundwater available in Martis Valley Basin.

Items	Water Demand and Supplies (acre-feet)	Notes
Recycled Wastewater	6,987	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**291,494**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**291,494**	–

Table 5D.15 City of Roseville

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	49,334	City of Roseville. 2011. *2010 Urban Water Management Plan*. August.
Water Sales to Others	–	–
Total Demand	**49,334**	–
Water Supplies for NAA		
CVP Water Supplies	32,000	CVP Water Service Contract (14-06-200-3474A).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	3,397	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	34,000	30,000 acre-foot purchase from Placer County Water Agency. 4,000 acre-foot purchase from San Juan Water District.
Conservation	–	–
Total Water Supplies for NAA	**69,397**	–
Possible Future Water Supplies	–	Under Water Forum Agreement, can transfer up to 20,000 acre-feet from Placer County Water Agency. Also may be able to purchase up to 7,000 acre-feet from other CVP water users. Up to 23,200 acre-feet from new wells.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**69,397**	Future water supplies used when existing water supplies not fully available.

Table 5D.16 Sacramento County Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	68,976	Sacramento County Water Agency. 2011. *2010 Zone 41 Urban Water Management Plan*. July.
Water Sales to Others	8,560	Sales to Elk Grove Water Service and Cal-Am Water Company.
Total Demand	**77,535**	–
Water Supplies for NAA		
CVP Water Supplies	40,000	15,000 acre-foot CVP Water Service Contract authorized by Public Law 101-514 (Fazio Water). Assume 12,320 acre-feet for long-time average based on capacity of conveyance. 30,000 acre-foot CVP Water Service Contract assigned from Sacramento Municipal Utility District (14-06-200-5198A) to Sacramento County Water Agency under two assignments.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	17,500	Up to 71,000 acre-feet intermittent water from American and Sacramento rivers water rights under State Water Resources Control Board Permit 21209. Use 17,500 acre-feet for long-term average.
Groundwater	38,500	31,000 acre-feet from wells and 7,500 acre-feet from groundwater treatment processes.
Recycled Wastewater	4,400	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	14,498	14,498 acre-foot purchase from City of Sacramento in accordance with the Water Forum Agreement.
Conservation	–	–
Total Water Supplies for NAA	**114,898**	**–**
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**114,898**	–

1 **Table 5D.17 Sacramento Suburban Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	40,389	Sacramento Suburban Water District. 2011. *2010 Urban Water Management Plan*. July.
Water Sales to Others	1,800	1,700 acre-feet sold to Cal-Am Water Company and 100 acre-feet to Rio Linda/Elverta Community Water District.
Total Demand	**43,189**	–
Water Supplies for NAA		
CVP Water Supplies	1,000	NOT CVP WATER SUPPLY. Surplus Section 215 water. Assume 12,000 acre-feet in wet years and long-term average of 1,000 acre-feet.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	31,241	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	21,300	12,000-29,000 acre-feet purchased from Placer County Water Agency, diverted from Folsom Lake, and treated by San Juan Water District in wet years. 9,300 acre-feet purchased from City of Sacramento.
Conservation	–	–
Total Water Supplies for NAA	**53,541**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**53,541**	–

Table 5D.18 San Juan Water District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	55,657	San Juan Water District. 2011. *2010 Urban Water Management Plan*. June 22. Includes 38,591 acre-feet purchased for conjunctive use which is not required each year.
Water Sales to Others	44,199	18,765 acre-feet to Citrus Heights Water District. 14,894 acre-feet to Fair Oaks Water District. 5,000 acre-feet to Orange Vale Water Company. 1,540 acre-feet to Folsom. 4,000 acre-feet to Roseville.
Total Demand	**99,856**	**61,265 acre-feet without conjunctive use component.**
Water Supplies for NAA		
CVP Water Supplies	24,200	11,200 acre-foot CVP Water Service Contract (06-07-20-W1373). 13,000 acre-foot CVP Water Service Contracts diverted from Folsom Lake as authorized under Public Law 101-514 (Fazio Water) (06-07-20-W1373).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	33,000	33,000 acre-feet pre-1914 water rights.
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	25,000	25,000 acre-foot purchase from Placer County Water Agency.
Conservation	–	–
Total Water Supplies for NAA	**82,200**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**82,200**	–

1 **Table 5D.19 Golden State Water Company – Rancho Cordova**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	16,932	Golden State Water Company. 2011. *Final Report, 2010 Urban Water Management Plan, Cordova*. July.
Water Sales to Others	–	–
Total Demand	**16,932**	–
Water Supplies for NAA		
CVP Water Supplies	–	Assumes no renewal of transfer of water from SMUD.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	10,000	Up to 10,000 acre-feet pre-1914 water right from American River conveyed through the Folsom South Canal. However, only 5,000 acre-feet retained for Golden State Water Company and leases 5,000 acre-feet to City of Folsom. Up to 5,000 acre-feet replacement water from American River conveyed through the Folsom South Canal provided under a settlement with Gencorp/Aerojet Corporation, plus up to 10,200 acre-feet if necessary.
Groundwater	14,850	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**24,850**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**24,850**	–

1 **Table 5D.20 Carmichael Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	9,571	Carmichael Water District. 2011. *2010 Urban Water Management Plan*. June 20.
Water Sales to Others	–	–
Total Demand	**9,571**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	32,627	Long-term average of 32,627 acre-feet of water rights on the American River under State Water Resources Control Board permits 1387 (10,859 acre-feet), 8731 (3,669 acre-feet), and 7356 (18,099 acre-feet).
Groundwater	8,156	6,646 acre-feet from local wells and 1,510 acre-feet from groundwater treatment processes.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**40,783**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**40,783**	–

Table 5D.21 City of Sacramento

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	160,100	City of Sacramento. 2011. *2010 Urban Water Management Plan*. October.
Water Sales to Others	60,062	5,293 acre-feet sold to Sacramento International Airport. 16,593 acre-feet sold to Sacramento Suburban Water District. 11,553 acre-feet sold to Cal-Am Water Company. 22,994 acre-feet sold to Sacramento County Water Agency. 3,629 acre-feet sold to Fruitridge Vista Water Company.
Total Demand	**220,162**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	238,684	Up to 81,800 acre-feet of water rights from Sacramento River under State Water Resources Control Board (SWRCB) Permit 992. Up to 245,000 acre-feet of water rights from American River and tributaries of the American River under SWRCB permits 11358, 11359, 11360, 11361.
Groundwater	22,300	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**260,984**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**260,984**	–

Table 5D.22 Solano County Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	82,750	238,050 acre-feet Ag (Solano Irrigation District and Maine Prairie Water District) and M&I demands only include demands met by SWP entitlement and Reclamation Solano Project. Does not include demands met by local surface water and groundwater supplies. Solano County Water Agency. 2011. *2010 Solano County Water Agency Urban Water Management Plan, Final Draft*.
Water Sales to Others	–	–
Total Demand	**82,750**	**238,050 Total Demand**
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	30,564	47,756 acre-foot SWP Entitlement.
Other Imported Water Supplies	205,276	207,350 acre-feet with Reclamation Solano Project.
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**235,840**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**235,840**	–

Table 5D.23 Napa County Flood Control and Water Conservation District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	21,572	5,712 acre-feet for American Canyon per City of American Canyon. 2011. *Final Urban Water Management Plan, 2010, Final*. September. 1,469 acre-feet for Calistoga per Napa County. 2007. *Draft Environmental Impact Report for Napa County General Plan*. February. 14,391 acre-feet for Napa per City of Napa. 2011. *Urban Water Management Plan, 2010 Update*. June 21.
Water Sales to Others	–	–
Total Demand	**21,572**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	26,028	3,120 acre-feet for American Canyon per City of American Canyon. 2011. *Final Urban Water Management Plan, 2010, Final*. September. 1,008 acre-feet for Calistoga treated by City of Napa. Total 1,925 acre-foot SWP entitlement in 2010 per Napa County. 2007. *Draft Environmental Impact Report for Napa County General Plan*. February. Total amount available is limited 1,008 acre-feet due to conveyance limitations. 21,900 acre-feet for Napa per City of Napa. 2011. *Urban Water Management Plan, 2010 Update*. June 21. Assume 19,900 acre-feet due to conveyance limitations.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	32,092	392 acre-feet for Calistoga from Kimball Reservoir per Napa County. 2007. *Draft Environmental Impact Report for Napa County General Plan*. February. 31,700 acre-feet for Napa from Lake Hennessey and Milliken Reservoir per City of Napa. 2011. *Urban Water Management Plan, 2010 Update*. June 21.
Groundwater	–	–

Items	Water Demand and Supplies (acre-feet)	Notes
Recycled Wastewater	5,605	1,065 acre-feet for American Canyon per City of American Canyon. 2011. *Final Urban Water Management Plan, 2010, Final*. September. 4,540 acre-feet for Napa per City of Napa. 2011. *Urban Water Management Plan, 2010 Update*. June 21.
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	1,527	1,027 acre-foot purchase by American Canyon from City of Vallejo, which diverts water from the Delta. Can be expanded to 1,527 acre-feet when SWP water reliability is reduced per City of American Canyon. 2011. *Final Urban Water Management Plan, 2010, Final*. September.
Conservation	–	–
Total Water Supplies for NAA	**65,252**	–
Possible Future Water Supplies	–	American Canyon can purchase water from Napa during emergencies per City of American Canyon. 2011. *Final Urban Water Management Plan, 2010, Final*. September.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**65,252**	–

1 **Table 5D.24 Stockton East Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	64,960	64,960 acre-feet of demand met by Stockton East Water District within City of Stockton, California Water Service Company – Stockton District, and San Joaquin County per Stockton East Water District. 2011. *2010 Stockton East Water District Urban Water Management Plan Update*. June.
Water Sales to Others	–	–
Total Demand	**64,960**	–
Water Supplies for NAA		
CVP Water Supplies	24,000	24,000 acre-foot CVP water service contract on Stanislaus River from New Melones Reservoir.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	20,000	20,000 acre-foot water rights on Calaveras River diverted from New Hogan Reservoir.
Groundwater	43,680	From groundwater bank.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	30,000	Transfer from Oakdale Irrigation District and South San Joaquin Irrigation District.
Conservation	–	–
Total Water Supplies for NAA	**117,680**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**117,680**	–

1 **Table 5D.25 City of Tracy**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	31,000	City of Tracy. 2011. *2010 Urban Water Management Plan*. May.
Water Sales to Others	–	–
Total Demand	**31,000**	–
Water Supplies for NAA		
CVP Water Supplies	31,000	10,000 acre-foot CVP Water Service Contract (14-06-200-7858A), 5,000 acre-feet assigned CVP Water Service Contract from Banta-Carbona Irrigation District (14-06-200-4305A), and 5,000 acre-feet from assigned CVP Water Service Contract from West Side Irrigation District (7-07-20-W-0045). 11,000 acre-foot CVP Water Service Contract assigned from Byron-Bethany Irrigation District from acquisition from Plainview Water District (14-06-200-785).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	16,000	13,000 acre-feet from pre-1914 water rights on the Stanislaus River from South County Water Supply Project. 3,000 acre-feet pre-1914 water rights from Byron-Bethany Irrigation District for annexations in City of Tracy.
Groundwater	2,500	Approximately up to 2,500 acre-feet/year. Up to 3,500 acre-feet banked in Semitropic Water Storage District Groundwater Bank, and 3,000 acre-feet in local groundwater.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**49,500**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–

Items	Water Demand and Supplies (acre-feet)	Notes
Total Potential Future Water Supplies	**49,500**	–

Table 5D.26 City of Avenal

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	3,500	Includes demands for Avenal State Prison. Bureau of Reclamation. 2014. *Central Valley Project Municipal and Industrial Water Shortage Policy, Draft Environmental Impact Statement*. November.
Water Sales to Others	–	–
Total Demand	**3,500**	–
Water Supplies for NAA		
CVP Water Supplies	3,500	3,500 acre-foot CVP Water Service Contract (14-06-200-4619A).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**3,500**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**3,500**	–

Table 5D.27 City of Coalinga

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	10,000	Includes demands for Coalinga State Hospital. Bureau of Reclamation. 2014. *Central Valley Project Municipal and Industrial Water Shortage Policy, Draft Environmental Impact Statement*. November.
Water Sales to Others	–	–
Total Demand	**10,000**	–
Water Supplies for NAA		
CVP Water Supplies	10,000	10,000 acre-foot CVP Water Service Contract (14-06-200-4173A).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	CVP Water Service Contract signed in 1968 required Coalinga to abandon groundwater wells.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**10,000**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**10,000**	–

Table 5D.28 City of Huron

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	3,000	Bureau of Reclamation. 2014. *Central Valley Project Municipal and Industrial Water Shortage Policy, Draft Environmental Impact Statement*. November.
Water Sales to Others	–	–
Total Demand	**3,000**	–
Water Supplies for NAA		
CVP Water Supplies	3,000	3,000 acre-foot CVP Water Service Contract (14-06-200-7081A).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**3,000**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**3,000**	–

1 **Table 5D.29 City of Fresno**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	201,000	City of Fresno. 2012. *2010 Urban Water Management Plan*. November. Does not include 69,400 acre-feet for groundwater recharge.
Water Sales to Others	100	–
Total Demand	**201,100**	–
Water Supplies for NAA		
CVP Water Supplies	58,200	60,000 acre-foot CVP Water Service Contract from Friant-Kern Canal.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	134,600	Basic allocation of 120,800 acre-feet from Fresno Irrigation District (FID) water rights on Kings River. City of Fresno receives 13,800 acre-feet from FID water rights on Kings River in exchange for recycled wastewater that recharges the groundwater in a portion of FID service area.
Groundwater	69,200	–
Recycled Wastewater	25,000	Recycled Wastewater. Could be combined with future transfers in exchange with surface water.
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**287,000**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**287,000**	–

1 **Table 5D.30 City of Lindsay**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	2,689	City of Lindsay. 2013. *Water Feasibility Study, Draft Final Report*. October.
Water Sales to Others	–	–
Total Demand	**2,689**	–
Water Supplies for NAA		
CVP Water Supplies	1,450	Assumes 2,500 acre-foot CVP Water Service Contract (5-07-20-W0428) only available in summer months due to availability of Friant Kern Canal per City of Lindsay. 2013. *Water Feasibility Study, Draft Final Report*. October.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	1,210	1,210 acre-feet from Well #14 per City of Lindsay. 2013. *Water Feasibility Study, Draft Final Report*. October. Well #15 can produce 1,937 acre-feet; however, not included in firm capacity.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**2,660**	–
Possible Future Water Supplies	3,630	3 new wells and treatment plant and distribution facilities improvements per City of Lindsay. 2013. *Water Feasibility Study, Draft Final Report*. October.
Subtotal Possible Future Water Supplies	**3,630**	–
Total Potential Future Water Supplies	**6,290**	–

Table 5D.31 Kern County Water Agency Improvement District No. 4 and North of the River Municipal Water District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	62,750	Kern County Water Agency Improvement District No. 4 and North of the River Municipal Water District. 2011. *2010 Urban Water Management Plan, Final*. June.
Water Sales to Others	–	–
Total Demand	**62,750**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	82,946	Assumes 82,946 acre-feet of the 82,946-acre-foot SWP Water Service Entitlement.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	68,126	Including Kern Water Bank, Pioneer Project Bank, and Allen Road Complex Well Field.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**151,072**	–
Possible Future Water Supplies	–	Including up to 96,000 acre-feet of transfers with Kern Delta Water District, Kern-Tulare Water District, Rosedale-Rio Bravo Water Storage District, and North Kern Water Storage District.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**151,072**	–

5D.3 San Francisco Bay Area Region

This section includes summaries of water demand and water supply projections for M&I users of CVP and SWP water supplies in the San Francisco Bay Area Region (see Tables 5D.32 through 5D.37). The M&I water users are generally organized geographically in this section from north to south.

Table 5D.32 Contra Costa Water District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	225,160	Contra Costa Water District. 2011. *Urban Water Management Plan*. June.
Water Sales to Others	–	–
Total Demand	**225,160**	–
Water Supplies for NAA		
CVP Water Supplies	195,000	195,000 acre-foot CVP Water Service Contract (175r-3401A-LTR1).
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	19,500	3,100 acre-foot water right from Mallard Slough. 6,400 acre-foot water right from San Joaquin River by City of Antioch. 10,000 acre-foot water right from San Joaquin River by industrial water users in Contra Costa Water District (CCWD) service area.
Groundwater	3,000	–
Recycled Wastewater	14,100	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	8,200	Purchase surplus water from East Contra Costa Irrigation District.
Conservation	–	–
Total Water Supplies for NAA	**239,800**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**239,800**	–

Table 5D.33 East Bay Municipal Utility District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	349,440 (Projected 2040 Water Demand)	East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*. June.
Water Sales to Others	–	–
Total Demand	**349,440**	–
Water Supplies for NAA		
CVP Water Supplies	Dry year supply	Up to 133,000 acre-feet in a dry year, with a maximum of 165,000 acre-feet over three dry years, CVP Water Service Contract (14-08-200-5183A-LTR1) from the American River.
SWP Water Supplies	–	–
Other Imported Water Supplies	Up to 240,800	East Bay Municipal Utility District has up to 364,037 acre-feet of water rights on the Mokelumne River, but available amount varies depending on hydrology per 2011. *Urban Water Management Plan 2010 Document*. June. “Other Imported Water Supplies” include East Bay Municipal Utility District’s entitlements on the Mokelumne River. Although East Bay Municipal Utility District has water rights up to 364,037 acre-feet, the actual amount available in any given year varies depending on hydrology, required releases to senior downstream water rights holders, and releases to meet instream flow requirements.
Local Surface Water Supplies	16,800	Water rights from local watersheds within the East Bay Municipal Utility District (EBMUD) watershed average 16,800 to 28,000 acre-feet per East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*.
Groundwater	Dry year supply	Up to 1,120 acre-feet in dry years from Bayside Groundwater Project Phase 1 groundwater recharge facility within EBMUD service area per East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*. June.

Items	Water Demand and Supplies (acre-feet)	Notes
Recycled Wastewater	22,400	22,400 acre-feet in East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*. June. East Bay Municipal Utility District's goal is to deliver 22,400 acre-feet of recycled water by the year 2040.
Recycled Stormwater	–	–
Desalination		
Transfers/Exchanges[a]	Dry year supply	5,040 to 49,952 acre-feet in dry years transfers from Northern California water users per East Bay Municipal Utility District. 2012. *Water Supply Management Program 2040 Plan*. April.
Conservation	69,440	East Bay Municipal Utility District's Water Conservation Master Plan is based on 69,440 acre-feet conservation in 2040 per East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*. June. East Bay Municipal Utility District's goal for conservation is 69,440 acre-feet by the year 2040.
Other Projects: Bayside Groundwater Project Phase 2[a]	Dry year supply	2,240 to 10,080 acre-feet in dry years Bayside Groundwater Project Phase 2 per East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*. June.
Total Water Supplies for NAA	**349,440** **Non-Dry year supply**	**Does not include CVP water supply for dry years, up to 15 percent rationing in dry years, or other dry year supply projects.** During normal years, East Bay Municipal Utility District anticipates having sufficient supplies to meet demands. Meeting customer demands during dry years will depend on the use of CVP supplies, rationing, and the implementation of additional water supply projects.
Possible Future Water Supplies		
Other Projects: Groundwater Banking outside of East Bay Municipal Utility District Service Area[a]	Dry year supply	Dry year supply of 4,704 acre-feet of groundwater banking in Sacramento Valley and/or 19,500 acre-feet in San Joaquin Valley; not anticipated until 2040 per East Bay Municipal Utility District. 2012. *Water Supply Management Program 2040 Plan*. April.

Items	Water Demand and Supplies (acre-feet)	Notes
Regional Desalination Facility[a]	Dry year supply–	Up to 22,400 acre-feet from regional desalination facility; however, not anticipated until 2040 per East Bay Municipal Utility District. 2012. *Water Supply Management Program 2040 Plan*. April.
Other Projects: Enlarge Lower Bear Reservoir[a]	Dry year supply–	Up to 4,500 acre-feet in dry years; however, not in plan for 2030 per East Bay Municipal Utility District. 2012. *Water Supply Management Program 2040 Plan*. April.
Other Projects: Expand Los Vaqueros Reservoir[a]	Dry year supply–	Exact amount available to be determined and additional study needed per East Bay Municipal Utility District. 2011. *Urban Water Management Plan 2010 Document*. June.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed, or are scheduled to be completed after 2030.
Total Potential Future Water Supplies	**349,440 Non-Dry year supply**	**Does not include CVP water supply for dry years, up to 15 percent rationing in dry years, or other dry year supply projects.**

[a] East Bay Municipal Utility District has identified a range of water supply projects that it will pursue simultaneously to meet future water needs. By considering a broad mix of projects, with inherent scalability and the ability to adjust implementation schedules for a particular component, East Bay Municipal Utility District will be able to minimize the risks associated with future uncertainties such as project implementation challenges and climate change. If East Bay Municipal Utility District is able to successfully develop one component, this could result in deferral of other additional water supply components over the planning period.

Table 5D.34 Zone 7 Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	66,300	Assume Low Water Demand to serve a portion of Livermore, Pleasanton, Dublin-San Ramon Services District, and Cal-Water Water Company, plus local retail treated and untreated water. Does not include 9,200 acre-feet for groundwater recharge. Zone 7 Water Agency. 2010. *2010 Urban Water Management Plan*. December 15.
Water Sales to Others	–	–
Total Demand	**66,300**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	51,545	51,400 acre-feet from the 80,619 acre-foot SWP Water Entitlement. 145 acre-feet of SWP water from Yuba Accord. Portions are stored in Semitropic Water Storage District and Cawelo Water District groundwater banks, Lake Del Valle, and local groundwater.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	7,100	Arroyo del Valle water rights.
Groundwater	9,200	Recharged by Zone 7 Water Agency; wells owned and operated by local agencies.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	4,500	2,000 to 5,000 acre-feet from Byron-Bethany Irrigation District. Assume 4,500 acre-feet for long-term average.
Conservation	–	–
Total Water Supplies for NAA	**72,345**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	**72,345**	–
Total Potential Future Water Supplies	–	–

1 **Table 5D.35 Alameda County Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	71,800	Alameda County Water District. 2011 *Urban Water Management Plan, 2010-2015*. June 9.
Water Sales to Others	–	–
Total Demand	**71,800**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	27,500	27,500 acre-feet of the 42,000-acre-foot SWP Water Entitlement, including SWP water stored in Semitropic Water Storage District groundwater bank. Could receive 13,500 to 33,500 acre-feet from groundwater bank.
Other Imported Water Supplies	15,400	15,400 acre-feet from the 15,400 acre-foot contract with San Francisco Public Utility Commission.
Local Surface Water Supplies	5,800	Up to 18,500 acre-feet from Del Valle Reservoir.
Groundwater	24,500	Up to 44,400 acre-feet for groundwater recharge and storage.
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	5,100	Newark Desalination Facility.
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**78,300**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**78,300**	–

1 **Table 5D.36 Santa Clara Valley Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	409,370	Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. June.
Water Sales to Others	–	–
Total Demand	**409,370**	–
Water Supplies for NAA		
CVP Water Supplies	108,120	152,500 acre-foot CVP Water Service Contract (7-07-20-W0023). Assume 108,120 acre-feet on long-term average per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April.
SWP Water Supplies	64,000	100,000 acre-foot SWP Water Entitlement. Assume 64,000 acre-feet on long-term average per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April.
Other Imported Water Supplies	61,000	61,000 acre-feet per Santa Clara Valley Water District. 2012. *Water Supply and Infrastructure Master Plan*. October. Up to 63,850 acre-feet from San Francisco Public Utility Commission per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April.
Local Surface Water Supplies	95,000	102,000 acre-feet per Santa Clara Valley Water District. 2012. *Water Supply and Infrastructure Master Plan*. October. Includes about 11,000 -12,000 acre-feet non-district surface water supplies. 93,500 acre-feet based upon reported local supplies minus groundwater component per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April.
Groundwater	61,000	61,000 acre-feet per Santa Clara Valley Water District. 2012. *Water Supply and Infrastructure Master Plan*. October. 60,300 acre-feet of effective natural groundwater recharge in Santa Clara Plain, Coyote Valley, and Llagas Subbasin basins per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April.
Recycled Wastewater	29,000	Per Santa Clara Valley Water District. 2012. *Water Supply and Infrastructure Master Plan*. October.

Items	Water Demand and Supplies (acre-feet)	Notes
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	4,000	Transfer from Patterson Irrigation District initiated in 2009 extended through 2024. This water is from Replacement Water, CVP Water Service Contract Water, and pre-1914 San Joaquin River water rights per Bureau of Reclamation. 2014. *Draft Findings of No Significant Impact, Patterson Irrigation District 10-Year Transfer and/or Warren Act Contract for up to 36,000 acre-feet of Available Surface Water Supply to Santa Clara Valley Water District*. May. Assume that this transfer is continued through 2030. Purchase of up to 20,000 acre-feet over a 20-year period from Pajaro Valley Water Management Agency during dry years; not included in long-term supply calculations. Assume 108,120 acre-feet on long-term average per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April.
Conservation	–	–
Total Water Supplies for NAA	**422,120**	–
Possible Future Water Supplies		
Brackish Groundwater Treatment in Pajaro Watershed	–	Per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April. Not included in Santa Clara Valley Water District. 2014. *FY 2014-15 Protection and Augmentation of Water Supplies*. February.
Regional Desalination Facility	–	Per Santa Clara Valley Water District. 2011. *Urban Water Management Plan 2010*. April. Not recommended at this time 61,000 acre-feet per Santa Clara Valley Water District. 2012. *Water Supply and Infrastructure Master Plan*. October; or per Santa Clara Valley Water District. 2014. *FY 2014-15 Protection and Augmentation of Water Supplies*. February.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**422,120**	–

Table 5D.37 San Benito County Water District, Zone 6

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	11,583	Per San Benito County Water District et al. (San Benito County Water District, Sunnyslope County Water District, and City of Hollister). 2011. *Draft Hollister Urban Area 2010 Urban Water Management Plan*. June 14. Does not include agricultural demands or groundwater use in San Juan Bautista, which does not directly use CVP water.
Water Sales to Others	100	–
Total Demand	**11,683**	–
Water Supplies for NAA		
CVP Water Supplies	8,250	43,800 acre-foot CVP Water Service Contract (8-07-20-W0130), including 8,250 acre-feet for Municipal & Industrial uses within Hollister and Sunnyslope County Water District. This use is limited by the Lessalt Water Treatment Plant capacity per San Benito County Water District et al. (San Benito County Water District, Sunnyslope County Water District, and City of Hollister). 2011. *Draft Hollister Urban Area 2010 Urban Water Management Plan*. June 14. Assumes expansion of water treatment plant capacity per Urban Water Management Plan and San Benito County Water District. 2014. *West Hills Water Treatment Plant Project, Draft Environmental Impact Report*. January. Remaining portion of the water supply, up to 35,550 acre-feet, is delivered to agricultural users and for groundwater recharge, which benefits Hollister, Sunnyslope, and San Juan Bautista communities.
SWP Water Supplies	–	–
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–

Items	Water Demand and Supplies (acre-feet)	Notes
Groundwater	4,004	Per San Benito County Water District et al. (San Benito County Water District, Sunnyslope County Water District, and City of Hollister). 2011. *Draft Hollister Urban Area 2010 Urban Water Management Plan*. June 14. Storage has been purchased in Semitropic Water Storage District groundwater banking per San Benito County Water District. 2014. *West Hills Water Treatment Plant Project, Draft Environmental Impact Report*. January.
Recycled Wastewater	1,170	Per San Benito County Water District et al. (San Benito County Water District, Sunnyslope County Water District, and City of Hollister). 2011. *Draft Hollister Urban Area 2010 Urban Water Management Plan*. June 14.
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**13,424**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**13,424**	–

5D.4 Central Coast Region

This section includes summaries of water demand and water supply projections for M&I users of SWP water supplies in the Central Coast Region (see Tables 5D.38 and 5D.39). The M&I water users are organized geographically in this section from north to south. The following water users contract with Central Coast Water Agency for SWP water supplies.

Table 5D.38 San Luis Obispo County Flood Control and Water Conservation District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	8,250	1,505 acre-feet for City of Morro Bay per City of Morro Bay. 2011. *Final Report, 2010 Urban Water Management Plan* June. 2,364 acre-feet for City of Pismo Beach per City of Pismo Beach. 2011. *2010 Urban Water Management Plan*. September. 1,135 acre-feet for California Men's Colony; 94 acre-feet for County Operations Center; 125 acre-feet for Cuesta College; 1,419 acre-feet for Oceano Community Services District; 393 acre-feet for San Miguelito Mutual Water Company; 170 acre-feet for Avila Beach Community Services District; 32 acre-feet for Avila Valley Mutual Water Company; 7 acre-feet for San Luis Coastal Unified School District through San Luis Obispo County Service Area No. 12; and 1,100 acre-feet for Shandon (San Luis Obispo County Service Area No. 16) per San Luis Obispo County Flood Control and Water Conservation District. 2012. *San Luis Obispo County Master Water Report*. May.
Water Sales to Others	-100	100 acre-feet from Oceano Community Services District to the City of Arroyo Grande.
Total Demand	**8,150**	–
Water Supplies for NAA		
CVP Water Supplies	–	–

Items	Water Demand and Supplies (acre-feet)	Notes
SWP Water Supplies	5,007	1,313 acre-feet for City of Morro Bay of Central Coast Water Authority SWP Water Entitlement per City of Morro Bay. 2011. *Final Report, 2010 Urban Water Management Plan*. June. 1,740 acre-feet for City of Pismo Beach per City of Pismo Beach. 2011. *2010 Urban Water Management Plan*. September. 735 acre-feet for California Men's Colony; 150 acre-feet for County Operations Center; 140 acre-feet Cuesta College; 495 acre-feet for Oceano Community Services District; 275 acre-feet for San Miguelito Mutual Water Company; 66 acre-feet Avila Beach Community Services District; 20 acre-feet for Avila Valley Mutual Water Company; 7 acre-feet for San Luis Coastal Unified School District through San Luis Obispo County Service Area No. 12; and 66 acre-feet for Shandon (San Luis Obispo County Service Area No. 16) per San Luis Obispo County Flood Control and Water Conservation District. 2012. *San Luis Obispo County Master Water Report*. May.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	2,015	896 acre-feet from Lopez Lake Reservoir for City of Pismo Beach per City of Pismo Beach. 2011. *2010 Urban Water Management Plan*. September. 445 acre-feet from Whale Rock Reservoir and Chorro Reservoir for California Men's Colony; 28 acre-feet from Whale Rock Reservoir for County Operations Center; 303 acre-feet from Lopez Lake Reservoir for Oceano Community Services District; 263 acre-feet from San Miguelito Mutual Water Company; 68 acre-feet from Lopez Lake Reservoir for Avila Beach Community Services District; and 12 acre-feet from Lopez Lake Reservoir for Avila Valley Mutual Water Company per San Luis Obispo County Flood Control and Water Conservation District. 2012. *San Luis Obispo County Master Water Report*. May.

Items	Water Demand and Supplies (acre-feet)	Notes
Groundwater	3,588	1,723 acre-feet for City of Morro Bay per City of Morro Bay. 2011. *Final Report, 2010 Urban Water Management Plan*. June. 700 acre-feet for City of Pismo Beach per City of Pismo Beach. 2011. *2010 Urban Water Management Plan*. September. 900 acre-feet for Oceano Community Services District; 118 acre-feet for San Miguelito Mutual Water Company; and 147 acre-feet for Shandon (San Luis Obispo County Service Area No. 16) per San Luis Obispo County Flood Control and Water Conservation District. 2012. *San Luis Obispo County Master Water Report*. May.
Recycled Wastewater	2,040	1,840 acre-feet for City of Pismo Beach per City of Pismo Beach. 2011. *2010 Urban Water Management Plan*. September. 200 acre-feet for California Men's Colony per San Luis Obispo Regional Water Management Group. 2014. *San Luis Obispo Integrated Regional Water Management Plan*. July.
Recycled Stormwater	–	–
Desalination	645	645 acre-feet for City of Morro Bay per City of Morro Bay. 2011. *Final Report, 2010 Urban Water Management Plan*. June.
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**13,295**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**13,295**	–

Table 5D.39 Santa Barbara County Flood Control and Water Conservation District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	72,515	1,635 acre-feet for City of Guadalupe per City of Guadalupe. 2014. *Water Master Plan Update*. May 13. 12,355 acre-feet for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. 19,564 acre-feet for City of Santa Maria per City of Santa Maria. 2011. *2010 Urban Water Management Plan*. July. 4,325 acre-feet for Carpinteria Valley Water District per Carpinteria Valley Water District. 2011. *Final 2010 Urban Water Management Plan Update*. June. 14,113 acre-feet for Goleta Water District per Goleta Water District. 2011. *Final 2010 Urban Water Management Plan Update*. November. 8,123 acre-feet for Golden State Water Company per Golden State Water Company. 2011. *Final Report, 2010 Urban Water Management Plan, Orcutt*. August. 1,434 acre-feet for City of Buellton; 1,868 acre-feet for La Cumbre Mutual Water Company; 5,633 acre-feet for Montecito Water District; 1,929 acre-feet for Santa Ynez River Water Conservation District, Improvement District #1; and 1,371 acre-feet for Vandenberg Air Force Base per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013*. 33 acre-feet for Raytheon Systems Company and 132 acre-feet for Morehart Land Company (Naples Water Company) for SWP water demand only, per Central Coast Water Authority. 2011. *2010 Urban Water Management Plan*. June.
Water Sales to Others	3,420	3,420 acre-feet for Golden State Water Company, Orcutt community, and Nipomo Community Services District from City of Santa Maria per City of Santa Maria. 2011. *2010 Urban Water Management Plan*. July.
Total Demand	**75,935**	–

Items	Water Demand and Supplies (acre-feet)	Notes
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	39,440	367 acre-feet of the 550-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for City of Guadalupe per City of Guadalupe. 2014. *Water Master Plan Update*. May 13. 1,802 acre-feet of the 3,000-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. 22,936 acre-feet of the 16,200-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for City of Santa Maria per City of Santa Maria. 2011. *2010 Urban Water Management Plan*. July. 1,200 acre-feet of the 2,000-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Carpinteria Valley Water District per Carpinteria Valley Water District. 2011. *Final 2010 Urban Water Management Plan Update*. June. 3,800 acre-feet of the 4,500-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Goleta Water District per Goleta Water District. 2011. *Final 2010 Urban Water Management Plan Update*. November. 1,109 acre-feet of the 500-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Golden State Water Company per Golden State Water Company. 2011. *Final Report, 2010 Urban Water Management Plan, Orcutt*. August.

Items	Water Demand and Supplies (acre-feet)	Notes
SWP Water Supplies (continued)	–	386 acre-feet of the 578-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for City of Buellton; 667 acre-feet of the 1,000-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for La Cumbre Mutual Water Company; 2,002 acre-feet of the 3,000-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Montecito Water District; 1,335 acre-feet of the 2,000-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Santa Ynez River Water Conservation District, Improvement District #1; and 3,670 acre-feet of the 5,500-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Vandenberg Air Force Base per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013*. 33 acre-feet of the 50-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Raytheon Systems Company; and 133 acre-feet of the 200-acre-foot allocation of the Central Coast Water Authority SWP Water Entitlement for Morehart Land Company (Naples Water Company) per Central Coast Water Authority. 2011. *2010 Urban Water Management Plan*. June.
Water Supplies from Reclamation Cachuma Project	23,534	6,566 acre-feet for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. 2,250 acre-feet for Carpinteria Valley Water District per Carpinteria Valley Water District. 2011. *Final 2010 Urban Water Management Plan Update*. June. 9,322 acre-feet for Goleta Water District per Goleta Water District. 2011. *Final 2010 Urban Water Management Plan Update*. November. 2,777 acre-feet for Montecito Water District; and 2,619 acre-feet for Santa Ynez River Water Conservation District, Improvement District #1 per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013*.

Items	Water Demand and Supplies (acre-feet)	Notes
Local Surface Water Supplies	21,742	4,331 acre-feet of water rights on Santa Ynez River and Devils Canyon Creek for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. 14,300 acre-feet from Twitchell Reservoir for City of Santa Maria per City of Santa Maria. 2011. *2010 Urban Water Management Plan*. July. 611 acre-feet for City of Buellton; 1,500 acre-feet for Montecito Water District; and 1,000 acre-feet for Santa Ynez River Water Conservation District, Improvement District #1 per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013*.
Groundwater	29,664	1,300 acre-feet with well modifications for City of Guadalupe per City of Guadalupe. 2014. *Water Master Plan Update*. May 13. 1,125 acre-feet for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. 12,795 acre-feet for City of Santa Maria per City of Santa Maria. 2011. *2010 Urban Water Management Plan*. July. 2,000 acre-feet for Carpinteria Valley Water District per Carpinteria Valley Water District. 2011. *Final 2010 Urban Water Management Plan Update*. June. 2,350 acre-feet for Goleta Water District per Goleta Water District. 2011. *Final 2010 Urban Water Management Plan Update*. November. 10,094 acre-feet for Golden State Water Company per Golden State Water Company. 2011. *Final Report, 2010 Urban Water Management Plan, Orcutt*. August. Not quantified use for City of Buellton; La Cumbre Mutual Water Company; Montecito Water District; Santa Ynez River Water Conservation District, Improvement District #1; and Vandenberg Air Force Base per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013*; and Central Coast Water Authority. 2011. *2010 Urban Water Management Plan*. June.

Items	Water Demand and Supplies (acre-feet)	Notes
Recycled Wastewater	2,250	1,100 acre-feet for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. 1,150 acre-feet for Goleta Water District per Goleta Water District. 2011. *Final 2010 Urban Water Management Plan Update*. November.
Recycled Stormwater	–	–
Desalination	7,500	7,500 acre-feet Santa Barbara (based on websites accessed in January 2015 for City of Santa Barbara).
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**124,130**	–
Possible Future Water Supplies	–	Modifications in groundwater management, desalination, and expansion of reclamation facilities for City of Santa Barbara per City of Santa Barbara. 2011. *Urban Water Management Plan, 2010 Update*. June. Desalination capacity of 3,125 acre-feet per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013.* Additional wells, use of recycled water, increased use of local water rights per Carpinteria Valley Water District. 2011. *Final 2010 Urban Water Management Plan Update*. June. Water system improvements and additional groundwater facilities for cities of Buellton, Guadalupe, Santa Barbara, and Santa Maria, and Goleta Water District per Santa Barbara County. 2014. *Integrated Regional Water Management Plan 2013.*
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**124,130**	–

5D.5 Southern California Region

This section includes summaries of water demand and water supply projections for M&I users of SWP water supplies in the Southern California Region (see Tables 5D.40 through 5D.50). The M&I water users are generally organized geographically in this section from north to south.

Table 5D.40 Antelope Valley-East Kern Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	96,558	Antelope Valley-East Kern Water Agency. 2011. *2010 Urban Water Management Plan*. June.
Water Sales to Others	–	–
Total Demand	**96,558**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	87,688	87,688 acre-feet of the 141,400-acre-foot SWP Water Entitlement.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	–
Groundwater	20,000	–
Recycled Wastewater	–	Recycled water is used by member agencies. The total is not quantified for the district.
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**107,688**	–
Possible Future Water Supplies		
Subtotal Possible Future Water Supplies	–	–
Total Potential Future Water Supplies	**107,688**	–

Table 5D.41 Castaic Lake Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	105,313	Castaic Lake Water Agency, Newhall County Water District, and Valencia Water Company. 2011. *2010 Urban Water Management Plan, Final*. June.
Water Sales to Others	–	–
Total Demand	**105,313**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	57,400	57,400 acre-feet of the 95,200-acre-foot SWP Water Entitlement.
Other Imported Water Supplies	17,287	17,287 from Flexible Storage Accounts with Ventura County; contracts with Buena Vista-Rosedale; and Newhall Land.
Local Surface Water Supplies	–	–
Groundwater	60,175	35,225 acre-feet of local groundwater and 24,950 acre-feet from groundwater banks in Kern County.
Recycled Wastewater	325	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**135,187**	–
Possible Future Water Supplies		
–	14,375	Additional groundwater use, including groundwater banking.
–	7,775	Additional recycled wastewater.
Subtotal Possible Future Water Supplies	**22,150**	–
Total Potential Future Water Supplies	**157,337**	–

Table 5D.42 Coachella Valley Water District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	212,000	212,000 acre-feet for urban water use. Total water use of 670,800 acre-feet includes water demands for agricultural users and groundwater recharge per Coachella Valley Water District. 2011. *2010 Urban Water Management Plan, Final Report*. July.
Water Sales to Others	–	–
Total Demand	**212,000**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	–	23,100 acre-foot SWP Water Entitlement plus 88,100 acre-feet from transfer of Metropolitan Water District of Southern California (MWDSC) SWP Entitlement and 27,150 acre-feet from transfers of SWP Entitlements from Kern County Water Users.
Other Imported Water Supplies	78,500	78,500 acre-foot Colorado River water supply for municipal and industrial uses. Approximately 428,000 acre-feet of Colorado River water supply for agricultural and groundwater recharge uses including 330,000 acre-foot Colorado R water right and additional 129,000 acre-feet from the Quantification Settlement Agreement (including SWP Water Entitlement that is exchanged with MWDSC).
Local Surface Water Supplies	–	–
Groundwater	133,500	–
Recycled Wastewater	26,840	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**238,840**	–
Possible Future Water Supplies	–	Treated groundwater could provide 10,000 acre-feet additional supplies for agricultural supplies; scheduled for 2035. Additional water transfers.

Items	Water Demand and Supplies (acre-feet)	Notes
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**238,840**	–

1 **Table 5D.43 Crestline-Lake Arrowhead Water Agency**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	2,250	Crestline-Lake Arrowhead Water Agency. 2011. *2010 Urban Water Management Plan*. August.
Water Sales to Others	–	–
Total Demand	**2,250**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	3,480	5,800 SWP Water Entitlement.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	481	Water right on Houston Creek conveyed through Lake Silverwood.
Groundwater	–	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**3,961**	–
Possible Future Water Supplies	–	Potential future water transfers, including from SWP water users. Potential recycled water use for limited use due to high elevation within service area.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**3,961**	–

1 **Table 5D.44 Desert Water Agency**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	69,400	Desert Water Agency. 2011. *2010 Urban Water Management Plan*. March.
Water Sales to Others	–	–
Total Demand	**69,400**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies		38,100 acre-foot SWP Water Entitlement plus 11,900 acre-feet from transfer of MWDSC SWP Entitlement and 5,750 acre-feet from transfers of SWP Entitlements from Kern County Water Users.
Other Imported Water Supplies	27,200	27,200 acre-foot Colorado River water supply for groundwater recharge including SWP water that is exchanged with MWDSC.
Local Surface Water Supplies	5,900	Water rights on Snow Creek, Falls Creek, Chino Creek, and Whitewater River.
Groundwater	7,000	–
Recycled Wastewater	8,400	–
Recycled Stormwater	21,400	21,400 acre-feet in nonconsumptive returns to aquifer.
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**69,900**	–
Possible Future Water Supplies	–	Potential future water transfers.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**69,900**	–

Table 5D.45 Mojave Water Agency

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	192,969	Mojave Water Agency. 2011. *Final 2010 Urban Water Management Plan*. June.
Water Sales to Others	–	–
Total Demand	**192,969**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	54,778	82,800 acre-foot SWP Water Entitlement and 14,000 acre-feet of SWP Water transferred from Dudley Ridge Water District.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	54,045	–
Groundwater	92,789	Includes 10,425 for agricultural depletion and 82,364 from return flows returned to the groundwater and reused.
Recycled Wastewater	6,087	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**207,699**	–
Possible Future Water Supplies	–	Potential water transfers, improved groundwater banking programs, and approaches to protect groundwater quality.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**207,699**	–

1 **Table 5D.46 Palmdale Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	55,000	Palmdale Water District. 2011. *Urban Water Management Plan*. June.
Water Sales to Others	300	Sales to Littlerock Creek Irrigation District.
Total Demand	**55,300**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	12,800	21,300 acre-foot SWP Water Entitlement.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	4,000	Water rights on Little Rock and Big Rock creeks.
Groundwater	20,600	12,000 acre-feet of groundwater and 8,600 acre-feet from groundwater banking.
Recycled Wastewater	9,000	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**46,400**	–
Possible Future Water Supplies	9,600	Future groundwater banking projects.
Subtotal Possible Future Water Supplies	**9,600**	–
Total Potential Future Water Supplies	**55,000**	–

1 **Table 5D.47 San Bernardino Valley Municipal Water District**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	305,447	San Bernardino Municipal Water District; East Valley Water District; cities of Loma Linda, Redlands, Colton, and San Bernardino; West Valley Water District; and Yucaipa Valley Water District. 2011. *2010 San Bernardino Valley Regional Urban Water Management Plan*. June.
Water Sales to Others	–	–
Total Demand	**305,447**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	61,560	27,090 acre-foot direct delivery from 102,600-acre-foot SWP Water Entitlement, and 34,470 acre-feet from storage.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	50,150	Water rights in the Santa Ana River watershed.
Groundwater	264,075	–
Recycled Wastewater	–	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**375,785**	–
Possible Future Water Supplies	–	Water transfers.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**375,785**	–

1 **Table 5D.48 San Gorgonio Pass Water Agency**

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	66,420	San Gorgonio Pass Water Agency. 2010. *2010 Urban Water Management Plan*. December.
Water Sales to Others	–	–
Total Demand	**66,420**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	8,000	17,300 acre-foot SWP Water Entitlement primarily used for groundwater recharge.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	3,000	Noble and Little San Gorgonio creeks used by Beaumont Cherry Valley Water District.
Groundwater	23,045	–
Recycled Wastewater	17,907	–
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**51,952**	–
Possible Future Water Supplies	11,717	Expanded groundwater facilities.
–	–	Future water transfers.
Subtotal Possible Future Water Supplies	**11,717**	–
Total Potential Future Water Supplies	**63,669**	–

Table 5D.49 Ventura County Watershed Protection District

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	10,365	The only portion of Ventura County Watershed Protection District that uses SWP Water not from Metropolitan Water District of Southern California is the Oxnard-Hueneme System of United Water Conservation District per United Water Conservation District. 2011 *Public Review Final, 2010 Urban Water Management Plan Update*. June.
Water Sales to Others	–	–
Total Demand	**10,365**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	–	5,000 acre-feet for United Water Conservation District of the Ventura County Watershed Conservation District 20,000 acre-foot SWP Water Entitlement. The water is used for groundwater recharge. The 5,000 acre-feet for Casitas Municipal Water District and 10,000 acre-feet for the City of San Buenaventura (Ventura) cannot be conveyed to those areas and are transferred to others.
Other Imported Water Supplies	–	–
Local Surface Water Supplies	–	Surface water from Lake Piru is used for groundwater recharge.
Groundwater	10,365	–
Recycled Wastewater	–	49,000 acre-feet of recycled water used for groundwater recharge (32,000 acre-feet), wildlife habitat (8,000 acre-feet), and agriculture (9,000 acre-feet).
Recycled Stormwater	–	–
Desalination	–	–
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**10,365**	–
Possible Future Water Supplies	–	Additional groundwater recharge and recycling.

Items	Water Demand and Supplies (acre-feet)	Notes
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**10,365**	–

Table 5D.50 Metropolitan Water District of Southern California

Items	Water Demand and Supplies (acre-feet)	Notes
Water Demand		
Service Area Water Demand	4,454,000	Based on retail municipal and industrial and agricultural water demands. Metropolitan Water District of Southern California. 2010. *The Regional Urban Water Management Plan*. November.
Water Sales to Others	–	–
Total Demand	**4,454,000**	–
Water Supplies for NAA		
CVP Water Supplies	–	–
SWP Water Supplies	1,441,000	1,911,500 acre-foot SWP Water Entitlement (Table A); transfer of SWP with Desert Water Agency and Coachella Valley Water District; San Luis Reservoir carryover storage; Article 21 supplies; and Yuba River Accord purchases.
Other Imported Water Supplies	1,480,000	1,250,000 acre-feet from Colorado River. 230,000 acre-feet from Los Angeles Aqueduct.
Local Surface Water Supplies	102,000	
Groundwater	1,530,000	1,430,000 acre-feet for groundwater pumping and 100,000 acre-feet for groundwater recovery.
Recycled Wastewater	333,000	–
Recycled Stormwater	–	–
Desalination	166,000	11,000 acre-feet Long Beach; 16,000 acre-feet West Basin; 72,000 acre-feet Metropolitan Water District of Orange County from Huntington Beach and Doheny projects; 11,000 acre-feet Oceanside; 56,000 acre-feet San Diego County Water Agency from Camp Pendleton (based on websites accessed in January 2015 for the cities of Long Beach and Oceanside, Metropolitan Water District of Orange County, San Diego County Water Authority, and West Basin Municipal Water District).
Transfers/Exchanges	–	–
Conservation	–	–
Total Water Supplies for NAA	**5,052,000**	–

Items	Water Demand and Supplies (acre-feet)	Notes
Possible Future Water Supplies	–	605,000 acre-feet of Delta improvements and other programs not approved at this time.
Subtotal Possible Future Water Supplies	–	All future projects not included for M&I No Action Alternative assumptions since some of the future projects are not fully defined or analyzed.
Total Potential Future Water Supplies	**5,052,000**	–

Appendix 5E

Sensitivity Analysis - Revised Second Basis of Comparison with no Fremont Weir Notch

Comment Number 90 from State Water Contractors on the Draft LTO EIS discussed that the Reasonable and Prudent Alternative (RPA) actions from the 2008 USFWS BO and 2009 NMFS BO should not have been included in the Second Basis of Comparison, including a specific reference to restoration of tidal habitat under Component 4 of the RPA in the USFWS BO and restoration of floodplain habitat under Action I.6.1 of the RPA in the NMFS BO.

As described in Section 3.3.1.2 of Chapter 3, Description of Alternatives, in the Draft EIS, tidal wetlands restoration activities under Component 4 of the USFWS BO include actions adopted, initiated, or constructed since 2012 (e.g., Suisun Marsh Habitat Management, Preservation, and Restoration Plan and restoration activities in the Cache Slough area); and therefore, were considered to be included in all of the alternatives and the Second Basis of Comparison.

As described in Section 3.3.1.2, substantial efforts have been completed to develop floodplain restoration activities under Action I.6.1 of the NMFS BO; however, specific details of the floodplain restoration activities have not been completed at this time. Therefore, the EIS analysis used published assumptions related to water operations associated with Action I.6.1, including use of an operable gate to convey water from Sacramento River near Fremont Weir into Yolo Bypass.

Although inclusion of an operable gate at the Fremont Weir is considered reasonable and foreseeable and is included in the Second Basis of Comparison, a sensitivity analysis without the operable gate was conducted to analyze possible effects of the operable gate on overall system operations.

The inclusion of an operable gate at the Fremont Weir would primarily affect flows in the Yolo Bypass and have minimal, if any effects, on flows in the Sacramento River downstream of the Fremont Weir or in the Delta, as shown in this sensitivity analysis. The model results of this sensitivity analysis are presented in Section 5E.3 of this appendix.

5E.1 Methodology

CalSim II model simulation representing the Revised Second Basis of Comparison[1] is rerun without an operable gate (notch) in the Fremont Weir. The Revised Second Basis of Comparison 2 (SBC_R_2) is compared against the

[1] Please refer to Appendix 5C for detailed description of the Revised Second Basis of Comparison.

Revised Second Basis of Comparison (SBC_R) to identify the extent of the effects of this change. As presented in the next section, the results show that the effects of the removal of the Fremont Weir notch are primarily contained within the Yolo Bypass and the Sacramento River downstream of the Fremont Weir.

5E.2 Analysis Results

Model results comparing Revised Second Basis of Comparison without an operable gate (notch) in the Fremont Weir (SBC_R_2) to the Revised Second Basis of Comparison (SBC_R) presented in Section 5E.3.1. Except for flow over Fremont Weir from the Sacramento River, flow in the Yolo Bypass, and Sacramento River flows at Freeport, all of the parameters are similar (less than 5 percent change) under both model runs.

In general, with the removal of the Fremont Weir notch, Fremont Weir spills to Yolo Bypass are reduced. As a results of this, Yolo Bypass flows are reduced, Sacramento River flows at Freeport are increased, and Sacramento River flows at Rio Vista are similar. Because this is a rerouting of high flows, no additional changes are observed in overall system.

5E.3 Model Run Results

Model results for the Revised Second Basis of Comparison compared with Second Basis of Comparison Results are presented on the following pages.

5E.3.1 Trinity Storage

5E.3.2 Shasta Storage

5E.3.3 Oroville Storage

5E.3.4 Folsom Storage

5E.3.5 New Melones Storage

5E.3.6 Delta Outflow

5E.3.7 Exports through Jones and Banks Pumping Plants

5E.3.8 Trinity River below Lewiston Dam

5E.3.9 Clear Creek below Whiskeytown Dam

5E.3.10 Sacramento River downstream of Keswick Dam

5E.3.11 Feather River downstream of Thermalito Afterbay

5E.3.12 Fremont Weir Spills

5E.3.13 American River below Nimbus Dam

5E.3.14 Sacramento River at Freeport

5E.3.15 Yolo Bypass Flow

5E.3.16 Sacramento River at Rio Vista

5E.3.17 San Joaquin River at Vernalis Flow

5E.3.18 San Joaquin River at Vernalis Salinity

5E.3.19 Stanislaus River below Goodwin Flow

5E.3.20 Stanislaus River at Mouth Flow

5E.3.21 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

5E.3.22 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP

5E.3.23 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP Deliveries

5E.3.24 CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP

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Table 5E.3.1. Trinity Lake, End of Month Storage

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,303	2,253	2,143	1,975
20%	1,805	1,840	1,850	1,900	2,000	2,100	2,257	2,276	2,199	2,059	1,922	1,822
30%	1,577	1,591	1,725	1,816	1,979	2,084	2,222	2,159	2,074	1,924	1,791	1,643
40%	1,386	1,446	1,567	1,701	1,865	2,023	2,131	2,029	1,919	1,767	1,588	1,422
50%	1,265	1,284	1,398	1,563	1,694	1,820	2,024	1,915	1,777	1,599	1,419	1,307
60%	1,173	1,200	1,226	1,341	1,538	1,709	1,778	1,749	1,671	1,497	1,329	1,218
70%	1,105	1,092	1,183	1,209	1,356	1,483	1,643	1,592	1,533	1,398	1,221	1,106
80%	942	958	979	1,053	1,143	1,267	1,442	1,429	1,332	1,166	1,054	972
90%	633	630	640	720	808	921	1,064	994	939	816	690	640
Long Term												
Full Simulation Period[b]	1,270	1,288	1,352	1,431	1,554	1,678	1,819	1,796	1,727	1,583	1,435	1,319
Water Year Types[c]												
Wet (32%)	1,502	1,536	1,645	1,768	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,804
Above Normal (16%)	1,207	1,245	1,363	1,524	1,718	1,902	2,082	2,056	1,959	1,819	1,650	1,517
Below Normal (13%)	1,446	1,467	1,486	1,551	1,638	1,726	1,868	1,796	1,692	1,510	1,334	1,203
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,452	1,585	1,536	1,466	1,299	1,151	1,055
Critical (15%)	825	806	817	827	870	951	1,002	966	933	814	673	600

Revised Second Basis of Comparison 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (TAF)											
Probability of Exceedance[a]												
10%	1,850	1,850	1,850	1,900	2,000	2,100	2,298	2,345	2,303	2,253	2,143	1,975
20%	1,805	1,840	1,850	1,900	2,000	2,100	2,254	2,276	2,193	2,056	1,920	1,822
30%	1,577	1,591	1,725	1,816	1,979	2,084	2,222	2,159	2,074	1,924	1,791	1,643
40%	1,386	1,446	1,567	1,701	1,865	2,022	2,131	2,029	1,919	1,766	1,588	1,422
50%	1,265	1,284	1,392	1,563	1,694	1,820	2,022	1,908	1,778	1,600	1,419	1,306
60%	1,175	1,199	1,226	1,341	1,538	1,709	1,778	1,749	1,671	1,496	1,330	1,219
70%	1,105	1,092	1,183	1,209	1,357	1,483	1,643	1,591	1,533	1,398	1,217	1,106
80%	941	958	979	1,052	1,143	1,266	1,442	1,429	1,332	1,166	1,054	972
90%	633	630	639	719	807	921	1,064	994	939	816	690	640
Long Term												
Full Simulation Period[b]	1,269	1,288	1,351	1,431	1,554	1,678	1,819	1,796	1,727	1,582	1,434	1,319
Water Year Types[c]												
Wet (32%)	1,502	1,536	1,645	1,768	1,931	2,055	2,224	2,250	2,194	2,068	1,939	1,804
Above Normal (16%)	1,206	1,244	1,361	1,522	1,717	1,901	2,080	2,054	1,958	1,818	1,649	1,516
Below Normal (13%)	1,446	1,467	1,486	1,551	1,638	1,726	1,866	1,794	1,690	1,509	1,332	1,202
Dry (24%)	1,178	1,184	1,210	1,230	1,322	1,452	1,585	1,536	1,466	1,300	1,151	1,055
Critical (15%)	824	805	816	827	869	950	1,001	965	932	814	672	599

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	End of Month Storage (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.2. Shasta Lake, End of Month Storage

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,220	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,766	3,379	3,354
30%	3,117	3,191	3,302	3,513	3,674	4,020	4,384	4,532	4,155	3,550	3,183	3,095
40%	2,931	3,015	3,253	3,380	3,569	3,980	4,290	4,364	3,907	3,289	2,969	2,942
50%	2,687	2,782	3,116	3,320	3,492	3,917	4,175	4,238	3,704	3,139	2,777	2,749
60%	2,505	2,583	2,937	3,167	3,356	3,713	4,064	3,961	3,482	2,960	2,646	2,599
70%	2,364	2,479	2,619	2,922	3,252	3,513	3,906	3,729	3,335	2,793	2,536	2,456
80%	2,096	2,142	2,178	2,617	2,973	3,390	3,643	3,536	2,977	2,449	2,139	2,114
90%	1,404	1,374	1,488	2,077	2,347	2,775	2,720	2,950	2,583	1,968	1,590	1,536
Long Term												
Full Simulation Period[b]	2,534	2,582	2,755	3,023	3,287	3,641	3,916	3,907	3,539	3,009	2,677	2,613
Water Year Types[c]												
Wet (32%)	2,819	2,925	3,153	3,405	3,597	3,841	4,301	4,453	4,225	3,732	3,362	3,255
Above Normal (16%)	2,513	2,592	2,819	3,326	3,521	4,038	4,415	4,415	3,977	3,347	2,974	2,926
Below Normal (13%)	2,822	2,840	2,972	3,293	3,642	3,963	4,163	4,042	3,599	3,012	2,604	2,576
Dry (24%)	2,411	2,434	2,579	2,756	3,170	3,647	3,866	3,774	3,333	2,804	2,543	2,501
Critical (15%)	1,881	1,835	1,920	2,065	2,234	2,471	2,397	2,275	1,864	1,418	1,162	1,102

Revised Second Basis of Comparison 2

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,250	3,252	3,359	3,632	3,911	4,220	4,499	4,552	4,434	3,902	3,563	3,400
20%	3,247	3,252	3,333	3,552	3,771	4,118	4,448	4,552	4,283	3,766	3,378	3,354
30%	3,117	3,191	3,302	3,513	3,674	4,020	4,384	4,532	4,155	3,550	3,183	3,095
40%	2,930	3,015	3,253	3,380	3,569	3,980	4,290	4,364	3,907	3,289	2,967	2,941
50%	2,687	2,782	3,116	3,320	3,492	3,917	4,175	4,241	3,707	3,139	2,776	2,749
60%	2,505	2,582	2,936	3,167	3,356	3,712	4,064	3,961	3,481	2,960	2,646	2,599
70%	2,359	2,480	2,619	2,922	3,252	3,513	3,906	3,729	3,335	2,793	2,536	2,456
80%	2,096	2,142	2,178	2,617	2,973	3,390	3,643	3,536	2,979	2,451	2,139	2,114
90%	1,403	1,374	1,487	2,073	2,347	2,775	2,720	2,950	2,582	1,967	1,590	1,535
Long Term												
Full Simulation Period[b]	2,534	2,581	2,755	3,023	3,287	3,641	3,916	3,907	3,539	3,009	2,677	2,613
Water Year Types[c]												
Wet (32%)	2,819	2,925	3,153	3,405	3,597	3,841	4,301	4,453	4,225	3,732	3,362	3,255
Above Normal (16%)	2,512	2,591	2,818	3,325	3,521	4,038	4,415	4,415	3,977	3,346	2,974	2,926
Below Normal (13%)	2,822	2,840	2,972	3,292	3,642	3,963	4,165	4,043	3,601	3,013	2,606	2,577
Dry (24%)	2,411	2,434	2,579	2,756	3,169	3,647	3,865	3,774	3,333	2,804	2,542	2,501
Critical (15%)	1,880	1,833	1,919	2,063	2,232	2,470	2,395	2,273	1,862	1,416	1,161	1,101

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.3. Lake Oroville, End of Month Storage

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,613	2,547	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,860	2,729
20%	2,277	2,324	2,490	2,788	2,831	2,990	3,298	3,538	3,532	2,959	2,592	2,458
30%	1,932	1,996	2,165	2,565	2,788	2,937	3,268	3,474	3,274	2,756	2,385	2,112
40%	1,687	1,759	2,023	2,372	2,780	2,844	3,209	3,275	2,945	2,340	1,988	1,789
50%	1,406	1,421	1,705	2,204	2,574	2,788	3,084	3,022	2,634	2,121	1,785	1,601
60%	1,143	1,078	1,383	1,682	2,133	2,621	2,885	2,777	2,418	1,913	1,588	1,376
70%	1,034	1,001	1,047	1,307	1,868	2,209	2,499	2,470	2,053	1,723	1,392	1,228
80%	998	959	985	1,109	1,538	1,789	1,938	2,034	1,805	1,443	1,255	1,097
90%	913	876	851	1,003	1,198	1,471	1,575	1,584	1,335	1,113	994	891
Long Term												
Full Simulation Period[b]	1,584	1,580	1,736	1,972	2,253	2,470	2,732	2,792	2,561	2,152	1,891	1,721
Water Year Types[c]												
Wet (32%)	1,940	1,983	2,353	2,633	2,869	2,942	3,300	3,478	3,392	2,969	2,730	2,571
Above Normal (16%)	1,465	1,521	1,697	2,166	2,644	2,939	3,274	3,359	3,079	2,491	2,085	1,823
Below Normal (13%)	1,831	1,796	1,839	2,046	2,376	2,642	2,892	2,844	2,460	1,933	1,635	1,413
Dry (24%)	1,354	1,306	1,327	1,456	1,745	2,101	2,345	2,339	2,012	1,668	1,409	1,248
Critical (15%)	1,101	1,028	1,032	1,119	1,227	1,398	1,415	1,398	1,210	1,018	904	840

Revised Second Basis of Comparison 2

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,613	2,547	2,788	2,807	2,948	3,052	3,352	3,538	3,538	3,037	2,860	2,729
20%	2,277	2,323	2,490	2,788	2,831	2,990	3,298	3,538	3,531	2,959	2,592	2,458
30%	1,931	1,996	2,165	2,565	2,788	2,937	3,268	3,474	3,273	2,756	2,384	2,112
40%	1,687	1,759	2,023	2,372	2,780	2,844	3,209	3,275	2,945	2,340	1,988	1,790
50%	1,407	1,421	1,705	2,204	2,574	2,788	3,084	3,021	2,636	2,120	1,785	1,600
60%	1,143	1,077	1,383	1,709	2,133	2,621	2,886	2,777	2,417	1,913	1,588	1,377
70%	1,035	1,001	1,035	1,307	1,880	2,230	2,498	2,470	2,053	1,723	1,392	1,229
80%	998	960	985	1,107	1,538	1,790	1,938	2,034	1,805	1,462	1,266	1,097
90%	914	876	851	1,003	1,198	1,471	1,577	1,582	1,333	1,113	994	892
Long Term												
Full Simulation Period[b]	1,584	1,579	1,736	1,972	2,253	2,471	2,733	2,792	2,562	2,153	1,892	1,721
Water Year Types[c]												
Wet (32%)	1,940	1,983	2,353	2,633	2,869	2,942	3,300	3,478	3,392	2,969	2,730	2,571
Above Normal (16%)	1,466	1,519	1,695	2,164	2,642	2,939	3,274	3,359	3,079	2,490	2,085	1,822
Below Normal (13%)	1,831	1,796	1,839	2,046	2,376	2,643	2,892	2,844	2,461	1,937	1,640	1,417
Dry (24%)	1,355	1,307	1,330	1,459	1,748	2,104	2,348	2,342	2,015	1,671	1,412	1,248
Critical (15%)	1,097	1,025	1,030	1,117	1,226	1,396	1,414	1,396	1,208	1,016	903	838

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	-1%	0%	1%	1%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.4. Folsom Lake, End of Month Storage

Revised Second Basis of Comparison

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	692	567	567	567	567	661	792	967	967	903	792	750
20%	580	558	567	567	567	657	792	967	967	816	685	631
30%	548	520	566	563	559	653	792	967	965	725	634	608
40%	472	498	523	554	555	646	792	967	908	639	567	526
50%	396	429	493	523	541	633	792	955	797	546	461	424
60%	349	394	456	470	498	621	790	858	731	497	438	403
70%	329	353	405	428	457	600	733	760	631	432	386	360
80%	285	337	358	388	432	563	635	655	545	376	329	315
90%	253	260	267	304	392	453	484	471	428	311	244	233
Long Term												
Full Simulation Period[b]	430	422	456	474	494	592	715	823	755	577	502	469
Water Year Types[c]												
Wet (32%)	483	469	522	524	515	632	785	951	936	793	687	646
Above Normal (16%)	388	410	465	537	538	640	787	946	851	584	517	479
Below Normal (13%)	505	488	501	514	541	626	762	848	739	476	404	385
Dry (24%)	402	396	421	437	486	585	699	768	662	486	432	407
Critical (15%)	336	315	322	323	367	433	467	479	429	349	290	257

Revised Second Basis of Comparison 2

Statistic	End of Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	692	567	567	567	567	661	792	967	967	903	792	750
20%	580	558	567	567	567	657	792	967	967	816	685	631
30%	548	520	566	563	559	653	792	967	965	725	634	608
40%	472	498	523	554	555	646	792	967	908	639	567	526
50%	396	430	493	523	541	633	792	955	797	546	462	424
60%	349	394	456	470	498	621	790	858	731	497	438	403
70%	329	353	405	428	457	600	733	760	631	432	386	360
80%	284	336	358	388	432	563	636	655	545	376	329	314
90%	253	260	267	304	392	453	485	471	427	310	244	233
Long Term												
Full Simulation Period[b]	430	422	456	474	494	592	715	823	755	577	502	469
Water Year Types[c]												
Wet (32%)	483	469	522	524	515	632	785	951	936	793	687	646
Above Normal (16%)	389	411	465	537	538	640	787	946	851	584	517	479
Below Normal (13%)	505	488	501	514	541	626	762	848	739	476	405	386
Dry (24%)	402	396	421	437	486	585	699	768	662	486	432	407
Critical (15%)	335	314	321	323	367	432	467	479	429	348	290	256

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	End of Month Storage (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.5. New Melones Reservoir, End of Month Storage

Revised Second Basis of Comparison

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (32%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (16%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (13%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (24%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (15%)	845	843	858	869	887	885	837	789	751	682	617	587

Revised Second Basis of Comparison 2

	End of Month Storage (TAF)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,879	1,859	1,935	1,954	1,970	2,030	2,043	2,167	2,141	2,080	1,971	1,911
20%	1,775	1,776	1,788	1,823	1,966	1,979	1,955	1,999	2,045	1,947	1,838	1,781
30%	1,666	1,660	1,703	1,764	1,807	1,896	1,885	1,955	1,912	1,817	1,712	1,661
40%	1,508	1,514	1,596	1,693	1,771	1,801	1,788	1,756	1,711	1,634	1,541	1,496
50%	1,364	1,362	1,396	1,478	1,611	1,671	1,625	1,668	1,621	1,512	1,417	1,360
60%	1,257	1,260	1,320	1,353	1,393	1,474	1,492	1,532	1,474	1,381	1,300	1,249
70%	1,074	1,086	1,146	1,224	1,231	1,230	1,250	1,343	1,299	1,204	1,111	1,055
80%	843	824	852	894	999	1,049	1,078	1,094	1,039	975	902	861
90%	705	711	716	724	802	806	749	817	842	775	722	718
Long Term												
Full Simulation Period[b]	1,316	1,321	1,355	1,411	1,470	1,522	1,522	1,564	1,559	1,470	1,373	1,319
Water Year Types[c]												
Wet (32%)	1,534	1,539	1,596	1,700	1,784	1,864	1,901	2,027	2,087	2,001	1,880	1,802
Above Normal (16%)	1,225	1,252	1,315	1,405	1,501	1,594	1,613	1,686	1,664	1,566	1,468	1,420
Below Normal (13%)	1,479	1,484	1,500	1,522	1,576	1,605	1,579	1,581	1,555	1,457	1,359	1,313
Dry (24%)	1,285	1,280	1,287	1,303	1,335	1,369	1,351	1,338	1,291	1,197	1,112	1,067
Critical (15%)	845	843	858	869	887	885	837	789	751	682	617	587

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

	End of Month Storage (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.6. Sacramento/San Joaquin River Delta Outflow, Monthly Outflow Volume

Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259	30,929
20%	286	384	2,029	4,469	4,884	4,375	2,589	1,579	658	581	247	240	24,158
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234	18,772
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229	14,349
50%	246	269	464	1,078	1,898	1,614	859	715	512	461	246	221	9,721
60%	246	268	371	829	1,168	1,103	726	675	495	400	246	184	8,015
70%	246	268	312	665	918	899	599	560	439	307	246	179	6,505
80%	246	268	277	501	720	751	565	533	422	307	236	179	5,871
90%	232	208	277	405	596	601	528	437	369	246	215	179	5,025
Long Term													
Full Simulation Period[b]	289	508	1,407	2,590	3,140	2,678	1,609	1,159	704	457	252	238	15,030
Water Year Types[c]													
Wet (32%)	345	794	3,009	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321	28,075
Above Normal (16%)	252	566	1,394	2,837	3,821	3,313	1,620	1,021	569	599	250	223	16,464
Below Normal (13%)	294	433	540	878	2,078	1,075	812	715	532	429	254	208	8,248
Dry (24%)	267	297	433	821	1,268	1,232	879	627	455	310	244	191	7,025
Critical (15%)	241	244	367	640	692	680	525	385	346	247	229	179	4,774

Revised Second Basis of Comparison 2

Statistic	Monthly Outflow Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	373	895	4,048	6,551	8,106	5,795	3,956	2,541	1,141	670	271	259	30,930
20%	286	384	2,017	4,469	4,884	4,375	2,589	1,579	658	581	247	240	24,159
30%	269	329	947	2,826	3,377	2,686	1,466	952	591	508	246	234	18,773
40%	257	291	635	1,561	2,882	2,060	1,215	790	559	492	246	229	14,348
50%	246	269	464	1,078	1,898	1,614	859	715	513	461	246	221	9,720
60%	246	268	371	839	1,168	1,103	726	675	495	400	246	184	8,015
70%	246	268	312	665	918	899	599	560	439	307	246	179	6,504
80%	246	268	277	501	720	751	565	534	422	307	236	179	5,872
90%	233	208	277	405	596	601	528	437	369	246	215	179	5,025
Long Term													
Full Simulation Period[b]	289	508	1,406	2,591	3,140	2,677	1,609	1,159	704	457	253	238	15,031
Water Year Types[c]													
Wet (32%)	345	794	3,008	5,453	5,819	5,073	3,004	2,182	1,199	607	271	321	28,075
Above Normal (16%)	252	566	1,393	2,837	3,822	3,311	1,620	1,021	570	599	250	223	16,464
Below Normal (13%)	294	433	540	878	2,077	1,075	812	716	532	428	254	208	8,247
Dry (24%)	267	297	434	821	1,268	1,232	879	628	455	310	245	191	7,026
Critical (15%)	241	244	365	643	692	680	525	385	346	247	229	179	4,774

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Outflow Volume (Percent Change)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term													
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]													
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.7. Exports Through Jones and Banks Pumping Plants, Monthly Export Volume

Revised Second Basis of Comparison

Statistic	Monthly Export Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	694	671	738	803	722	707	530	515	526	694	694	671	7,327
20%	681	671	723	769	684	619	508	417	450	694	694	671	6,944
30%	626	659	719	746	666	563	481	369	429	691	694	671	6,761
40%	551	622	717	738	602	542	433	351	408	609	621	668	6,571
50%	488	590	683	724	552	512	391	314	392	555	529	628	6,266
60%	426	502	609	645	512	489	336	277	353	474	468	549	5,943
70%	327	460	554	562	461	459	264	228	316	390	364	408	5,000
80%	249	349	492	499	393	373	189	169	176	306	281	338	4,572
90%	196	286	382	371	309	301	109	81	128	146	183	228	3,458
Long Term													
Full Simulation Period[b]	467	524	613	638	528	491	355	302	349	494	487	526	5,775
Water Year Types[c]													
Wet (32%)	544	620	717	724	587	554	485	428	451	632	653	660	7,055
Above Normal (16%)	419	520	641	719	590	568	455	359	411	574	647	648	6,553
Below Normal (13%)	544	595	629	670	471	498	342	296	413	631	525	543	6,156
Dry (24%)	434	472	550	567	516	491	262	221	273	401	323	431	4,941
Critical (15%)	336	340	444	451	405	264	135	110	132	138	195	249	3,199

Revised Second Basis of Comparison 2

Statistic	Monthly Export Volume (TAF)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	694	671	738	803	722	707	530	515	526	694	694	671	7,325
20%	681	671	723	769	684	618	508	417	450	694	694	671	6,943
30%	626	659	719	746	666	563	481	369	428	691	694	671	6,760
40%	551	622	717	738	607	542	433	351	408	609	620	668	6,571
50%	488	590	683	724	552	512	391	314	392	556	529	629	6,277
60%	426	502	609	640	512	489	336	278	353	473	471	550	5,942
70%	346	460	554	562	461	458	264	228	316	390	364	408	4,999
80%	265	349	491	499	393	373	189	168	176	306	281	337	4,572
90%	196	286	382	371	309	301	107	81	128	146	183	228	3,458
Long Term													
Full Simulation Period[b]	468	524	613	637	528	491	355	302	349	494	488	526	5,775
Water Year Types[c]													
Wet (32%)	544	620	717	724	587	554	485	428	451	632	653	660	7,055
Above Normal (16%)	424	520	642	719	591	567	455	359	411	574	647	648	6,558
Below Normal (13%)	544	594	629	670	471	498	341	296	413	628	524	543	6,151
Dry (24%)	435	472	550	567	516	491	262	220	273	401	323	431	4,941
Critical (15%)	339	340	444	448	405	264	135	110	132	138	195	249	3,199

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Export Volume (Percent Change)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOT
Probability of Exceedance[a]													
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	1%	0%	0%
70%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%
Long Term													
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]													
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	1%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.8. Trinity River below Lewiston Reservoir, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,151	387	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	366	361	659	738	747	668	555	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,432	1,645	1,319	1,380	632	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	357	275	300	300	300	300	575	2,092	783	450	450	413

Revised Second Basis of Comparison 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	373	300	300	1,448	2,149	380	600	4,709	4,626	1,102	450	450
20%	373	300	300	300	300	300	540	4,709	2,526	1,102	450	450
30%	373	300	300	300	300	300	540	4,570	2,526	1,102	450	450
40%	373	300	300	300	300	300	521	4,570	2,526	1,102	450	450
50%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
60%	373	300	300	300	300	300	493	4,189	2,120	1,102	450	450
70%	373	300	300	300	300	300	460	2,924	783	450	450	450
80%	373	300	300	300	300	300	460	2,924	783	450	450	450
90%	373	300	300	300	300	300	427	1,498	783	450	450	450
Long Term												
Full Simulation Period[b]	364	361	659	738	746	668	556	3,753	2,210	890	450	445
Water Year Types[c]												
Wet (32%)	373	504	1,432	1,645	1,317	1,380	633	4,556	3,413	1,136	450	450
Above Normal (16%)	373	300	300	374	801	462	457	4,597	2,948	1,102	450	450
Below Normal (13%)	373	300	300	300	630	303	517	3,585	1,755	924	450	450
Dry (24%)	354	300	300	300	300	300	528	3,250	1,271	678	450	450
Critical (15%)	344	275	300	300	300	300	575	2,092	783	450	450	413

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	-2%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	-3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.9. Clear Creek below Whiskeytown, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Revised Second Basis of Comparison 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	200	200	200	200	200	200	200	200	200	85	85	150
20%	200	200	200	200	200	200	200	200	200	85	85	150
30%	200	200	200	200	200	200	200	200	200	85	85	150
40%	200	200	200	200	200	200	200	200	200	85	85	150
50%	200	200	200	200	200	200	200	200	200	85	85	150
60%	200	200	200	200	200	200	200	200	200	85	85	150
70%	200	200	200	200	200	200	200	200	200	85	85	150
80%	200	200	200	200	200	200	200	200	150	85	85	150
90%	150	150	150	150	150	150	150	150	150	85	85	150
Long Term												
Full Simulation Period[b]	185	188	190	225	241	214	191	192	181	85	85	148
Water Year Types[c]												
Wet (32%)	200	200	200	309	356	272	200	200	200	85	85	150
Above Normal (16%)	181	182	188	192	196	196	196	200	200	85	85	150
Below Normal (13%)	195	195	195	195	195	195	195	195	191	85	85	150
Dry (24%)	178	184	188	190	190	190	190	190	183	85	85	150
Critical (15%)	163	167	167	167	167	167	167	167	111	85	85	133

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.10. Sacramento River d/s of Keswick Dam, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,567	19,509	20,470	31,560	18,571	10,172	10,229	14,458	15,000	12,700	8,243
20%	7,898	6,796	11,485	15,018	21,412	12,718	8,215	9,227	13,000	15,000	11,702	6,412
30%	7,349	5,700	6,189	8,978	12,892	8,359	6,962	8,481	12,266	15,000	11,187	5,953
40%	6,205	5,230	4,374	4,500	5,302	4,500	6,305	8,011	11,426	14,606	10,732	5,680
50%	5,651	4,873	4,016	4,184	4,500	4,500	5,732	7,437	11,089	14,001	10,234	5,500
60%	5,260	4,407	3,976	3,798	3,656	3,872	5,144	7,099	10,345	13,365	9,823	5,180
70%	4,873	4,180	3,680	3,251	3,250	3,250	4,500	6,543	9,975	12,759	9,256	4,650
80%	4,295	4,000	3,274	3,250	3,250	3,250	4,500	6,091	9,205	11,861	9,034	4,318
90%	4,000	3,502	3,250	3,250	3,250	3,250	3,713	5,573	8,400	10,741	8,139	4,013
Long Term												
Full Simulation Period[b]	6,057	5,625	7,681	9,345	11,729	8,578	6,745	7,749	11,210	13,425	10,387	5,801
Water Year Types[c]												
Wet (32%)	6,381	6,742	14,046	18,182	20,764	16,037	8,702	8,399	10,291	13,215	11,128	7,264
Above Normal (16%)	5,874	5,793	7,473	8,992	17,811	8,881	6,317	7,819	11,981	14,792	11,359	5,970
Below Normal (13%)	6,540	5,702	4,124	4,784	7,119	5,064	6,094	8,130	12,326	14,507	11,942	5,416
Dry (24%)	6,237	4,756	3,898	4,123	3,573	3,701	5,074	7,334	11,725	13,439	8,903	4,782
Critical (15%)	4,808	4,399	3,682	3,463	3,382	3,440	6,347	6,608	10,486	11,383	8,776	4,501

Revised Second Basis of Comparison 2

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,508	7,568	19,508	20,466	31,555	18,571	10,172	10,229	14,462	15,000	12,690	8,199
20%	8,021	6,797	11,488	15,013	21,412	12,718	8,215	9,227	12,983	15,000	11,701	6,412
30%	7,345	5,700	6,102	8,978	12,849	8,359	6,962	8,481	12,266	15,000	11,187	5,952
40%	6,205	5,230	4,373	4,500	5,297	4,500	6,305	8,011	11,426	14,606	10,734	5,674
50%	5,649	4,873	4,020	4,184	4,500	4,500	5,732	7,445	11,090	14,001	10,234	5,501
60%	5,261	4,407	3,976	3,798	3,654	3,872	5,144	7,099	10,345	13,365	9,823	5,180
70%	4,870	4,180	3,677	3,251	3,250	3,250	4,500	6,543	9,975	12,763	9,265	4,650
80%	4,303	4,000	3,274	3,250	3,250	3,250	4,500	6,091	9,205	11,861	9,033	4,318
90%	4,000	3,502	3,250	3,250	3,250	3,250	3,713	5,573	8,400	10,740	8,139	4,013
Long Term												
Full Simulation Period[b]	6,062	5,626	7,679	9,344	11,727	8,578	6,745	7,748	11,212	13,425	10,389	5,801
Water Year Types[c]												
Wet (32%)	6,382	6,743	14,043	18,180	20,764	16,037	8,702	8,401	10,291	13,216	11,128	7,264
Above Normal (16%)	5,900	5,796	7,456	8,992	17,809	8,878	6,317	7,819	11,985	14,792	11,362	5,966
Below Normal (13%)	6,542	5,700	4,124	4,784	7,110	5,064	6,092	8,132	12,333	14,507	11,943	5,415
Dry (24%)	6,236	4,755	3,904	4,123	3,572	3,701	5,075	7,327	11,724	13,438	8,910	4,784
Critical (15%)	4,814	4,405	3,682	3,465	3,382	3,440	6,347	6,608	10,488	11,387	8,776	4,501

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
20%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.11. Feather River d/s of Thermalito Afterbay, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,000	2,500	4,835	14,314	19,368	14,789	8,396	8,275	7,856	9,422	7,708	5,582
20%	4,000	2,500	3,418	3,405	11,381	11,022	3,686	6,274	6,941	9,008	6,567	5,294
30%	4,000	2,154	2,155	1,700	6,094	7,843	2,757	5,155	6,254	8,564	5,571	4,549
40%	3,846	1,700	1,700	1,700	2,096	5,528	1,853	3,512	5,303	7,944	4,680	3,736
50%	3,257	1,700	1,700	1,700	1,700	2,556	1,251	2,546	4,170	6,005	3,576	2,541
60%	2,524	1,700	1,700	1,700	1,700	1,700	1,000	2,029	3,830	4,794	2,735	1,630
70%	1,907	1,700	1,700	1,200	1,700	1,700	1,000	1,368	3,414	3,703	2,365	1,194
80%	1,700	1,200	1,233	960	1,200	1,000	1,000	1,000	2,670	3,289	1,809	1,044
90%	1,200	900	947	900	900	800	853	1,000	1,896	2,030	1,206	1,000
Long Term												
Full Simulation Period[b]	2,883	1,975	3,118	4,822	5,809	6,464	3,131	4,034	4,728	6,028	4,104	3,030
Water Year Types[c]												
Wet (32%)	3,088	2,647	5,483	11,721	12,717	13,752	6,587	7,095	4,508	6,870	4,216	3,247
Above Normal (16%)	2,619	1,600	2,558	2,517	5,107	8,076	2,259	3,064	4,892	8,869	6,442	4,473
Below Normal (13%)	3,268	1,918	1,782	1,582	3,049	2,066	1,394	3,522	6,283	7,619	4,328	3,469
Dry (24%)	2,761	1,611	1,960	1,360	1,497	1,323	1,191	2,421	4,994	4,330	3,640	2,475
Critical (15%)	2,572	1,582	1,754	1,108	1,317	1,523	1,410	1,609	3,159	2,495	1,898	1,521

Revised Second Basis of Comparison 2

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,000	2,500	4,835	14,314	19,370	14,789	8,396	8,275	7,859	9,427	7,721	5,582
20%	4,000	2,500	3,419	3,408	11,382	11,022	3,686	6,268	6,944	9,031	6,566	5,294
30%	4,000	2,153	2,155	1,700	6,094	7,843	2,757	5,155	6,254	8,559	5,571	4,553
40%	3,845	1,700	1,700	1,700	2,090	5,528	1,853	3,528	5,318	7,938	4,666	3,738
50%	3,257	1,700	1,700	1,700	1,700	2,436	1,251	2,547	4,173	6,001	3,573	2,544
60%	2,644	1,700	1,700	1,700	1,700	1,700	1,000	2,030	3,830	4,785	2,724	1,632
70%	1,932	1,700	1,700	1,200	1,700	1,700	1,000	1,368	3,418	3,704	2,364	1,197
80%	1,700	1,200	1,233	990	1,200	1,000	1,000	1,000	2,670	3,285	1,942	1,044
90%	1,200	900	947	900	900	800	853	1,000	1,896	2,030	1,206	1,000
Long Term												
Full Simulation Period[b]	2,897	1,974	3,115	4,822	5,808	6,457	3,131	4,034	4,727	6,021	4,108	3,032
Water Year Types[c]												
Wet (32%)	3,087	2,647	5,484	11,722	12,717	13,752	6,588	7,093	4,509	6,866	4,210	3,245
Above Normal (16%)	2,680	1,600	2,560	2,517	5,106	8,033	2,259	3,064	4,898	8,869	6,439	4,473
Below Normal (13%)	3,268	1,918	1,782	1,582	3,046	2,066	1,394	3,522	6,270	7,583	4,327	3,480
Dry (24%)	2,763	1,613	1,960	1,360	1,498	1,323	1,191	2,425	4,993	4,328	3,648	2,480
Critical (15%)	2,604	1,577	1,726	1,111	1,317	1,523	1,410	1,609	3,160	2,492	1,932	1,520

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	-5%	0%	0%	0%	0%	0%	0%
60%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	7%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	2%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	1%	0%	-2%	0%	0%	0%	0%	0%	0%	0%	2%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.12. Fremont Weir, Monthly Spills

Revised Second Basis of Comparison

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	100	100	10,536	30,202	45,235	18,332	5,859	100	100	0	0	100
20%	100	100	3,758	10,563	13,794	7,393	4,170	100	100	0	0	100
30%	100	100	1,561	5,232	8,155	5,246	957	100	100	0	0	100
40%	100	100	532	2,826	5,590	3,433	341	100	100	0	0	100
50%	100	100	188	1,638	3,268	2,065	119	100	100	0	0	100
60%	100	100	100	851	2,291	1,093	100	100	100	0	0	100
70%	100	100	100	153	1,142	482	100	100	100	0	0	100
80%	100	100	100	100	184	201	100	100	100	0	0	100
90%	100	100	100	100	100	100	100	100	100	0	0	100
Long Term												
Full Simulation Period[b]	113	386	3,702	9,547	13,182	7,929	2,213	160	104	0	0	100
Water Year Types[c]												
Wet (32%)	142	1,002	9,898	25,426	30,534	18,973	5,611	289	113	0	0	100
Above Normal (16%)	100	100	2,664	6,376	15,112	8,541	1,765	100	100	0	0	100
Below Normal (13%)	100	100	262	1,251	3,971	1,167	292	100	100	0	0	100
Dry (24%)	100	100	346	931	2,024	1,405	410	100	100	0	0	100
Critical (15%)	100	100	149	542	536	407	106	100	100	0	0	100

Revised Second Basis of Comparison 2

Statistic	Monthly Spills (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	7,600	28,436	44,415	16,589	475	0	0	0	0	0
20%	0	0	504	7,797	12,992	5,175	0	0	0	0	0	0
30%	0	0	0	2,064	6,252	595	0	0	0	0	0	0
40%	0	0	0	0	1,634	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	14	287	2,870	8,218	11,714	6,350	1,075	61	4	0	0	0
Water Year Types[c]												
Wet (32%)	43	907	8,057	23,791	28,683	17,011	3,300	192	14	0	0	0
Above Normal (16%)	0	0	1,990	3,956	13,631	5,957	138	0	0	0	0	0
Below Normal (13%)	0	0	0	0	2,263	3	0	0	0	0	0	0
Dry (24%)	0	0	0	196	634	48	26	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Spills (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-100%	-100%	-28%	-6%	-2%	-10%	-92%	-100%	-100%	0%	0%	-100%
20%	-100%	-100%	-87%	-26%	-6%	-30%	-100%	-100%	-100%	0%	0%	-100%
30%	-100%	-100%	-100%	-61%	-23%	-89%	-100%	-100%	-100%	0%	0%	-100%
40%	-100%	-100%	-100%	-100%	-71%	-100%	-100%	-100%	-100%	0%	0%	-100%
50%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	0%	0%	-100%
60%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	0%	0%	-100%
70%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	0%	0%	-100%
80%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	0%	0%	-100%
90%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	0%	0%	-100%
Long Term												
Full Simulation Period[b]	-88%	-26%	-22%	-14%	-11%	-20%	-51%	-62%	-96%	0%	0%	-100%
Water Year Types[c]												
Wet (32%)	-70%	-9%	-19%	-6%	-6%	-10%	-41%	-34%	-88%	0%	0%	-100%
Above Normal (16%)	-100%	-100%	-25%	-38%	-10%	-30%	-92%	-100%	-100%	0%	0%	-100%
Below Normal (13%)	-100%	-100%	-100%	-100%	-43%	-100%	-100%	-100%	-100%	0%	0%	-100%
Dry (24%)	-100%	-100%	-100%	-79%	-69%	-97%	-94%	-100%	-100%	0%	0%	-100%
Critical (15%)	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-100%	0%	0%	-100%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.13. American River d/s of Nimbus Dam, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	3,951	9,359	12,160	14,655	9,754	6,737	7,450	4,652	5,000	3,200	1,766
20%	1,500	3,208	4,325	7,873	10,804	6,804	5,084	4,486	3,799	5,000	2,779	1,546
30%	1,500	2,078	2,528	5,706	7,391	5,044	4,483	3,543	3,623	4,965	2,299	1,533
40%	1,500	1,925	2,000	3,592	5,756	4,172	3,491	2,851	3,235	4,227	1,968	1,533
50%	1,500	1,827	2,000	1,750	3,739	3,042	2,499	2,060	2,954	3,616	1,750	1,533
60%	1,500	1,683	1,921	1,700	2,602	2,015	2,084	1,750	2,267	2,923	1,750	1,533
70%	1,389	1,438	1,676	1,700	1,445	1,747	1,750	1,614	1,916	2,515	1,659	1,493
80%	994	1,116	1,172	1,359	1,264	1,012	1,146	1,079	1,715	2,373	1,003	800
90%	800	800	800	819	978	800	800	800	1,070	1,377	800	800
Long Term												
Full Simulation Period[b]	1,461	2,384	3,819	5,098	6,026	4,282	3,390	3,085	3,012	3,445	1,905	1,407
Water Year Types[c]												
Wet (32%)	1,666	3,308	7,234	10,515	10,615	7,209	5,522	5,541	4,239	3,582	2,611	1,749
Above Normal (16%)	1,269	2,552	3,616	5,637	7,965	6,117	3,572	2,527	2,973	4,780	1,902	1,553
Below Normal (13%)	1,656	2,274	2,654	2,356	5,177	2,187	2,471	1,914	2,895	4,586	1,752	1,205
Dry (24%)	1,321	1,682	1,603	1,572	2,313	2,377	2,209	1,947	2,426	3,001	1,466	1,223
Critical (15%)	1,279	1,469	1,400	1,171	950	1,047	1,383	1,340	1,479	1,395	1,249	1,002

Revised Second Basis of Comparison 2

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,967	3,951	9,359	12,160	14,655	9,754	6,737	7,450	4,652	5,000	3,200	1,766
20%	1,500	3,207	4,325	7,873	10,804	6,804	5,084	4,486	3,799	5,000	2,779	1,546
30%	1,500	2,078	2,528	5,703	7,391	5,044	4,483	3,543	3,623	4,946	2,299	1,533
40%	1,500	1,925	2,000	3,591	5,756	4,172	3,491	2,851	3,235	4,228	1,968	1,533
50%	1,500	1,827	2,000	1,765	3,739	3,041	2,500	2,061	2,955	3,616	1,750	1,533
60%	1,500	1,683	1,921	1,700	2,602	2,015	2,084	1,750	2,267	2,923	1,750	1,533
70%	1,388	1,438	1,679	1,700	1,445	1,747	1,750	1,616	1,917	2,515	1,659	1,493
80%	994	1,110	1,171	1,359	1,264	1,010	1,133	1,079	1,716	2,373	1,003	800
90%	800	800	800	819	978	800	800	800	1,066	1,381	800	800
Long Term												
Full Simulation Period[b]	1,461	2,384	3,819	5,100	6,026	4,282	3,389	3,086	3,012	3,444	1,904	1,407
Water Year Types[c]												
Wet (32%)	1,665	3,307	7,234	10,514	10,615	7,209	5,522	5,541	4,239	3,583	2,611	1,749
Above Normal (16%)	1,269	2,553	3,616	5,648	7,965	6,117	3,572	2,527	2,975	4,780	1,902	1,553
Below Normal (13%)	1,656	2,274	2,654	2,356	5,177	2,187	2,465	1,915	2,893	4,581	1,751	1,205
Dry (24%)	1,321	1,682	1,604	1,572	2,313	2,377	2,209	1,947	2,426	3,001	1,466	1,223
Critical (15%)	1,281	1,469	1,400	1,171	950	1,047	1,383	1,341	1,477	1,395	1,249	1,002

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	-1%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (15%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.14. Sacramento River at Freeport, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,551	22,359	54,045	64,879	70,451	63,654	46,240	38,579	20,776	23,195	16,663	15,098
20%	14,090	15,039	34,473	56,266	61,709	51,427	32,544	27,639	18,975	21,635	15,939	14,531
30%	13,193	13,786	22,326	41,578	51,524	41,506	22,932	17,452	18,150	20,277	15,193	14,129
40%	11,535	13,341	18,577	26,629	45,616	29,974	19,982	15,203	16,964	19,565	14,570	13,918
50%	10,865	12,102	15,606	23,009	33,290	24,772	16,394	13,797	15,808	18,216	13,980	13,211
60%	10,117	11,213	14,404	18,460	24,623	20,971	12,918	12,876	14,539	16,370	12,432	12,035
70%	9,064	10,188	12,929	15,002	19,808	18,571	11,683	12,087	13,047	14,608	10,714	9,785
80%	8,007	8,873	10,823	13,487	16,579	15,219	11,109	11,037	12,359	13,049	9,752	8,533
90%	7,029	7,552	9,350	11,866	14,216	11,491	10,200	9,036	11,481	9,999	8,703	7,301
Long Term												
Full Simulation Period[b]	11,166	14,169	23,197	31,223	37,970	31,864	22,160	18,740	16,877	17,261	13,039	12,099
Water Year Types[c]												
Wet (32%)	12,847	18,563	38,684	50,414	56,964	48,443	35,068	30,178	21,009	19,004	14,907	14,667
Above Normal (16%)	10,044	15,450	24,213	39,681	47,790	42,769	24,411	18,103	16,671	21,742	15,918	14,124
Below Normal (13%)	12,260	14,350	15,660	19,252	31,672	19,432	14,555	14,839	17,909	20,529	14,052	12,119
Dry (24%)	10,515	10,941	13,654	17,397	23,786	21,469	15,030	12,638	14,681	14,800	10,736	10,279
Critical (15%)	8,820	8,470	11,351	14,500	15,588	12,846	10,613	8,393	10,858	9,733	8,780	7,353

Revised Second Basis of Comparison 2

Statistic	Monthly Flow (cfs)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,651	22,458	55,976	65,447	70,579	63,789	51,294	38,678	20,876	23,228	16,663	15,196
20%	14,190	15,138	36,295	58,195	63,665	55,064	36,926	27,738	19,001	21,635	15,939	14,631
30%	13,290	13,884	23,779	43,298	54,603	45,366	23,699	17,552	18,253	20,275	15,190	14,229
40%	11,635	13,441	18,903	29,560	46,582	33,968	20,452	15,302	17,073	19,252	14,568	14,018
50%	10,964	12,201	16,092	24,328	36,049	26,279	16,499	13,897	15,909	18,229	13,976	13,338
60%	10,191	11,313	14,562	19,337	26,819	22,007	13,114	12,983	14,653	16,368	12,432	12,139
70%	9,213	10,320	13,046	15,141	20,860	19,568	11,783	12,187	13,147	14,602	10,712	9,887
80%	8,265	8,973	10,922	13,587	16,690	15,554	11,209	11,137	12,459	13,048	9,750	8,631
90%	7,130	7,652	9,450	11,989	14,317	11,591	10,300	9,136	11,581	9,999	8,703	7,397
Long Term												
Full Simulation Period[b]	11,285	14,267	24,020	32,553	39,431	33,434	23,297	18,838	16,977	17,253	13,041	12,199
Water Year Types[c]												
Wet (32%)	12,946	18,658	40,520	52,046	58,813	50,404	37,375	30,275	21,109	19,007	14,908	14,767
Above Normal (16%)	10,230	15,551	24,861	42,109	49,311	45,306	26,037	18,203	16,783	21,741	15,917	14,219
Below Normal (13%)	12,361	14,448	15,920	20,503	33,322	20,596	14,840	14,942	18,001	20,474	14,040	12,219
Dry (24%)	10,616	11,042	14,007	18,132	25,157	22,825	15,413	12,733	14,778	14,796	10,751	10,386
Critical (15%)	8,960	8,570	11,473	15,048	16,123	13,253	10,719	8,492	10,958	9,732	8,779	7,453

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1%	0%	4%	1%	0%	0%	11%	0%	0%	0%	0%	1%
20%	1%	1%	5%	3%	3%	7%	13%	0%	0%	0%	0%	1%
30%	1%	1%	7%	4%	6%	9%	3%	1%	1%	0%	0%	1%
40%	1%	1%	2%	11%	2%	13%	2%	1%	1%	-2%	0%	1%
50%	1%	1%	3%	6%	8%	6%	1%	1%	1%	0%	0%	1%
60%	1%	1%	1%	5%	9%	5%	2%	1%	1%	0%	0%	1%
70%	2%	1%	1%	1%	5%	5%	1%	1%	1%	0%	0%	1%
80%	3%	1%	1%	1%	1%	2%	1%	1%	1%	0%	0%	1%
90%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	0%	1%
Long Term												
Full Simulation Period[b]	1%	1%	4%	4%	4%	5%	5%	1%	1%	0%	0%	1%
Water Year Types[c]												
Wet (32%)	1%	1%	5%	3%	3%	4%	7%	0%	0%	0%	0%	1%
Above Normal (16%)	2%	1%	3%	6%	3%	6%	7%	1%	1%	0%	0%	1%
Below Normal (13%)	1%	1%	2%	6%	5%	6%	2%	1%	1%	0%	0%	1%
Dry (24%)	1%	1%	3%	4%	6%	6%	3%	1%	1%	0%	0%	1%
Critical (15%)	2%	1%	1%	4%	3%	3%	1%	1%	1%	0%	0%	1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.15. Yolo Bypass, Monthly Flow

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	164	575	15,106	37,291	53,011	25,260	10,346	335	168	48	183	240
20%	162	245	6,371	16,098	21,931	11,070	7,372	178	168	48	55	159
30%	160	146	2,509	8,217	12,355	8,556	2,043	173	168	48	55	159
40%	154	110	803	5,020	10,223	5,190	499	170	168	48	55	159
50%	147	108	496	2,405	5,513	2,988	272	168	167	48	55	159
60%	142	105	259	970	3,254	1,402	229	165	167	48	55	159
70%	132	100	146	470	1,202	754	211	163	166	48	55	157
80%	116	100	107	167	345	225	186	159	164	48	55	155
90%	106	100	100	123	129	149	173	153	162	48	54	152
Long Term												
Full Simulation Period[b]	186	574	5,171	12,736	17,111	10,707	3,656	311	185	48	101	175
Water Year Types[c]												
Wet (32%)	227	1,354	13,411	32,911	38,549	25,268	8,882	560	227	48	147	173
Above Normal (16%)	137	345	4,161	9,622	19,789	11,595	3,242	273	166	48	92	165
Below Normal (13%)	246	299	470	1,969	5,903	1,665	546	169	166	48	130	192
Dry (24%)	156	131	585	1,582	3,393	2,185	908	175	167	48	61	170
Critical (15%)	145	124	365	857	900	687	210	167	165	48	55	188

Revised Second Basis of Comparison 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	64	475	12,246	36,406	53,010	23,707	6,806	236	68	48	183	140
20%	62	145	3,079	13,238	20,732	8,689	3,203	78	68	48	55	59
30%	60	46	973	5,270	9,602	3,589	635	73	68	48	55	59
40%	54	10	342	2,005	7,094	2,154	190	70	68	48	55	59
50%	47	8	165	540	2,456	917	135	68	67	48	55	59
60%	42	5	60	327	729	279	111	65	67	48	55	59
70%	32	0	20	80	261	115	88	63	66	48	55	57
80%	17	0	0	32	82	45	78	59	64	48	55	55
90%	6	0	0	7	19	7	56	53	62	48	54	52
Long Term												
Full Simulation Period[b]	86	476	4,342	11,408	15,651	9,129	2,518	212	86	48	101	75
Water Year Types[c]												
Wet (32%)	127	1,259	11,572	31,277	36,700	23,307	6,575	463	128	48	147	73
Above Normal (16%)	38	245	3,498	7,204	18,311	9,012	1,616	173	66	48	92	65
Below Normal (13%)	146	199	208	718	4,240	501	253	69	66	48	130	92
Dry (24%)	56	31	238	846	2,005	828	525	75	67	48	61	70
Critical (15%)	45	24	216	314	365	279	105	67	65	48	55	88

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (Percent Change)											
Probability of Exceedance[a]												
10%	-61%	-17%	-19%	-2%	0%	-6%	-34%	-30%	-60%	0%	0%	-42%
20%	-62%	-41%	-52%	-18%	-5%	-22%	-57%	-56%	-60%	0%	0%	-63%
30%	-63%	-69%	-61%	-36%	-22%	-58%	-69%	-58%	-60%	0%	0%	-63%
40%	-65%	-91%	-57%	-60%	-31%	-59%	-62%	-59%	-60%	0%	0%	-63%
50%	-68%	-92%	-67%	-78%	-55%	-69%	-50%	-60%	-60%	0%	0%	-63%
60%	-70%	-95%	-77%	-66%	-78%	-80%	-51%	-61%	-60%	0%	0%	-63%
70%	-76%	-100%	-86%	-83%	-78%	-85%	-58%	-61%	-60%	0%	0%	-64%
80%	-85%	-100%	-100%	-81%	-76%	-80%	-58%	-63%	-61%	0%	0%	-65%
90%	-94%	-100%	-100%	-94%	-85%	-96%	-68%	-65%	-62%	0%	0%	-66%
Long Term												
Full Simulation Period[b]	-54%	-17%	-16%	-10%	-9%	-15%	-31%	-32%	-54%	0%	0%	-57%
Water Year Types[c]												
Wet (32%)	-44%	-7%	-14%	-5%	-5%	-8%	-26%	-17%	-44%	0%	0%	-58%
Above Normal (16%)	-72%	-29%	-16%	-25%	-7%	-22%	-50%	-37%	-60%	0%	0%	-61%
Below Normal (13%)	-41%	-33%	-56%	-64%	-28%	-70%	-54%	-59%	-60%	0%	0%	-52%
Dry (24%)	-64%	-76%	-59%	-46%	-41%	-62%	-42%	-57%	-60%	0%	0%	-59%
Critical (15%)	-69%	-81%	-41%	-63%	-59%	-59%	-50%	-60%	-61%	0%	0%	-53%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.16. Sacramento River at Rio Vista, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,459	16,168	59,604	92,211	116,167	75,834	51,782	32,159	12,425	13,392	9,476	8,745
20%	8,183	9,840	34,954	61,221	73,778	55,512	33,674	22,346	11,245	12,430	9,155	8,380
30%	7,549	8,910	18,359	44,979	56,260	41,456	20,337	13,432	10,594	11,499	8,516	8,130
40%	6,476	8,546	13,684	26,298	48,706	29,686	16,926	11,454	9,811	10,960	8,025	7,948
50%	6,002	7,675	11,332	19,987	32,704	23,249	12,770	10,161	9,037	10,125	7,654	7,450
60%	5,495	6,993	10,012	15,044	23,444	18,024	9,786	9,537	8,236	8,857	6,551	6,677
70%	4,778	6,275	8,684	11,678	17,211	16,060	8,764	8,824	7,064	7,639	5,379	5,305
80%	4,057	5,284	7,025	9,829	13,407	12,147	8,230	7,916	6,689	6,606	4,772	4,252
90%	3,427	4,334	5,914	8,722	11,278	8,663	7,375	6,205	6,140	4,513	3,929	3,460
Long Term												
Full Simulation Period[b]	6,332	10,109	23,121	38,692	49,363	37,209	21,381	14,750	10,295	9,421	7,013	6,738
Water Year Types[c]												
Wet (32%)	7,656	14,701	45,362	76,406	87,481	66,334	37,923	24,956	14,319	10,606	8,326	8,455
Above Normal (16%)	5,503	10,915	22,930	43,450	60,792	47,545	22,896	14,185	9,632	12,460	8,973	8,077
Below Normal (13%)	7,045	9,835	11,545	16,974	32,611	17,199	11,548	11,149	10,482	11,626	7,741	6,775
Dry (24%)	5,767	6,823	9,877	14,836	23,168	19,626	12,445	9,307	8,227	7,775	5,404	5,497
Critical (15%)	4,650	5,015	7,821	11,491	13,412	10,555	7,804	5,622	5,568	4,282	4,059	3,603

Revised Second Basis of Comparison 2

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,428	16,142	59,025	92,089	116,148	75,586	51,297	32,145	12,395	13,415	9,476	8,712
20%	8,151	9,817	34,545	60,928	73,557	55,099	33,255	22,332	11,216	12,430	9,155	8,348
30%	7,516	8,884	17,961	44,810	55,851	40,962	20,159	13,419	10,567	11,499	8,516	8,098
40%	6,444	8,520	13,599	27,198	48,210	29,162	16,842	11,440	9,789	10,794	8,031	7,918
50%	5,971	7,648	11,239	19,694	32,308	22,975	12,756	10,140	9,008	10,134	7,661	7,436
60%	5,445	6,968	9,965	14,823	23,422	17,897	9,762	9,530	8,217	8,856	6,551	6,648
70%	4,772	6,250	8,649	11,658	17,060	15,945	8,751	8,811	7,034	7,634	5,377	5,273
80%	4,138	5,258	7,001	9,809	13,388	12,103	8,217	7,886	6,659	6,607	4,766	4,219
90%	3,395	4,308	5,892	8,693	11,265	8,650	7,362	6,192	6,111	4,513	3,929	3,426
Long Term												
Full Simulation Period[b]	6,316	10,086	22,983	38,581	49,172	36,995	21,230	14,736	10,267	9,416	7,015	6,708
Water Year Types[c]												
Wet (32%)	7,625	14,677	45,087	76,184	87,237	66,076	37,619	24,943	14,295	10,608	8,326	8,423
Above Normal (16%)	5,537	10,894	22,791	43,255	60,634	47,165	22,682	14,172	9,611	12,460	8,972	8,042
Below Normal (13%)	7,014	9,810	11,490	16,939	32,379	17,045	11,502	11,140	10,447	11,592	7,733	6,744
Dry (24%)	5,737	6,798	9,823	14,788	22,971	19,447	12,394	9,290	8,196	7,773	5,415	5,469
Critical (15%)	4,647	4,994	7,765	11,534	13,341	10,502	7,790	5,609	5,539	4,281	4,058	3,581

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	-1%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
20%	0%	0%	-1%	0%	0%	-1%	-1%	0%	0%	0%	0%	0%
30%	0%	0%	-2%	0%	-1%	-1%	-1%	0%	0%	0%	0%	0%
40%	0%	0%	-1%	3%	-1%	-2%	0%	0%	0%	-2%	0%	0%
50%	-1%	0%	-1%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%
60%	-1%	0%	0%	-1%	0%	-1%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	-1%	-1%	0%	0%	0%	0%	0%	-1%
80%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
90%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Long Term												
Full Simulation Period[b]	0%	0%	-1%	0%	0%	-1%	-1%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (32%)	0%	0%	-1%	0%	0%	0%	-1%	0%	0%	0%	0%	0%
Above Normal (16%)	1%	0%	-1%	0%	0%	-1%	-1%	0%	0%	0%	0%	0%
Below Normal (13%)	0%	0%	0%	0%	-1%	-1%	0%	0%	0%	0%	0%	0%
Dry (24%)	-1%	0%	-1%	0%	-1%	-1%	0%	0%	0%	0%	0%	-1%
Critical (15%)	0%	0%	-1%	0%	-1%	-1%	0%	0%	-1%	0%	0%	-1%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.17. San Joaquin River at Vernalis, Monthly Flow

Revised Second Basis of Comparison

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,384	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,170	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

Revised Second Basis of Comparison 2

	Monthly Flow (cfs)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,058	3,088	4,931	11,054	17,256	15,467	14,774	14,101	9,720	6,052	2,996	3,315
20%	2,699	2,813	2,924	4,859	10,259	9,401	10,359	8,202	4,768	2,636	2,599	2,659
30%	2,470	2,631	2,462	3,635	6,228	7,841	8,536	5,452	3,364	1,988	1,896	2,484
40%	2,326	2,448	2,299	2,606	4,252	5,343	7,507	4,488	2,947	1,742	1,675	2,152
50%	2,089	2,342	2,226	2,481	3,420	3,825	6,018	3,916	2,205	1,503	1,499	1,934
60%	1,895	2,218	2,100	2,247	2,681	3,460	4,432	2,913	1,824	1,383	1,415	1,837
70%	1,697	2,100	1,988	2,070	2,379	2,870	3,224	2,493	1,420	1,169	1,322	1,743
80%	1,511	1,954	1,866	1,827	2,153	2,327	2,452	1,994	1,271	1,087	1,211	1,611
90%	1,338	1,753	1,671	1,638	1,931	2,115	1,813	1,564	1,085	941	1,099	1,503
Long Term												
Full Simulation Period[b]	2,200	2,673	3,455	5,082	6,806	7,116	7,330	5,903	4,350	2,668	1,876	2,266
Water Year Types[c]												
Wet (23%)	2,472	3,596	6,642	11,484	16,260	16,444	15,398	14,493	12,009	6,823	3,227	3,582
Above Normal (24%)	2,234	2,469	2,712	4,887	6,916	7,376	8,371	5,184	3,310	1,997	1,976	2,348
Below Normal (10%)	2,052	2,330	3,742	3,561	3,837	4,077	5,974	3,968	2,025	1,478	1,455	1,847
Dry (16%)	2,305	2,644	2,306	2,421	2,623	3,227	3,656	2,625	1,661	1,266	1,362	1,783
Critical (27%)	1,926	2,205	1,952	1,854	2,092	2,228	2,079	1,780	1,114	951	1,077	1,490

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

	Monthly Flow (Percent Change)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (10%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (27%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5E.3.18. San Joaquin River at Vernalis, Monthly EC

Revised Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	752	643	807	807	948	865	577	597	649	649	622	603
20%	714	611	784	781	911	824	524	572	645	648	603	584
30%	677	584	770	754	840	744	436	528	631	647	580	568
40%	642	572	758	723	790	686	383	493	606	638	571	552
50%	609	555	740	704	693	612	324	395	572	628	557	539
60%	570	538	730	691	631	499	303	363	500	617	543	520
70%	551	522	716	643	469	352	282	346	464	607	526	489
80%	522	495	691	572	316	306	261	294	420	587	451	478
90%	477	467	611	380	261	255	201	192	366	487	410	418
Long Term												
Full Simulation Period[b]	613	547	714	661	642	573	372	419	526	597	533	522
Water Year Types[c]												
Wet (23%)	585	518	623	520	357	306	220	229	365	489	405	405
Above Normal (24%)	608	548	728	628	485	421	301	365	494	617	515	506
Below Normal (10%)	618	566	688	673	692	606	313	388	555	611	563	551
Dry (16%)	597	526	742	725	818	698	413	502	593	635	579	559
Critical (27%)	648	577	772	772	909	854	563	594	643	645	623	607

Revised Second Basis of Comparison 2

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	752	643	807	807	948	865	577	597	649	649	622	603
20%	714	611	784	781	911	824	524	572	645	648	603	584
30%	677	584	770	754	840	744	436	528	631	647	580	568
40%	642	572	758	723	790	686	383	493	606	638	571	552
50%	609	555	740	704	693	612	324	395	572	628	557	539
60%	570	538	730	691	631	499	303	363	500	617	543	520
70%	551	522	716	643	469	352	282	346	464	607	526	489
80%	522	495	691	572	316	306	261	294	420	587	451	478
90%	477	467	611	380	261	255	201	192	366	487	410	418
Long Term												
Full Simulation Period[b]	613	547	714	661	642	573	372	419	526	597	533	522
Water Year Types[c]												
Wet (23%)	585	518	623	520	357	306	220	229	365	489	405	405
Above Normal (24%)	608	548	728	628	485	421	301	365	494	617	515	506
Below Normal (10%)	618	566	688	673	692	606	313	388	555	611	563	551
Dry (16%)	597	526	742	725	818	698	413	502	593	635	579	559
Critical (27%)	648	577	772	772	909	854	563	594	643	645	623	607

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly EC (Percent Change)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (10%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (27%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5E.3.19. Stanislaus River below Goodwin, Monthly Flow

Revised Second Basis of Comparison

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

Revised Second Basis of Comparison 2

Statistic	Monthly Flow (cfs) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	350	399	400	400	1,825	999	1,500	1,500	1,502	491	319	300
20%	349	356	358	359	863	400	1,500	1,498	1,243	313	300	300
30%	318	334	340	336	400	344	1,429	1,380	948	300	285	281
40%	260	305	323	318	364	312	1,241	1,134	713	296	283	250
50%	193	246	280	250	339	267	879	855	399	283	283	249
60%	146	217	230	183	304	200	649	725	300	271	283	249
70%	123	207	214	152	239	159	517	612	265	265	283	249
80%	115	202	206	136	176	140	462	507	255	265	283	249
90%	104	188	188	122	133	123	403	439	255	265	283	249
Long Term												
Full Simulation Period[b]	250	340	429	530	748	593	958	984	830	433	386	391
Water Year Types[c]												
Wet (23%)	334	581	884	1,038	1,692	1,597	1,511	1,556	1,813	860	729	857
Above Normal (24%)	248	269	331	666	712	484	1,051	1,062	986	352	287	268
Below Normal (10%)	254	306	306	336	532	292	1,087	1,021	414	269	283	261
Dry (16%)	245	282	290	253	387	185	686	743	346	276	283	249
Critical (27%)	181	242	252	203	256	174	511	548	278	291	277	233

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Monthly Flow (Percent Change) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (10%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (27%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5E.3.20. Stanislaus River at Mouth, Monthly Flow

Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

Revised Second Basis of Comparison 2

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (cfs)											
Probability of Exceedance[a]												
10%	653	567	590	624	2,437	1,243	1,824	1,680	1,791	932	588	706
20%	577	482	480	506	987	615	1,626	1,588	1,545	564	488	506
30%	491	441	431	462	560	531	1,495	1,515	1,261	499	458	473
40%	424	409	382	434	498	458	1,303	1,285	1,041	443	445	446
50%	377	386	336	392	442	405	1,022	903	726	412	441	439
60%	314	344	312	279	399	311	716	756	418	389	420	431
70%	284	313	291	248	320	277	584	601	375	374	396	397
80%	248	270	270	229	232	226	469	541	347	349	374	370
90%	185	243	204	199	178	146	424	471	312	317	347	320
Long Term												
Full Simulation Period[b]	430	460	512	642	872	741	1,079	1,067	1,034	585	530	573
Water Year Types[c]												
Wet (23%)	505	706	978	1,155	1,903	1,839	1,754	1,693	2,130	1,121	921	1,111
Above Normal (24%)	441	400	406	779	822	641	1,237	1,160	1,281	533	461	480
Below Normal (10%)	445	435	438	484	703	466	1,189	1,197	607	449	438	434
Dry (16%)	454	397	375	368	479	330	720	816	502	376	404	402
Critical (27%)	336	347	314	294	320	226	524	544	332	343	361	344

Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Flow (Percent Change)											
Probability of Exceedance[a]												
10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
40%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Long Term												
Full Simulation Period[b]	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Water Year Types[c]												
Wet (23%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal (24%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Below Normal (10%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Dry (16%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Critical (27%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in text.

Table 5E.3.21. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

				Revised Second Basis of Comparison 2	Revised Second Basis of Comparison	Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison
Water Supply Reliability						
Sacramento River Hydrologic Region						
CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,858	0%
			Dry	1,905	1,905	0%
			Critical	1,734	1,732	0%
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	155	0%
			Dry	151	151	0%
			Critical	105	105	0%
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	214	214	0%
			Dry	192	192	0%
			Critical	151	151	0%
CVP Ag	Contract Delivery (annual average - does not include Settlement contractors)	(TAF/year)	Long Term	220	219	0%
			Dry	122	122	0%
			Critical	35	35	0%
San Joaquin River Hydrologic Region (not including Friant-Kern and Madera Canal water users and Eastside Contractors deliveries)						
CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0%
			Dry	875	875	0%
			Critical	741	741	0%
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	260	260	0%
			Dry	268	268	0%
			Critical	221	221	0%
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	17	17	0%
			Dry	15	15	0%
			Critical	12	12	0%
CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	348	348	0%
			Dry	203	203	0%
			Critical	61	61	0%
San Francisco Bay Hydrologic Region						
CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	286	286	0%
			Dry	292	292	0%
			Critical	305	305	0%
CVP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	43	43	0%
			Dry	25	25	-1%
			Critical	8	7	0%
Central Coast Hydrologic Region						
Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)						
CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	0%
			Dry	12	12	0%
			Critical	10	10	0%
CVP Ag	Contract Delivery (annual average - includes Cross Valley Canal)	(TAF/year)	Long Term	709	709	0%
			Dry	424	422	0%
			Critical	127	127	0%
Total For All Regions						
Total Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	4,974	4,973	0%
			Dry	4,483	4,483	0%
			Critical	3,510	3,508	0%

Notes:

1) Long-term Average is the average quantity for the 82-year simulation period.

2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.

4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.

5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

6) Annual deliveries are based on March to February Average.

7) In the table on the following page, San Francisco Bay Hydrologic Region M&I deliveries are divided between North of Delta M&I deliveries (Contra Costa Water District) and South of Delta M&I deliveries (San Felipe Division); and San Francisco Bay Hydrologic Region Ag deliveries are only included in South of Delta Ag deliveries.

Table 5E.3.22. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, CVP Deliveries

					Revised Second Basis of Comparison 2	Revised Second Basis of Comparison	Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison
Water Supply Reliability							
North of Delta							
	CVP Ag	Contract Delivery (annual average; does not include Settlement contractors)	(TAF/year)	Long Term	220	219	0%
				Dry	122	122	0%
				Critical	35	35	0%
	CVP M&I (Including American River)	Contract Delivery (annual average)	(TAF/year)	Long Term	392	392	0%
				Dry	390	390	0%
				Critical	383	383	0%
	CVP M&I American River	Contract Delivery (annual average)	(TAF/year)	Long Term	120	120	0%
				Dry	105	105	0%
				Critical	79	79	0%
	CVP Settlement	Contract Delivery (annual average)	(TAF/year)	Long Term	1,858	1,858	0%
				Dry	1,905	1,905	0%
				Critical	1,734	1,732	0%
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	155	155	0%
				Dry	151	151	0%
				Critical	105	105	0%
Total CVP North of Delta Ag and M&I Deliveries							
	Total CVP Ag and M&I Deliveries	Contract Delivery (CVP) (annual average)	(TAF/year)	Long Term	612	612	0%
				Dry	512	512	0%
				Critical	418	418	0%
South of Delta (Not including Eastside Contractors deliveries, or Friant-Kern Canal or Madera Canal water users)							
	CVP Ag	Contract Delivery (annual average; does not include Exchange contractors)	(TAF/year)	Long Term	1,100	1,100	0%
				Dry	652	650	0%
				Critical	195	195	0%
	CVP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	124	125	0%
				Dry	109	109	-1%
				Critical	85	85	0%
	CVP Exchange	Contract Delivery (annual average)	(TAF/year)	Long Term	852	852	0%
				Dry	875	875	0%
				Critical	741	741	0%
	CVP Refuge Level 2	Contract Delivery (annual average)	(TAF/year)	Long Term	272	272	0%
				Dry	280	280	0%
				Critical	232	232	0%
Total CVP South of Delta Ag and M&I Deliveries							
	Total CVP Ag and M&I Deliveries	Contract Delivery (annual average)	(TAF/year)	Long Term	1,225	1,225	0%
				Dry	760	759	0%
				Critical	280	280	0%
Eastside Contractors deliveries							
	Water Rights	Delivery (annual average)	(TAF/year)	Long Term	514	514	0%
				Dry	524	524	0%
				Critical	486	486	0%
	CVP Service Contracts	Contract Delivery (annual average)	(TAF/year)	Long Term	118	118	0%
				Dry	98	98	0%
				Critical	25	25	0%
Total Eastside Contractors Deliveries							
	Total Water Rights and CVP Service Contracts Deliveries	Delivery (annual average)	(TAF/year)	Long Term	632	632	0%
				Dry	621	621	0%
				Critical	511	511	0%

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.
6) Annual deliveries are based on March to February Average.

Table 5E.3.23. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP Deliveries

					Revised Second Basis of Comparison 2	Revised Second Basis of Comparison	Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison
Water Supply Reliability							
Sacramento River Hydrologic Region							
	SWP FRSA	Contract Delivery (annual average)	(TAF/year)	Long Term	930	931	0%
				Dry	946	946	0%
				Critical	707	709	0%
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	27	26	0%
				Dry	19	19	0%
				Critical	12	12	0%
San Joaquin River Hydrologic Region							
	SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	4	4	0%
				Dry	3	3	0%
				Critical	2	2	0%
San Francisco Bay Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	220	219	0%
				Dry	167	166	0%
				Critical	103	103	0%
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	21	22	-1%
				Dry	20	20	-1%
				Critical	12	12	-1%
Central Coast Hydrologic Region							
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	52	52	0%
				Dry	39	39	0%
				Critical	24	24	3%
Tulare Lake Hydrologic Region							
	SWP M&I	Contract Delivery (annual average)	(TAF/year)	Long Term	99	99	0%
				Dry	75	75	0%
				Critical	45	45	0%
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	737	735	0%
				Dry	555	554	0%
				Critical	339	337	1%
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	174	174	0%
				Dry	142	143	0%
				Critical	29	29	0%
South Lahontan Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	325	325	0%
				Dry	253	252	0%
				Critical	157	156	1%
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	4	4	0%
				Dry	4	4	0%
				Critical	2	2	0%
South Coast Hydrologic Region							
	SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	1,539	1,540	0%
				Dry	1,236	1,235	0%
				Critical	779	783	-1%
	SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	89	89	0%
				Dry	74	74	-1%
				Critical	9	9	-1%
	SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	9	9	1%
				Dry	7	7	0%
				Critical	4	4	4%
	SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	2	2	1%
				Dry	1	1	4%
				Critical	1	1	0%
Total For All Regions							
	Total Supplies (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	3,942	3,941	0%
				Dry	3,300	3,296	0%
				Critical	2,172	2,174	0%
	Total Article 21 Supplies	Contract Delivery (annual average)	(TAF/year)	Long Term	290	291	0%
				Dry	241	243	-1%
				Critical	52	52	-1%

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 5E.3.24. CALSIM II Summary Reporting Metrics, Long-Term Average and Dry and Critical Year Averages, SWP Deliveries

				Revised Second Basis of Comparison 2	Revised Second Basis of Comparison	Revised Second Basis of Comparison 2 minus Revised Second Basis of Comparison
Water Supply Reliability						
North of Delta						
SWP Ag	Contract Delivery (annual average)	(TAF/year)	Long Term	0	0	0%
			Dry	0	0	0%
			Critical	0	0	0%
SWP M&I (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	83	83	0%
			Dry	62	62	0%
			Critical	53	53	0%
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	-1%
			Dry	13	13	-1%
			Critical	12	12	-1%
Total SWP North of Delta						
Total SWP Ag and M&I NOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	83	83	0%
			Dry	62	62	0%
			Critical	53	53	0%
Total SWP Ag and M&I Article 21 NOD	Contract Delivery (annual average)	(TAF/year)	Long Term	12	12	-1%
			Dry	13	13	-1%
			Critical	12	12	-1%
South of Delta						
SWP Ag (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	750	749	0%
			Dry	566	564	0%
			Critical	483	481	0%
SWP Ag Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	176	176	0%
			Dry	143	144	0%
			Critical	100	101	0%
SWP M&I (w/o Article 21)	Contract Delivery (includes transfers to SWP contractors) (annual average)	(TAF/year)	Long Term	2,178	2,179	0%
			Dry	1,727	1,725	0%
			Critical	1,485	1,484	0%
SWP M&I Article 21	Contract Delivery (annual average)	(TAF/year)	Long Term	102	103	0%
			Dry	85	86	-1%
			Critical	58	59	-1%
Total SWP South of Delta						
Total SWP Ag and M&I SOD (w/o Article 21)	Contract Delivery (annual average)	(TAF/year)	Long Term	2,929	2,928	0%
			Dry	2,292	2,289	0%
			Critical	1,968	1,965	0%
Total SWP Ag and M&I Article 21 SOD	Contract Delivery (annual average)	(TAF/year)	Long Term	278	279	0%
			Dry	228	230	-1%
			Critical	159	159	-1%

Notes:
1) Long-term Average is the average quantity for the 82-year simulation period.
2) Dry and Critical Year designations are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.
3) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions.
4) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences are discussed in the text.
5) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences are discussed in the text.

Appendix 6A was not used in this document.

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Appendix 6B, Section A

Surface Water Temperature Modeling

This appendix provides information about the methods and assumptions used for the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis on surface water temperature. The appendix also provides temperature model results and interpretation methods used for the impacts analysis and descriptions. Additional information pertaining to the development of the analytical tools, incorporating climate change, and the use of input data from other models, is also provided. This appendix is organized into three sections that are briefly described below:

- Appendix 6B, Section A: Surface Water Temperature Modeling Methodology, Simulations, and Assumptions
  - The water quality impacts analysis uses the HEC-5Q and Reclamation Monthly Temperature models to assess and quantify effects of the alternatives on the environment. This section provides information about the overall analytical framework linkages with other models.
  - This section provides a brief description of the assumptions for the surface water temperature model simulations of the No Action Alternative, Second Basis of Comparison, and other alternatives.
- Appendix 6B, Section B: Surface Water Temperature Modeling Results
  - This section provides model outputs and a description of the model simulation output formats used in the analysis and interpretation of modeling results for the alternatives impacts assessment.
- Appendix 6B, Section C: HEC-5Q Model Update for Surface Water Temperature Modeling
  - This section provides a detailed description of the compilation and updates of the HEC-5Q models performed during development of the EIS for the Trinity-Sacramento, American, and Stanislaus Rivers.

6B.A.1 Surface Water Temperature Modeling Methodology

This section summarizes the surface water temperature modeling methodology used for the No Action Alternative, Second Basis of Comparison, and other alternatives. It describes how temperature modeling fits into the overall analytical framework and contains descriptions of the key analytical and numerical tools and approaches used in the quantitative evaluation of the alternatives.

In the evaluation of the No Action Alternative, Second Basis of Comparison, and other alternatives, climate change assumptions at the Year 2030 are used to develop modified climate input files for the temperature models. The modeling assumptions are provided in Section 6B.A.2.

6B.A.1.1 Overview of the Modeling Approach

To support the water quality and aquatic resources impact analyses of the alternatives, modeling of surface water temperature in the Central Valley is necessary to evaluate changes to conditions affecting surface water temperatures in rivers that are affected by SWP and CVP operations. Two different surface water temperature modeling tools were used for the analysis. The HEC-5Q model simulated daily temperatures for the Trinity River (downstream of Lewiston Dam), Sacramento River (from Keswick Dam to the Feather River confluence), American River (from Nimbus Dam to Sacramento River confluence), and Stanislaus River (from New Melones Dam to the confluence with San Joaquin River). The Reclamation Temperature Model was used for simulating monthly temperatures for the Feather and Lower Sacramento (from the Feather River confluence to Freeport) rivers. Both models used CalSim II outputs as stream flow and reservoir storage inputs. The results from these models are used to inform the understanding of effects on the surface water temperature of each individual alternative considered in the EIS.

6B.A.1.1.1 HEC-5Q

Over the past 15 years, various temperature models were developed to simulate temperature conditions on the rivers affected by CVP and SWP operations (Sacramento River Water Quality Model [SRWQM], San Joaquin River HEC-5Q model) (Reclamation 2008). Recently, these models were compiled and updated into a single modeling package hereafter referred to as the HEC-5Q model. Further updates were performed under the EIS modeling that included improved meteorological data and subsequent validation of the Sacramento and American River models, implementation of the Folsom Temperature Control Devices and low-level outlet, implementation of the Trinity River auxiliary outlet, improved temperature targeting for the Shasta and Folsom Dams, as well as improved documentation and streamlining of the models as well as improved integration with the CalSim II model.

Section 6B.C.4 of this appendix is consistent with the technical memorandum submitted to Reclamation that documented changes in the HEC-5Q compilation and updates for the temperature models.

The HEC-5Q model contains three separate models that simulate reservoir and river temperatures:

- The Trinity River from Trinity Dam to below Lewiston Dam and the Sacramento River from Shasta Dam to the Feather River confluence. Reservoir temperatures are simulated for Trinity Lake, Lewiston Reservoir, Shasta Lake, Keswick Reservoir, and Black Butte Reservoir (see Figure 6B.A.1 for a schematic of the Trinity-Sacramento River HEC-5Q model).

- The American River from Folsom Dam to the confluence with the Sacramento River. Reservoir temperatures were simulated for Folsom Lake and Lake Natoma (see Figure 6B.A.2 for a schematic of the American River HEC-5Q model).
- The Stanislaus River from upstream of New Melones Reservoir to the confluence with the San Joaquin River and the lower San Joaquin River from the Stanislaus River confluence to below Vernalis. Reservoir temperatures were simulated for New Melones Reservoir (see Figure 6B.A.3 for a schematic of the Stanislaus River HEC-5Q model).

The HEC-5Q model was developed using integrated HEC-5 and HEC-5Q models. The HEC-5 component of the model simulates daily reservoir and river flow operations from monthly CalSim II data that are disaggregated to daily data. The HEC-5Q component simulates mean daily reservoir and river temperatures based on the daily flow inputs and meteorological parameters specified on a 6-hour time step.

6B.A.1.1.2 Reclamation Temperature Model

The Reclamation Temperature Model includes reservoir and stream temperature models that simulate monthly reservoir and stream temperatures used for evaluating the effects of CVP and SWP project operations on mean monthly water temperatures in the basin (Reclamation 2008). The model simulates temperatures in seven major reservoirs (Trinity Lake, Whiskeytown Reservoir, Shasta Lake, Oroville Reservoir, Folsom Lake, New Melones Reservoir, and Tulloch Reservoir), four downstream regulating reservoirs (Lewiston, Keswick, and Goodwin reservoirs; Lake Natoma), and five main river systems (Trinity, Sacramento, Feather, American, and Stanislaus rivers). The river component of the Reclamation Temperature Model calculates temperature changes in the regulating reservoirs, below the main reservoirs. With regulating reservoir release temperature as the initial river temperature, the river model computes temperatures at several locations along the rivers. The calculation points for river temperatures generally coincide with tributary inflow locations. The model is one-dimensional in the longitudinal direction and assumes fully mixed river cross sections. The effect of tributary inflow on river temperature is computed by mass balance calculation. The river temperature calculations are based on regulating reservoir release temperatures, river flows, and climatic data.

For the EIS, the Reclamation Temperature Model was used for the Feather River and lower Sacramento River from the Feather River confluence to Freeport. Sacramento, Trinity, American, and Stanislaus rivers temperature effects were analyzed using the daily HEC-5Q models described in the previous section.

For more information on the Reclamation Temperature Model, see Appendix H of the Reclamation's 2008 Operation Criteria and Plan (OCAP) Biological Assessment (BA) (Reclamation 2008).

6B.A.2 Surface Water Temperature Modeling Simulations and Assumptions

This section describes the assumptions for the HEC-5Q and Reclamation Temperature Model monthly temperature simulations of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

The following model simulations were performed as the basis of evaluating the impacts of Alternatives 1 through 5 as compared to the No Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

Assumptions for each of these alternatives were developed with the surface water modeling tools and are described in Appendix 5A, Section B.

Alternative 1 modeling assumptions are the same as the Second Basis of Comparison and Alternative 2 modeling assumptions are the same as the No Action Alternative; therefore, the assumptions for those alternatives are not discussed separately in this document.

The general modeling assumptions described below pertain to the model runs for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

6B.A.2.1 Input Storage and Streamflow

6B.A.2.1.1 HEC-5Q

Monthly flows simulated by the CalSim II model for an 82-year period (water years 1922 through 2003) are used as input to HEC-5Q. Temporal downscaling is performed[1] on the CalSim II monthly average tributary flows to convert them to

[1] A constant daily flow that is equivalent to monthly average flow simulated in CalSim II is assumed throughout the month for each month of the 82-year CalSim II simulation period. An exception to this is the inflow timeseries to Trinity, Shasta, and New Melones reservoirs, where monthly average inflows are downscaled to a daily timestep by fitting to a cubic-spline. This allows simulation of a daily varying inflow into the reservoirs with a smooth transition between the individual months, while assuming the same monthly volume of inflow consistent with CalSim II.

daily average flows for HEC-5Q input using a pre-processing tool (see Tables 6B.A.1 to 6B.A.3 for a list of all of the CalSim II inputs).

Table 6B.A.1 CalSim II Input Mapping with Trinity-Sacramento River HEC-5Q Model

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
340	Trinity Reservoir	Storage Inflow Outflow Evaporation	S1 I1 C1+F1 E1
330	Lewiston Reservoir	Inflow Diversion	I100 D100
240	Whiskeytown Reservoir	Storage Inflow Outflow Evaporation	S3 I3 C3+F3 E3
220	Shasta Reservoir	Storage Inflow Outflow Evaporation	S4 I4 C4+F4 E4
200	Keswick Reservoir	Evaporation	E5
180	Sacramento River below Clear Creek Confluence	Diversion	C5-C104
178	Sacramento River below Cow Creek Confluence	Inflow	C10801
176	Sacramento River below Cottonwood Creek Confluence	Inflow	C10802
172	Sacramento River below Battle Creek Confluence	Inflow	C10803
170	Sacramento River at Bend Bridge	Inflow Diversion	I109+R109 D109
160	Sacramento River above Red Bluff Diversion Dam	Inflow Diversion	C11001+I112 D112
150	Sacramento River below Woodson Bridge	Inflow Diversion	C11305+C11301+R113+R114A+R114B+R114C D113A+D113B
140	Sacramento River at GCID	Diversion	D114
1136	Black Butte Reservoir	Storage Inflow Outflow Diversion	S42 I42+C41 C42+F42 E42+D42

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
1134	Stony Creek Diversions	Diversion	C42-C142A
1132	Stony Creek Confluence	Inflow	C11501
132	Sacramento River at Ord Ferry	Diversion	D117
130	Sacramento River at Butte City	Inflow Diversion	I118 I118+C115-C118-D117
128	Sacramento River above Moultin Weir	Inflow Diversion	I123+c17603 C118+I123+C17603-C124
126	Sacramento River at Moultin Weir	Diversion	D124
120	Sacramento River at Colusa Weir	Diversion	D125
116	Sacramento River at Tisdale Weir	Diversion	D126
114	Sacramento River above Knights Landing	Diversion	C126-C129
112	Sacramento River at Knights Landing	Diversion	C129-C134
365	Butte Creek BP3	Diversion	C136B-R137-R135A-R135B-C217A

Table 6B.A.2 CalSim II Input Mapping with American River HEC-5Q Model

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
590	Folsom Reservoir	Storage Inflow Outflow Diversion	S8 C300+I8 C8+F8 E8+D8
580	Natoma Reservoir	Storage Diversion	S9 D9+E9-I9
572	American River above City of Sacramento Diversion	Diversion	GS66-I302
570	American River at City of Sacramento Diversion	Diversion	D302

Table 6B.A.3 CalSim II Input Mapping with Stanislaus River HEC-5Q Model

HEC-5Q Control Point Number	HEC-5Q Control Point Name	Input Types	CalSim II Node
240	New Melones Reservoir	Storage Inflow Outflow Evaporation	S10 I10 C10+F10 E10
220	Tulloch Reservoir	Storage Inflow Diversion	S76 I76 E76
200	Goodwin Reservoir	Inflow Diversion	I520 C76-C520
160	Stanislaus River at Knights Ferry	Diversion	C520-C528
150	Stanislaus River at Orange Blossom Bridge	Diversion	C520-C528
140	Stanislaus River at Oakdale Highway 120 Bridge	Diversion	C520-C528
130	Stanislaus River at Riverbank Bridge	Diversion	C520-C528
120	Stanislaus River at McHenry Bridge	Diversion	C520-C528
110	Stanislaus River at Ripon Gage	Diversion	C520-C528
400	San Joaquin River above Stanislaus River Confluence Dummy Reservoir	Diversion	C620+C545+C528-C644
98	San Joaquin River at Vernalis	Diversion	C620+C545+C528-C644

6B.A.2.1.2 Reclamation Temperature Model

Monthly flows that were simulated by the CalSim II model for an 81-year period (January 1922 to December 2002) are used as input to the model. Because of the CalSim II model's complex structure, where applicable, flow arcs were combined at the appropriate temperature nodes to ensure compatibility with the Reclamation Temperature Model.

6B.A.2.2 Climate Change Assumptions

When simulating alternatives with climate change, some of the inputs to the temperature models must be modified. This section presents the assumptions and approaches used for modifying meteorological and inflow temperatures in the temperature models. For the alternative simulations, climate assumptions were established around Year 2030. Therefore, to be consistent with the other water supply and economics models, the climate input data for HEC-5Q and Reclamation Temperature Model were modified to represent approximate conditions at Year 2030.

6B.A.2.2.1 HEC-5Q

HEC-5Q requires meteorological inputs specified in the form of equilibrium temperatures, exchange rates, shortwave radiation and wind speed. The exchange rates and equilibrium temperatures are computed from hourly observed data at the Gerber gauging station. Considering the uncertainties associated with climate change impacts, it was assumed that the equilibrium temperature inputs derived from observed data would be modified by the change in daily average air temperature projected under the climate change scenarios.

The inflow temperatures in HEC-5Q are specified as seasonal curve fit values with diurnal variations superimposed as a function of heat exchange parameters. The seasonal temperature values are derived based on the observed flows and temperatures for each inflow. HEC-5Q superimposes diurnal variations on the seasonal values specified using the heat exchange parameter inputs. The diurnal variations are superimposed by adjusting the equilibrium temperature to reflect the inflow location environment and scaling it based on the heat exchange rate scaling factor and the weighting factor for emphasis on the seasonal values specified. In this fashion, any climate change effects accounted for in the equilibrium temperature are translated to the changes in inflow temperatures in the HEC-5Q. Therefore, for the climate change scenarios, only the equilibrium temperatures were adjusted for the projected change in temperature, and these influence the inflow temperatures; however, independent inflow temperature inputs were not changed.

6B.A.2.2.2 Reclamation Temperature Model

The Reclamation Temperature Model requires mean monthly meteorological inputs of air and equilibrium temperature and heat exchange rates. The heat exchange rates and equilibrium temperatures are computed from the mean monthly air temperature data and long-term estimates of solar radiation, relative humidity, wind speed, cloud cover, solar reflectivity, and river shading. Considering the uncertainties associated with climate change impacts, it was assumed that the equilibrium temperature and heat exchange rate inputs would be modified by the change in mean monthly air temperature in the climate change scenarios.

Reservoir inflow temperatures were derived from the available record of observed data and averaged by month. The mean monthly inflow temperatures are then repeated for each study year. For alternatives modeled with climate change, the inflow temperatures were modified based on the projected long-term average change in mean annual air temperature for each month.

6B.A.3 Reference

Reclamation (Bureau of Reclamation). 2008. *2008 Central Valley Project and State Water Project Operations Criteria and Plan Biological Assessment, Appendix H Reclamation Temperature Model and SRWQM Temperature Model.*

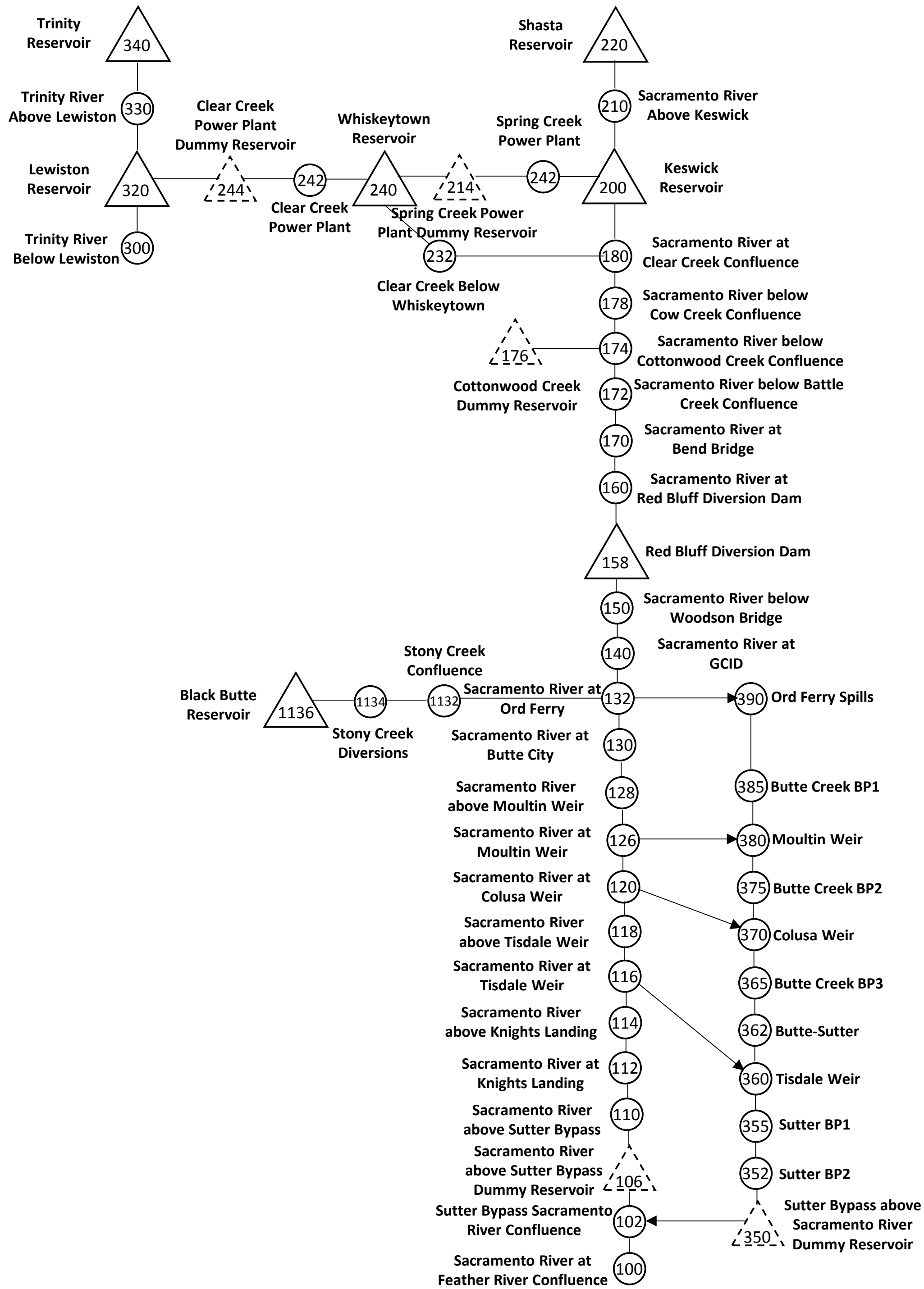


Figure 6B.A.1 Schematic of Trinity-Sacramento River HEC-5Q Model

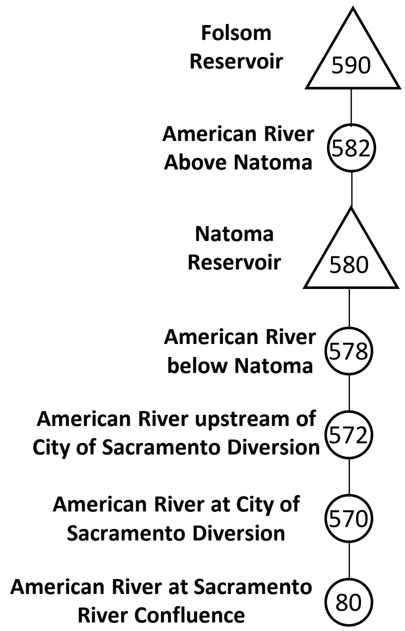


Figure 6B.A.2 Schematic of American River HEC-5Q Model

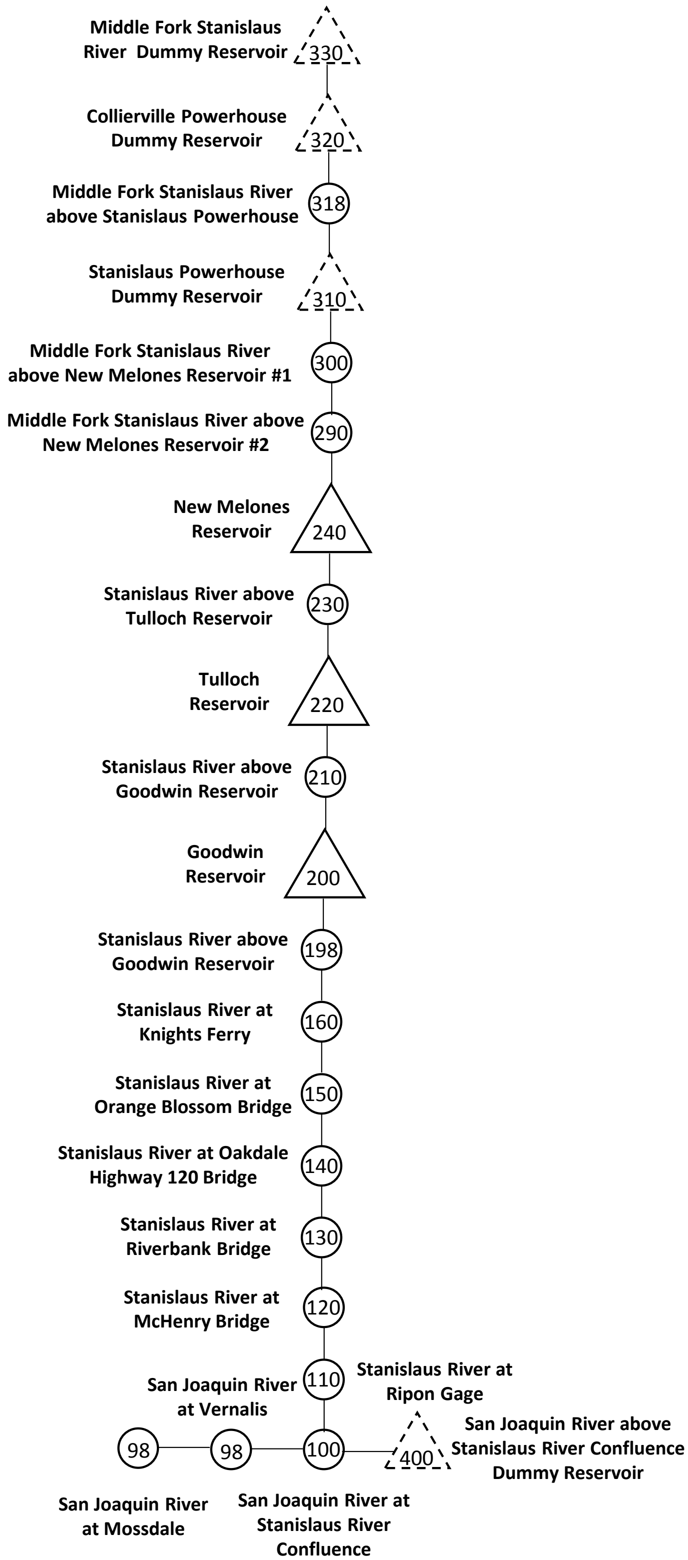


Figure 6B.A.3 Schematic of Stanislaus River HEC-5Q Model

Appendix 6B, Section B

Surface Water Temperature Modeling Results

This appendix provides information about the methods and assumptions used for the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis on surface water temperature. The appendix is organized into three sections that are briefly described below:

- Appendix 6B, Section A: Surface Water Temperature Modeling Methodology, Simulations, and Assumptions
  - The water quality impacts analysis uses the HEC-5Q and Reclamation Monthly Temperature models to assess and quantify effects of the alternatives on the environment. This section provides information about the overall analytical framework linkages with other models.
  - This section provides a brief description of the assumptions for the surface water temperature model simulations of the No Action Alternative, Second Basis of Comparison, and other alternatives.
- Appendix 6B, Section B: Surface Water Temperature Modeling Results
  - This section provides model outputs and a description of the model simulation output formats used in the analysis and interpretation of modeling results for the alternatives impact assessment.
- Appendix 6B, Section C: HEC-5Q Model Update for Surface Water Temperature Modeling
  - This section provides a detailed description of the compilation and updates of the HEC-5Q models performed during development of the EIS for the Trinity-Sacramento, American, and Stanislaus Rivers.

6B.B.1 Introduction

This section provides surface water temperature model (HEC-5Q and Reclamation Temperature Model) simulation results for alternatives evaluated for the EIS. The sections provided for each parameter include figures and tables in various formats to provide the reader with tools for multiple ways of analysis.

The different types of presentations are explained as follows:

- **Probability of Exceedance Plots:** Probability of exceedance plots provide the frequency of occurrence of values of a parameter that exceed a reference value. For this appendix, the calculation of exceedance probability is done by ranking the data. For example, for Shasta storage end-of-September exceedance plot, Shasta storage values at the end of September for each simulated year are sorted in ascending order. The smallest value would have a probability of exceedance of 100 percent since all other values would be greater than that value; and the largest value would have a probability of exceedance of 0 percent. All of the values are plotted with probability of exceedance on the x-axis and the value of the parameter on the y-axis. Following the same example, if for one scenario, Shasta Lake end-of-September storage of 2,000 thousand acre-feet (TAF) corresponds to 80 percent probability, it implies that Shasta end-of-September storage is higher than 2,000 TAF in 80 percent of the years under the simulated conditions.

- **Long-Term Average Summary and Year-Type-Based Statistics Summary Tables**: These tables provide parameter values for each 10 o increment of exceedance probability (rows) for each month (columns) as well as long-term and year-type averages (using the Sacramento Valley 40-30-30 Index developed by the State Water Resources Control Board for projected climate at Year 2030) for each month. For a few parameters, such as Delta outflow, annual total or average values are added to the tables (for volume and rates, respectively).

All plots and tables are prepared to accommodate following comparisons:

- No Action Alternative (with climate change and sea-level rise at Year 2030) compared to the Second Basis of Comparison (with climate change and sea-level rise at Year 2030)
- Alternatives (with climate change and sea-level rise at Year 2030) compared to the No Action Alternative
- Alternatives (with climate change and sea-level rise at Year 2030) compared to the Second Basis of Comparison

6B.B.1.1 Appropriate Use of Model Results

The physical models developed and applied in the EIS analysis are generalized and simplified representations of a complex water resources system. A brief description of the appropriate use of the model results to compare two scenarios or to compare against threshold values or standards is presented below.

6B.B.1.1.1 Absolute vs. Relative Use of the Model Results

The models are not predictive models (in how they are applied in this project), and therefore the results cannot be considered as absolute with and within a quantifiable confidence interval. The model results are only useful in a comparative analysis and can only serve as an indicator of condition (e.g., compliance with a standard) and of trend (e.g., generalized impacts).

6B.B.1.2 Appropriate Reporting Time-Step

Due to the assumptions involved in the input data sets and model logic, care must be taken to select the most appropriate time-step for the reporting of model results. Sub-monthly (e.g., weekly or daily) reporting of model results is inappropriate for all models and the results should be presented on a monthly basis.

6B.B.1.3 Statistical Comparisons Are Preferred

Absolute differences computed at a point in time between model results from an alternative and a baseline to evaluate impacts is an inappropriate use of model results (e.g., computing differences between the results from a baseline and an alternative for a particular day or month and year within the period of record of simulation). Likewise computing absolute differences between an alternative (or a baseline) and a specific threshold value or standard is an inappropriate use of model results. Statistics computed based on the absolute differences at a point in time (e.g., average of monthly differences) are an inappropriate use of model results. By computing the absolute differences in this way, disregards the changes in antecedent conditions between individual scenarios and distorts the evaluation of impacts of a specific action.

Reporting seasonal patterns from long-term averages and water year-type averages is appropriate. Statistics computed based on long-term and water year-type averages are an appropriate use of model results. Computing differences between long-term or water year type averages of model results from two scenarios are appropriate. Care should be taken to use the appropriate water year type for presenting water year-type average statistics of model results (e.g., D1641 Sacramento River 40-30-30 index or San Joaquin River 60-20-20 index based on climate modifications). For this study, water year-types are based on the projected climate and hydrology at Year 2030.

The most appropriate presentation of monthly and annual model results is in the form of probability distributions and comparisons of probability distributions (e.g., cumulative probabilities). If necessary, comparisons of model results against threshold or standard values should be limited to comparisons based on cumulative probability distributions.

6B.B.2 Results

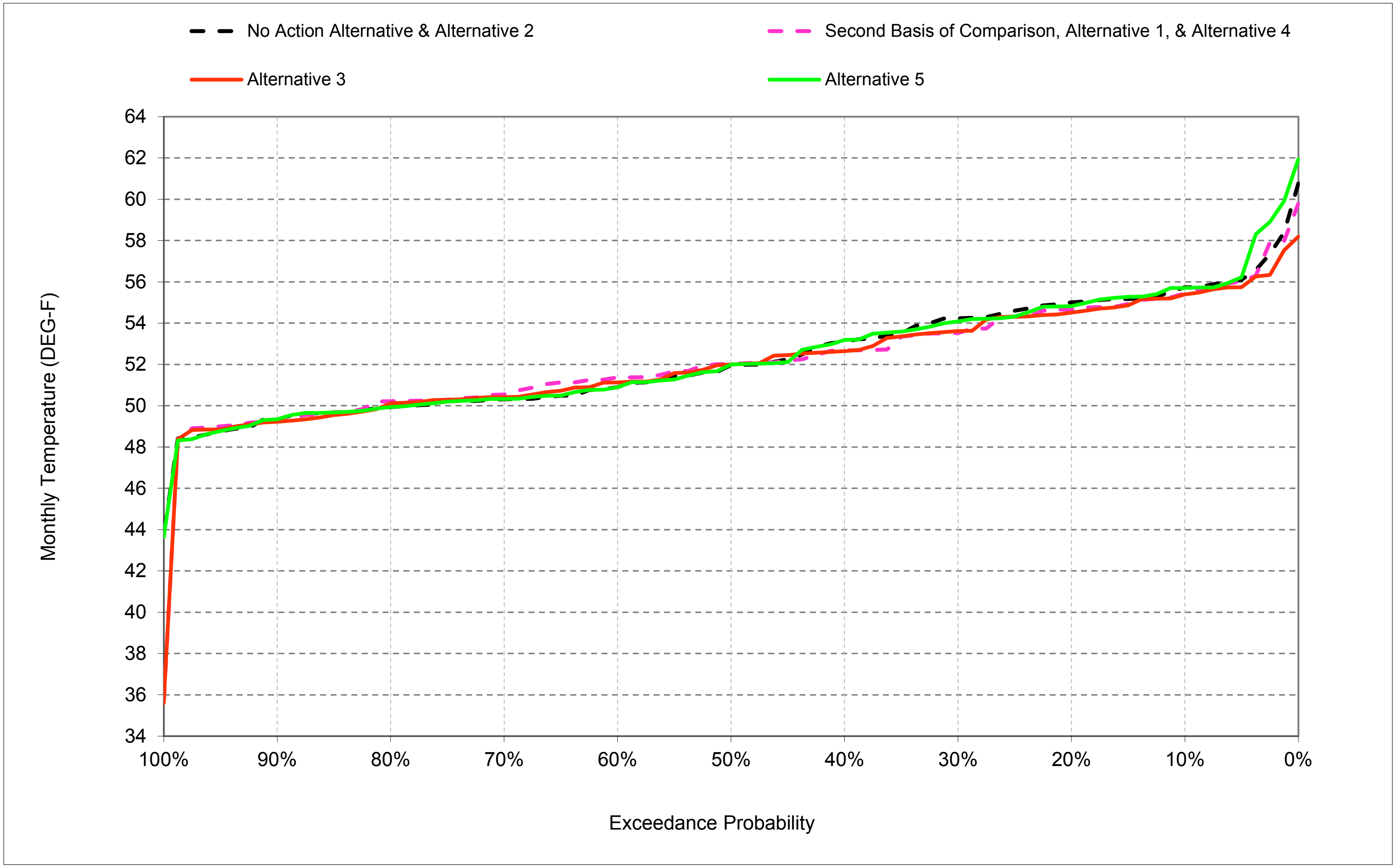
The results are presented in the following figures.

- B.1. Trinity River below Lewiston Temperature
- B.2. Clear Creek below Whiskeytown Temperature
- B.3. Clear Creek at Igo Temperature
- B.4. Clear Creek at Mouth Temperature
- B.5. Sacramento River below Keswick Temperature
- B.6. Sacramento River at Balls Ferry Temperature
- B.7. Sacramento River at Jellys Ferry Temperature
- B.8. Sacramento River at Bend Bridge Temperature
- B.9. Sacramento River at Red Bluff Temperature
- B.10. Sacramento River at Hamilton City Temperature
- B.11. Sacramento River at Knights Landing Temperature

- B.12. American River below Nimbus Temperature
- B.13. American River at Watt Avenue Temperature
- B.14. American River at Mouth Temperature
- B.15. Stanislaus River below New Melones Temperature
- B.16. Stanislaus River below Tulloch Temperature
- B.17. Stanislaus River below Goodwin Temperature
- B.18. Stanislaus River at Orange Blossom Bridge Temperature
- B.19. Stanislaus River at Mouth Temperature
- B.20. Feather River Low Flow Channel
- B.21. Feather River at Robinson Riffle
- B.22. Feather River at Gridley Bridge
- B.23. Feather River at Mouth

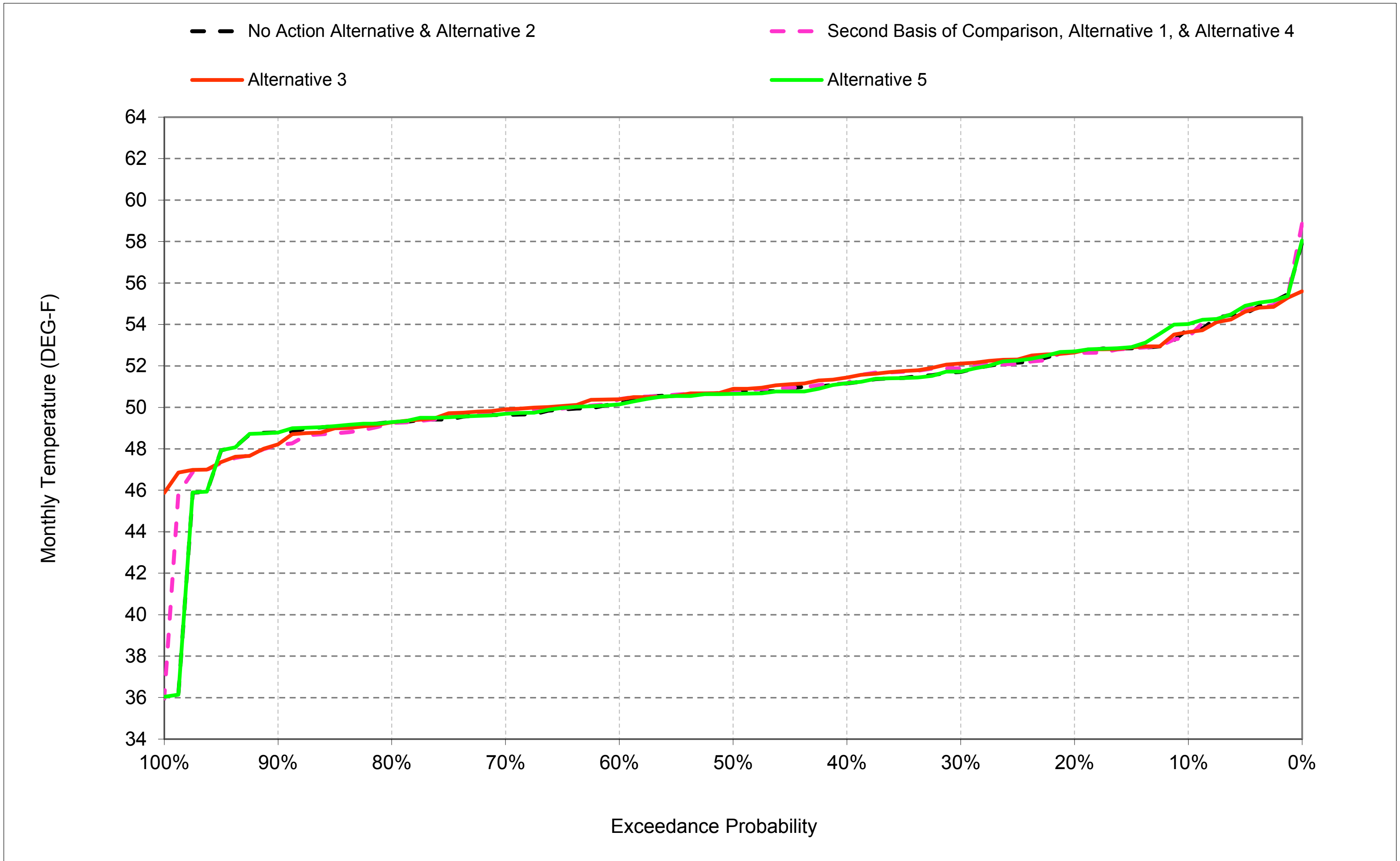
B.1. Trinity River below Lewiston Temperature

Figure B-1-1. Trinity River below Lewiston Dam, October



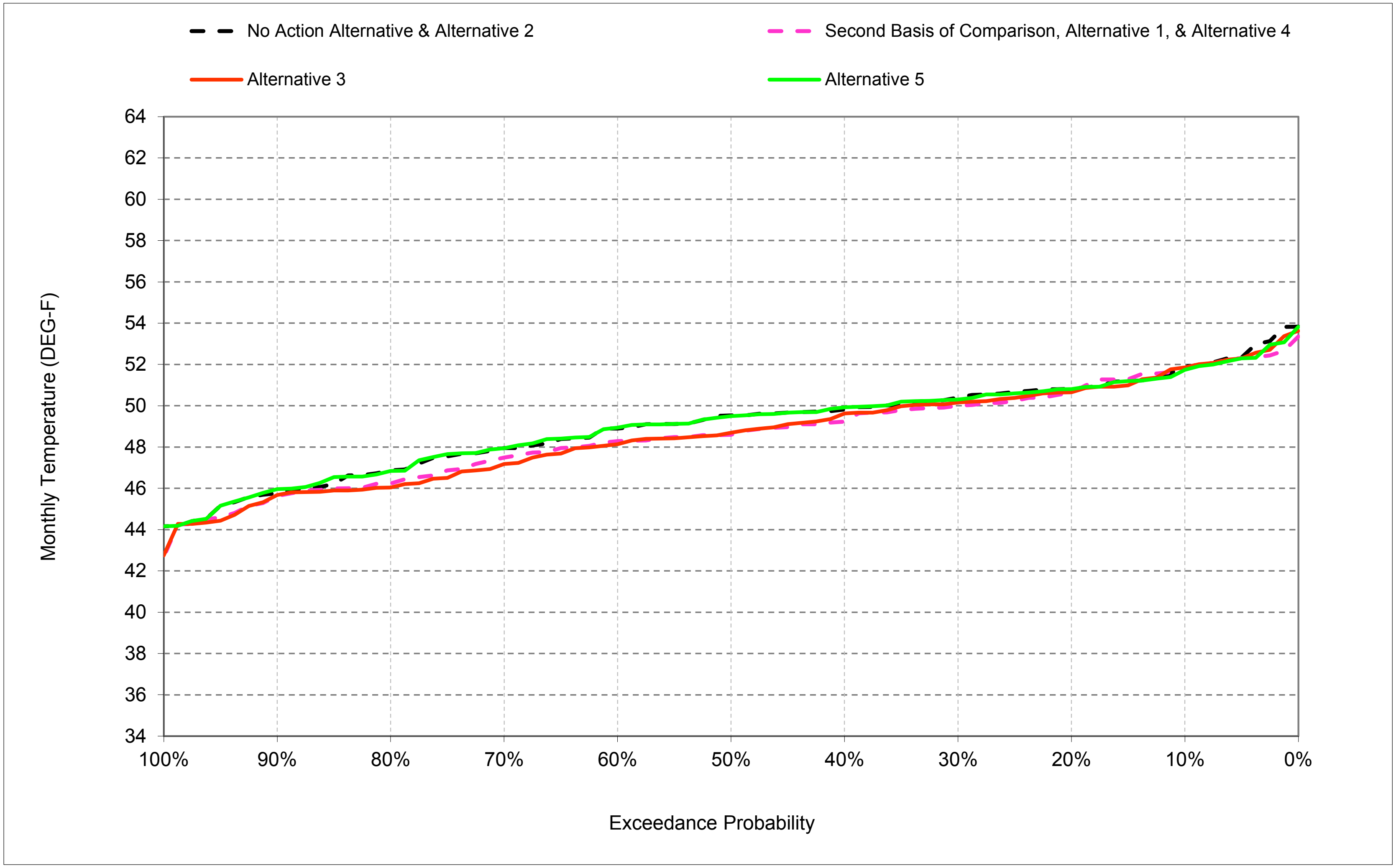
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-2. Trinity River below Lewiston Dam, November



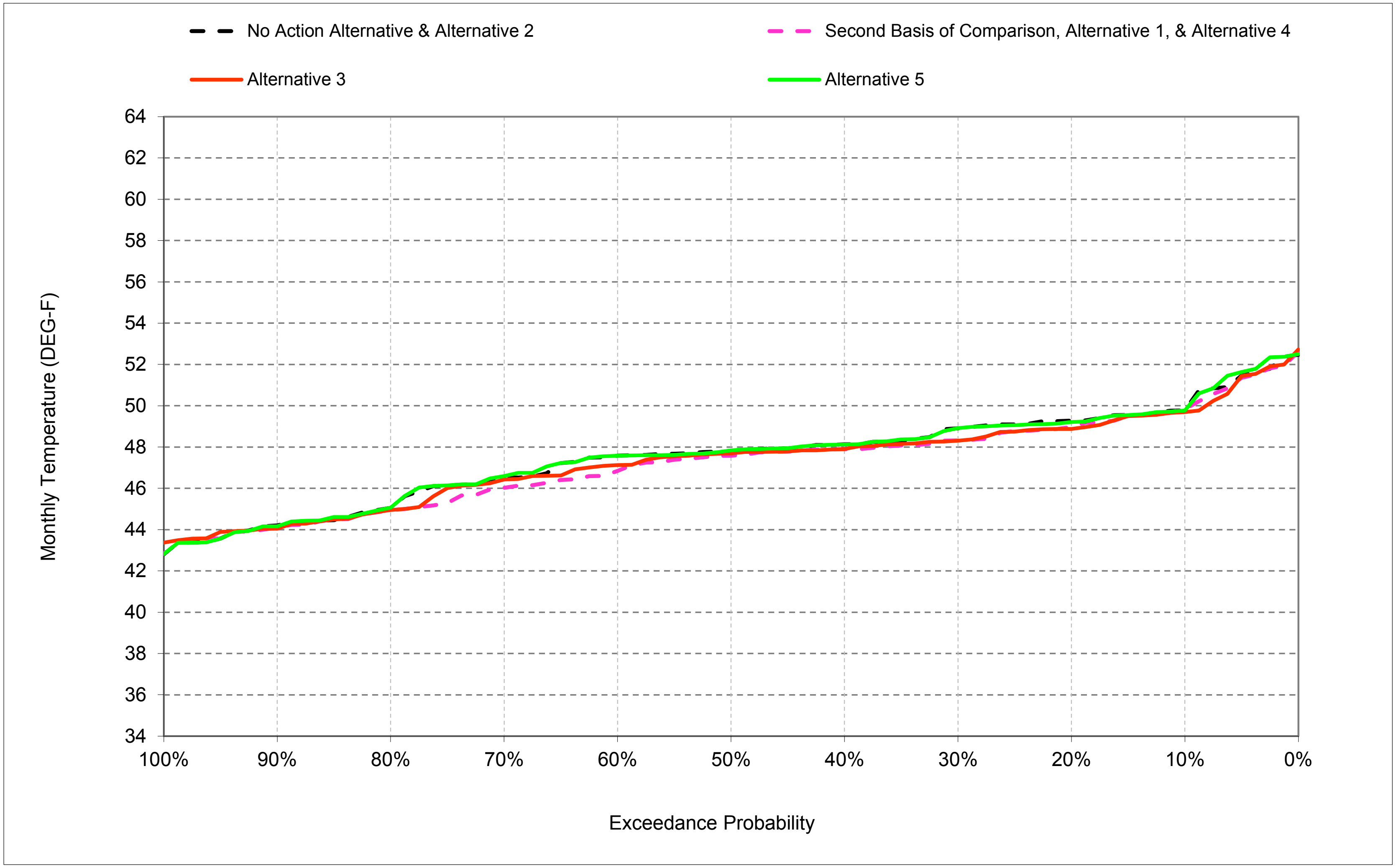
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-3. Trinity River below Lewiston Dam, December



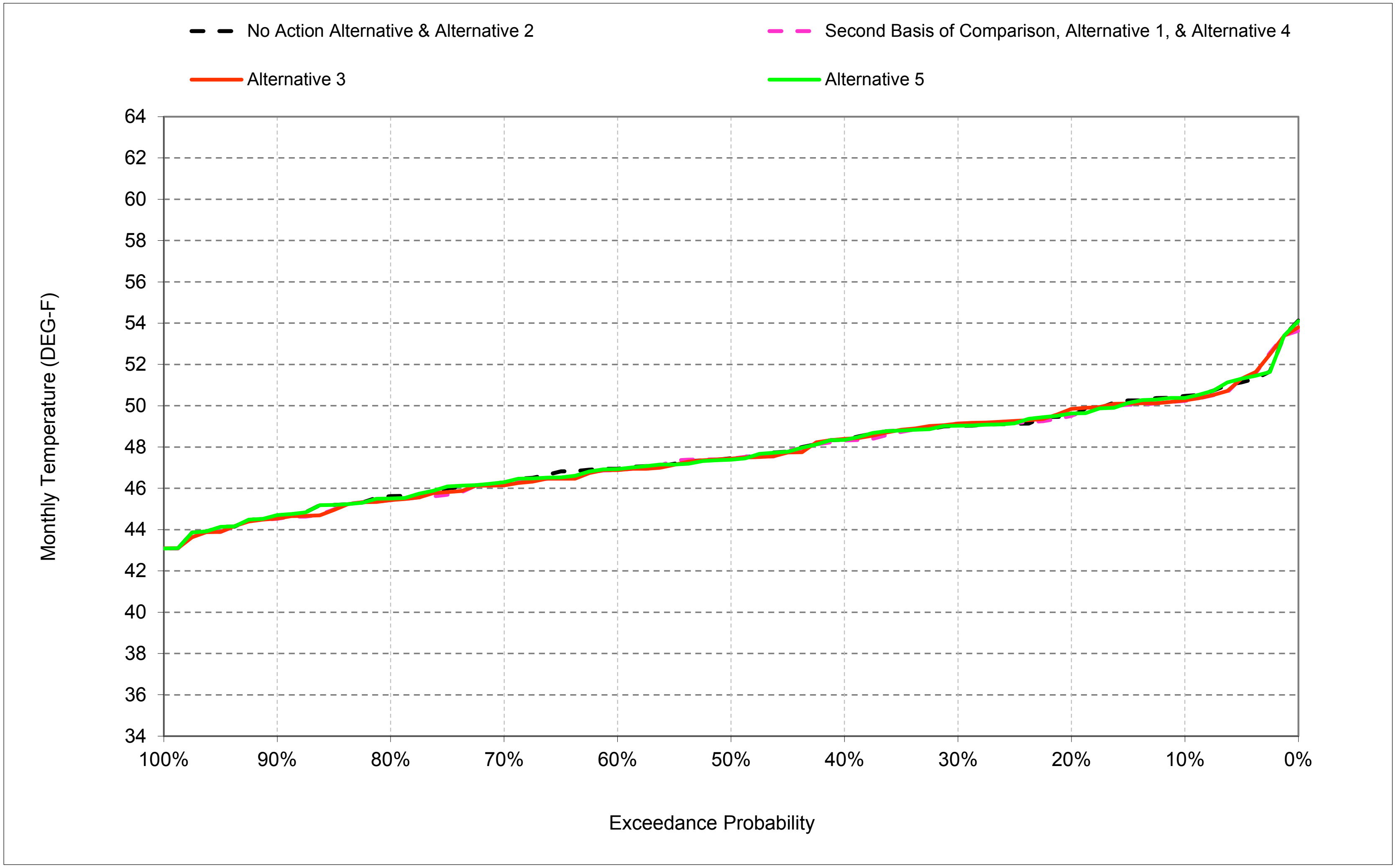
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-4. Trinity River below Lewiston Dam, January



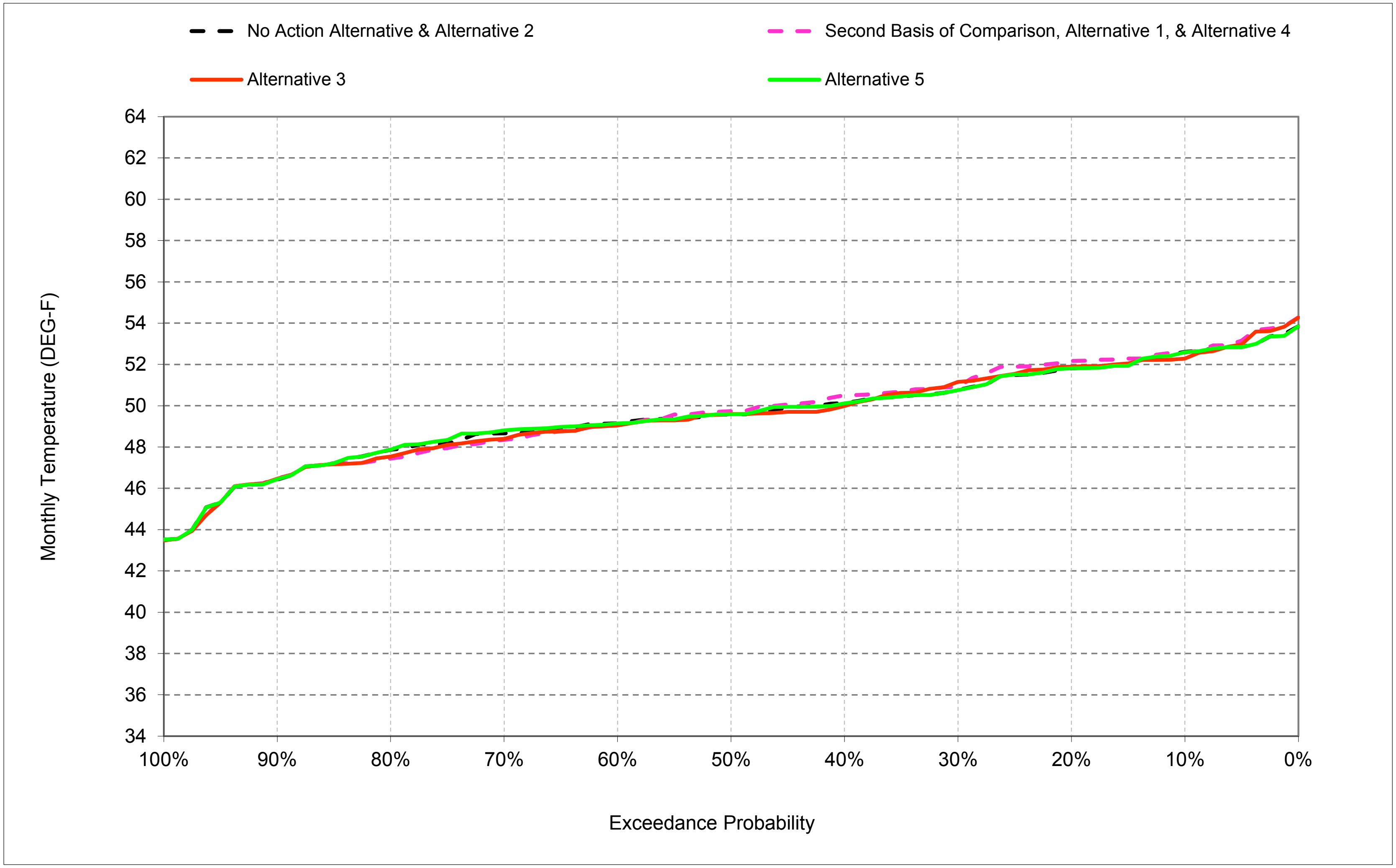
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-5. Trinity River below Lewiston Dam, February



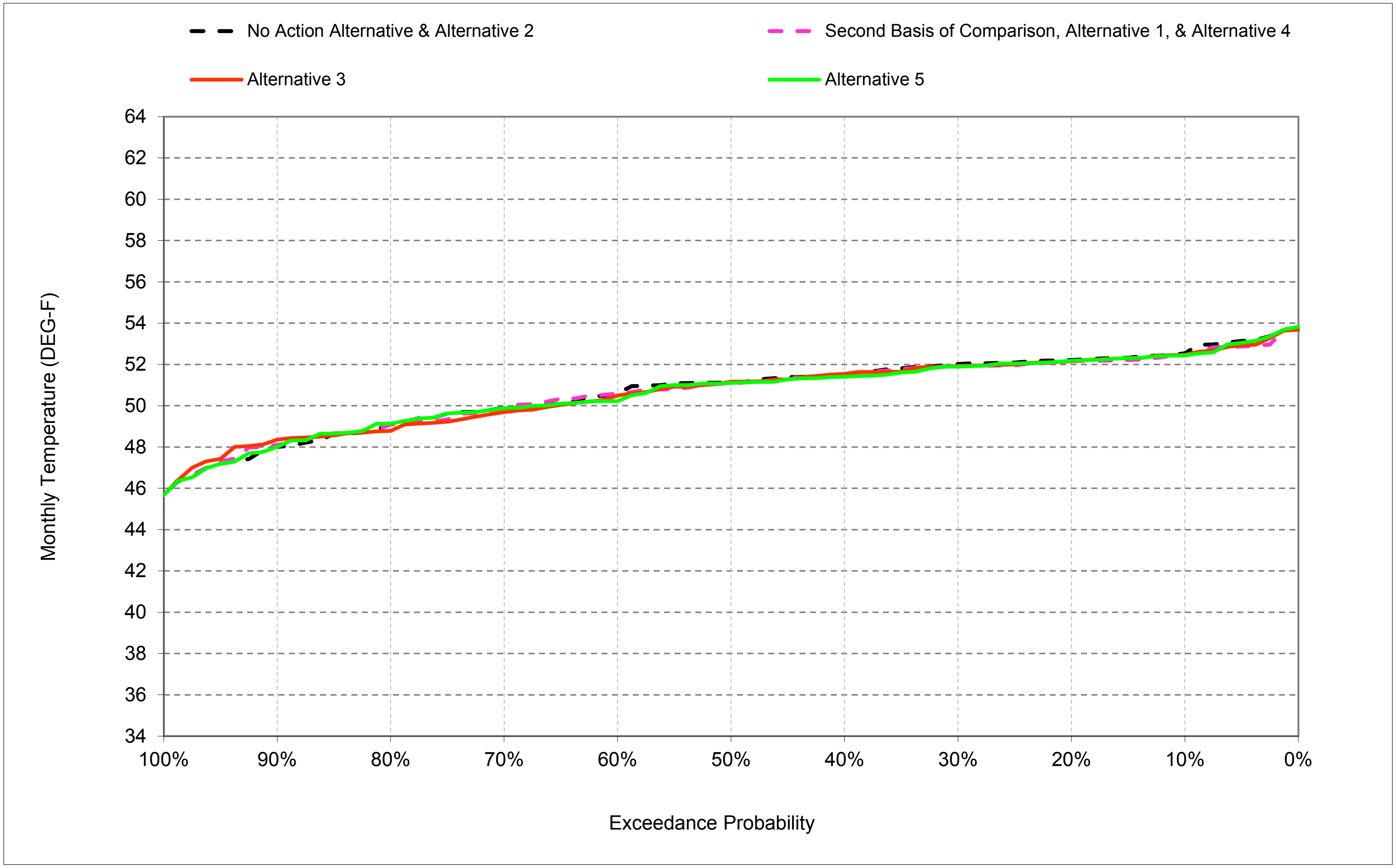
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-6. Trinity River below Lewiston Dam, March



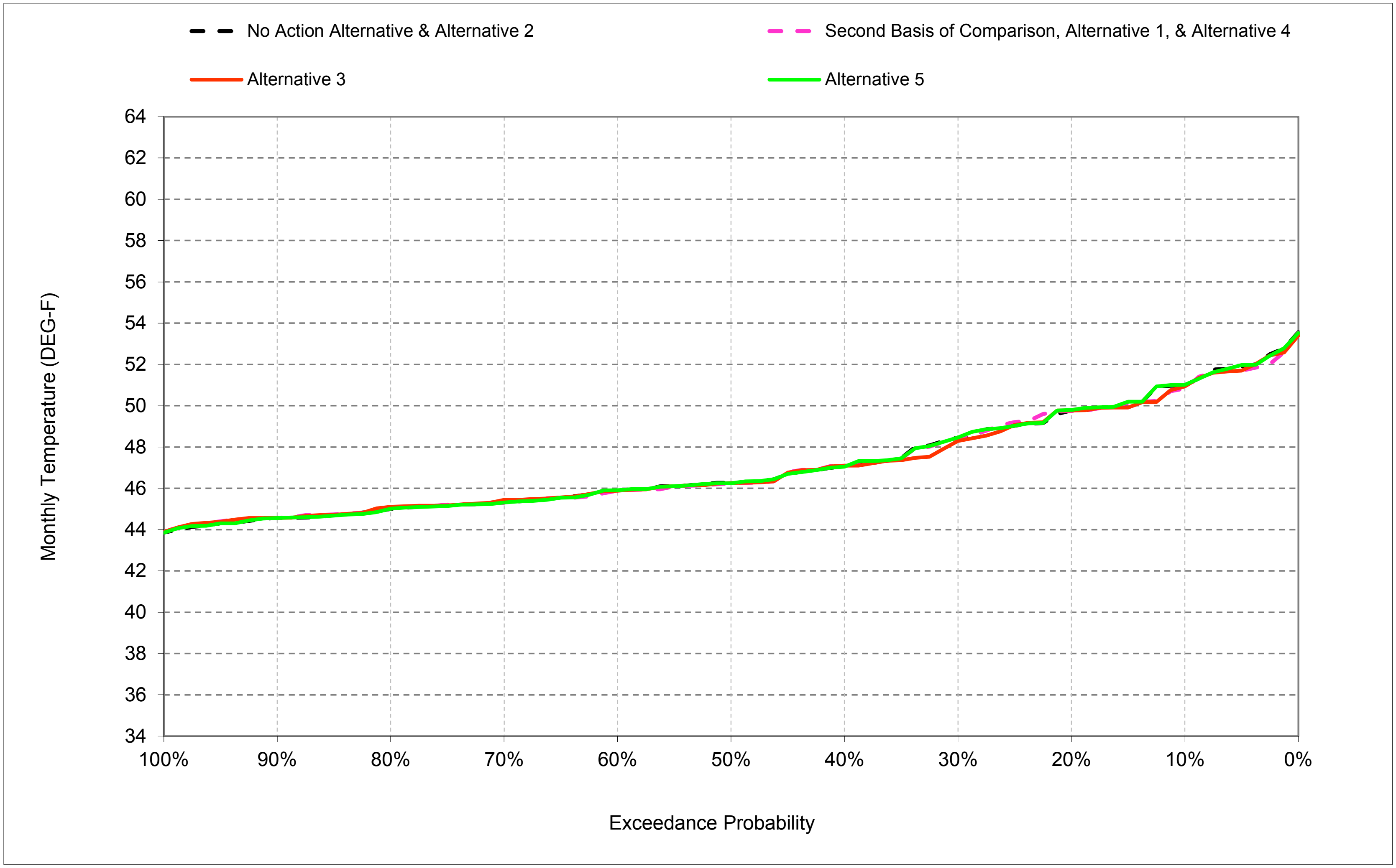
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-7. Trinity River below Lewiston Dam, April



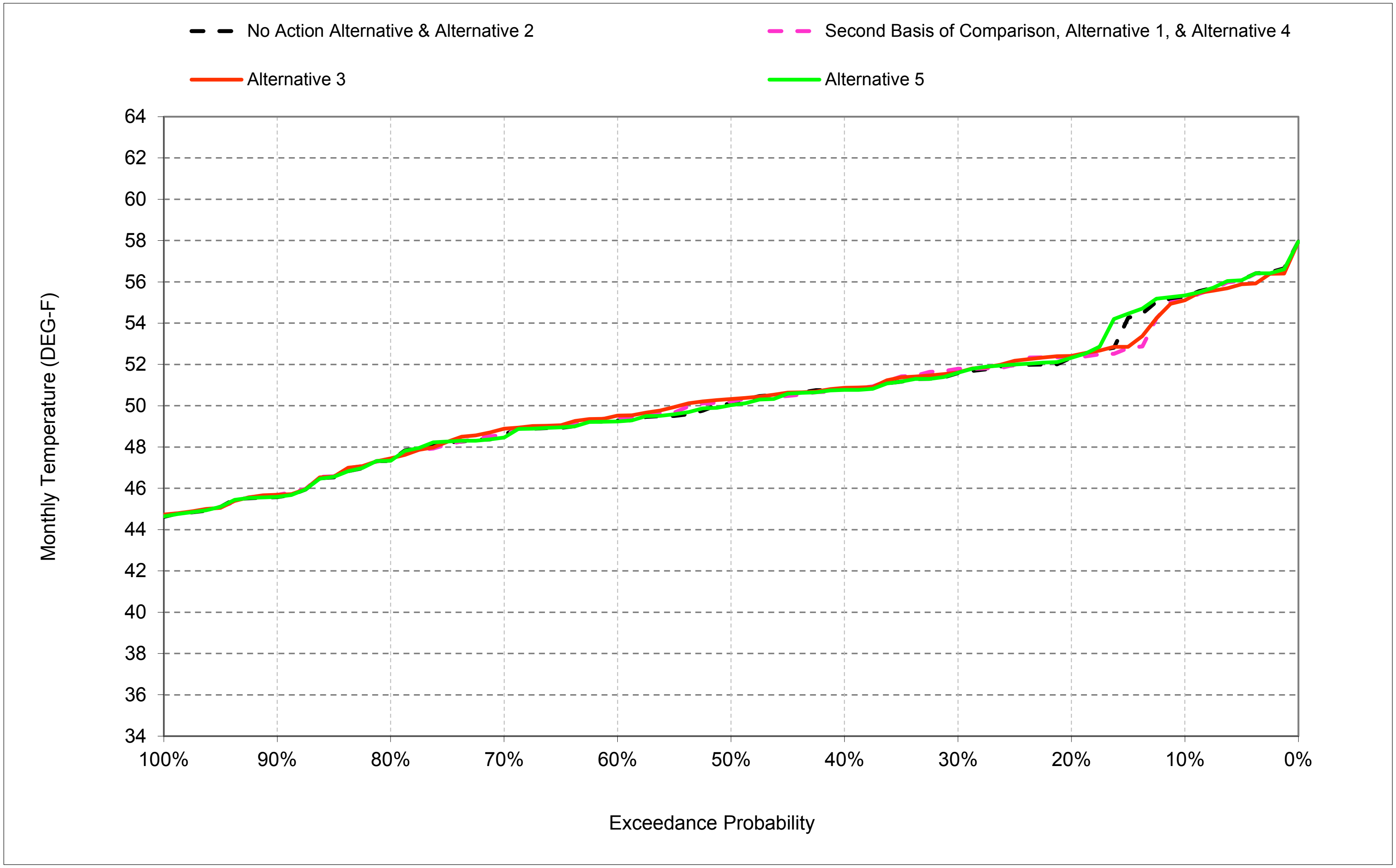
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-8. Trinity River below Lewiston Dam, May



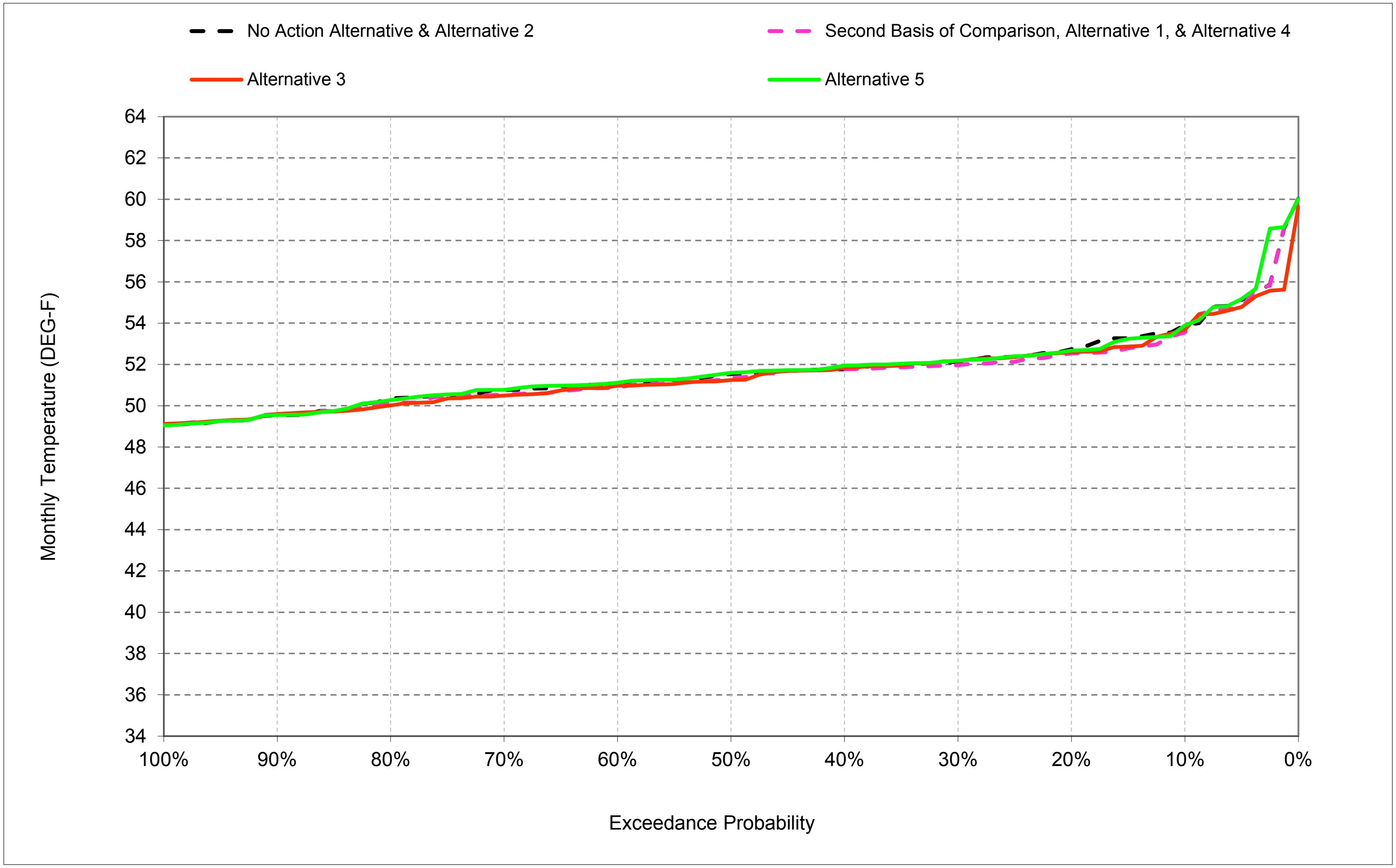
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-9. Trinity River below Lewiston Dam, June



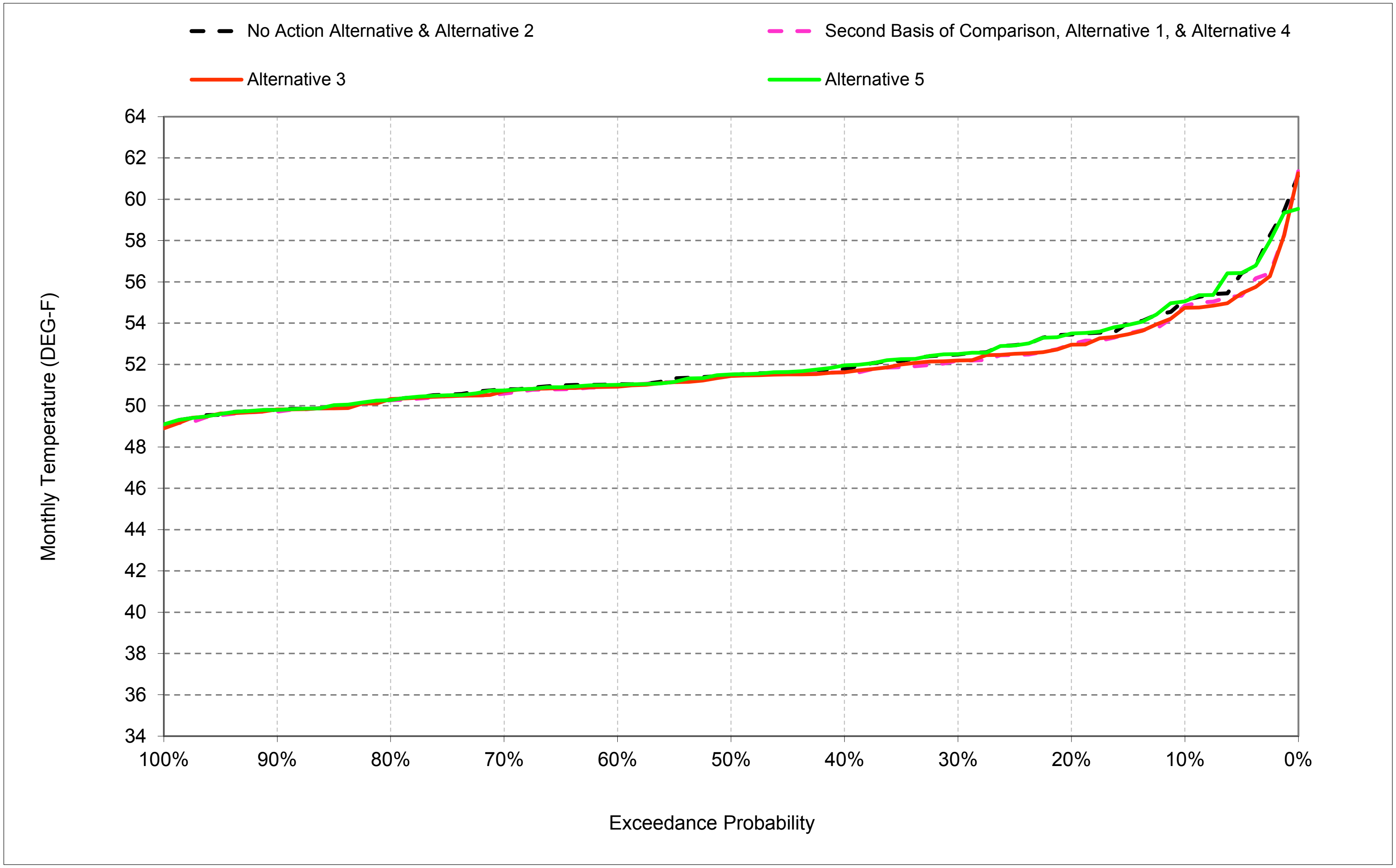
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-10. Trinity River below Lewiston Dam, July



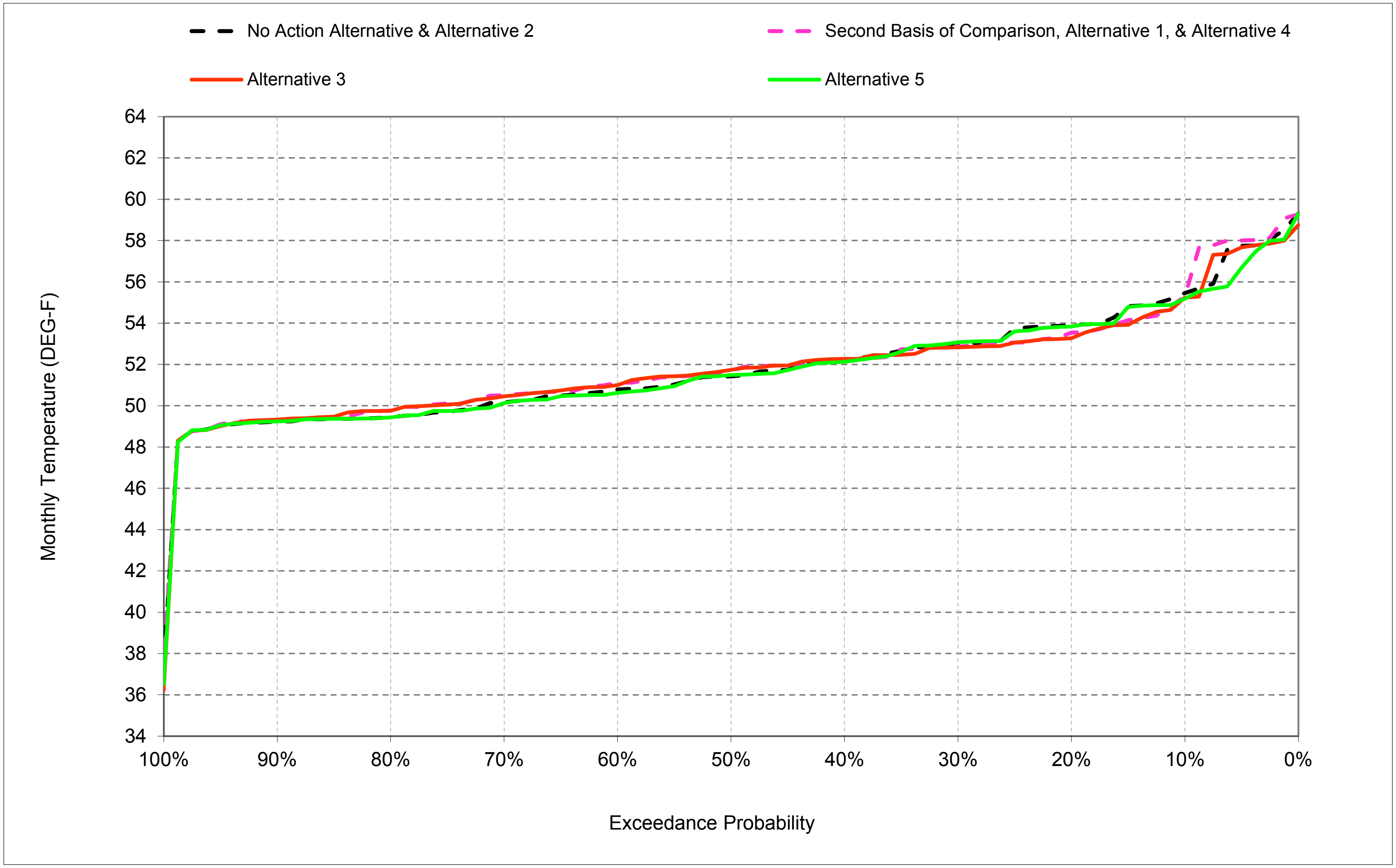
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-11. Trinity River below Lewiston Dam, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-12. Trinity River below Lewiston Dam, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-1. Trinity River below Lewiston Dam, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Alternative 1

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.3	-0.4	-0.1	0.1	-0.2	0.0	-0.1	-0.2	-0.1	-0.3	-0.3	-0.2
0.2	-0.3	-0.1	-0.2	-0.3	0.0	0.4	-0.1	0.0	0.1	-0.2	-0.5	-0.4
0.3	-0.7	0.2	-0.4	-0.6	0.1	0.2	-0.1	0.0	0.2	-0.2	-0.3	0.0
0.4	-0.4	0.0	-0.6	-0.2	-0.1	0.3	0.0	0.1	0.0	0.0	-0.2	0.0
0.5	0.1	-0.1	-0.9	-0.2	0.0	0.1	-0.1	0.0	0.1	-0.2	0.0	0.2
0.6	0.5	0.2	-0.6	-0.8	-0.1	-0.1	0.0	-0.1	0.1	-0.2	-0.1	0.3
0.7	0.2	0.1	-0.5	-0.5	0.0	-0.4	0.0	0.0	0.1	-0.2	-0.2	0.3
0.8	0.3	0.0	-0.6	-0.1	-0.2	-0.4	0.0	0.1	0.0	-0.1	-0.1	0.3
0.9	0.0	-0.6	-0.1	-0.1	0.0	0.0	0.1	0.0	0.1	0.0	-0.1	0.0
Long Term												
Full Simulation Period[b]	-0.1	0.1	-0.4	-0.3	-0.1	0.1	0.0	0.0	0.0	-0.1	-0.2	0.1
Water Year Types[c]												
Wet (32%)	-0.1	-0.1	-0.4	-0.2	-0.2	-0.1	0.1	0.0	0.0	-0.1	-0.1	0.6
Above Normal (16%)	-0.2	-0.7	-0.6	-0.9	0.1	0.0	0.1	0.1	0.1	-0.2	-0.3	-0.3
Below Normal (13%)	0.3	-0.8	-1.5	-0.5	-0.4	0.1	-0.5	0.1	0.1	-0.3	-0.2	-0.4
Dry (24%)	-0.4	0.0	-0.1	-0.1	-0.1	0.3	-0.1	0.0	0.1	-0.1	-0.1	-0.2
Critical (15%)	-0.2	2.4	0.2	0.0	0.3	0.1	0.0	-0.2	-0.4	-0.2	-0.7	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-2. Trinity River below Lewiston Dam, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	55	54	52	50	50	52	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	50	46	49	51	51	51
70%	50	50	47	46	46	48	50	45	49	50	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	46	49	50	45	48	50	50	50
Below Normal (13%)	51	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	49	48	49	51	52	48	52	52	52	53
Critical (15%)	55	53	51	49	50	52	52	50	55	54	55	54

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.3	-0.2	-0.1	-0.1	-0.2	-0.3	-0.1	-0.1	-0.2	-0.2	-0.4	-0.3
0.2	-0.5	0.0	-0.2	-0.4	0.3	0.1	-0.1	0.0	0.1	-0.1	-0.5	-0.6
0.3	-0.6	0.4	-0.2	-0.6	0.1	0.4	-0.1	-0.2	0.1	0.0	-0.3	-0.1
0.4	-0.5	0.3	-0.2	-0.2	0.0	-0.2	0.0	0.1	0.1	0.0	-0.2	0.1
0.5	0.0	0.1	-0.8	-0.1	0.0	0.0	0.0	0.0	0.2	-0.3	-0.1	0.3
0.6	0.2	0.2	-0.8	-0.4	-0.1	-0.1	-0.2	0.0	0.2	-0.1	-0.1	0.2
0.7	0.1	0.3	-0.8	-0.2	0.0	-0.3	-0.2	0.0	0.3	-0.3	-0.2	0.2
0.8	0.2	0.0	-0.8	-0.1	-0.2	-0.3	-0.1	0.1	0.0	-0.3	-0.1	0.3
0.9	-0.1	-0.6	-0.1	-0.1	0.0	0.0	0.3	0.0	0.1	0.0	-0.1	0.1
Long Term												
Full Simulation Period[b]	-0.2	0.3	-0.4	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	0.0
Water Year Types[c]												
Wet (32%)	-0.1	-0.1	-0.4	-0.1	-0.2	-0.1	0.2	0.0	0.0	0.0	-0.1	0.6
Above Normal (16%)	0.0	-0.4	-0.6	-0.7	0.0	-0.1	0.0	0.1	0.3	-0.2	-0.1	-0.2
Below Normal (13%)	0.1	-0.7	-1.5	-0.6	-0.5	0.1	-0.6	0.1	0.1	0.0	-0.2	-0.5
Dry (24%)	-0.4	0.0	-0.3	0.0	-0.1	0.0	-0.1	-0.1	0.2	-0.2	-0.2	-0.2
Critical (15%)	-0.8	3.3	0.3	0.3	0.6	0.0	0.0	-0.2	-0.4	-0.5	-0.8	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-3. Trinity River below Lewiston Dam, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	54	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	50	46	49	51	51	51
70%	50	50	48	47	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	48	48	50	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	56	50	51	49	49	51	52	50	56	55	56	54

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	0.2	-0.2	0.0	-0.1	0.0	-0.1	0.0	0.1	0.0	0.0	-0.3
0.2	-0.2	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.1
0.4	0.1	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.1	0.1	-0.1
0.5	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	-0.2
0.7	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
0.8	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0
Above Normal (16%)	0.4	0.1	-0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	-0.1	0.0	-0.5	0.1	0.0	0.0	0.0	-0.2
Dry (24%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Critical (15%)	0.3	0.3	-0.1	0.1	0.0	0.0	-0.1	0.0	0.2	0.4	-0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-4. Trinity River below Lewiston Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	54	52	50	50	53	53	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	50	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	51	46	49	51	51	51
70%	50	50	48	46	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	52	47	50	51	52	53
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	55	50	51	49	49	51	52	50	55	55	56	55

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.3	0.4	0.1	-0.1	0.2	0.0	0.1	0.2	0.1	0.3	0.3	0.2
0.2	0.3	0.1	0.2	0.3	0.0	-0.4	0.1	0.0	-0.1	0.2	0.5	0.4
0.3	0.7	-0.2	0.4	0.6	-0.1	-0.2	0.1	0.0	-0.2	0.2	0.3	0.0
0.4	0.4	0.0	0.6	0.2	0.1	-0.3	0.0	-0.1	0.0	0.0	0.2	0.0
0.5	-0.1	0.1	0.9	0.2	0.0	-0.1	0.1	0.0	-0.1	0.2	0.0	-0.2
0.6	-0.5	-0.2	0.6	0.8	0.1	0.1	0.0	0.1	-0.1	0.2	0.1	-0.3
0.7	-0.2	-0.1	0.5	0.5	0.0	0.4	0.0	0.0	-0.1	0.2	0.2	-0.3
0.8	-0.3	0.0	0.6	0.1	0.2	0.4	0.0	-0.1	0.0	0.1	0.1	-0.3
0.9	0.0	0.6	0.1	0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	0.1	-0.1	0.4	0.3	0.1	-0.1	0.0	0.0	0.0	0.1	0.2	-0.1
Water Year Types[c]												
Wet (32%)	0.1	0.1	0.4	0.2	0.2	0.1	-0.1	0.0	0.0	0.1	0.1	-0.6
Above Normal (16%)	0.2	0.7	0.6	0.9	-0.1	0.0	-0.1	-0.1	-0.1	0.2	0.3	0.3
Below Normal (13%)	-0.3	0.8	1.5	0.5	0.4	-0.1	0.5	-0.1	-0.1	0.3	0.2	0.4
Dry (24%)	0.4	0.0	0.1	0.1	0.1	-0.3	0.1	0.0	-0.1	0.1	0.1	0.2
Critical (15%)	0.2	-2.4	-0.2	0.0	-0.3	-0.1	0.0	0.2	0.4	0.2	0.7	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-5. Trinity River below Lewiston Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	54	52	50	50	52	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	50	46	49	51	51	51
70%	50	50	47	46	46	48	50	45	49	50	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	49	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	46	49	50	45	48	50	50	50
Below Normal (13%)	51	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	49	48	49	51	52	48	52	52	52	53
Critical (15%)	55	53	51	49	50	52	52	50	55	54	55	54

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	0.2	0.1	-0.1	0.0	-0.3	0.0	0.1	0.0	0.1	-0.1	-0.1
0.2	-0.1	0.0	0.0	-0.1	0.3	-0.3	0.0	0.0	0.1	0.1	0.0	-0.2
0.3	0.1	0.2	0.2	0.0	0.0	0.2	0.0	-0.2	-0.2	0.2	0.0	0.0
0.4	0.0	0.3	0.4	0.0	0.1	-0.5	0.0	0.0	0.1	0.0	0.0	0.1
0.5	0.0	0.2	0.1	0.1	0.0	-0.1	0.0	0.0	0.1	-0.1	-0.1	0.0
0.6	-0.2	0.0	-0.2	0.4	0.0	-0.1	-0.2	0.1	0.1	0.1	0.0	-0.1
0.7	-0.1	0.2	-0.3	0.3	-0.1	0.1	-0.2	0.1	0.2	-0.1	0.0	-0.1
0.8	-0.1	0.0	-0.2	0.0	0.0	0.1	-0.1	0.0	0.0	-0.1	0.0	0.0
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Long Term												
Full Simulation Period[b]	-0.1	0.2	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1
Water Year Types[c]												
Wet (32%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.2	0.3	0.1	0.2	-0.1	-0.2	-0.1	0.0	0.2	-0.1	0.1	0.0
Below Normal (13%)	-0.2	0.1	0.0	-0.2	0.0	0.0	-0.2	0.0	0.0	0.3	0.0	-0.1
Dry (24%)	-0.1	0.0	-0.1	0.1	0.0	-0.3	0.0	-0.1	0.1	0.0	0.0	0.0
Critical (15%)	-0.6	0.8	0.1	0.3	0.3	-0.1	0.0	0.0	-0.1	-0.4	-0.1	-0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-6. Trinity River below Lewiston Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	55	53	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	49	52	52	50	52	53	53	53
30%	54	52	50	48	49	51	52	48	52	52	52	53
40%	53	51	49	48	48	50	52	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	51	51	52
60%	51	50	48	47	47	49	51	46	49	51	51	51
70%	51	50	47	46	46	48	50	45	49	51	51	50
80%	50	49	46	45	45	47	49	45	47	50	50	50
90%	49	48	46	44	44	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	47	48	50	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	45	46	46	48	49	46	48	51	51	51
Above Normal (16%)	53	51	48	46	47	49	50	45	48	50	50	50
Below Normal (13%)	52	50	48	48	47	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	52	53
Critical (15%)	55	52	51	49	50	52	52	50	55	55	55	55

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	54	52	50	50	53	52	51	55	54	55	55
20%	55	53	51	49	50	52	52	50	52	53	53	54
30%	54	52	50	49	49	51	52	48	52	52	52	53
40%	53	51	50	48	48	50	51	47	51	52	52	52
50%	52	51	49	48	47	50	51	46	50	52	51	51
60%	51	50	49	48	47	49	50	46	49	51	51	51
70%	50	50	48	47	46	49	50	45	48	51	51	50
80%	50	49	47	45	46	48	49	45	47	50	50	49
90%	49	49	46	44	45	46	48	45	46	50	50	49
Long Term												
Full Simulation Period[b]	52	51	49	48	48	50	51	47	50	52	52	52
Water Year Types[c]												
Wet (32%)	49	48	46	46	46	48	49	46	48	51	51	50
Above Normal (16%)	53	51	49	47	46	49	50	45	48	51	50	50
Below Normal (13%)	51	51	50	48	48	50	51	47	50	51	52	52
Dry (24%)	52	51	50	48	49	51	52	48	52	52	53	53
Critical (15%)	56	50	51	49	49	51	52	50	56	55	56	54

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.3	0.6	0.0	-0.1	0.2	0.0	0.0	0.2	0.2	0.3	0.3	-0.1
0.2	0.2	0.1	0.2	0.2	0.1	-0.3	0.0	0.0	-0.1	0.1	0.5	0.3
0.3	0.6	-0.2	0.3	0.6	-0.1	-0.2	0.0	0.0	-0.2	0.2	0.3	0.2
0.4	0.5	0.0	0.7	0.2	0.1	-0.4	-0.1	-0.1	0.0	0.1	0.3	-0.1
0.5	0.0	0.0	0.9	0.2	0.0	-0.1	0.0	0.0	-0.2	0.2	0.1	-0.2
0.6	-0.5	-0.2	0.6	0.9	0.1	0.0	-0.3	0.1	-0.2	0.2	0.1	-0.5
0.7	-0.2	0.0	0.5	0.5	0.0	0.4	0.0	0.0	-0.1	0.2	0.2	-0.3
0.8	-0.3	0.0	0.6	0.1	0.1	0.4	0.2	-0.1	0.0	0.1	0.1	-0.3
0.9	0.1	0.6	0.3	0.1	0.1	0.0	-0.2	0.0	-0.1	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	0.2	-0.1	0.4	0.3	0.1	-0.1	0.0	0.0	0.0	0.2	0.2	-0.2
Water Year Types[c]												
Wet (32%)	0.0	0.1	0.4	0.2	0.2	0.1	-0.1	0.0	0.0	0.0	0.1	-0.7
Above Normal (16%)	0.6	0.8	0.5	1.0	-0.1	-0.1	-0.1	-0.1	0.0	0.2	0.3	0.2
Below Normal (13%)	-0.3	0.8	1.5	0.5	0.3	-0.1	0.0	0.0	-0.1	0.3	0.2	0.2
Dry (24%)	0.3	0.0	0.2	0.2	0.1	-0.3	0.1	0.0	-0.2	0.2	0.1	0.2
Critical (15%)	0.5	-2.2	-0.3	0.0	-0.3	-0.1	-0.1	0.2	0.5	0.5	0.6	-0.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

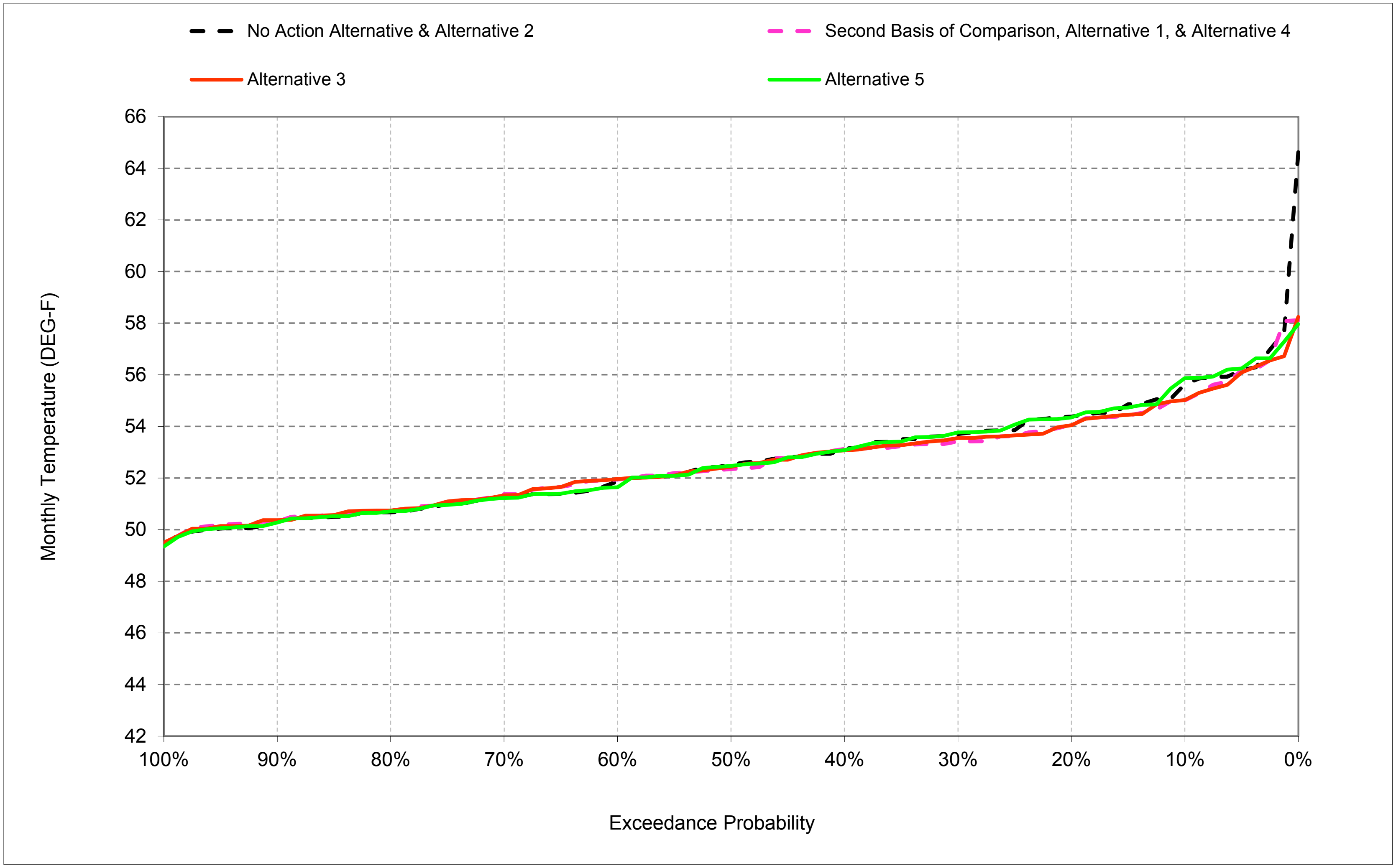
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

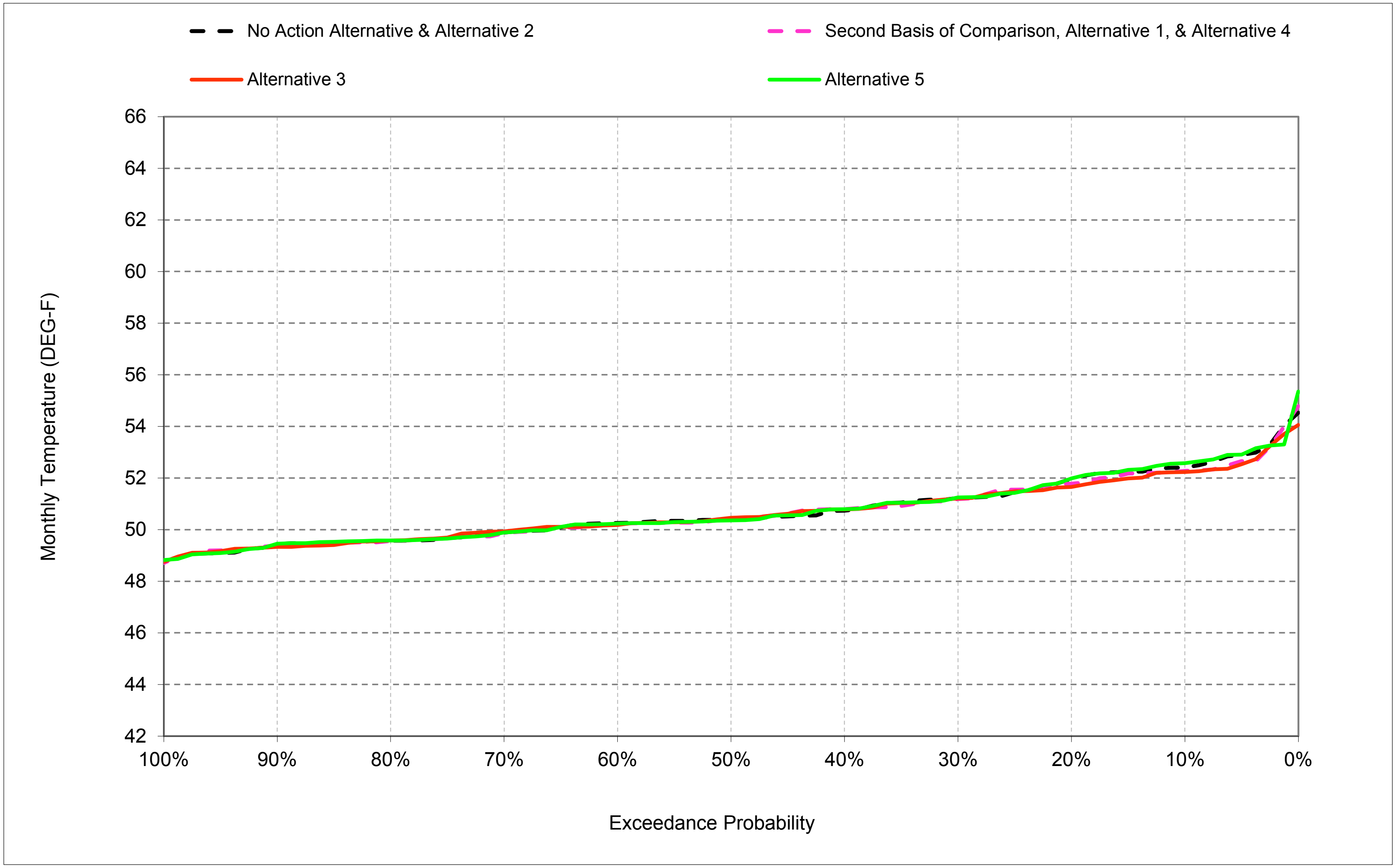
B.2. Clear Creek below Whiskeytown Temperature

Figure B-2-1. Clear Creek below Whiskeytown, October



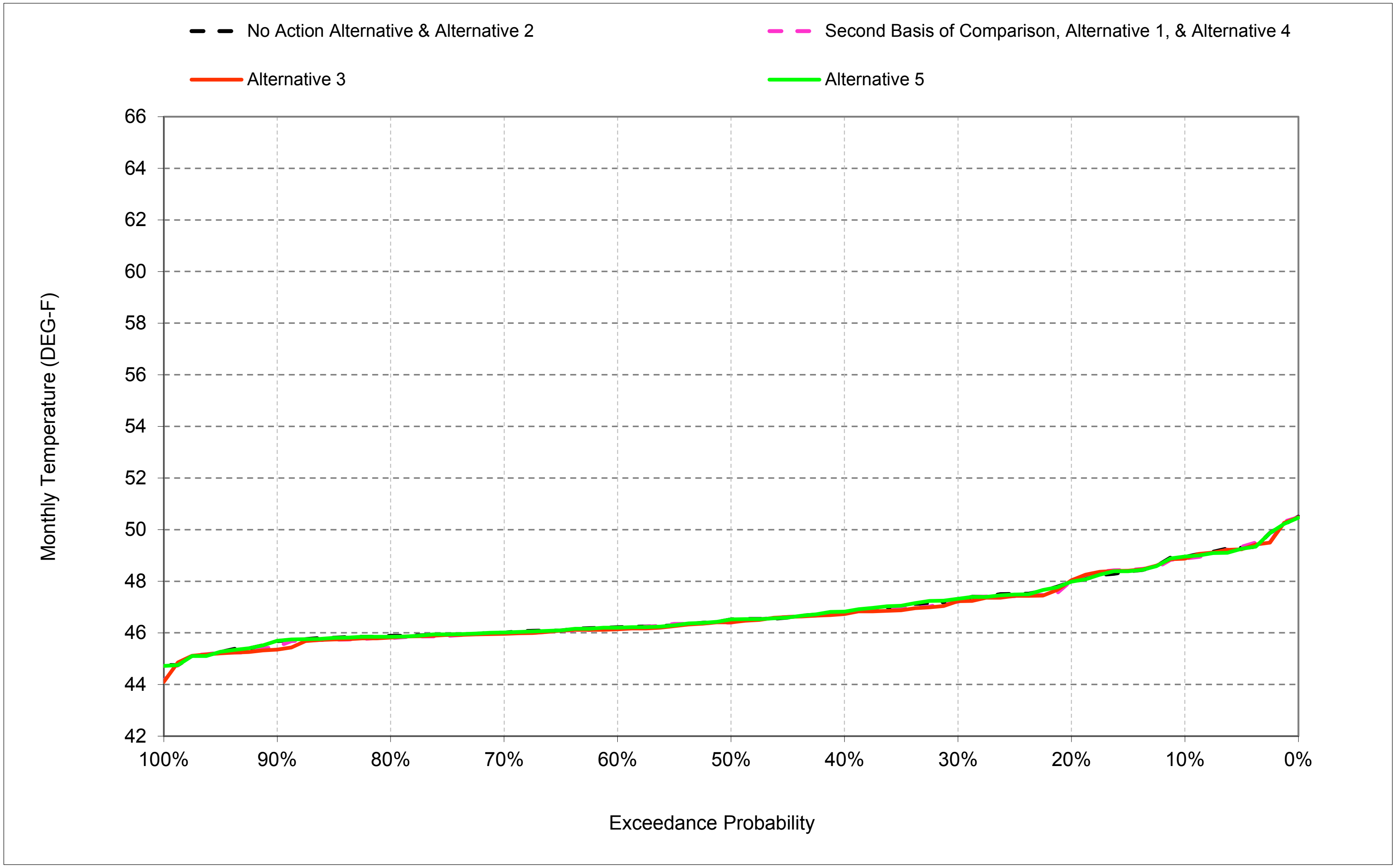
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-2. Clear Creek below Whiskeytown, November



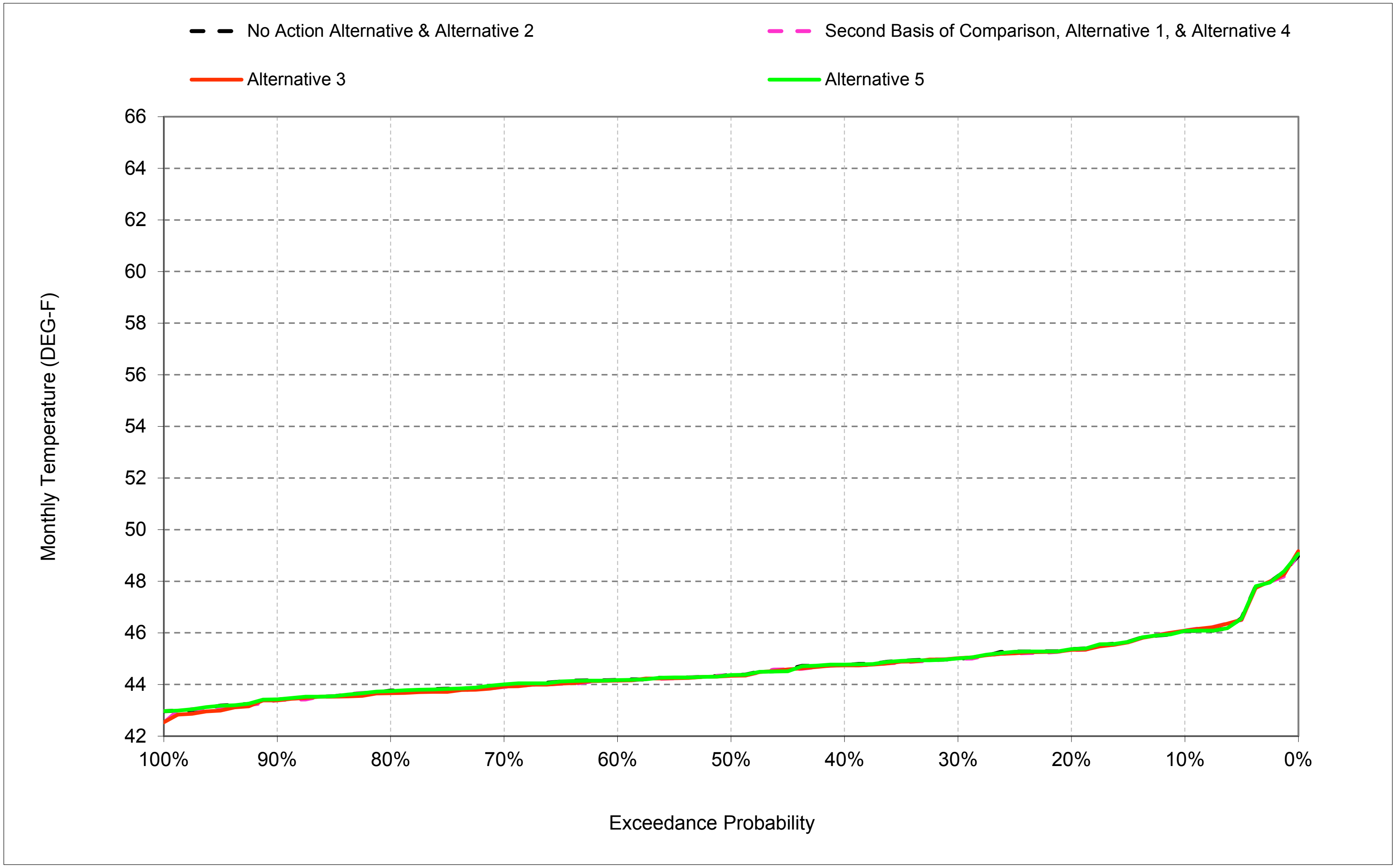
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-3. Clear Creek below Whiskeytown, December



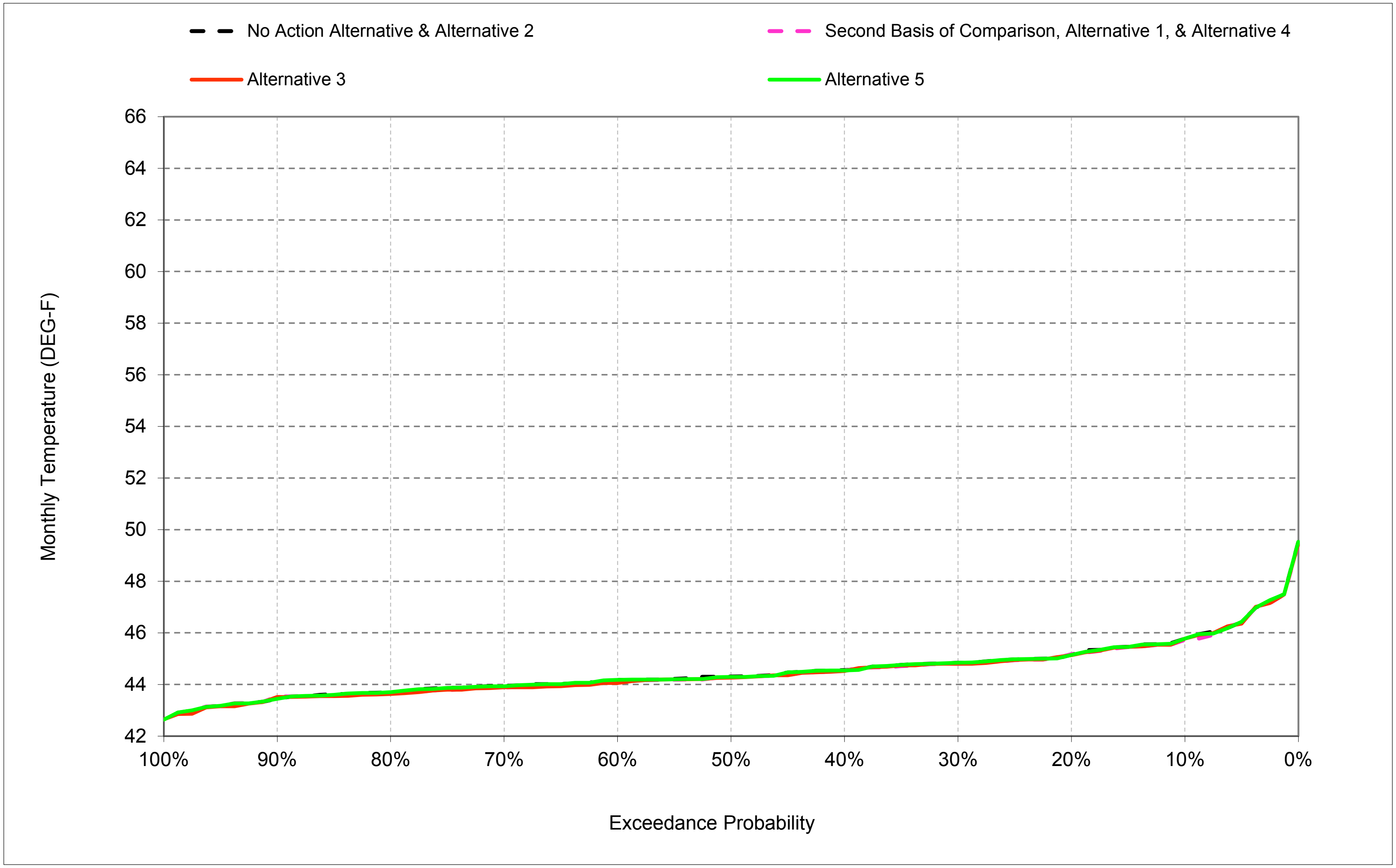
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-4. Clear Creek below Whiskeytown, January



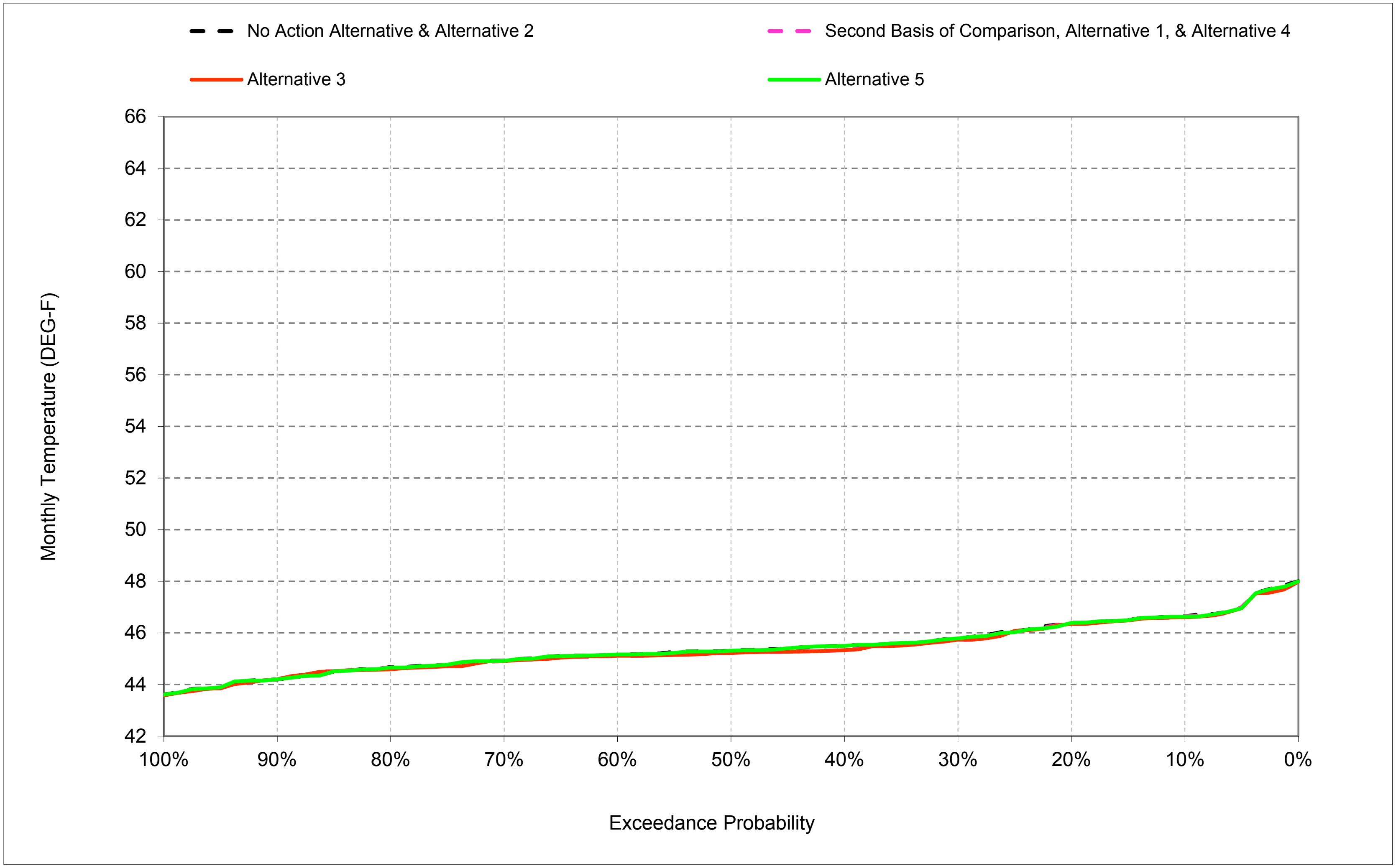
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-5. Clear Creek below Whiskeytown, February



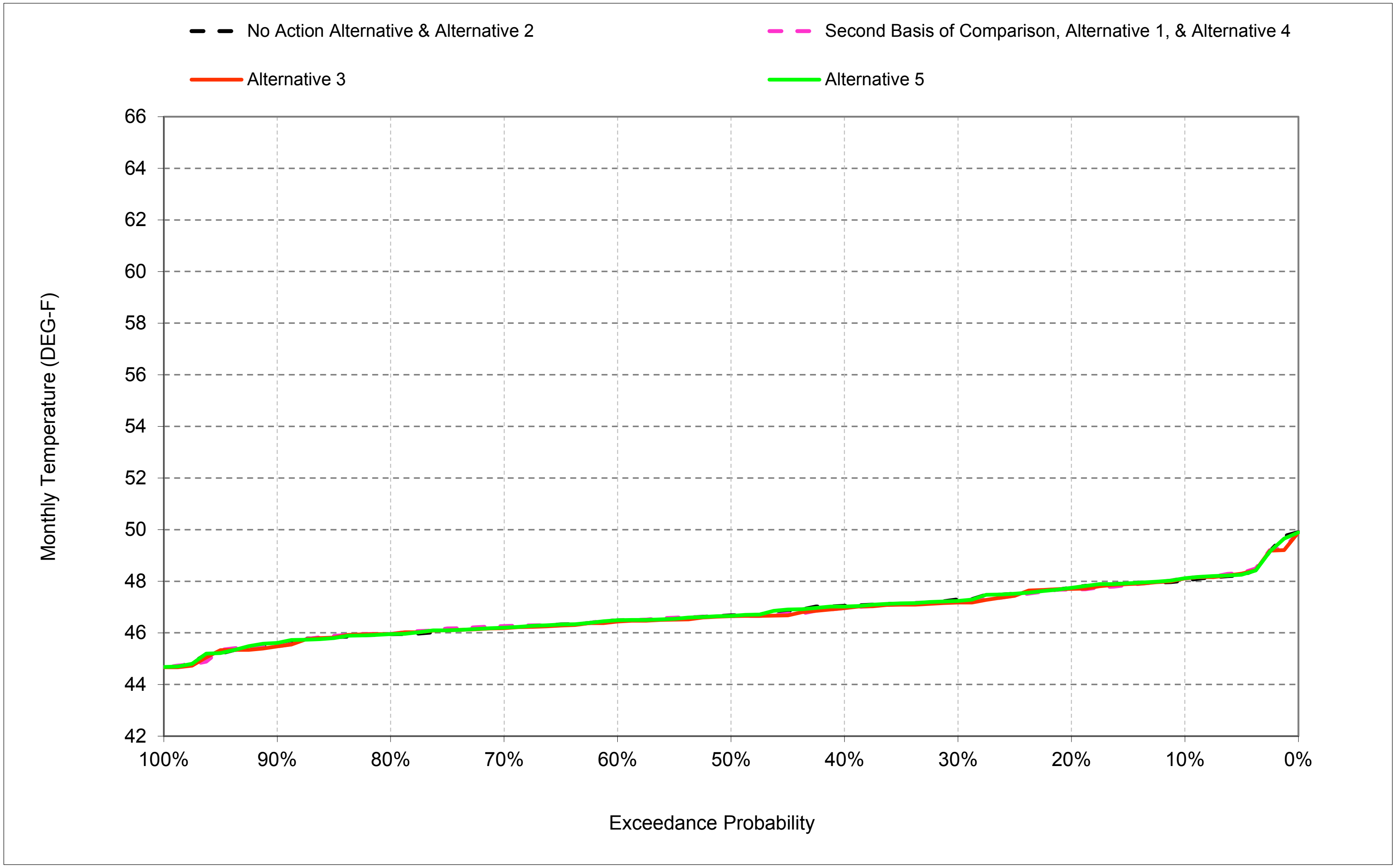
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-6. Clear Creek below Whiskeytown, March



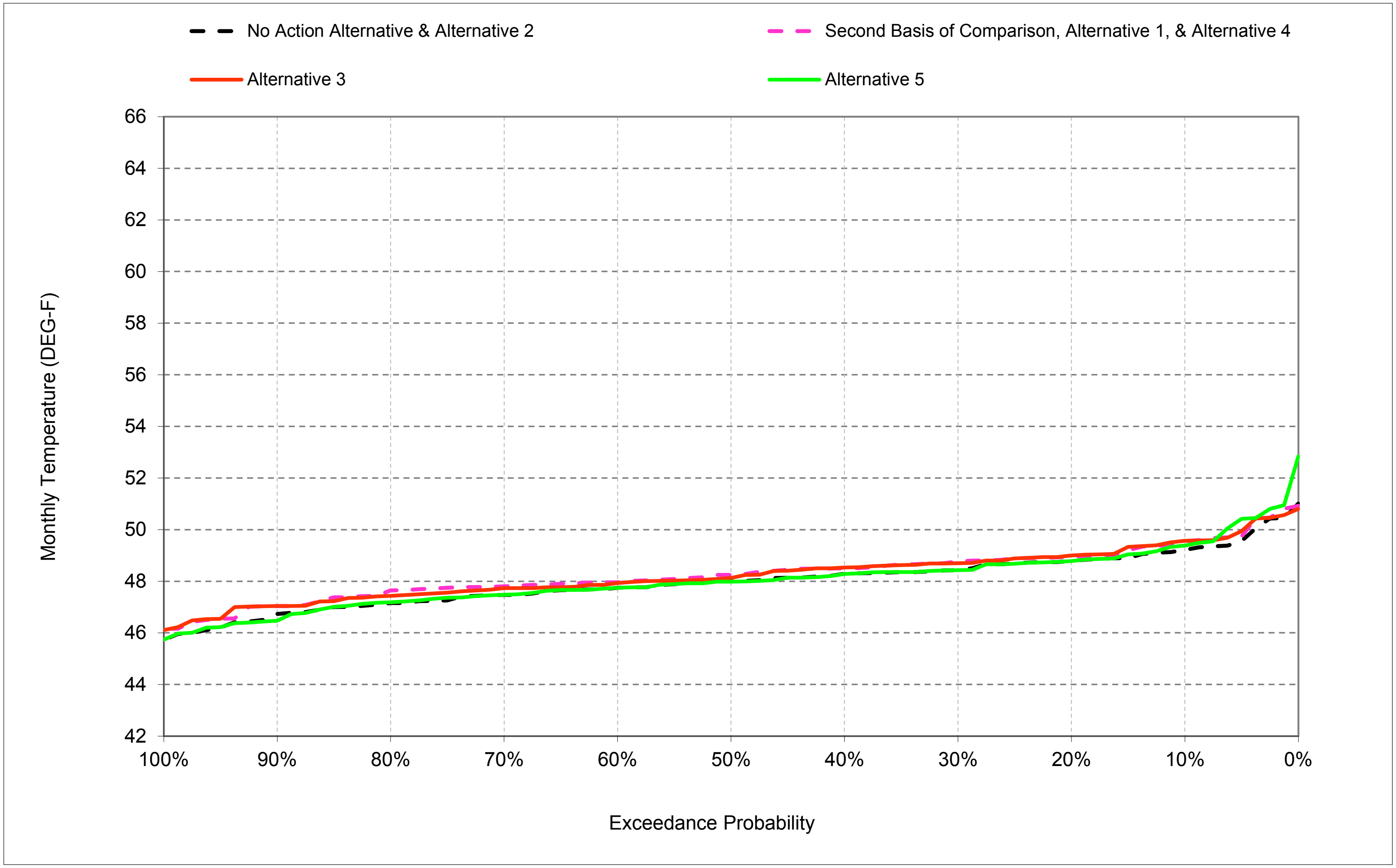
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-7. Clear Creek below Whiskeytown, April



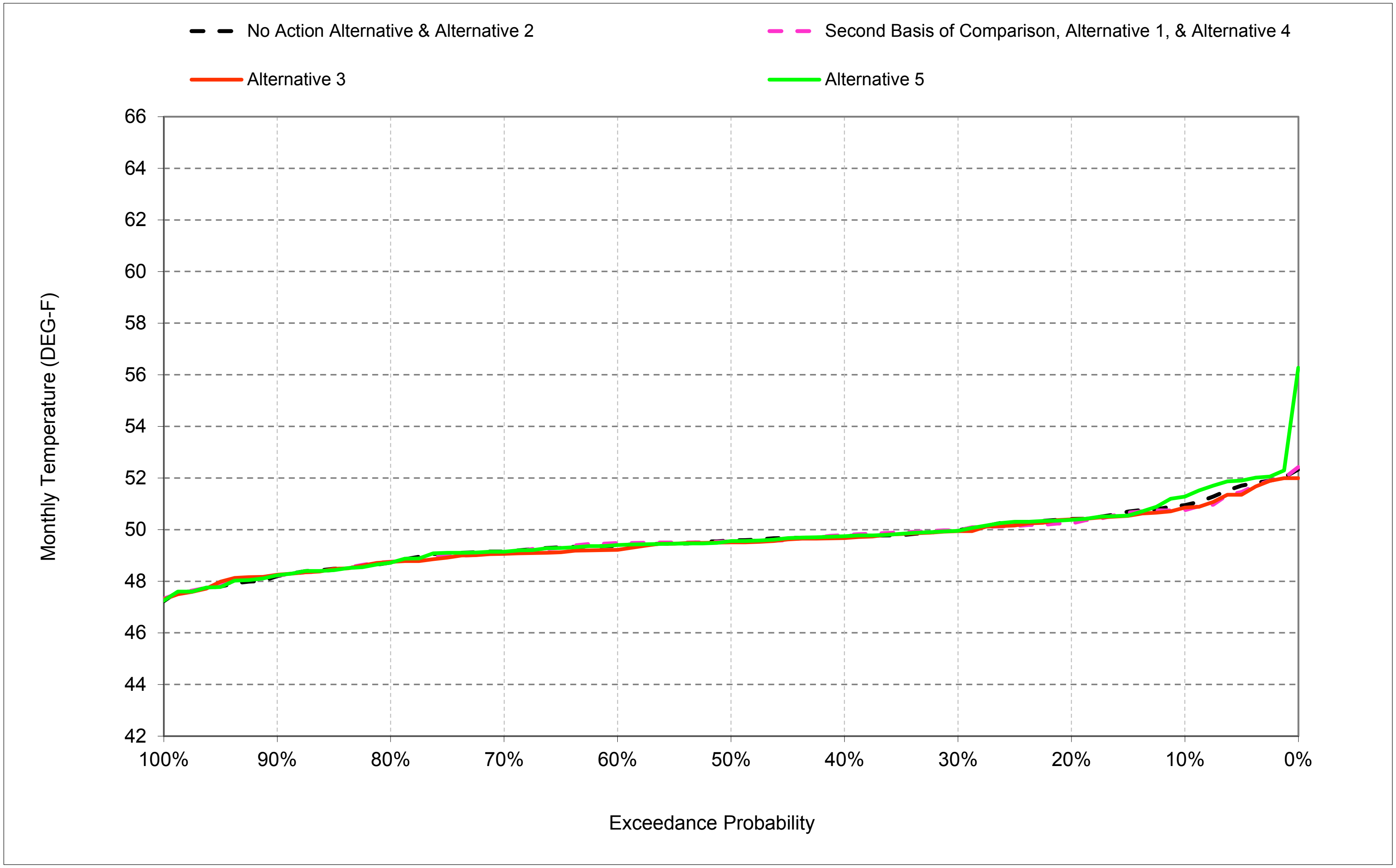
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-8. Clear Creek below Whiskeytown, May



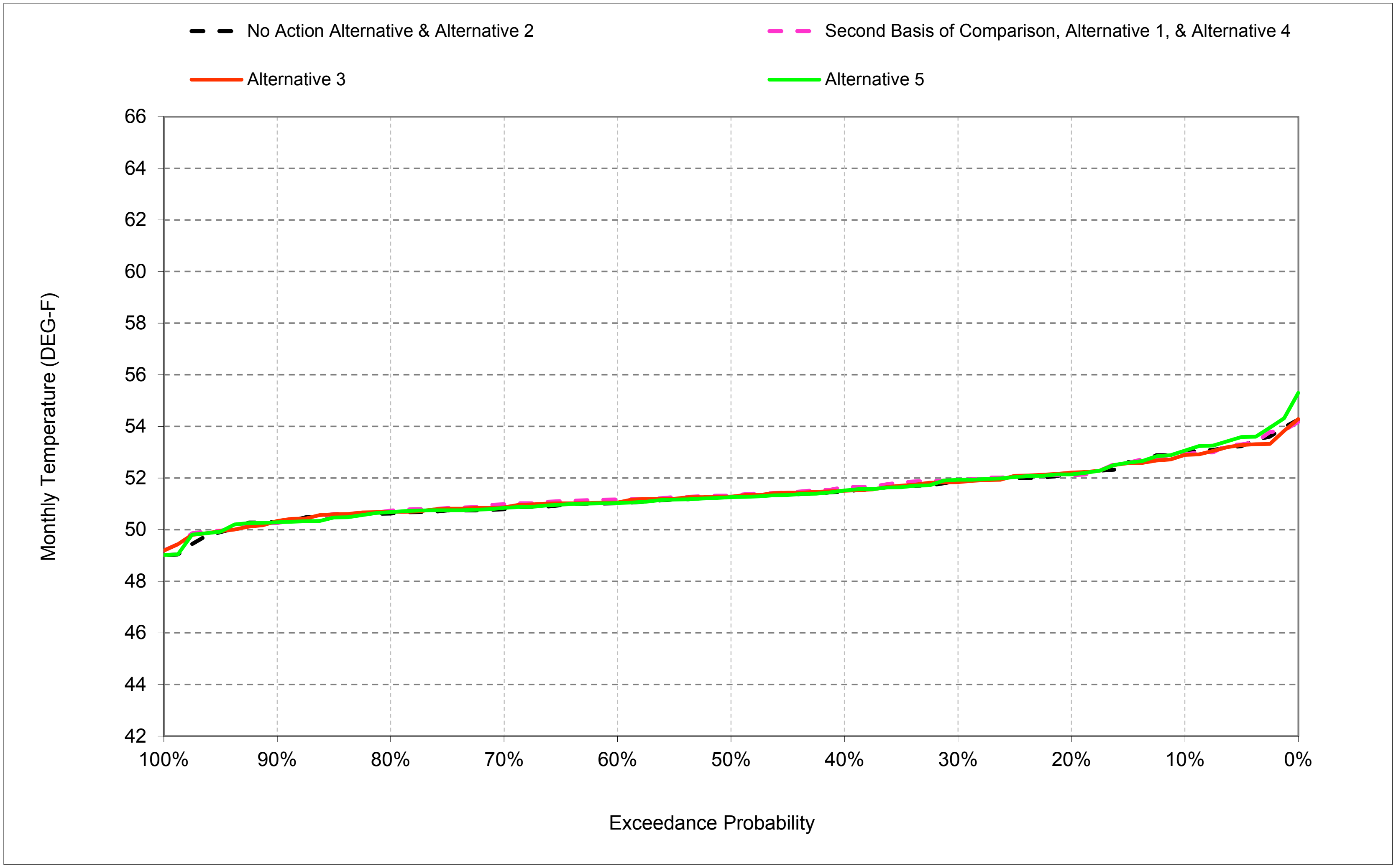
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-9. Clear Creek below Whiskeytown, June



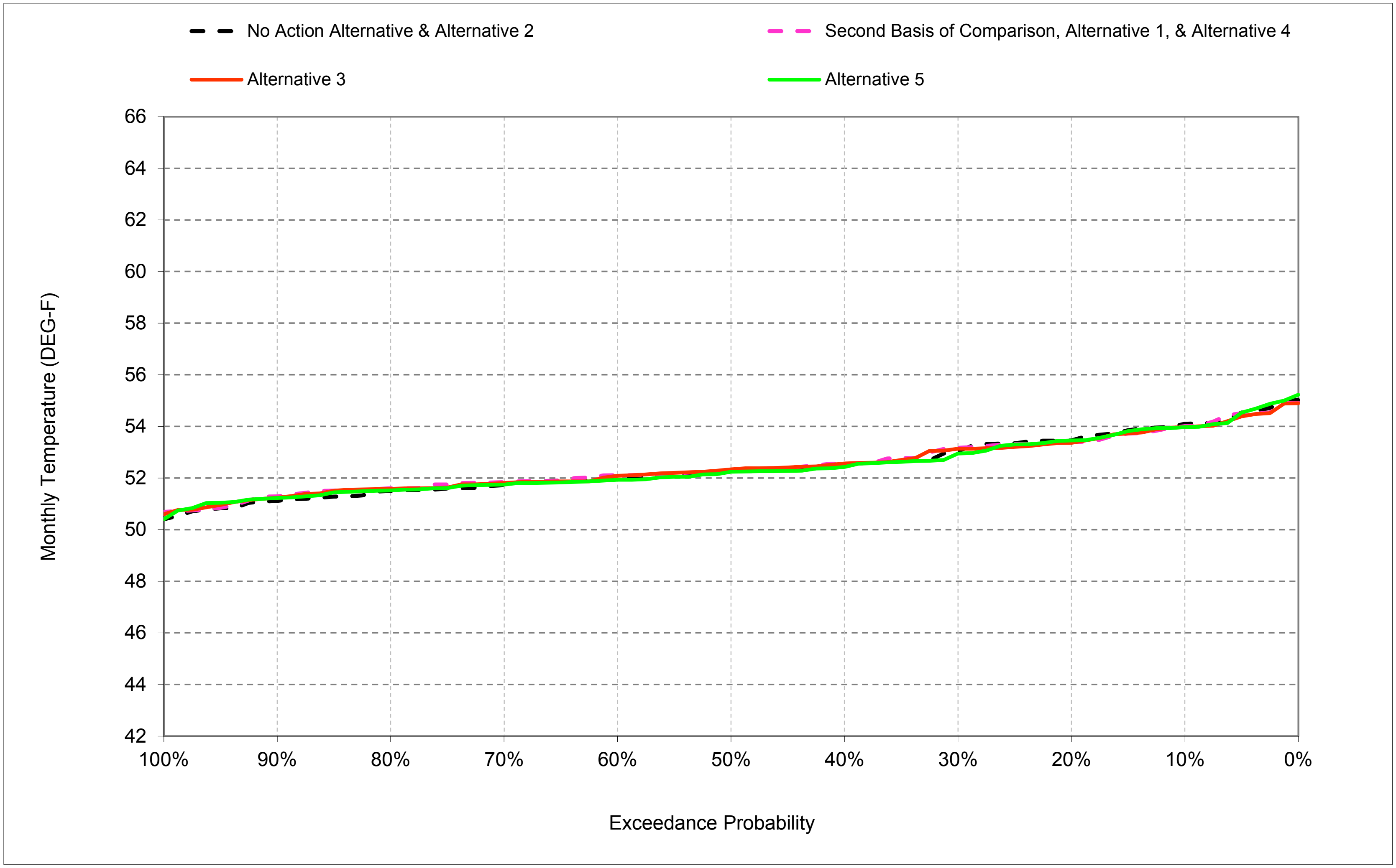
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-10. Clear Creek below Whiskeytown, July



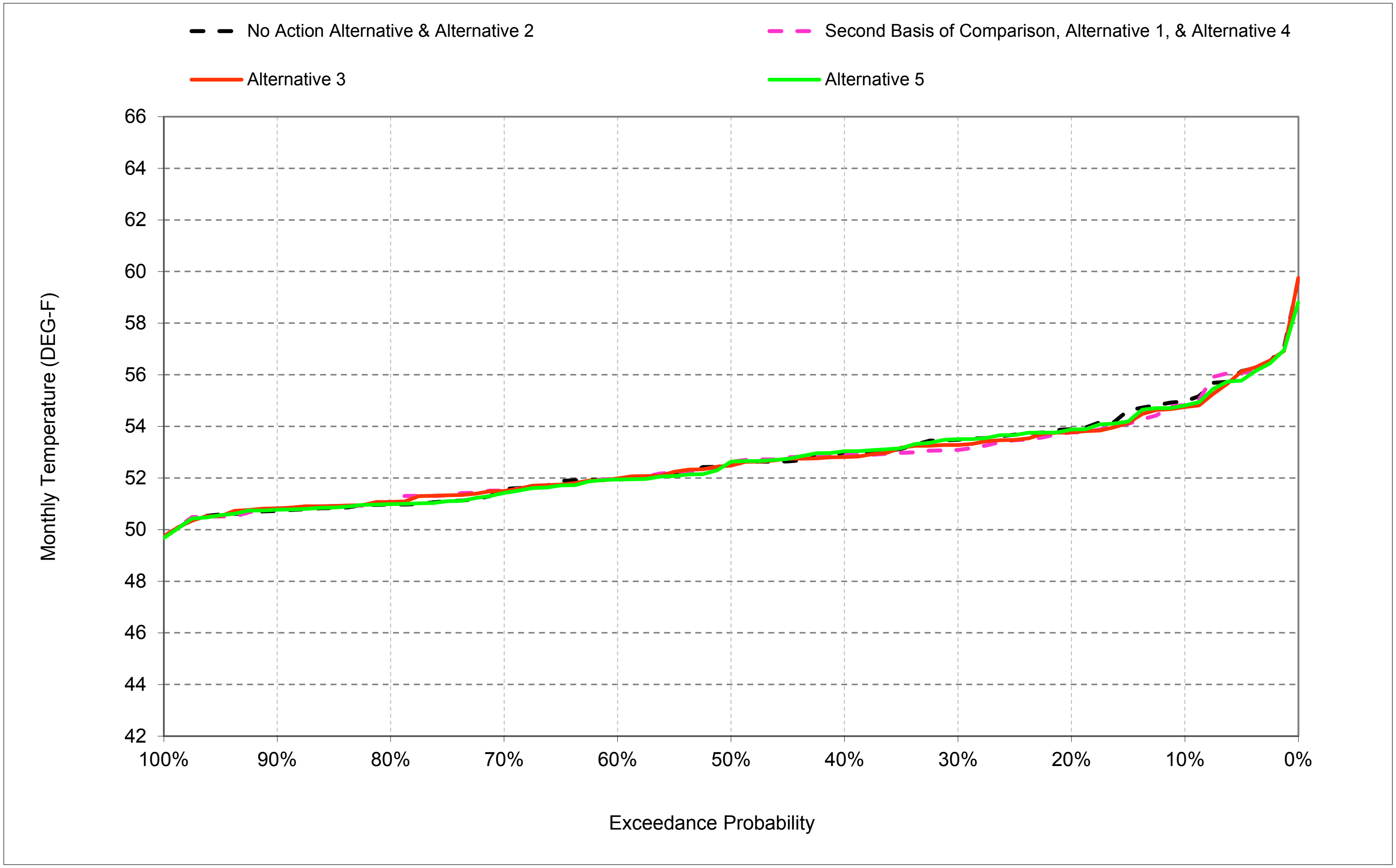
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-11. Clear Creek below Whiskeytown, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-12. Clear Creek below Whiskeytown, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-1. Clear Creek below Whiskeytown, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.6	-0.1	-0.1	0.0	0.0	0.0	0.1	0.3	-0.2	-0.1	-0.1	-0.1
0.2	-0.3	-0.2	0.0	0.0	0.0	0.0	-0.1	0.2	-0.2	0.0	-0.1	-0.1
0.3	-0.3	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	0.0	0.0	0.1	-0.4
0.4	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1	0.2	0.0	0.1	0.0	-0.1
0.5	-0.2	0.1	-0.1	0.0	0.0	-0.1	0.0	0.2	0.0	0.1	0.0	0.0
0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.0
0.7	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.3	-0.1	0.2	0.1	0.1
0.8	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.1	0.2
0.9	0.0	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.5	0.1	-0.1	0.2	0.1
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	0.0
Water Year Types[c]												
Wet (32%)	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.3	0.0	0.1	0.1	0.1
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.1	0.4	0.2	0.2	0.1	0.0
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	0.0	-0.2
Critical (15%)	-0.3	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	0.1	0.0	0.1	0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-2. Clear Creek below Whiskeytown, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	49	50	51	53	53
50%	52	50	46	44	44	45	47	48	49	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	49	52	53	53
Critical (15%)	54	52	48	46	45	46	48	49	50	52	54	56

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.6	-0.2	-0.1	0.0	0.0	0.0	0.1	0.4	-0.1	-0.1	-0.1	-0.2
0.2	-0.3	-0.3	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.1	-0.1	-0.1
0.3	-0.2	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	0.0	0.0	0.1	-0.2
0.4	-0.1	0.1	-0.1	0.0	0.0	-0.2	-0.1	0.3	-0.1	0.0	0.0	-0.1
0.5	-0.1	0.1	-0.1	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	0.1	0.0
0.6	0.1	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.2	-0.2	0.0	0.1	0.0
0.7	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	-0.1	0.1	0.1	0.0
0.8	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.3	0.1	0.1	0.1	0.1
0.9	0.0	-0.1	-0.3	0.0	0.0	0.0	-0.1	0.5	0.2	-0.1	0.1	0.1
Long Term												
Full Simulation Period[b]	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.3	-0.1	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.3	0.0	0.1	0.1	0.2
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.3	-0.1	0.0	0.0	-0.1
Below Normal (13%)	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	0.4	0.1	0.1	0.1	-0.1
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	-0.2	-0.1	-0.1	-0.2
Critical (15%)	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-3. Clear Creek below Whiskeytown, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

Alternative 5

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	52	53
50%	52	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	46	43	43	44	46	46	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	47	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	51	52	53	56

Alternative 5 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	-0.1	-0.2
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0
0.4	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1
0.5	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1
Dry (24%)	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	-0.2	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-4. Clear Creek below Whiskeytown, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	53	53
50%	53	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	51	51
90%	50	49	46	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	52
Below Normal (13%)	52	50	47	44	44	45	47	48	49	51	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	50	52	54	56

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.6	0.1	0.1	0.0	0.0	0.0	-0.1	-0.3	0.2	0.1	0.1	0.1
0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.1	-0.2	0.2	0.0	0.1	0.1
0.3	0.3	0.0	0.0	0.0	0.0	0.1	0.1	-0.3	0.0	0.0	-0.1	0.4
0.4	0.0	-0.1	0.0	0.0	0.0	0.2	0.1	-0.2	0.0	-0.1	0.0	0.1
0.5	0.2	-0.1	0.1	0.0	0.0	0.1	0.0	-0.2	0.0	-0.1	0.0	0.0
0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.1	-0.1	0.0
0.7	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	-0.3	0.1	-0.2	-0.1	-0.1
0.8	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.1	-0.1	-0.2
0.9	0.0	0.1	0.2	0.1	0.0	0.0	0.0	-0.5	-0.1	0.1	-0.2	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.0	-0.1	-0.1	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.3	0.0	-0.1	-0.1	-0.1
Above Normal (16%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.4	0.0	0.0	0.0	0.1
Below Normal (13%)	0.1	0.0	0.2	0.0	0.0	0.1	0.1	-0.4	-0.2	-0.2	-0.1	0.0
Dry (24%)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0	0.2
Critical (15%)	0.3	0.1	0.1	0.0	0.1	0.1	0.1	-0.1	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-5. Clear Creek below Whiskeytown, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	49	50	51	53	53
50%	52	50	46	44	44	45	47	48	49	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	49	52	53	53
Critical (15%)	54	52	48	46	45	46	48	49	50	52	54	56

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0
0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	-0.1	0.2
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1
0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	-0.1	-0.1	0.0
0.7	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.0
0.8	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.1
0.9	0.1	-0.1	-0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-6. Clear Creek below Whiskeytown, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	55	52	49	46	46	47	48	50	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	53	51	47	45	45	46	47	49	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	52	53	53
50%	52	50	46	44	44	45	47	48	50	51	52	53
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	48	49	51	52	52
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	45	43	43	44	45	47	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	44	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	46	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	45	46	48	49	50	52	54	56

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	48	49	51	53	54	55
20%	54	52	48	45	45	46	48	49	50	52	53	54
30%	54	51	47	45	45	46	47	48	50	52	53	53
40%	53	51	47	45	45	45	47	48	50	51	52	53
50%	52	50	47	44	44	45	47	48	50	51	52	52
60%	52	50	46	44	44	45	46	48	49	51	52	52
70%	51	50	46	44	44	45	46	47	49	51	52	51
80%	51	50	46	44	44	45	46	47	49	51	52	51
90%	50	49	46	43	43	44	46	46	48	50	51	51
Long Term												
Full Simulation Period[b]	53	51	47	45	45	45	47	48	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	48	45	44	44	45	46	48	49	51	52	51
Above Normal (16%)	53	51	47	44	44	45	46	48	49	51	52	51
Below Normal (13%)	52	50	47	44	44	45	47	48	49	52	52	53
Dry (24%)	53	51	47	45	45	46	47	48	50	52	53	53
Critical (15%)	55	52	48	46	46	46	48	49	51	52	53	56

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.9	0.3	0.1	0.0	0.1	0.0	0.0	-0.2	0.5	0.1	0.0	0.0
0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.1	-0.2	0.1	0.0	0.1	0.1
0.3	0.4	0.1	0.1	0.0	0.0	0.1	0.0	-0.3	0.0	0.0	-0.3	0.4
0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.1	-0.2	0.0	-0.1	-0.1	0.1
0.5	0.1	-0.1	0.1	0.0	0.0	0.1	0.0	-0.3	0.0	-0.1	-0.1	-0.1
0.6	-0.3	0.0	0.0	0.0	0.1	0.0	0.0	-0.2	-0.1	-0.1	-0.2	0.0
0.7	-0.1	0.0	0.0	0.1	0.1	0.0	-0.1	-0.3	0.1	-0.2	-0.1	-0.1
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	0.0	-0.1	-0.1
0.9	0.0	0.1	0.2	0.1	0.0	0.0	0.1	-0.6	0.0	0.0	-0.1	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	-0.1	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.3	0.1	0.0	-0.1	-0.2
Above Normal (16%)	0.2	0.1	0.0	0.1	0.0	0.0	-0.1	-0.4	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.2	0.0	0.0	0.1	0.1	-0.2	-0.1	-0.1	0.0	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.5	0.1	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

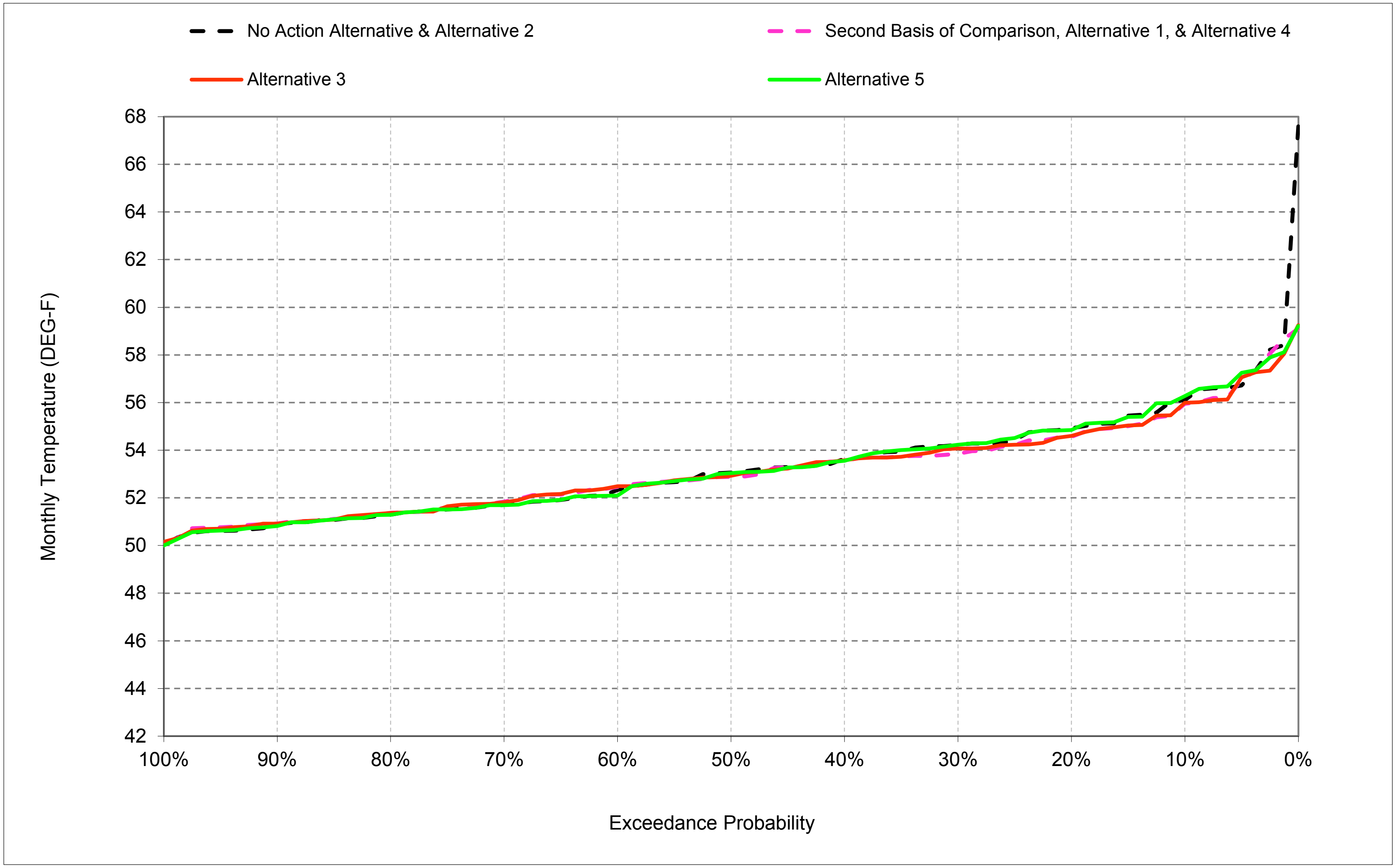
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

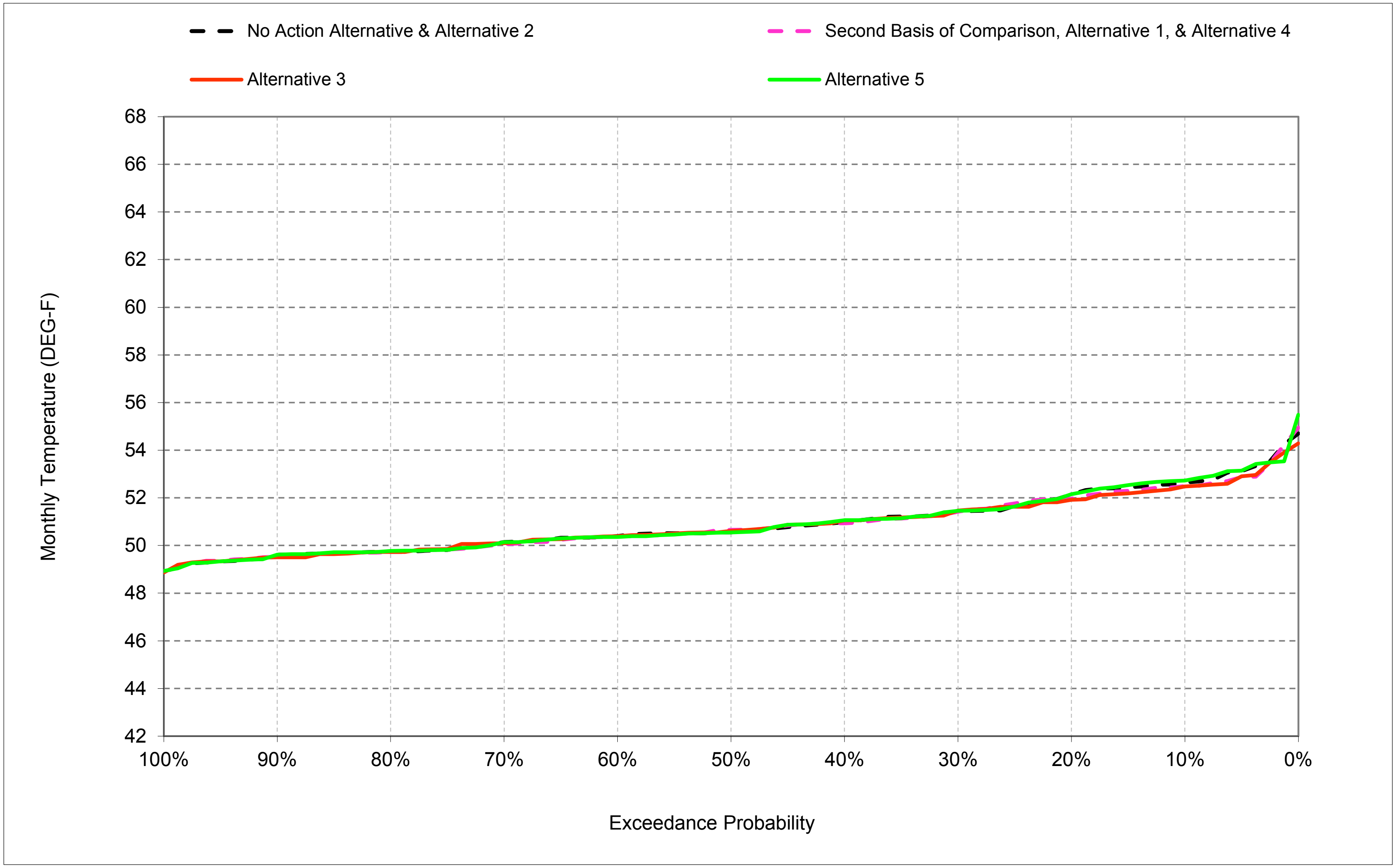
B.3. Clear Creek at Igo Temperature

Figure B-3-1. Clear Creek at Igo, October



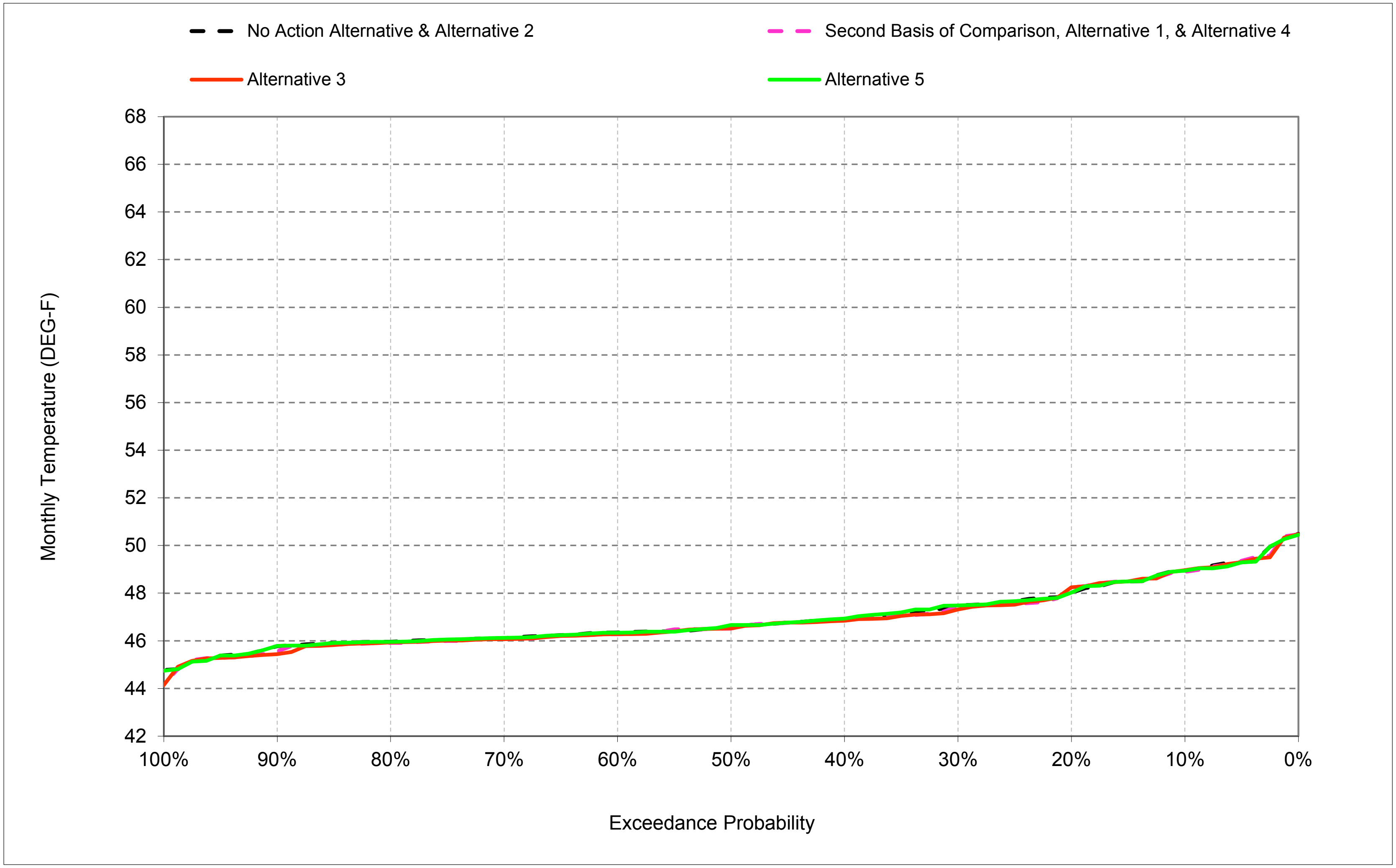
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-2. Clear Creek at Igo, November



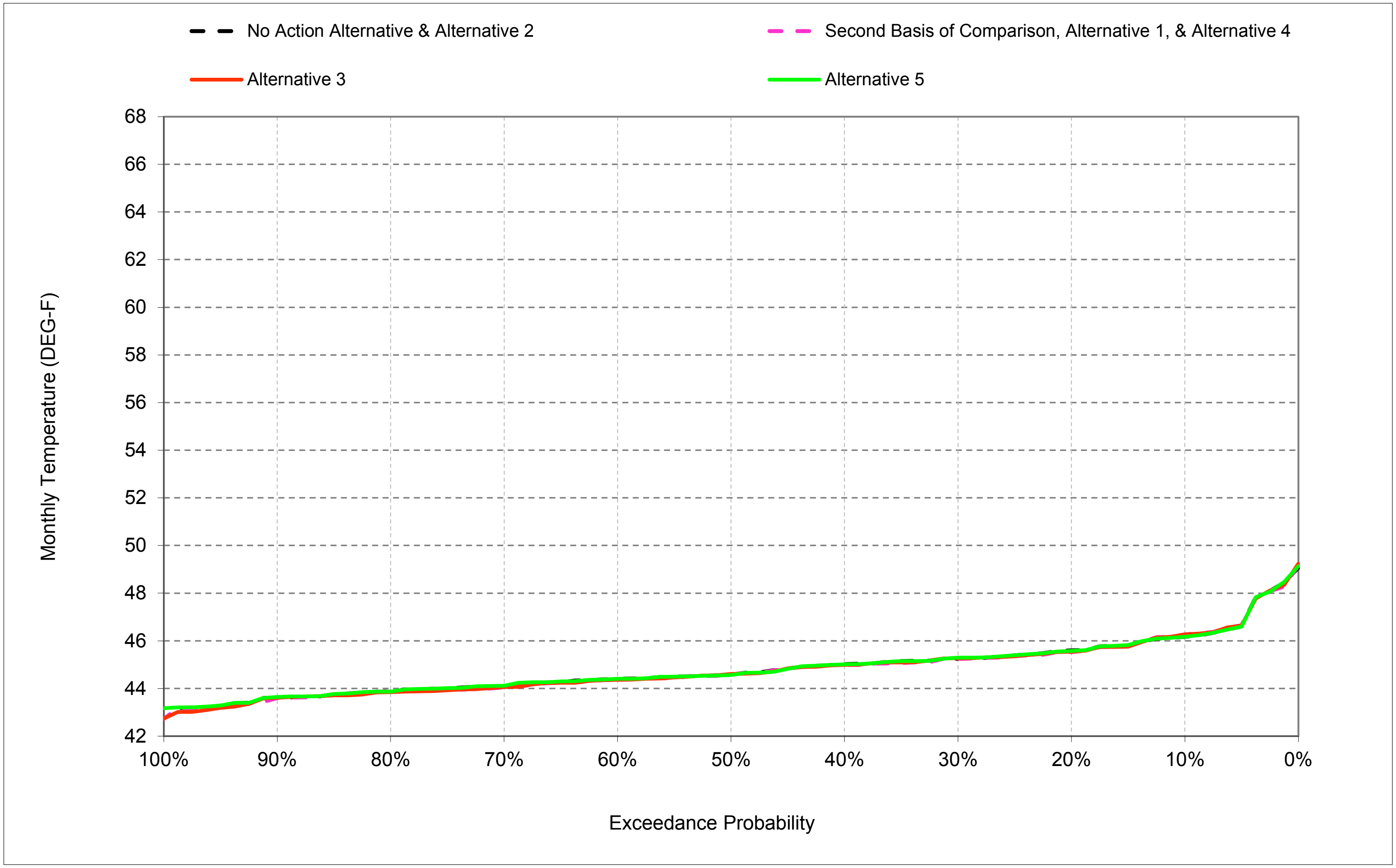
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-3. Clear Creek at Igo, December



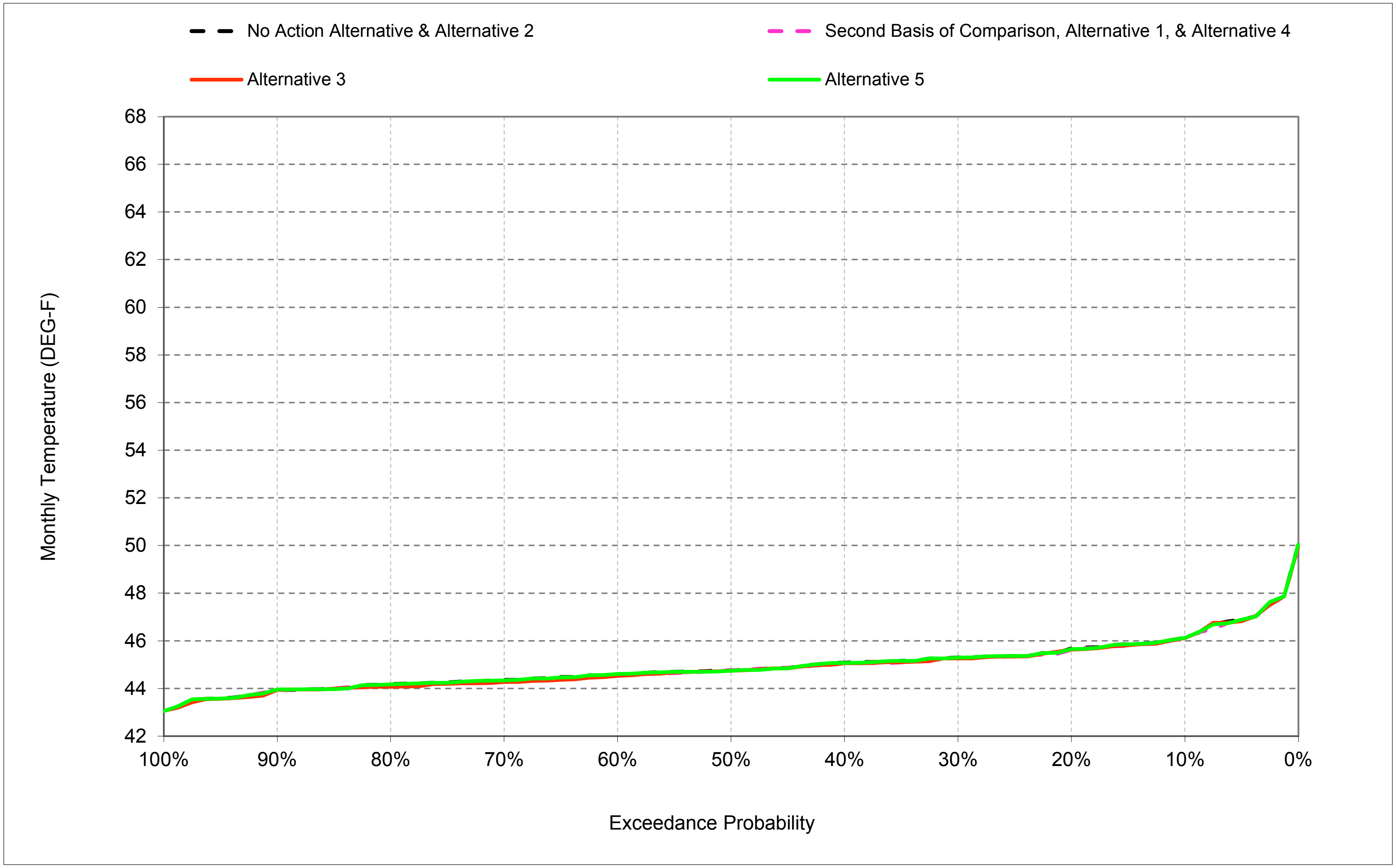
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-4. Clear Creek at Igo, January



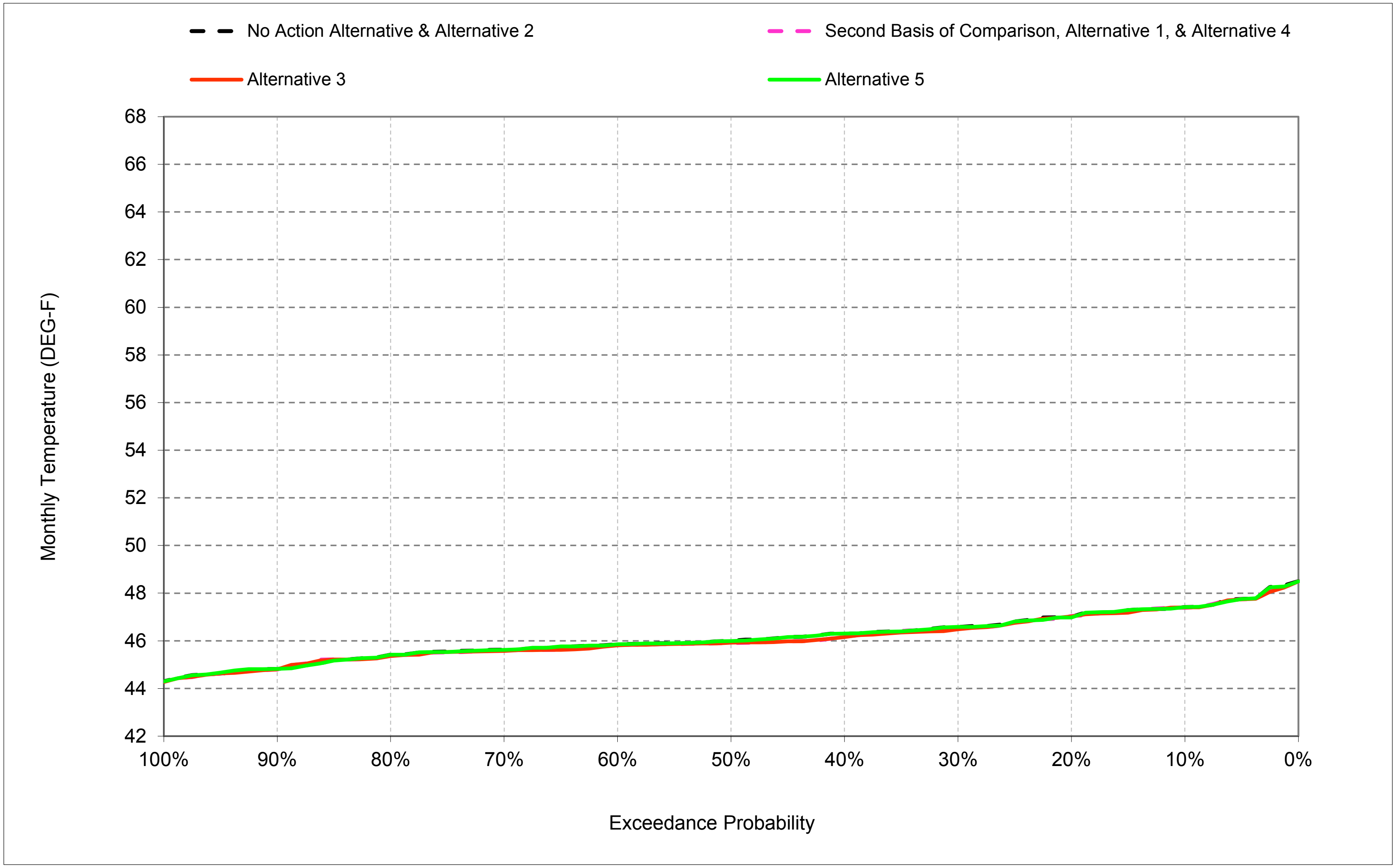
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-5. Clear Creek at Igo, February



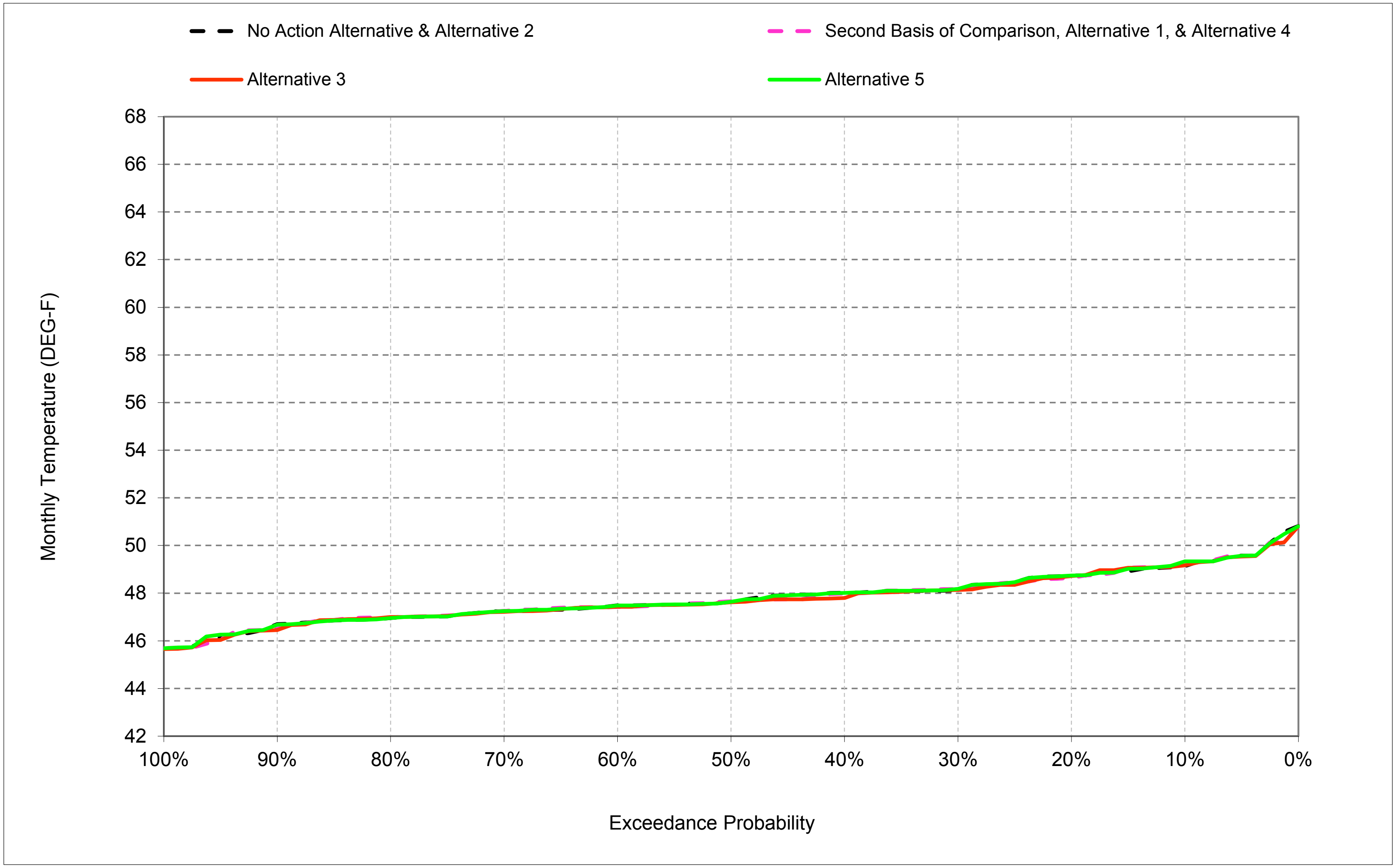
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-6. Clear Creek at Igo, March



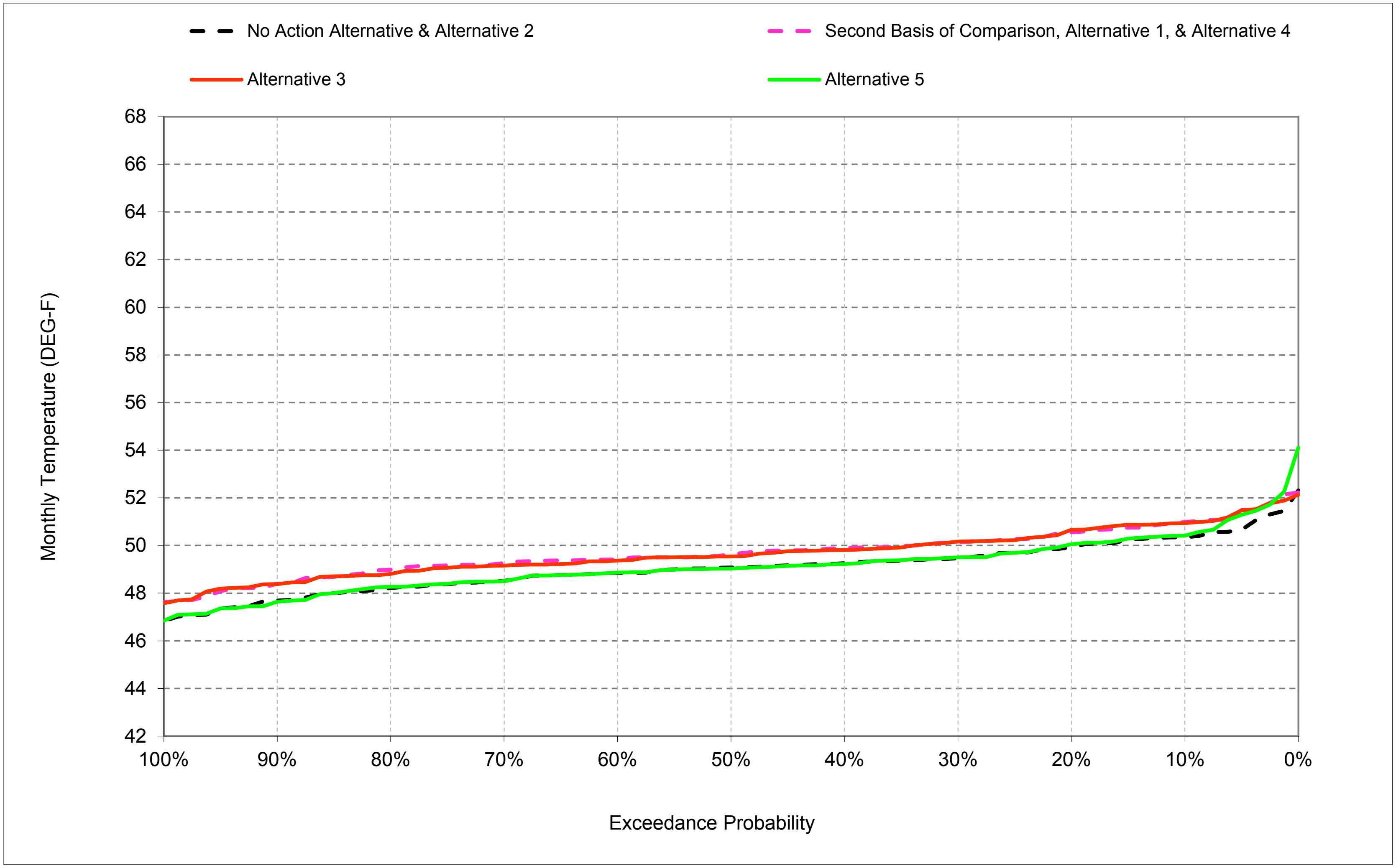
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-7. Clear Creek at Igo, April



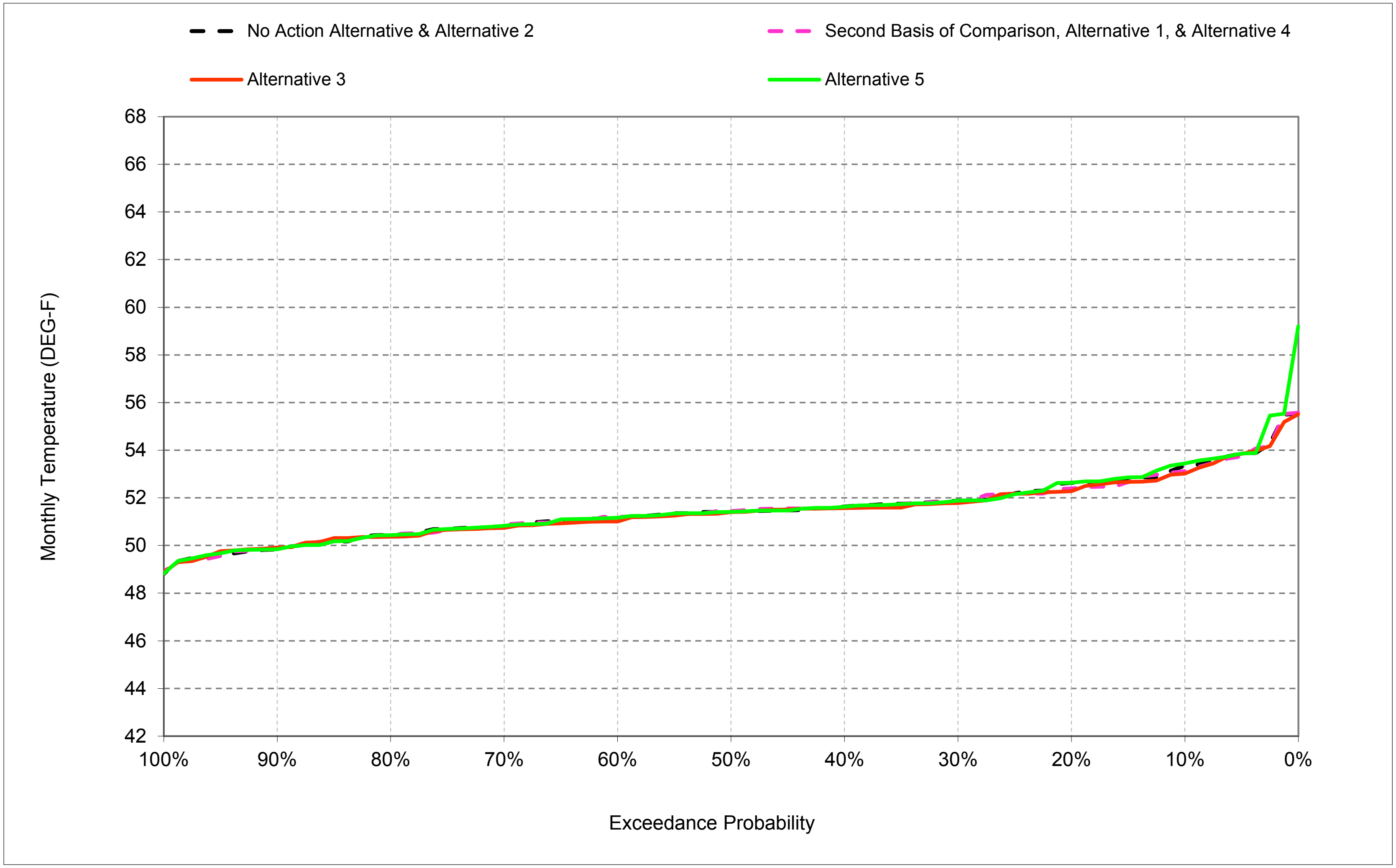
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-8. Clear Creek at Igo, May



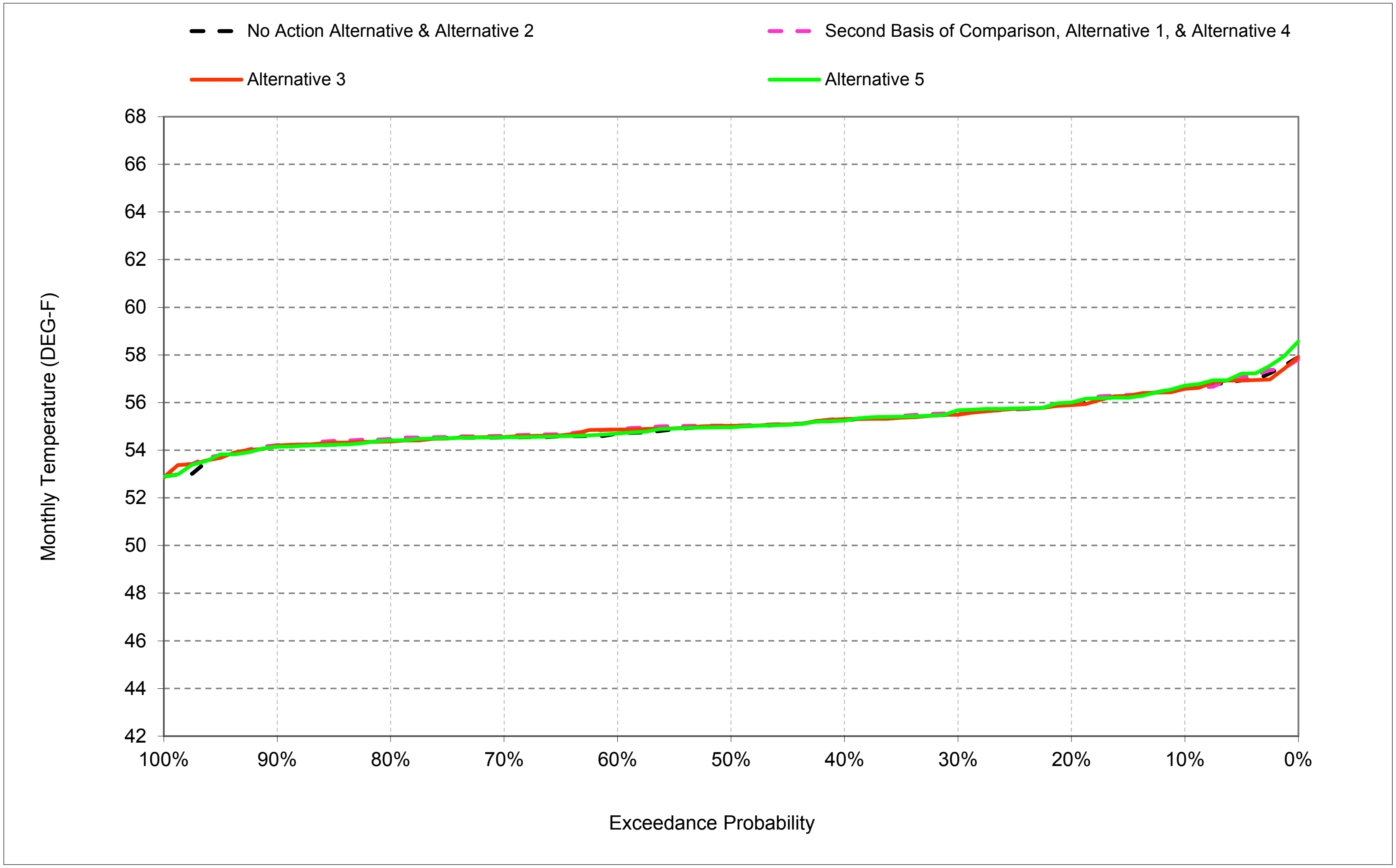
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-9. Clear Creek at Igo, June



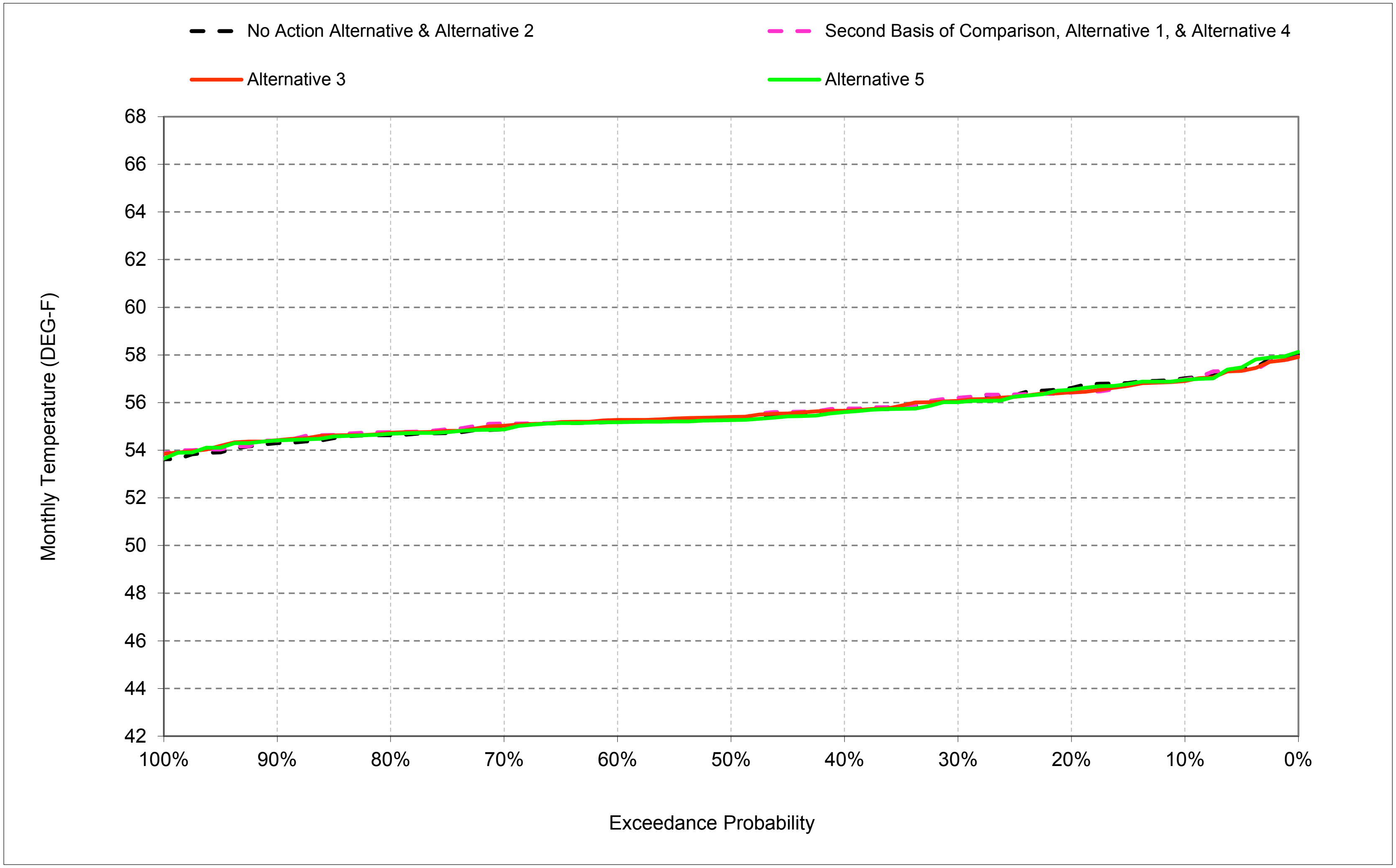
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-10. Clear Creek at Igo, July



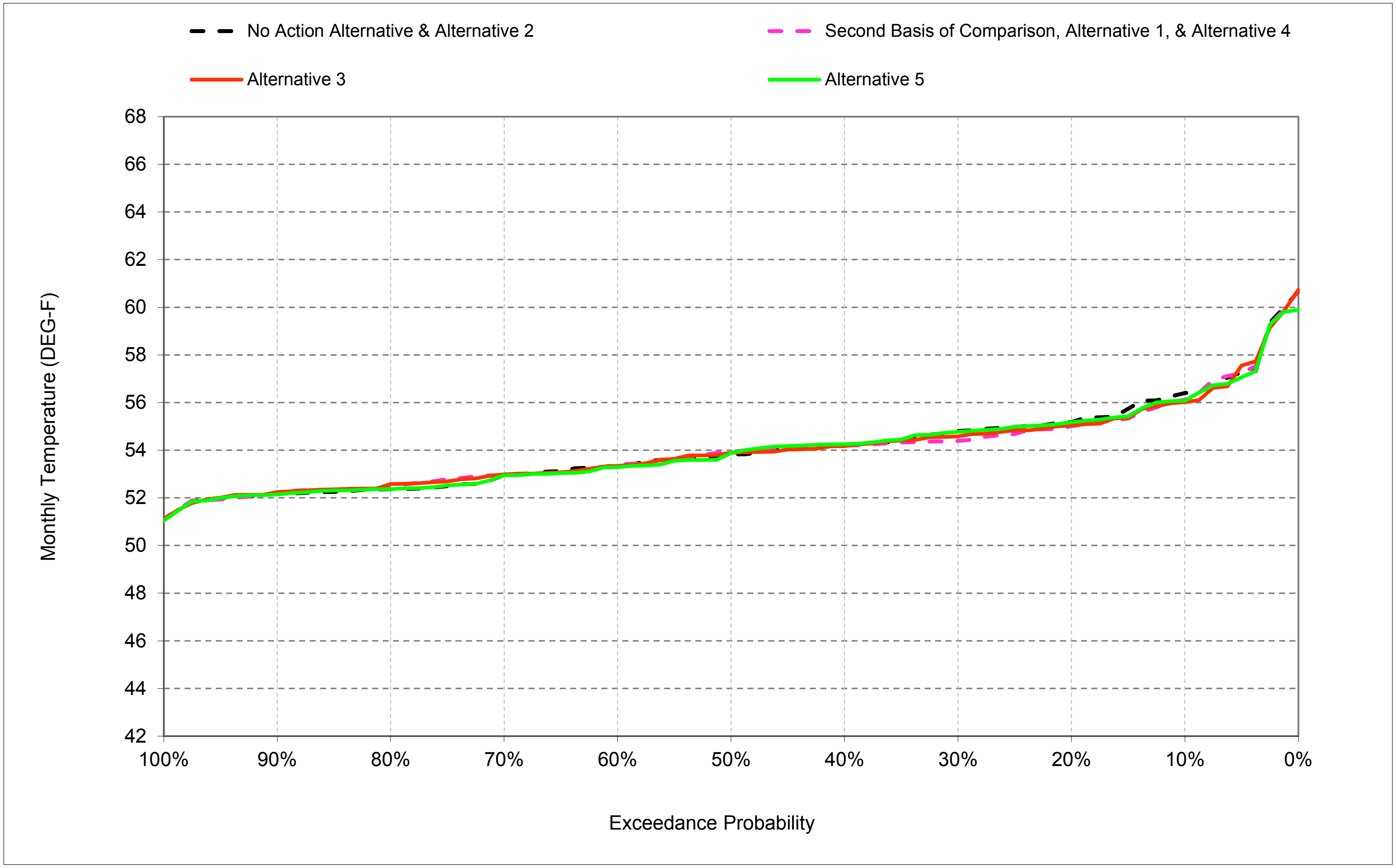
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-11. Clear Creek at Igo, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-12. Clear Creek at Igo, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-1. Clear Creek at Igo, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.1	-0.2	-0.1	0.1	0.0	0.0	0.1	0.6	-0.2	-0.1	0.0	-0.3
0.2	-0.4	-0.2	0.2	-0.1	0.0	0.0	-0.1	0.6	-0.2	0.0	-0.2	-0.2
0.3	-0.4	0.0	0.0	0.0	0.0	-0.1	0.1	0.7	0.0	0.1	0.1	-0.4
0.4	-0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.6	0.0	0.1	0.1	0.0
0.5	-0.2	0.1	-0.1	0.0	0.0	-0.1	0.0	0.5	0.0	0.1	0.1	0.1
0.6	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.6	0.1	0.2	0.0	0.0
0.7	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.7	0.0	0.1	0.2	0.0
0.8	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.8	0.0	0.1	0.1	0.1
0.9	0.1	-0.1	-0.2	-0.2	0.0	0.0	0.0	0.6	0.0	0.1	0.1	0.0
Long Term												
Full Simulation Period[b]	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.1	0.1	0.0
Water Year Types[c]												
Wet (32%)	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.6	0.0	0.1	0.1	0.1
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.1	0.8	0.2	0.1	0.1	0.0
Dry (24%)	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.6	-0.1	0.0	0.0	-0.1
Critical (15%)	-0.3	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.4	0.0	0.1	0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-2. Clear Creek at Igo, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	46	48	50	52	55	56	55
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	53
90%	51	49	45	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	49	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	52	48	46	46	47	49	51	53	55	57	57

Alternative 3 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.1	-0.2	0.0	0.1	0.0	0.0	0.0	0.6	-0.3	-0.1	-0.1	-0.4
0.2	-0.3	-0.2	0.2	-0.1	0.0	0.0	0.0	0.7	-0.4	-0.1	-0.2	-0.1
0.3	-0.2	0.1	-0.2	0.0	0.0	-0.1	0.0	0.7	-0.1	0.0	0.0	-0.2
0.4	-0.1	0.1	0.0	0.0	0.0	-0.2	-0.2	0.6	0.0	0.1	0.0	-0.1
0.5	-0.1	0.1	-0.1	0.0	0.0	-0.1	0.0	0.5	-0.1	0.0	0.1	0.1
0.6	0.2	0.0	-0.1	0.0	-0.1	0.0	0.0	0.5	-0.1	0.2	0.1	0.0
0.7	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.7	0.0	0.0	0.2	0.0
0.8	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.6	-0.1	0.0	0.0	0.2
0.9	0.0	-0.1	-0.3	0.0	-0.1	0.0	0.0	0.7	0.1	0.0	0.1	0.1
Long Term												
Full Simulation Period[b]	-0.2	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.6	-0.1	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.6	0.0	0.1	0.1	0.2
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.7	-0.1	0.0	0.0	-0.1
Below Normal (13%)	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	0.8	0.1	0.1	0.1	-0.1
Dry (24%)	-0.5	0.0	0.0	0.0	0.0	0.0	-0.1	0.6	-0.2	-0.1	-0.1	-0.1
Critical (15%)	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0.4	-0.1	0.0	0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-3. Clear Creek at Igo, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	56	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	47	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	49	52	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	54	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	54	56	56	57

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	-0.1	-0.3
0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
0.4	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	-0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-4. Clear Creek at Igo, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	55	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	49	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	53	55	57	57

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	0.2	0.1	-0.1	0.0	0.0	-0.1	-0.6	0.2	0.1	0.0	0.3
0.2	0.4	0.2	-0.2	0.1	0.0	0.0	0.1	-0.6	0.2	0.0	0.2	0.2
0.3	0.4	0.0	0.0	0.0	0.0	0.1	-0.1	-0.7	0.0	-0.1	-0.1	0.4
0.4	0.1	0.0	0.0	0.0	0.0	0.2	0.0	-0.6	0.0	-0.1	-0.1	0.0
0.5	0.2	-0.1	0.1	0.0	0.0	0.1	0.0	-0.5	0.0	-0.1	-0.1	-0.1
0.6	-0.1	0.0	0.1	0.0	0.1	0.0	0.0	-0.6	-0.1	-0.2	0.0	0.0
0.7	-0.1	0.1	0.0	0.1	0.1	0.0	0.0	-0.7	0.0	-0.1	-0.2	0.0
0.8	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	-0.8	0.0	-0.1	-0.1	-0.1
0.9	-0.1	0.1	0.2	0.2	0.0	0.0	0.0	-0.6	0.0	-0.1	-0.1	0.0
Long Term												
Full Simulation Period[b]	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	-0.1	-0.1	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.6	0.0	-0.1	-0.1	-0.1
Above Normal (16%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.7	0.0	0.0	0.0	0.1
Below Normal (13%)	0.1	0.0	0.2	0.0	0.0	0.1	0.1	-0.8	-0.2	-0.1	-0.1	0.0
Dry (24%)	0.5	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.1	0.0	0.0	0.1
Critical (15%)	0.3	0.1	0.1	0.0	0.1	0.0	0.1	-0.4	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-5. Clear Creek at Igo, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	46	48	50	52	55	56	55
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	53
90%	51	49	45	44	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	49	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	52	48	46	46	47	49	51	53	55	57	57

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	**0.0**	0.1	0.0	0.0	0.0	**0.0**	**0.0**	**-0.1**	**0.0**	**-0.1**	**-0.1**
0.2	0.0	**0.0**	0.0	0.0	0.0	**0.0**	0.1	0.1	**-0.1**	**-0.1**	0.0	0.0
0.3	0.2	0.0	**-0.1**	0.0	**0.0**	**-0.1**	**0.0**	0.0	**-0.1**	**-0.1**	**-0.1**	0.2
0.4	0.1	0.1	**0.0**	**0.0**	0.0	**0.0**	**-0.2**	**-0.1**	**0.0**	**0.0**	**-0.1**	**0.0**
0.5	0.0	**0.0**	0.0	0.0	**0.0**	0.0	**0.0**	**-0.1**	**-0.1**	**0.0**	0.0	**-0.1**
0.6	0.0	0.0	**0.0**	0.0	**0.0**	**0.0**	**0.0**	**-0.1**	**-0.2**	0.0	0.0	**0.0**
0.7	**0.0**	0.1	**0.0**	0.0	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**0.0**	**-0.1**	0.0
0.8	**0.0**	**0.0**	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**-0.2**	**0.0**	**-0.1**	**-0.1**	0.1
0.9	**0.0**	**0.0**	**-0.1**	0.1	**-0.1**	**0.0**	**0.0**	0.1	0.0	**-0.1**	**0.0**	0.0
Long Term												
Full Simulation Period[b]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.0**	0.0	0.0	**0.0**	**0.0**	0.0
Above Normal (16%)	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**0.0**	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**0.0**	**0.0**	**0.0**
Dry (24%)	0.0	0.0	**0.0**	0.0	**0.0**	**0.0**	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**0.0**
Critical (15%)	**-0.1**	**-0.2**	**-0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**	**-0.1**	0.0	**0.0**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-6. Clear Creek at Igo, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	52	49	46	46	47	49	51	53	57	57	56
20%	55	52	48	46	46	47	49	51	52	56	56	55
30%	54	51	47	45	45	47	48	50	52	56	56	54
40%	54	51	47	45	45	46	48	50	52	55	56	54
50%	53	51	47	45	45	46	48	50	51	55	55	54
60%	52	50	46	44	44	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	49	51	55	55	53
80%	51	50	46	44	44	45	47	49	50	54	55	52
90%	51	50	46	43	44	45	46	48	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	50	51	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	44	45	46	47	49	51	55	55	53
Above Normal (16%)	53	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	46	44	45	46	48	50	51	55	55	54
Dry (24%)	53	51	47	45	45	46	48	50	51	55	56	54
Critical (15%)	55	53	48	46	46	47	49	51	53	56	57	57

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	56	53	49	46	46	47	49	50	53	57	57	56
20%	55	52	48	46	46	47	49	50	53	56	57	55
30%	54	51	47	45	45	47	48	49	52	56	56	55
40%	54	51	47	45	45	46	48	49	52	55	56	54
50%	53	51	47	45	45	46	48	49	51	55	55	54
60%	52	50	46	44	45	46	47	49	51	55	55	53
70%	52	50	46	44	44	46	47	48	51	55	55	53
80%	51	50	46	44	44	45	47	48	50	54	55	52
90%	51	50	46	44	44	45	46	47	50	54	54	52
Long Term												
Full Simulation Period[b]	53	51	47	45	45	46	48	49	52	55	56	54
Water Year Types[c]												
Wet (32%)	50	48	45	45	45	46	47	49	51	55	55	53
Above Normal (16%)	54	51	47	45	45	46	47	49	51	55	55	53
Below Normal (13%)	52	50	47	44	45	46	48	49	51	55	55	54
Dry (24%)	54	51	47	45	45	46	48	49	51	55	56	55
Critical (15%)	55	53	48	46	46	47	49	50	54	56	56	57

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.3	0.2	0.0	-0.1	0.0	0.0	0.1	-0.6	0.3	0.1	0.0	0.0
0.2	0.3	0.2	-0.2	0.0	0.0	0.0	0.1	-0.5	0.2	0.0	0.1	0.2
0.3	0.4	0.0	0.0	0.0	0.0	0.1	0.0	-0.6	0.0	0.1	-0.2	0.4
0.4	0.0	0.1	0.0	0.0	0.0	0.2	0.0	-0.7	0.0	-0.1	-0.2	0.1
0.5	0.2	-0.1	0.1	0.0	0.0	0.1	0.0	-0.6	0.0	-0.1	-0.1	-0.2
0.6	-0.4	0.0	0.1	0.0	0.1	0.0	0.0	-0.6	0.0	-0.2	0.0	-0.1
0.7	-0.1	0.1	0.0	0.1	0.1	0.0	0.0	-0.7	0.0	-0.1	-0.2	0.0
0.8	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	-0.7	0.0	-0.1	-0.1	-0.1
0.9	-0.1	0.1	0.2	0.2	0.0	0.0	0.0	-0.8	0.0	-0.1	0.0	0.0
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.1	0.0	-0.1	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	-0.6	0.1	0.0	-0.1	-0.2
Above Normal (16%)	0.2	0.1	0.0	0.1	0.0	0.0	-0.1	-0.8	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.2	0.0	0.0	0.1	0.1	-0.6	-0.1	-0.1	0.0	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.1	0.1	0.0	0.1	0.0	0.1	-0.1	0.4	0.1	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

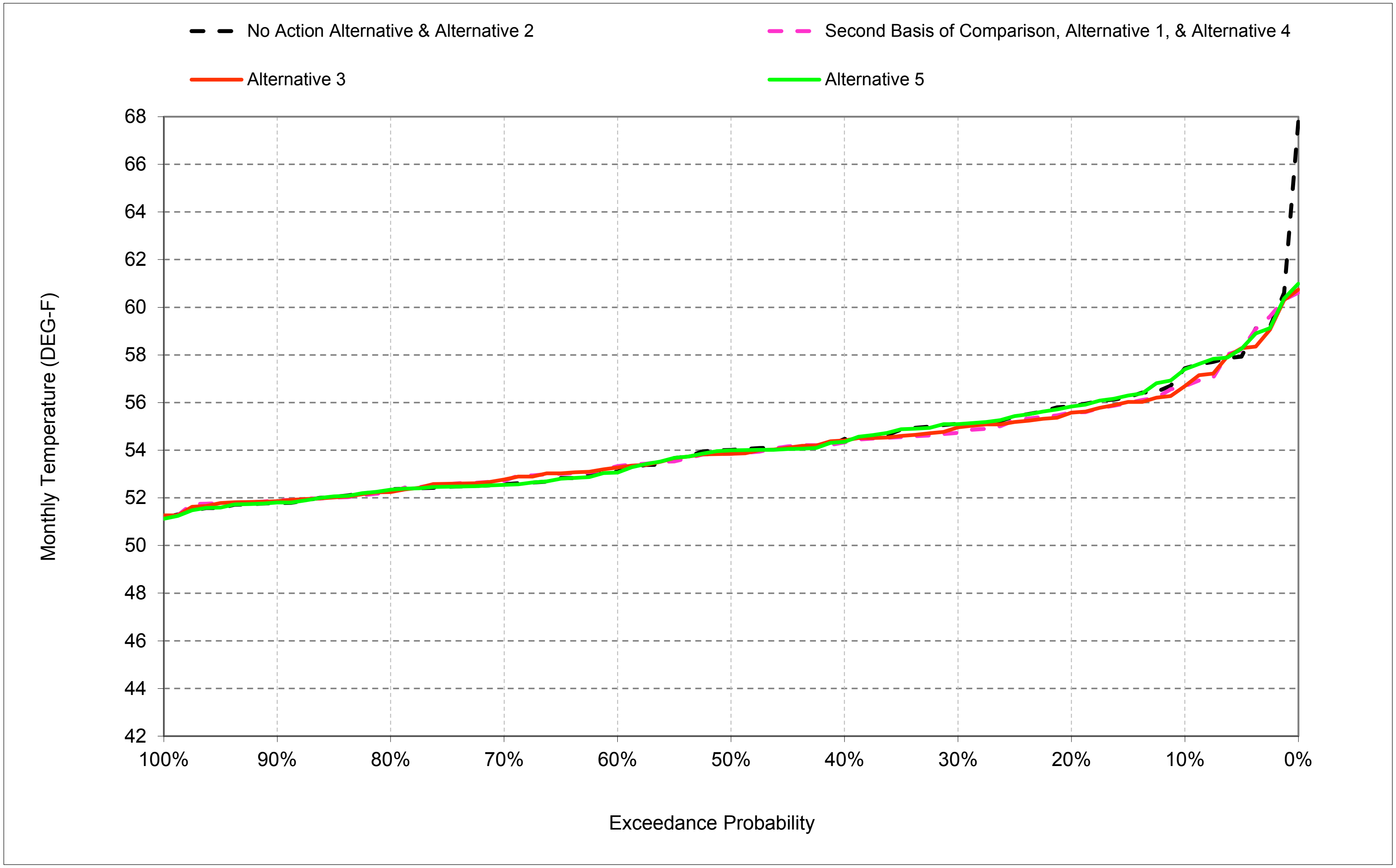
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

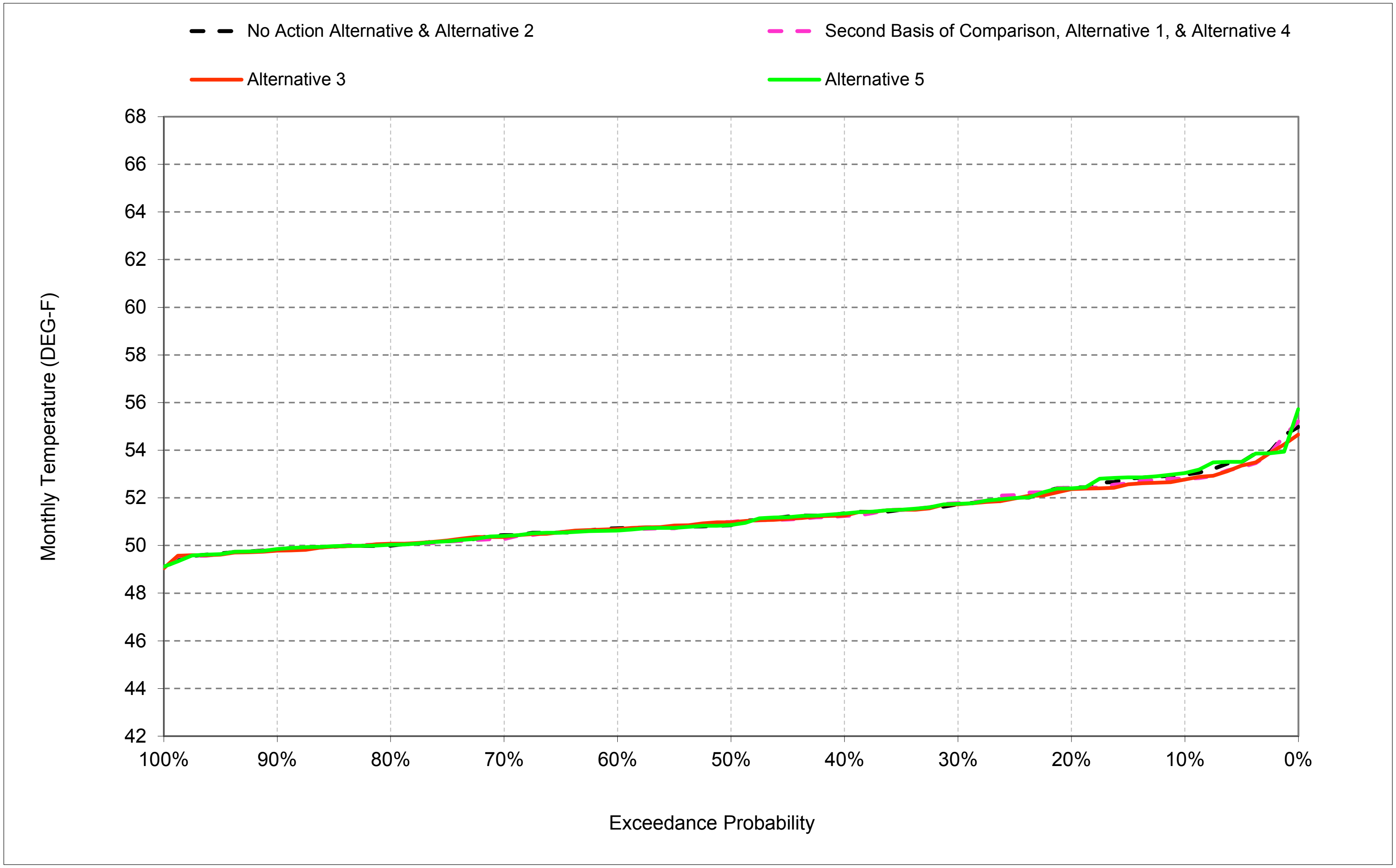
B.4. Clear Creek at Mouth Temperature

Figure B-4-1. Clear Creek at mouth, October



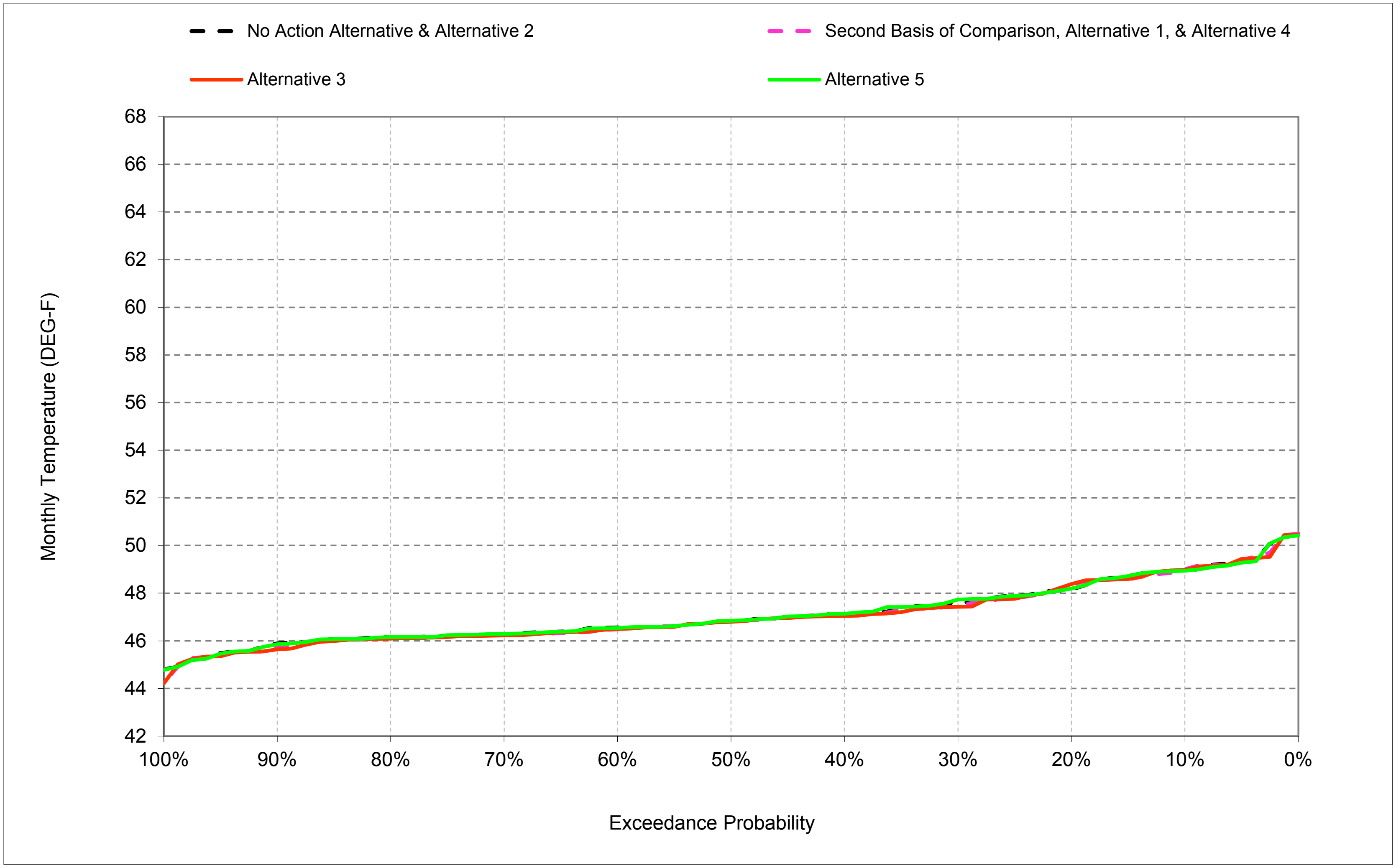
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-2. Clear Creek at mouth, November



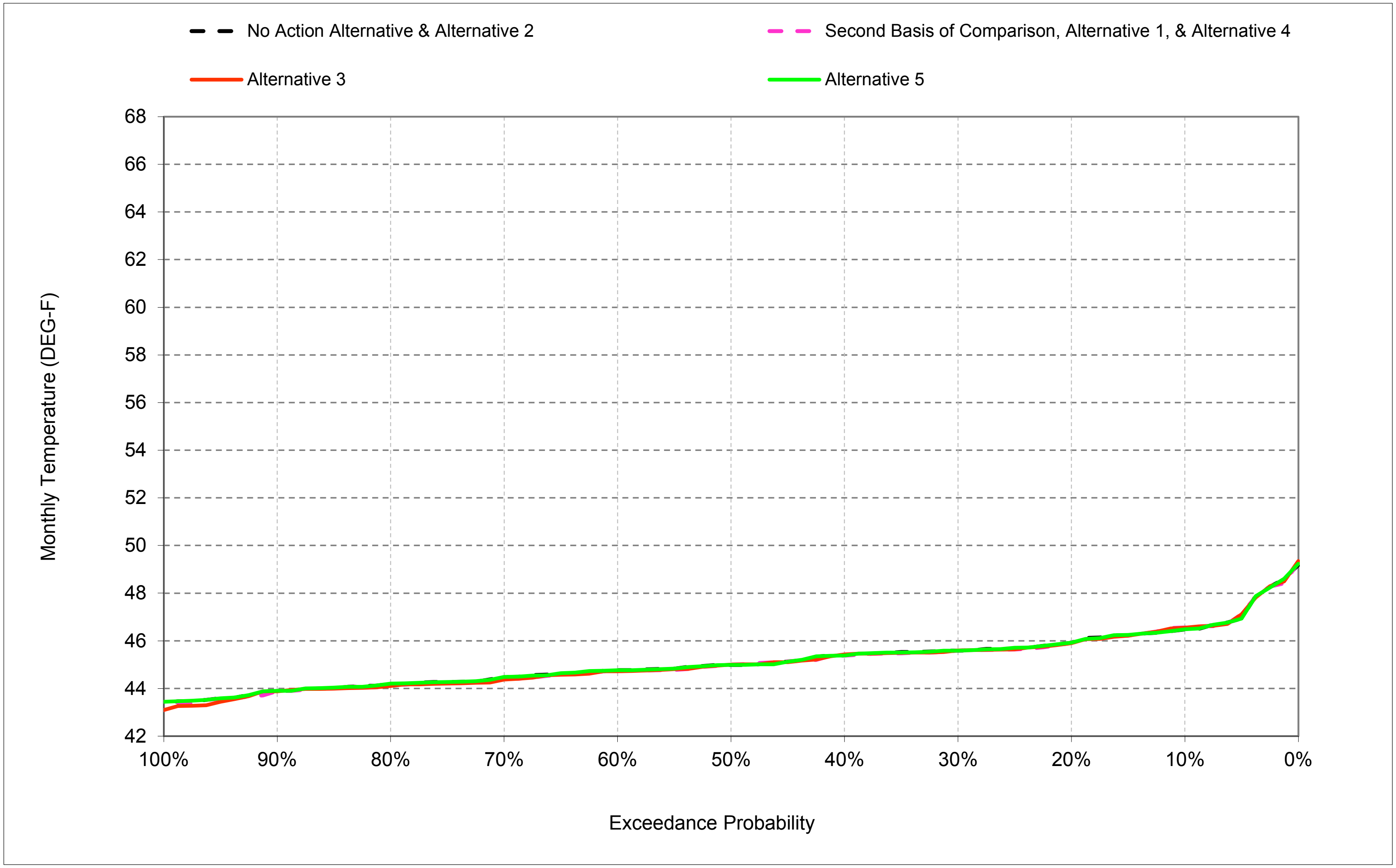
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-3. Clear Creek at mouth, December



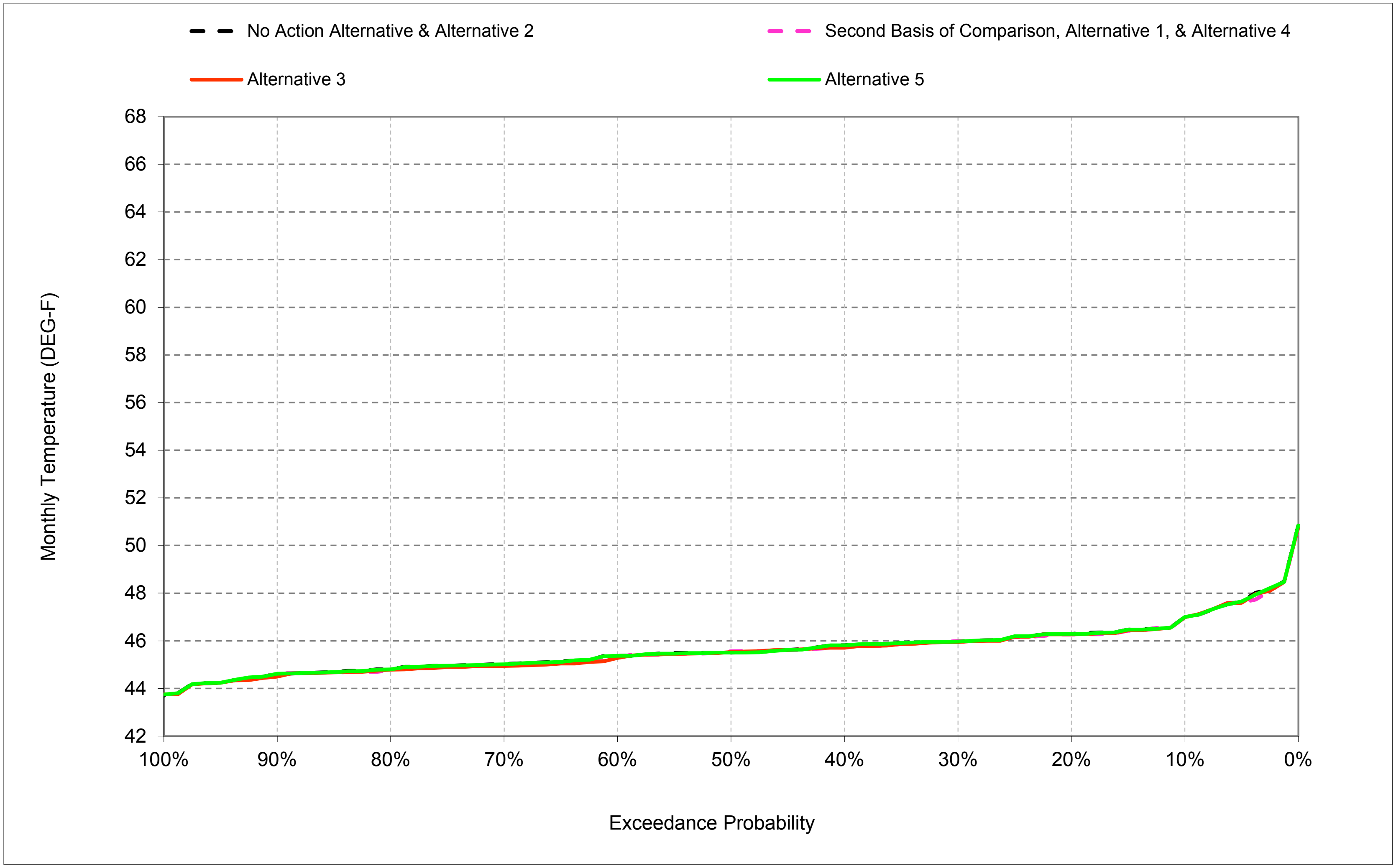
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-4. Clear Creek at mouth, January



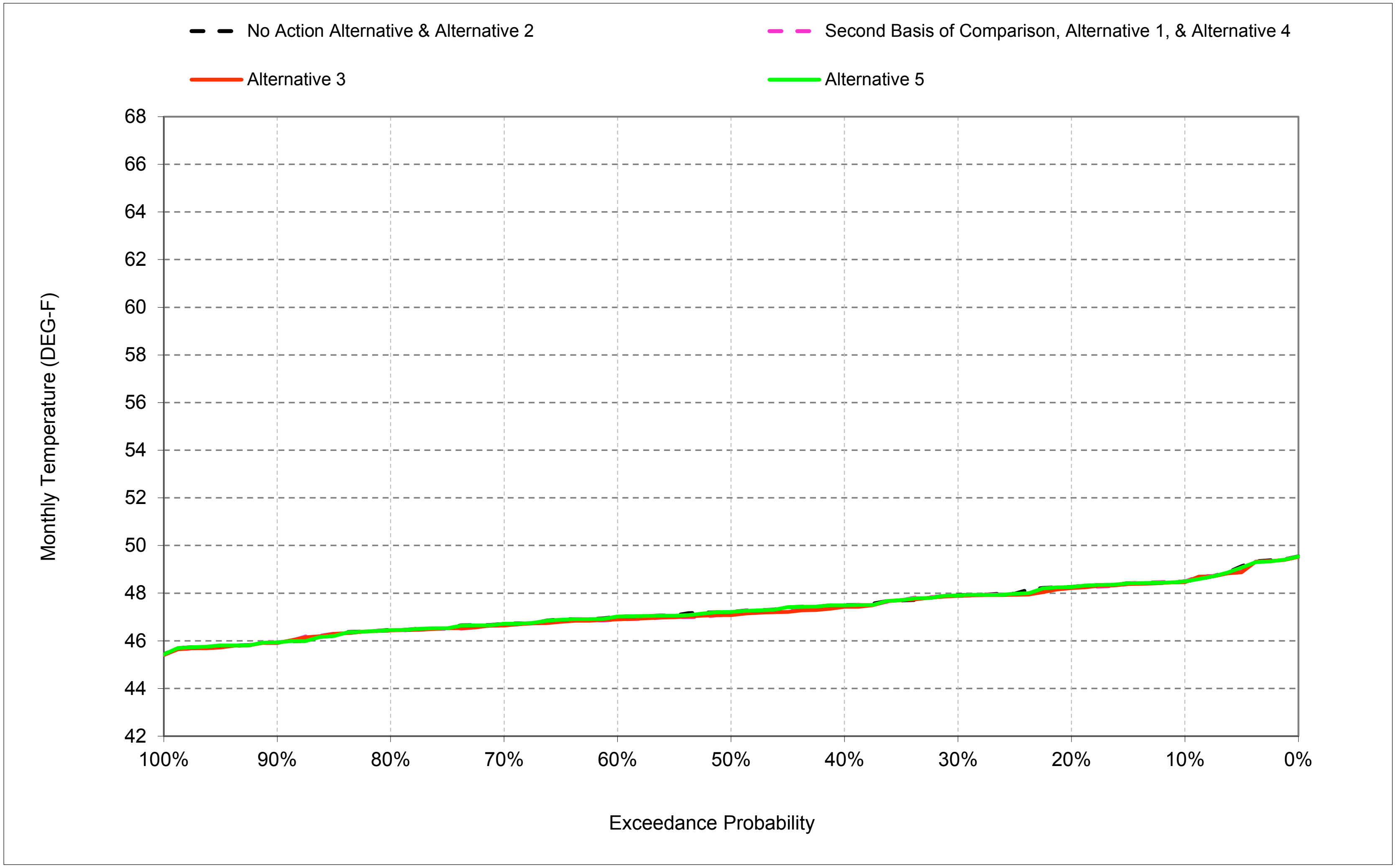
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-5. Clear Creek at mouth, February



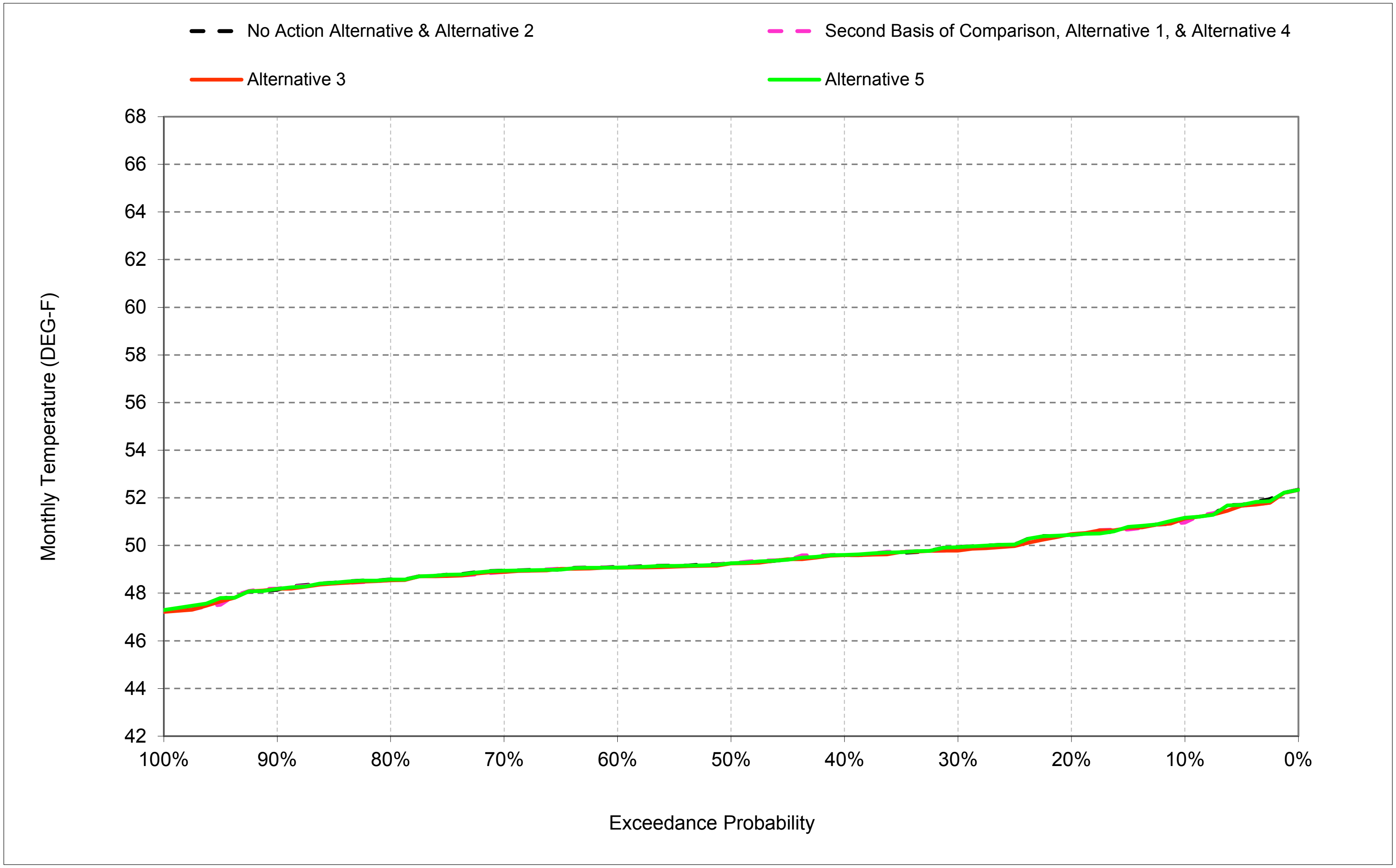
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-6. Clear Creek at mouth, March



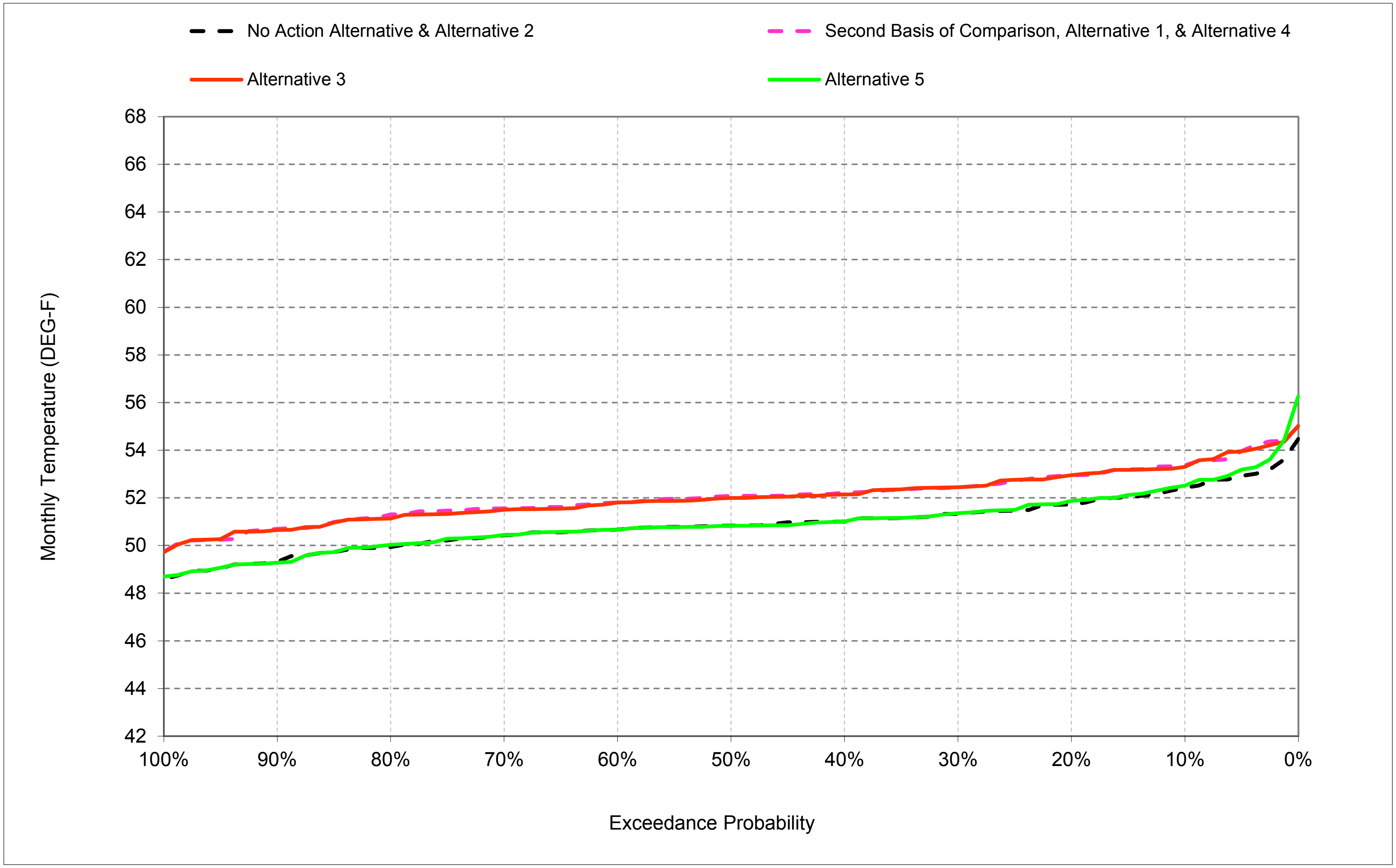
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-7. Clear Creek at mouth, April



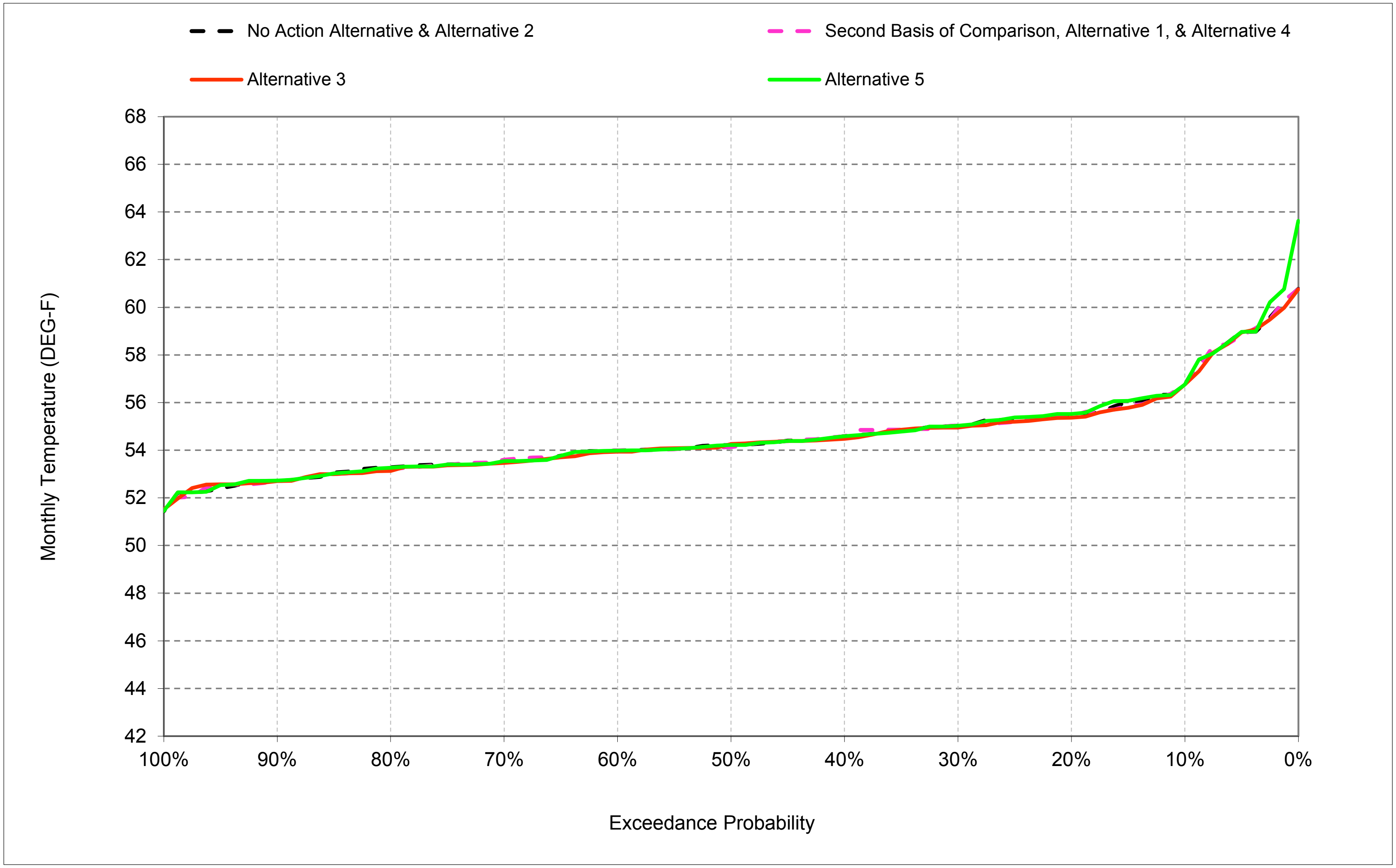
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-8. Clear Creek at mouth, May



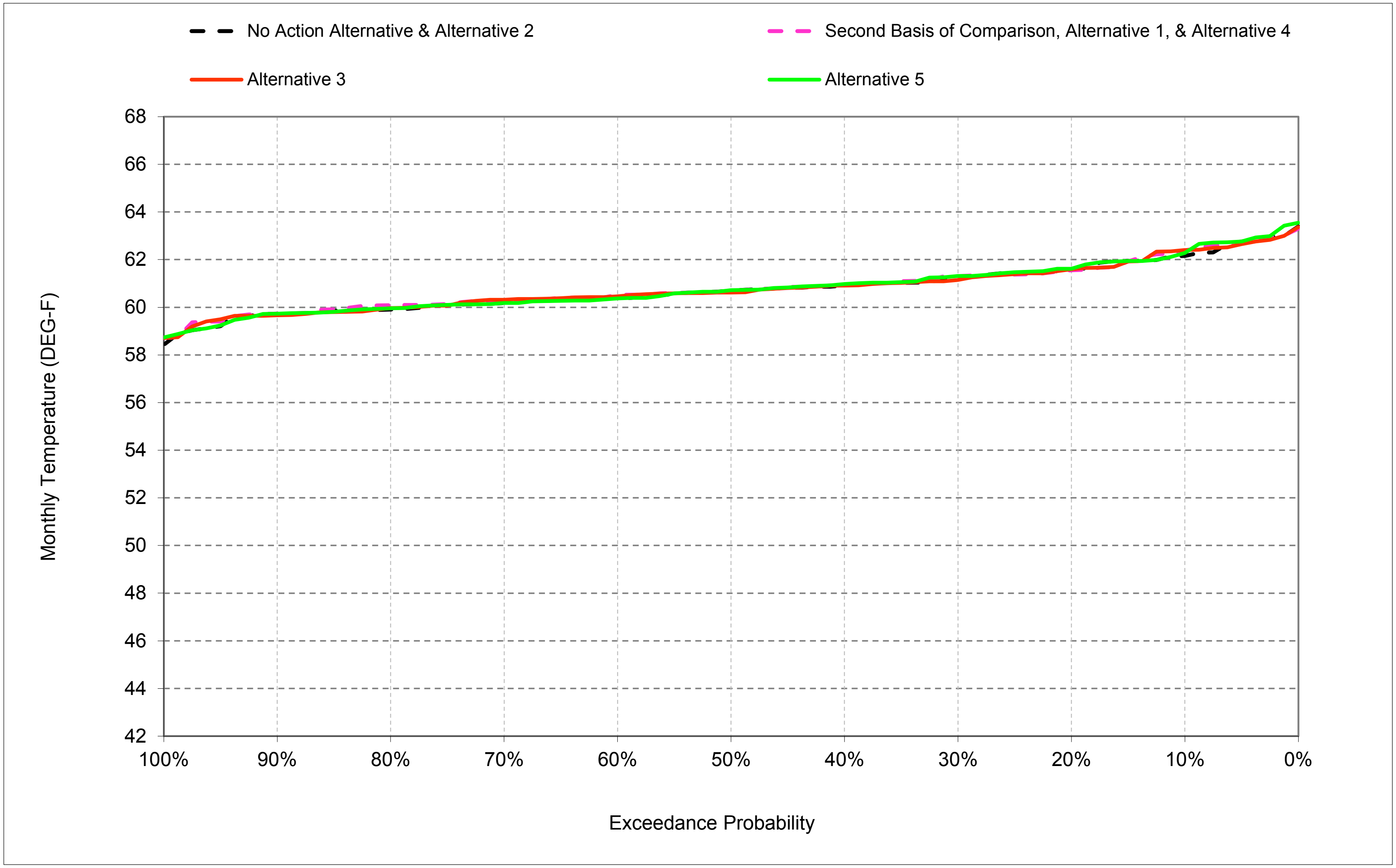
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-9. Clear Creek at mouth, June



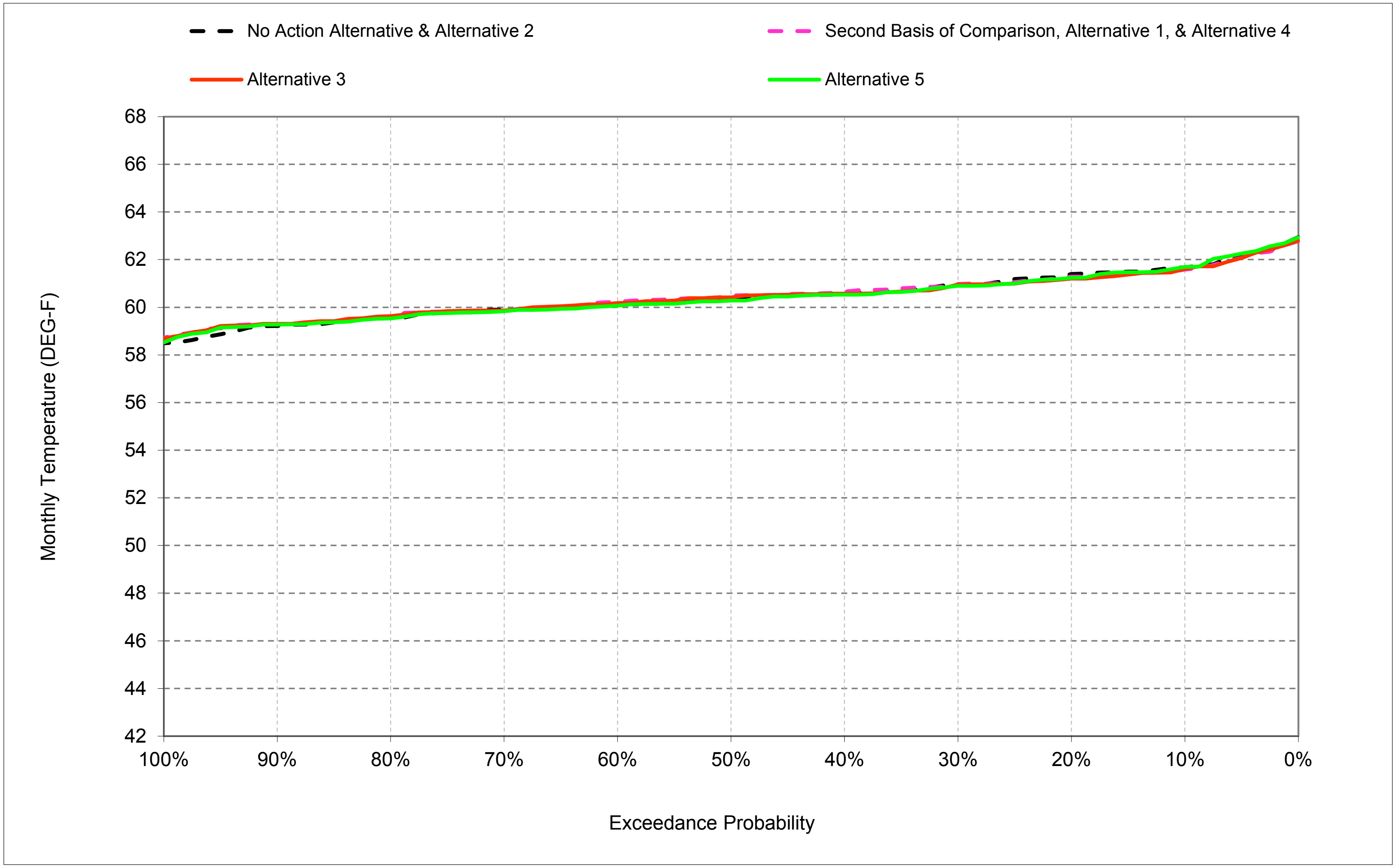
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-10. Clear Creek at mouth, July



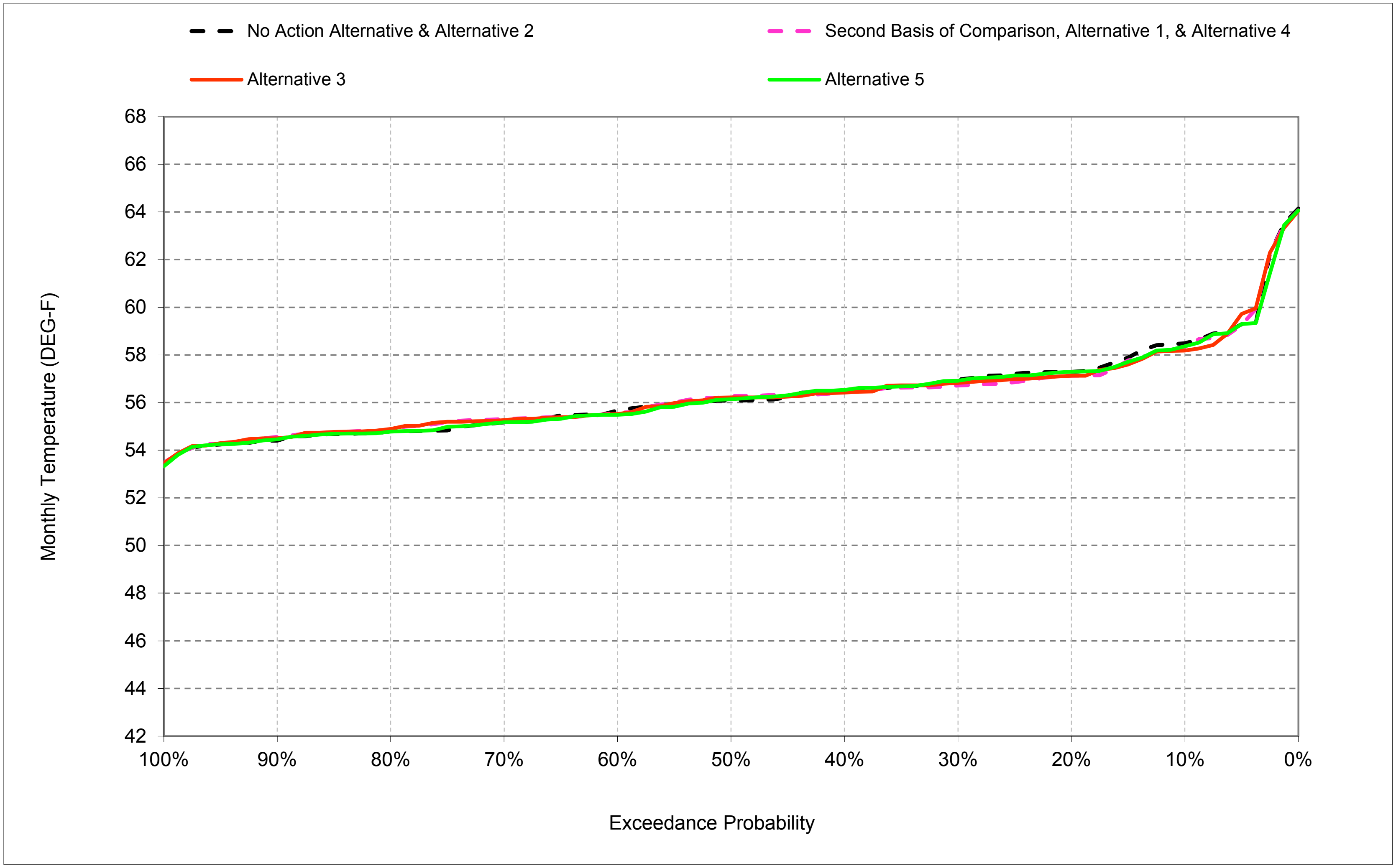
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-11. Clear Creek at mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-12. Clear Creek at mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-1. Clear Creek at mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.7	-0.2	0.0	0.1	0.0	0.0	-0.1	0.9	0.0	0.2	-0.1	-0.2
0.2	-0.2	0.0	0.2	0.0	0.0	0.0	0.0	1.2	-0.1	-0.1	-0.1	-0.2
0.3	-0.4	0.0	-0.2	0.0	0.0	0.0	-0.1	1.1	0.0	0.1	0.0	-0.2
0.4	-0.1	-0.1	0.0	0.0	-0.1	-0.1	0.0	1.2	0.0	0.0	0.1	0.0
0.5	-0.2	0.1	0.0	0.0	0.0	-0.1	0.0	1.2	-0.1	0.0	0.2	0.2
0.6	0.2	0.0	-0.1	0.0	-0.2	-0.1	0.0	1.1	0.0	0.1	0.1	-0.1
0.7	0.1	-0.2	0.0	-0.1	-0.1	0.0	-0.1	1.2	0.1	0.1	-0.1	0.1
0.8	-0.1	0.1	0.0	0.0	-0.1	0.0	0.0	1.3	-0.1	0.2	0.0	0.1
0.9	0.1	0.0	-0.2	-0.1	0.0	0.0	0.1	1.4	-0.1	0.0	0.1	0.1
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.1	0.1	0.2
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	1.3	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.1	0.0	-0.2	0.0	0.0	-0.1	-0.1	1.3	0.2	0.1	0.1	0.0
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.2	-0.1	0.0	0.0	-0.1
Critical (15%)	-0.2	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.9	0.0	0.1	0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-2. Clear Creek at mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	54	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	51	53	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	51	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.8	-0.2	0.0	0.1	0.0	0.0	0.1	0.9	0.0	0.2	-0.1	-0.3
0.2	-0.3	-0.1	0.2	0.0	0.0	0.0	0.0	1.2	-0.1	0.0	-0.2	-0.2
0.3	-0.1	0.0	-0.2	0.0	0.0	0.0	-0.1	1.1	-0.1	-0.1	0.0	-0.1
0.4	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.0	1.1	-0.1	0.0	0.0	-0.1
0.5	-0.2	0.1	0.0	0.0	0.0	-0.1	0.0	1.2	0.0	-0.1	0.1	0.1
0.6	0.2	0.0	-0.1	0.0	-0.2	-0.1	0.0	1.1	-0.1	0.1	0.1	-0.1
0.7	0.2	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	1.1	0.0	0.2	0.0	0.1
0.8	-0.1	0.1	-0.1	-0.1	0.0	0.0	0.0	1.2	-0.1	0.0	0.1	0.1
0.9	0.1	0.0	-0.2	0.0	-0.1	0.0	0.0	1.3	-0.1	-0.1	0.1	0.1
Long Term												
Full Simulation Period[b]	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	1.1	0.0	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	1.2	0.0	0.0	0.0	0.2
Above Normal (16%)	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	-0.2	0.0	-0.1	-0.1	-0.1	1.3	0.1	0.1	0.1	-0.1
Dry (24%)	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	1.1	-0.1	0.0	-0.1	-0.1
Critical (15%)	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	0.8	-0.1	0.0	0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-3. Clear Creek at mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	46	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	52	56	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	57
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	55	51	47	45	45	47	49	50	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	51	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	59

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	-0.1
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1
Dry (24%)	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	-0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-4. Clear Creek at mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	46	47	48	51	52	57	62	62	58
20%	56	52	48	46	46	48	50	52	55	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	56
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	51	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	50	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	55	61	61	57
Critical (15%)	56	53	48	46	47	49	51	52	58	61	61	60

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.7	0.2	0.0	-0.1	0.0	0.0	0.1	-0.9	0.0	-0.2	0.1	0.2
0.2	0.2	0.0	-0.2	0.0	0.0	0.0	0.0	-1.2	0.1	0.1	0.1	0.2
0.3	0.4	0.0	0.2	0.0	0.0	0.0	0.1	-1.1	0.0	-0.1	0.0	0.2
0.4	0.1	0.1	0.0	0.0	0.1	0.1	0.0	-1.2	0.0	0.0	-0.1	0.0
0.5	0.2	-0.1	0.0	0.0	0.0	0.1	0.0	-1.2	0.1	0.0	-0.2	-0.2
0.6	-0.2	0.0	0.1	0.0	0.2	0.1	0.0	-1.1	0.0	-0.1	-0.1	0.1
0.7	-0.1	0.2	0.0	0.1	0.1	0.0	0.1	-1.2	-0.1	-0.1	0.1	-0.1
0.8	0.1	-0.1	0.0	0.0	0.1	0.0	0.0	-1.3	0.1	-0.2	0.0	-0.1
0.9	-0.1	0.0	0.2	0.1	0.0	0.0	-0.1	-1.4	0.1	0.0	-0.1	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.0	-0.1	0.0	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	-1.2	0.0	-0.1	-0.1	-0.2
Above Normal (16%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-1.3	0.0	0.0	0.0	0.1
Below Normal (13%)	0.1	0.0	0.2	0.0	0.0	0.1	0.1	-1.3	-0.2	-0.1	-0.1	0.0
Dry (24%)	0.4	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.1	0.1	0.0	0.1	0.0	0.1	-0.9	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-5. Clear Creek at mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	54	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	51	53	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	51	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	0.0	0.0	-0.1
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	0.1
0.4	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0
0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0
0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0
0.8	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	0.1	0.0
0.9	0.0	0.0	-0.1	0.2	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0	-0.1
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-6. Clear Creek at mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	47	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	53	55	62	61	57
30%	55	52	47	46	46	48	50	52	55	61	61	57
40%	54	51	47	45	46	47	50	52	55	61	61	56
50%	54	51	47	45	46	47	49	52	54	61	60	56
60%	53	51	46	45	45	47	49	52	54	60	60	56
70%	53	50	46	44	45	47	49	52	54	60	60	55
80%	52	50	46	44	45	46	49	51	53	60	60	55
90%	52	50	46	44	44	46	48	51	53	60	59	55
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	52	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	52	54	61	60	55
Above Normal (16%)	54	51	47	45	45	47	49	52	54	61	60	55
Below Normal (13%)	53	50	47	45	45	47	50	52	54	61	60	56
Dry (24%)	54	51	47	45	46	48	50	52	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	60

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	57	53	49	46	47	48	51	53	57	62	62	58
20%	56	52	48	46	46	48	50	52	56	62	61	57
30%	55	52	48	46	46	48	50	51	55	61	61	57
40%	54	51	47	45	46	47	50	51	55	61	61	57
50%	54	51	47	45	46	47	49	51	54	61	60	56
60%	53	51	47	45	45	47	49	51	54	60	60	56
70%	53	50	46	44	45	47	49	50	53	60	60	55
80%	52	50	46	44	45	46	49	50	53	60	60	55
90%	52	50	46	44	45	46	48	49	53	60	59	54
Long Term												
Full Simulation Period[b]	54	51	47	45	46	47	49	51	55	61	60	56
Water Year Types[c]												
Wet (32%)	51	49	45	45	45	47	49	51	54	61	60	55
Above Normal (16%)	55	51	47	45	45	47	49	50	54	60	60	55
Below Normal (13%)	53	50	47	45	45	47	50	51	54	61	60	56
Dry (24%)	55	51	47	45	46	48	50	51	54	61	61	57
Critical (15%)	56	53	48	46	47	49	51	53	58	61	61	59

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.7	0.2	-0.1	-0.1	0.0	0.0	0.2	-0.9	0.0	-0.1	0.1	0.1
0.2	0.2	0.0	-0.2	0.0	0.0	0.0	0.0	-1.1	0.1	0.1	0.0	0.2
0.3	0.4	0.0	0.3	0.0	0.0	0.0	0.1	-1.1	0.0	0.0	-0.1	0.2
0.4	0.0	0.1	0.0	0.0	0.1	0.1	0.0	-1.2	0.0	0.0	-0.1	0.1
0.5	0.1	-0.1	0.0	0.0	0.0	0.1	0.0	-1.2	0.1	0.0	-0.2	-0.1
0.6	-0.3	0.0	0.0	0.0	0.1	0.1	0.0	-1.1	0.0	-0.1	-0.2	-0.1
0.7	-0.2	0.1	0.0	0.1	0.1	0.0	0.1	-1.2	0.0	-0.1	0.0	-0.1
0.8	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-1.2	0.0	-0.1	0.0	-0.1
0.9	-0.1	0.1	0.1	0.2	0.0	0.0	-0.1	-1.4	0.1	0.0	0.0	-0.1
Long Term												
Full Simulation Period[b]	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-1.1	0.1	0.0	-0.1	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	-1.1	0.0	0.0	0.0	-0.2
Above Normal (16%)	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-1.3	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.2	0.0	0.0	0.1	0.1	-1.1	-0.1	-0.1	0.0	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-1.2	0.1	0.0	0.0	0.1
Critical (15%)	0.2	0.1	0.1	0.0	0.1	0.0	0.1	-0.6	0.3	0.1	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

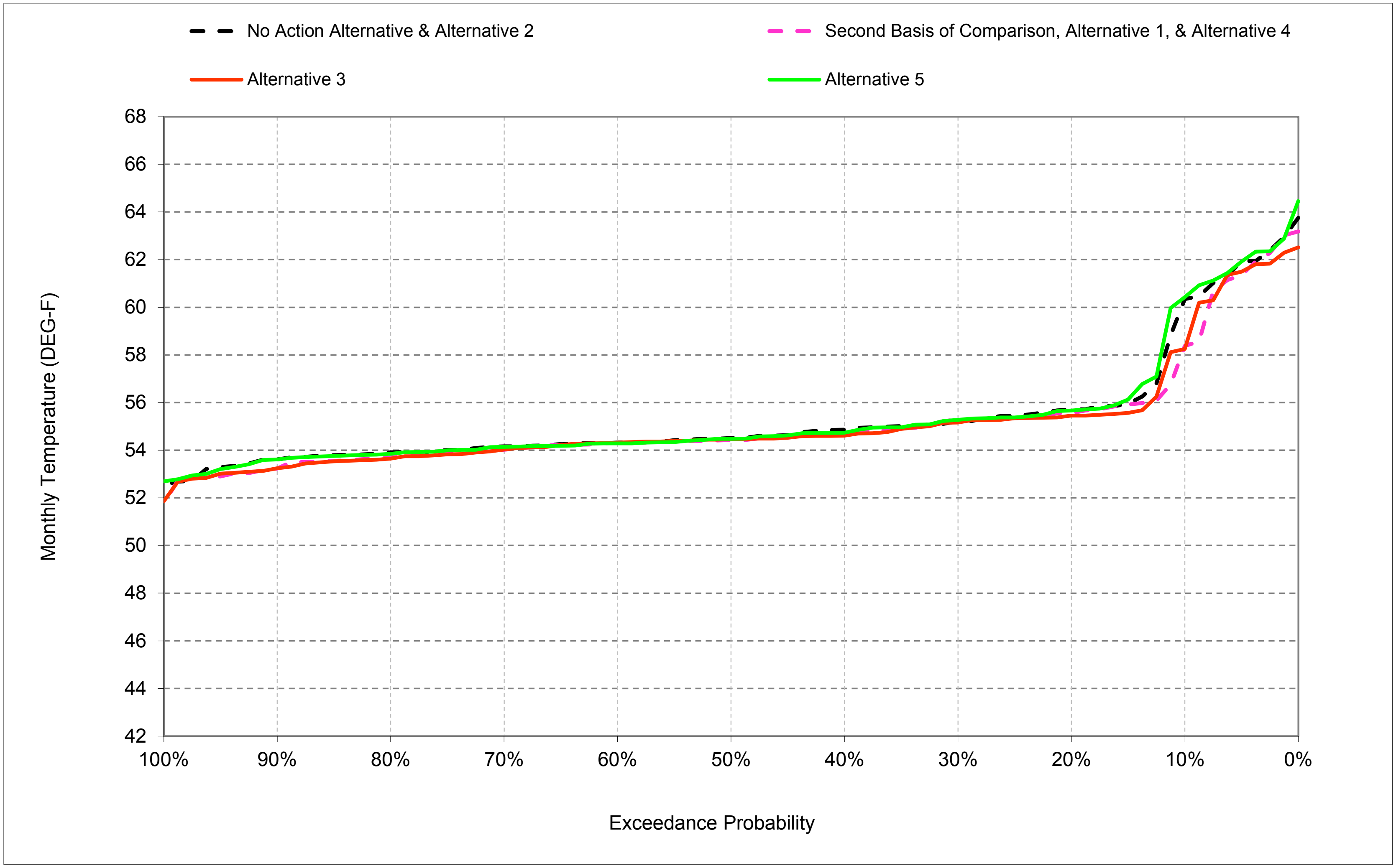
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

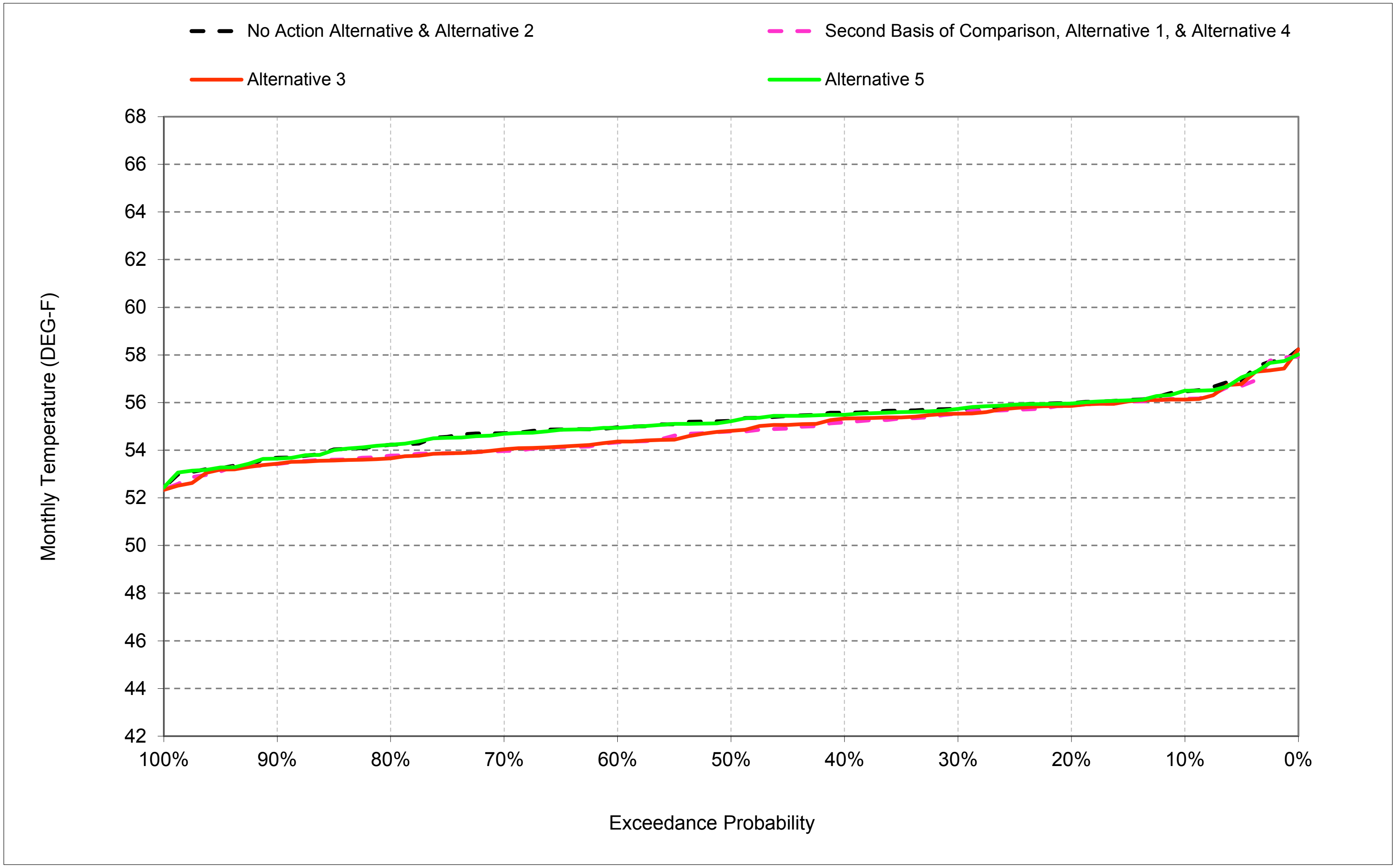
B.5. Sacramento River below Keswick Temperature

Figure B-5-1. Sacramento River below Keswick, October



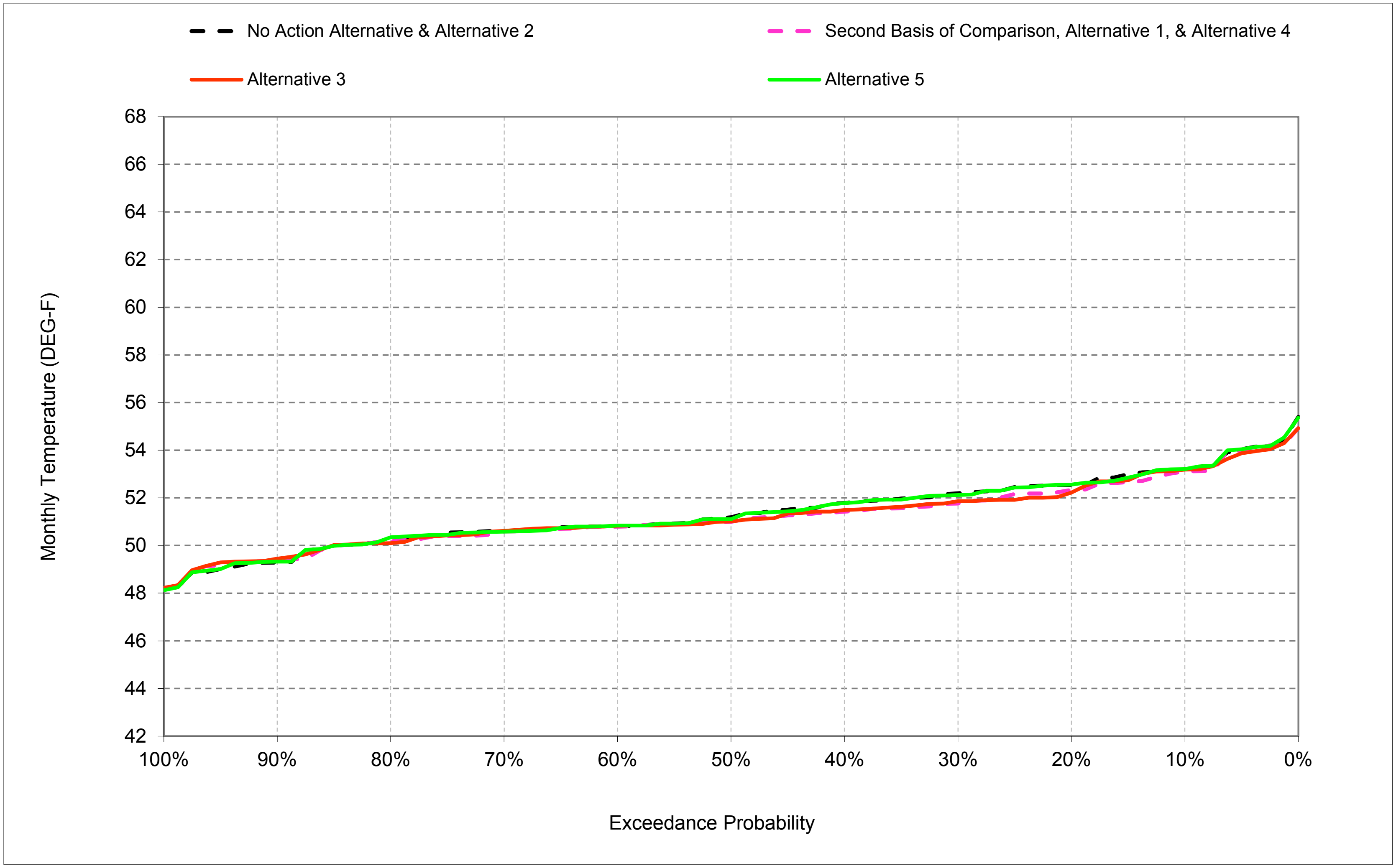
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-2. Sacramento River below Keswick, November



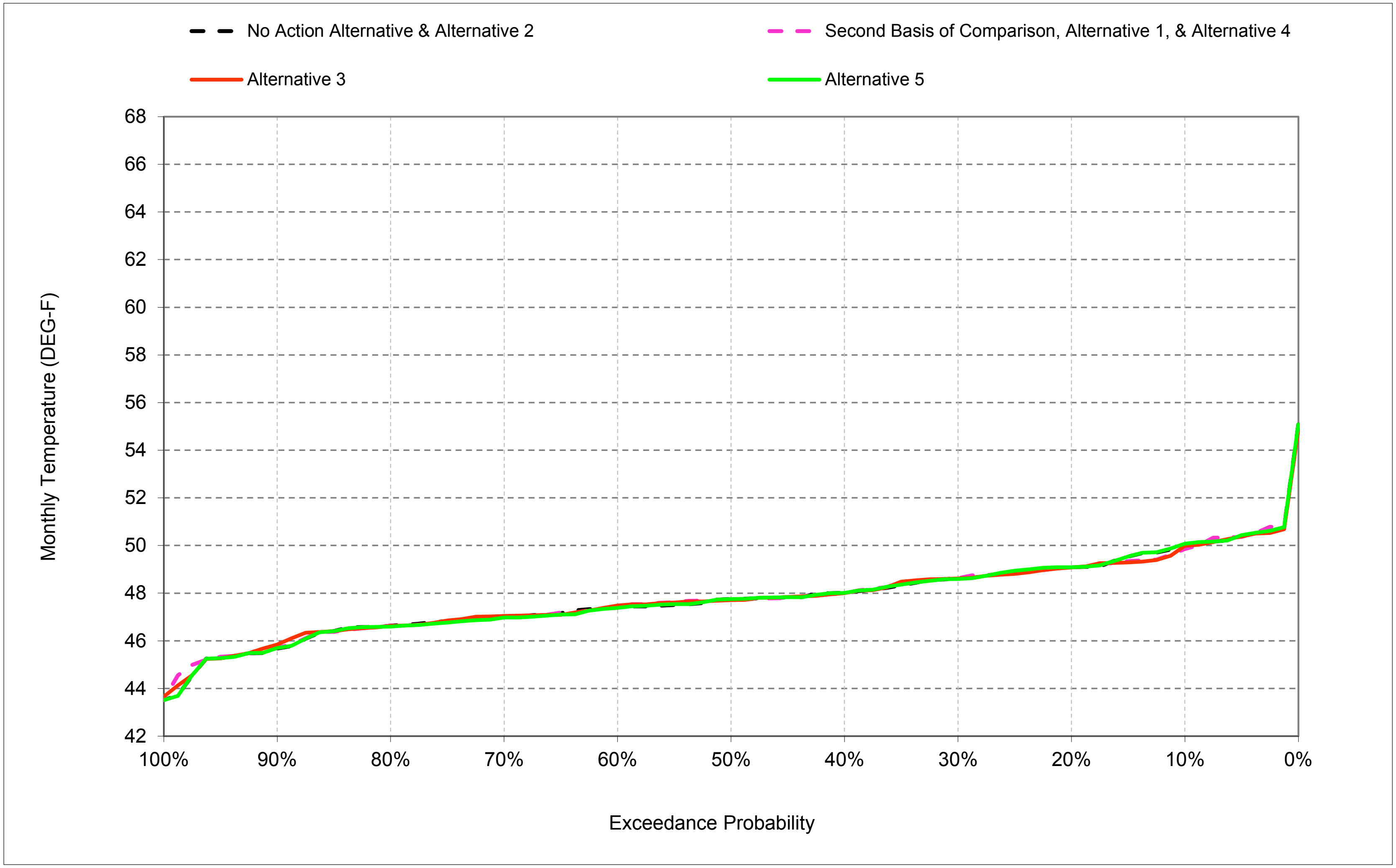
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-3. Sacramento River below Keswick, December



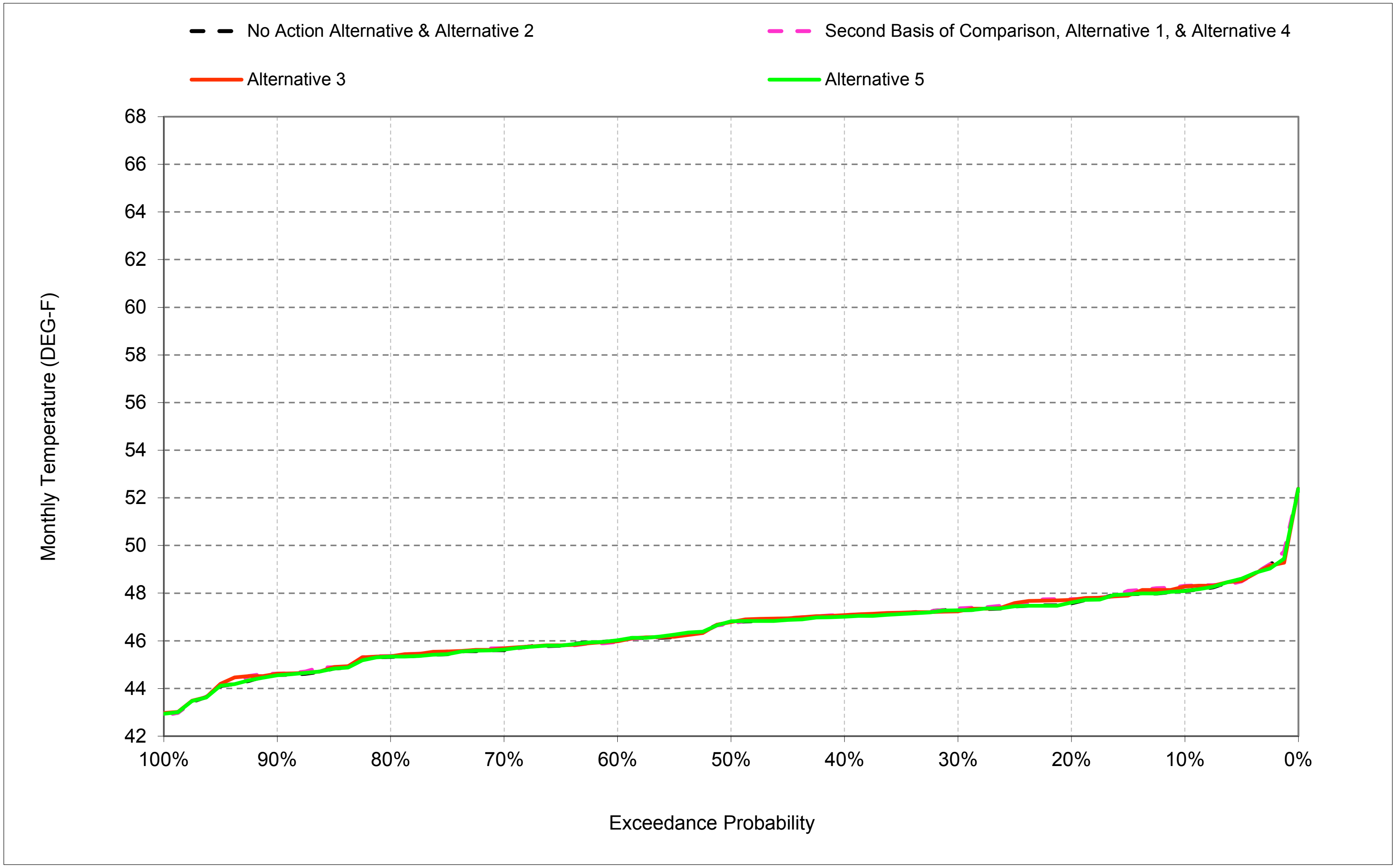
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-4. Sacramento River below Keswick, January



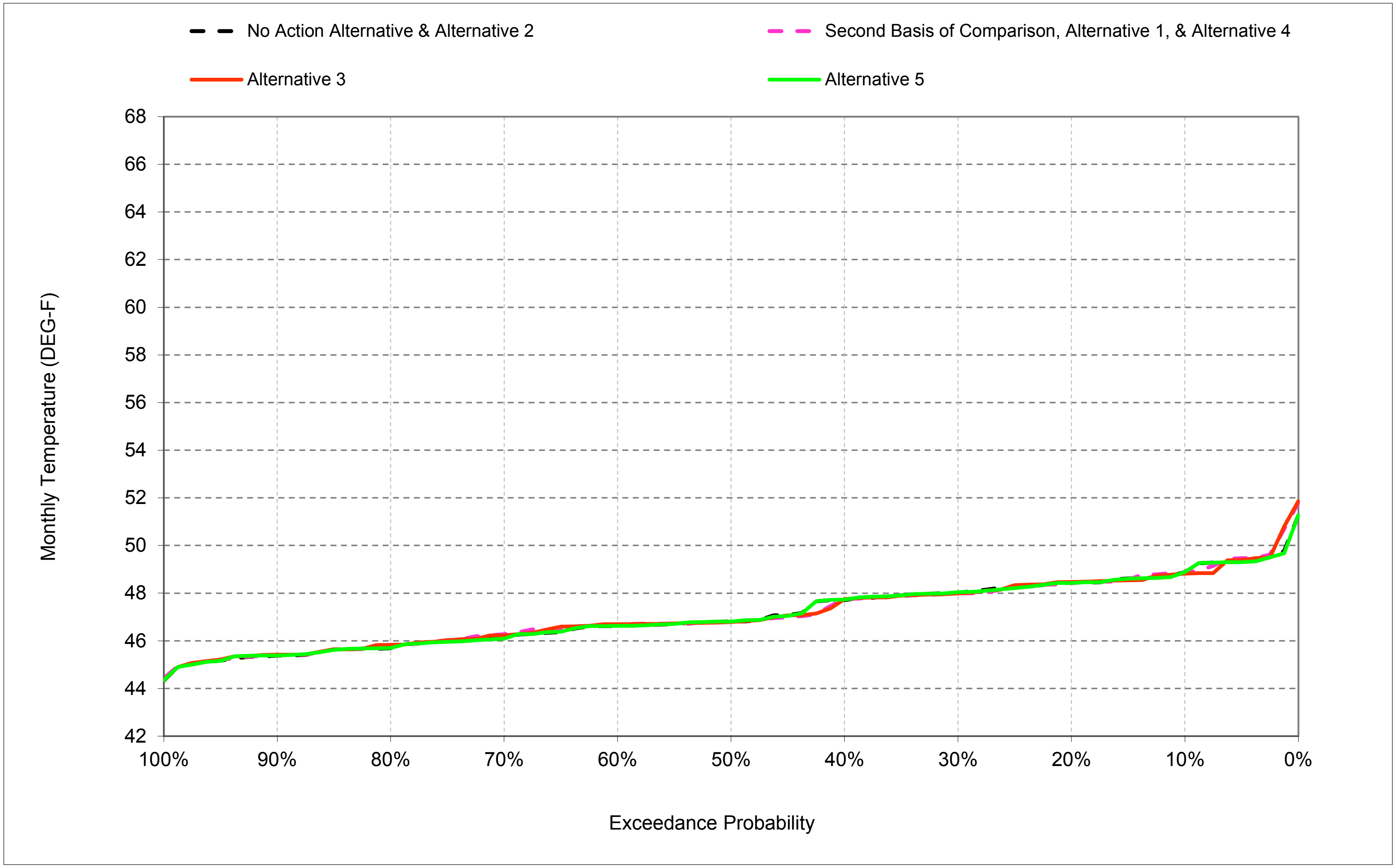
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-5. Sacramento River below Keswick, February



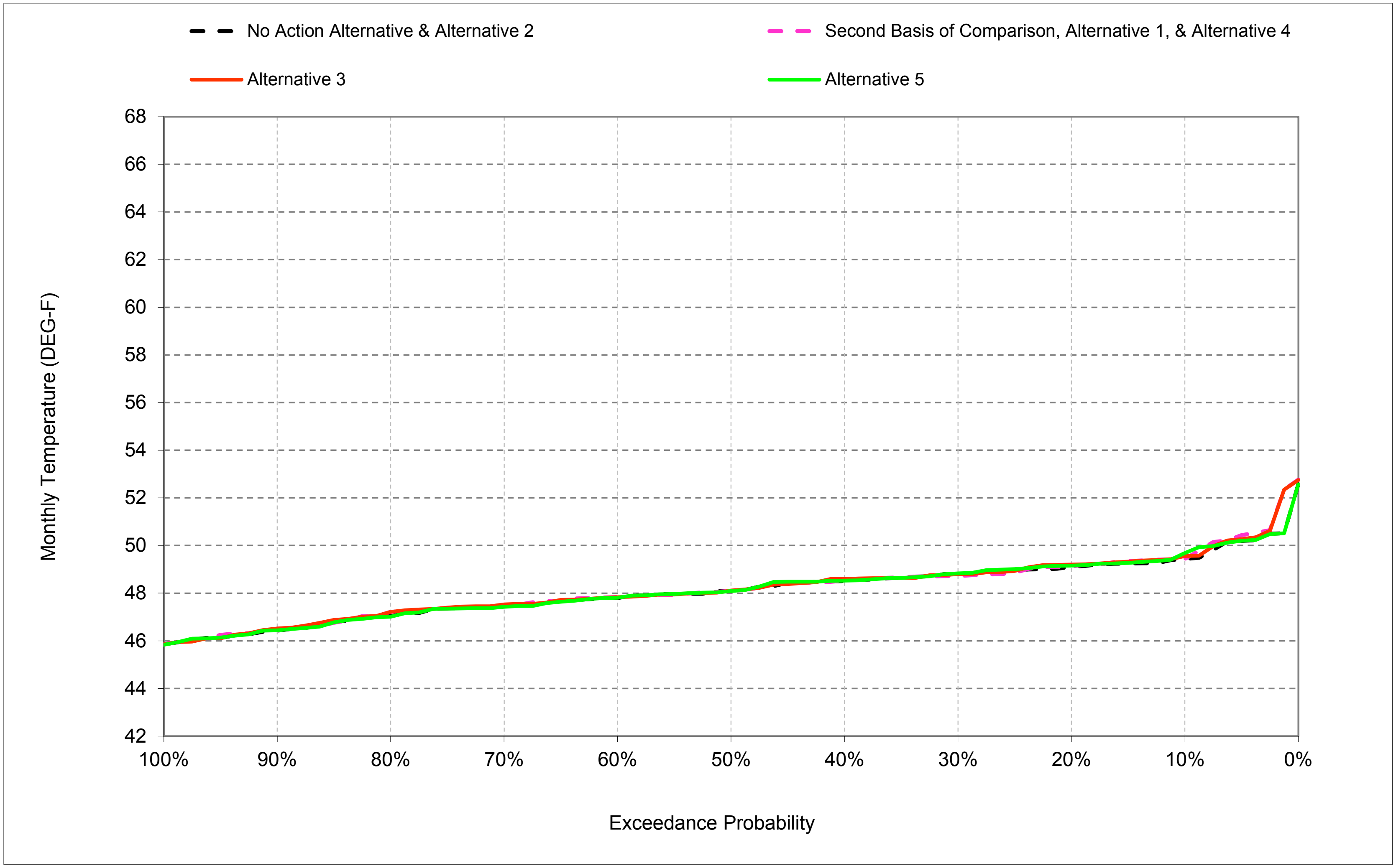
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-6. Sacramento River below Keswick, March



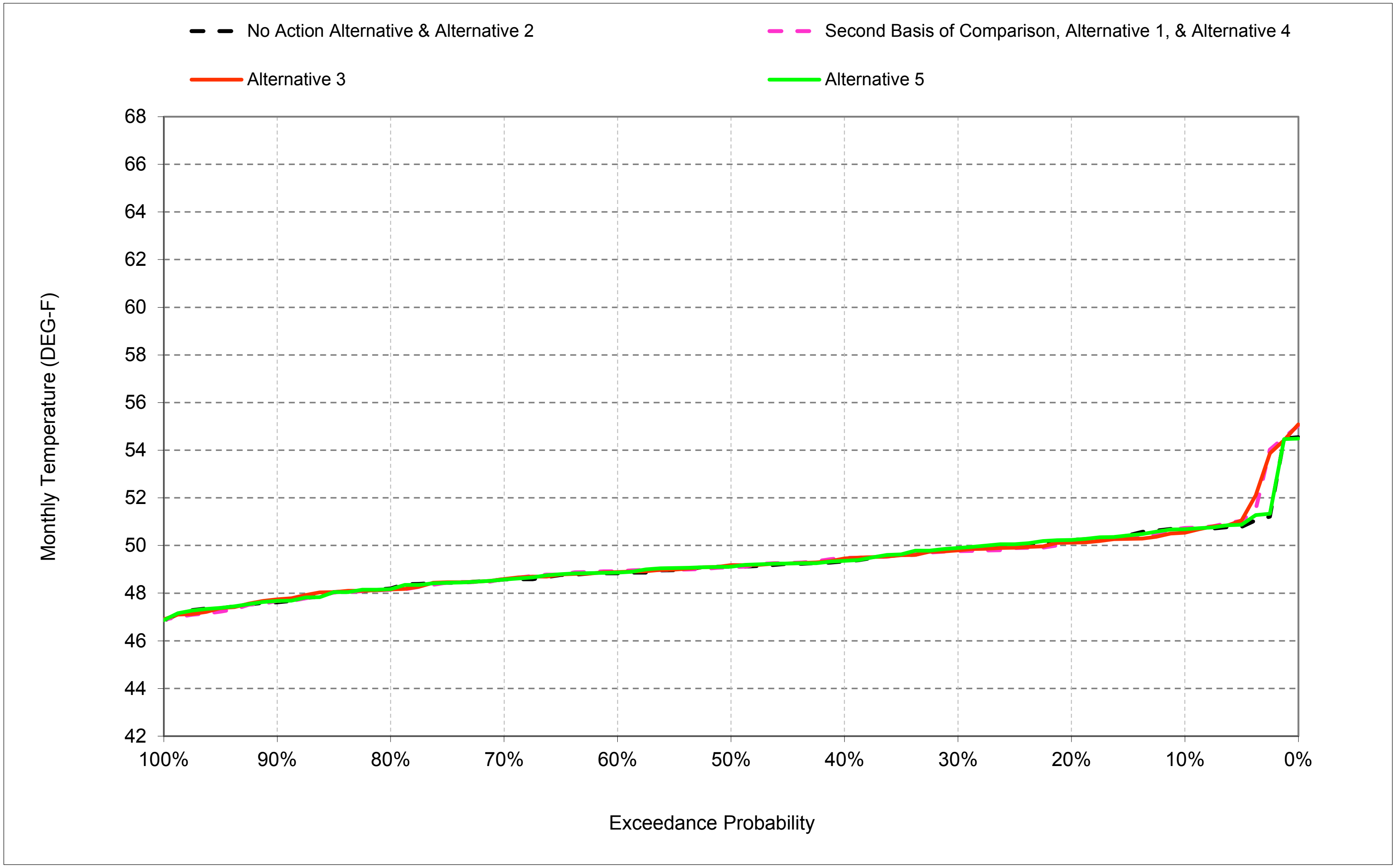
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-7. Sacramento River below Keswick, April



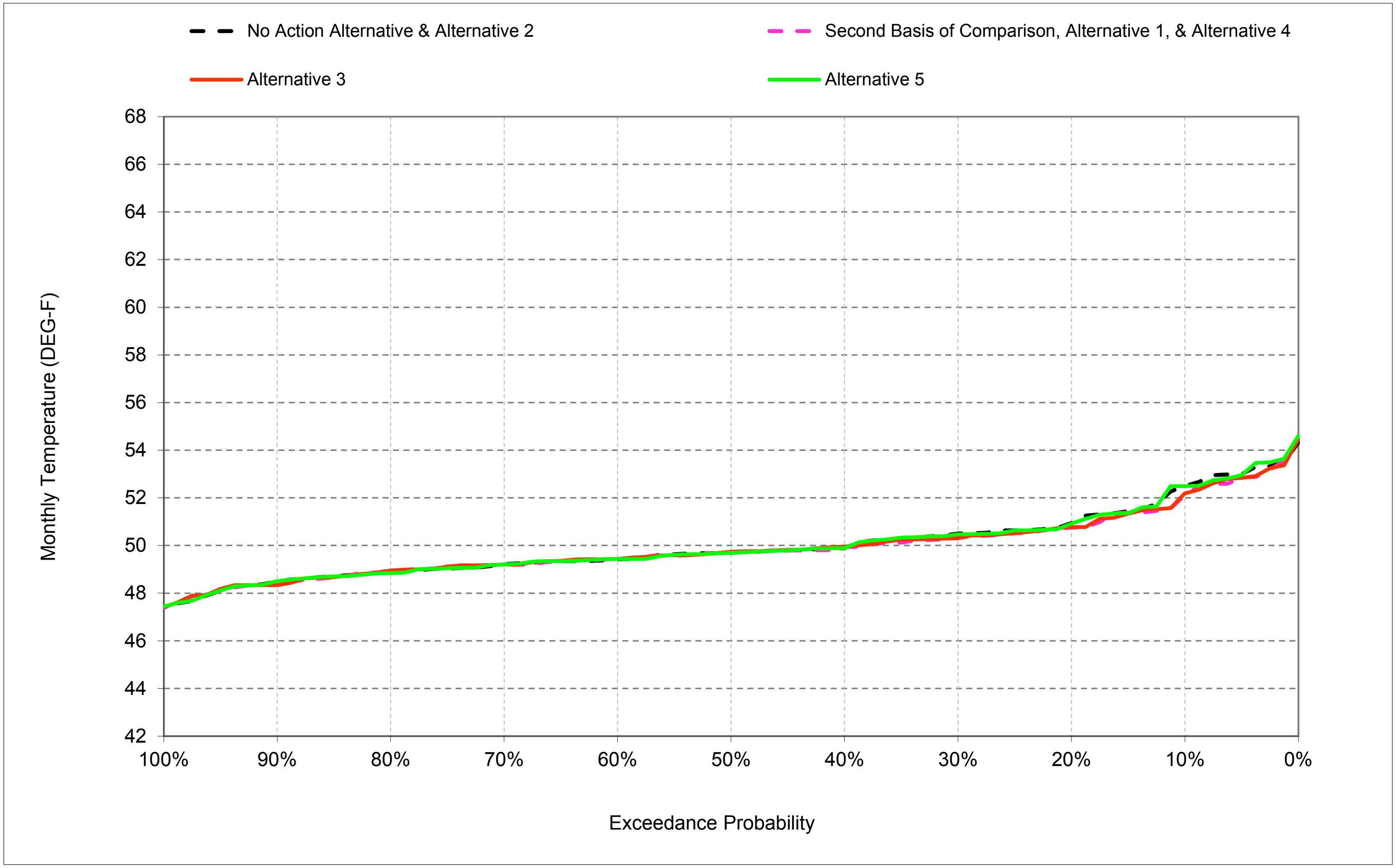
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-8. Sacramento River below Keswick, May



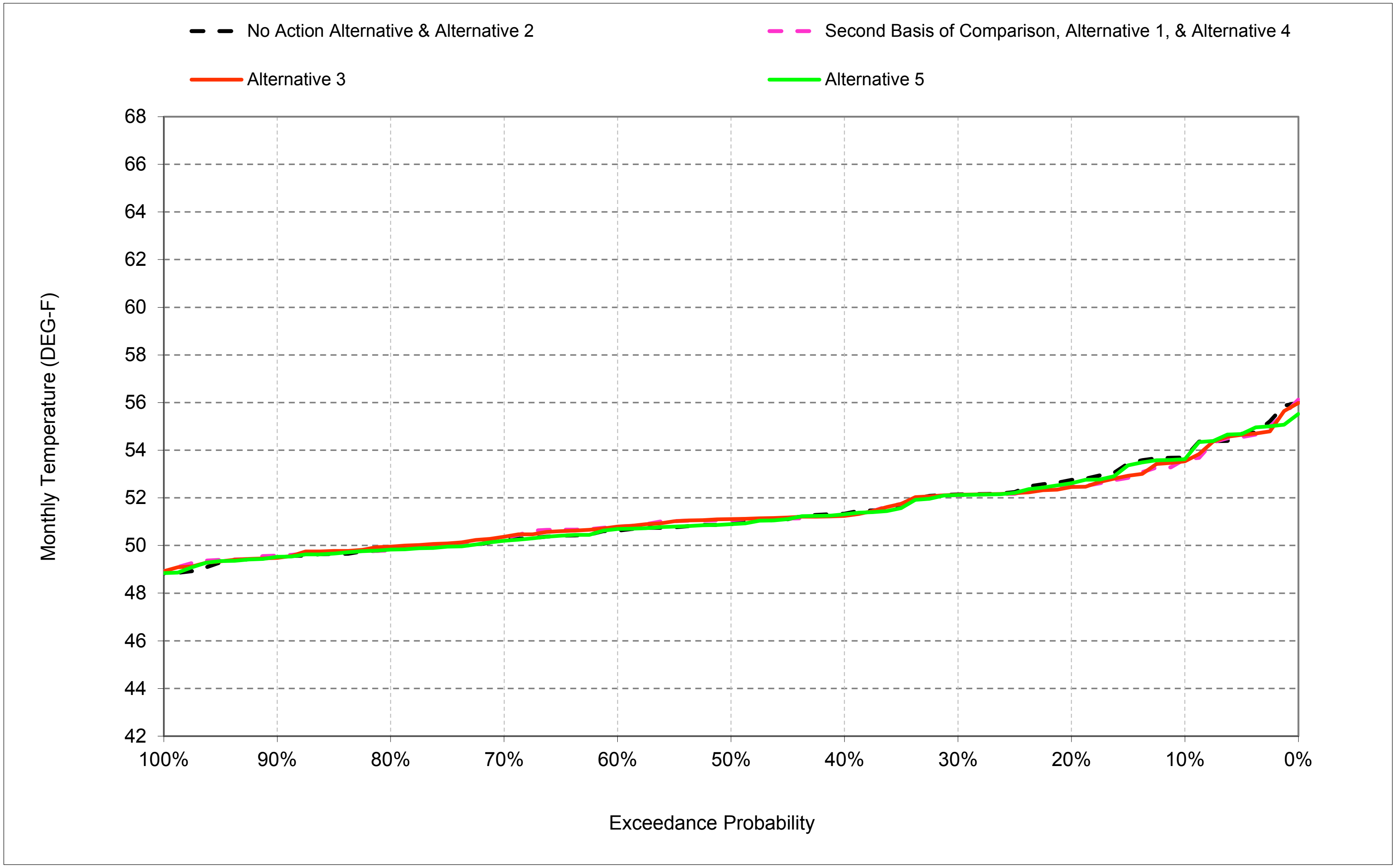
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-9. Sacramento River below Keswick, June



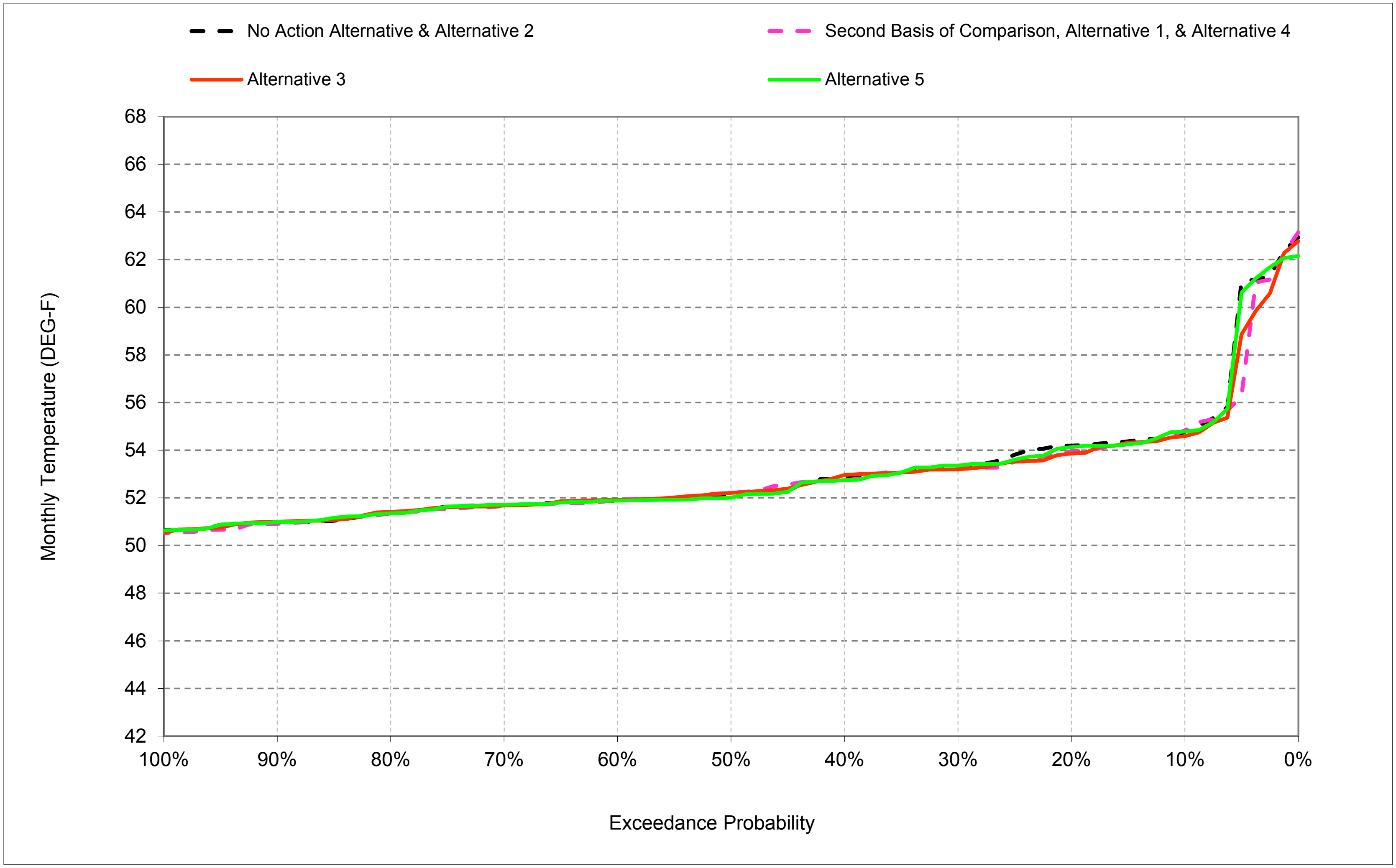
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-10. Sacramento River below Keswick, July



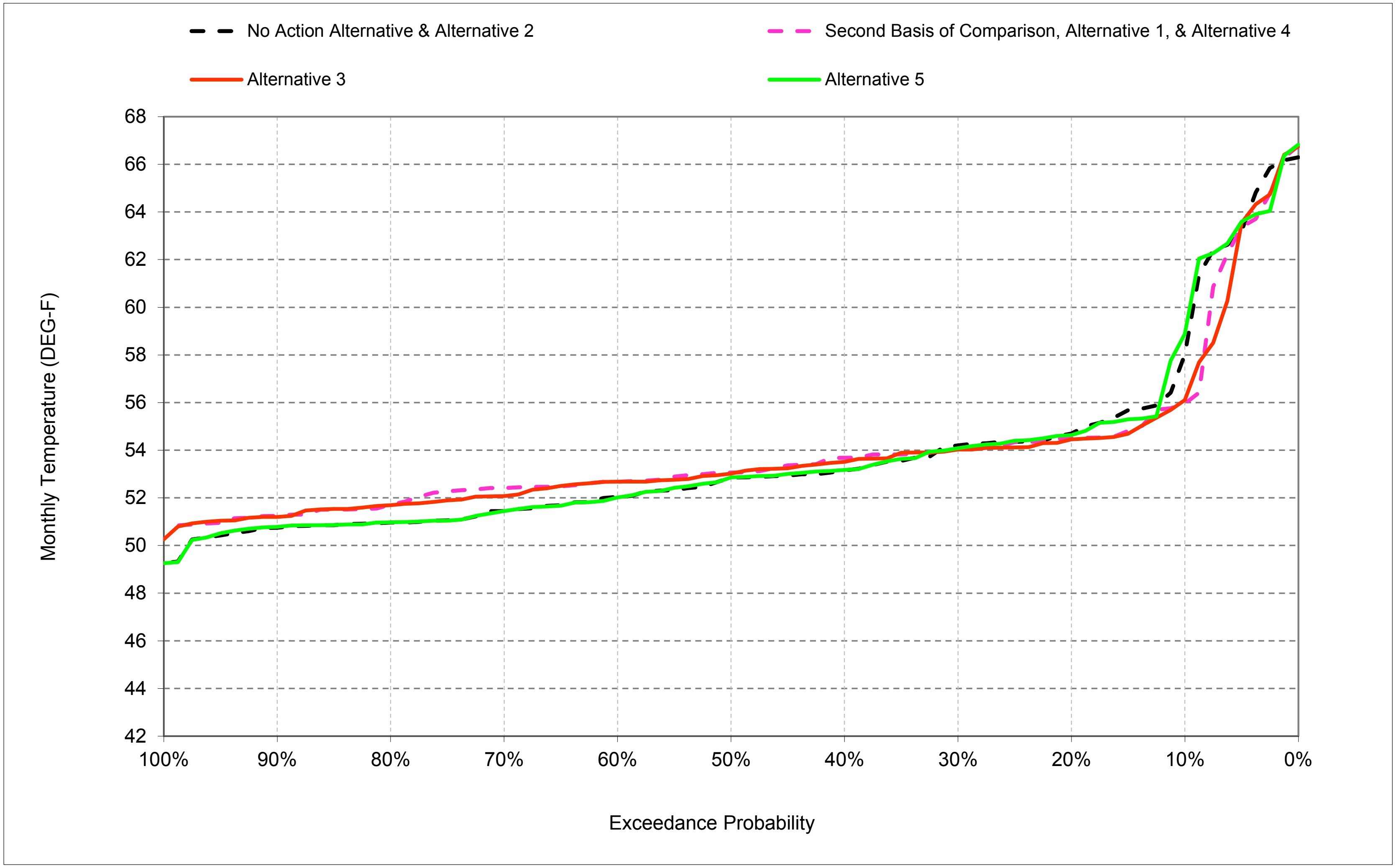
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-11. Sacramento River below Keswick, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-12. Sacramento River below Keswick, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-1. Sacramento River below Keswick, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-2.0	-0.3	-0.1	0.0	0.2	0.0	0.0	0.0	-0.4	-0.1	0.1	-1.9
0.2	-0.1	-0.1	-0.2	0.0	0.2	0.0	0.0	-0.1	-0.2	-0.3	-0.3	-0.2
0.3	0.1	-0.2	-0.4	0.0	0.0	0.0	-0.1	-0.1	-0.2	0.0	-0.1	-0.1
0.4	-0.1	-0.4	-0.4	0.0	0.0	-0.1	0.0	0.1	0.0	-0.1	-0.1	0.6
0.5	-0.1	-0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3
0.6	0.0	-0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.7
0.7	-0.1	-0.7	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.1	-0.1	0.9
0.8	-0.2	-0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.8
0.9	-0.4	-0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.5
Long Term												
Full Simulation Period[b]	-0.2	-0.4	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	-0.1	0.2
Water Year Types[c]												
Wet (32%)	-0.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	1.0
Above Normal (16%)	-0.1	-0.4	-0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.8
Below Normal (13%)	-0.3	-0.6	-0.5	-0.1	0.0	-0.1	0.2	0.3	0.0	0.0	-0.2	0.1
Dry (24%)	0.1	-0.3	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1
Critical (15%)	-0.8	-0.2	0.0	0.3	0.2	0.1	0.1	0.0	-0.2	-0.1	-0.5	-1.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-2. Sacramento River below Keswick, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58	56	53	50	48	49	50	51	52	54	55	56
20%	55	56	52	49	48	48	49	50	51	52	54	54
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	52	53	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	52	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-2.1	-0.3	0.0	0.1	0.2	-0.1	0.1	-0.2	-0.3	-0.2	-0.2	-1.8
0.2	-0.2	-0.1	-0.3	0.0	0.2	0.0	0.1	-0.1	-0.1	-0.3	-0.3	-0.3
0.3	-0.1	-0.2	-0.3	0.0	-0.1	0.0	0.0	0.0	-0.2	0.0	-0.1	-0.2
0.4	-0.3	-0.2	-0.3	0.0	0.0	-0.1	0.1	0.1	0.1	-0.1	0.1	0.4
0.5	-0.1	-0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2
0.6	0.0	-0.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.7
0.7	-0.1	-0.7	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.6
0.8	-0.3	-0.6	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.7
0.9	-0.4	-0.2	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.5
Long Term												
Full Simulation Period[b]	-0.2	-0.4	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	-0.1	0.1
Water Year Types[c]												
Wet (32%)	-0.2	-0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.8
Above Normal (16%)	0.0	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.8
Below Normal (13%)	-0.4	-0.6	-0.4	-0.1	0.0	-0.1	0.2	0.3	0.0	0.0	0.0	-0.3
Dry (24%)	-0.1	-0.4	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.2
Critical (15%)	-0.6	-0.1	0.1	0.2	0.1	0.0	0.1	0.0	-0.1	-0.1	-0.6	-1.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-3. Sacramento River below Keswick, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	56	53	50	48	49	50	51	52	54	55	59
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	52	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	44	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	54	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	51	53	54
Critical (15%)	58	56	52	48	47	48	49	51	53	54	58	61

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	-0.1	0.0	0.9
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.1
0.3	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
0.4	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.5	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.8	-0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Dry (24%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1
Critical (15%)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-4. Sacramento River below Keswick, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	56	53	50	48	49	49	51	52	54	55	58
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	56	52	48	47	48	49	49	50	51	53	53
50%	55	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	55	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	52	53	54
Critical (15%)	58	56	52	48	47	48	49	51	52	54	58	61

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	2.0	0.3	0.1	0.0	-0.2	0.0	0.0	0.0	0.4	0.1	-0.1	1.9
0.2	0.1	0.1	0.2	0.0	-0.2	0.0	0.0	0.1	0.2	0.3	0.3	0.2
0.3	-0.1	0.2	0.4	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.1
0.4	0.1	0.4	0.4	0.0	0.0	0.1	0.0	-0.1	0.0	0.1	0.1	-0.6
0.5	0.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.3
0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	0.0	-0.7
0.7	0.1	0.7	0.0	0.0	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	-0.9
0.8	0.2	0.5	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.8
0.9	0.4	0.3	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.5
Long Term												
Full Simulation Period[b]	0.2	0.4	0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	-0.2
Water Year Types[c]												
Wet (32%)	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-1.0
Above Normal (16%)	0.1	0.4	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.2	0.0	-0.8
Below Normal (13%)	0.3	0.6	0.5	0.1	0.0	0.1	-0.2	-0.3	0.0	0.0	0.2	-0.1
Dry (24%)	-0.1	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Critical (15%)	0.8	0.2	0.0	-0.3	-0.2	-0.1	-0.1	0.0	0.2	0.1	0.5	1.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-5. Sacramento River below Keswick, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58	56	53	50	48	49	50	51	52	54	55	56
20%	55	56	52	49	48	48	49	50	51	52	54	54
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	52	53	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	52	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.1	0.0	0.1	0.1	0.0	0.0	0.1	-0.2	0.1	-0.1	-0.2	0.1
0.2	-0.1	0.0	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1
0.3	-0.1	0.0	0.1	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
0.4	-0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	-0.2
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3
0.8	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0
0.9	0.0	0.0	0.1	0.1	-0.1	0.0	0.0	0.1	0.0	-0.1	0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1
Above Normal (16%)	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	-0.3
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1
Critical (15%)	0.2	0.1	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.0	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-6. Sacramento River below Keswick, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58	56	53	50	48	49	49	51	52	54	55	56
20%	56	56	52	49	48	48	49	50	51	52	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	51	48	47	48	49	49	50	51	53	54
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	54	51	47	46	47	48	49	49	51	52	53
70%	54	54	51	47	46	46	47	49	49	50	52	52
80%	54	54	50	47	45	46	47	48	49	50	51	52
90%	53	53	49	46	45	45	46	48	48	50	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	52	52	49	47	46	46	48	49	49	51	52	52
Above Normal (16%)	55	54	51	47	46	46	48	49	49	50	51	52
Below Normal (13%)	54	55	51	48	47	48	49	49	50	51	52	53
Dry (24%)	55	55	51	48	47	48	49	49	50	51	53	54
Critical (15%)	57	56	52	48	47	48	49	51	52	54	57	60

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	56	53	50	48	49	50	51	52	54	55	59
20%	56	56	53	49	48	48	49	50	51	53	54	55
30%	55	56	52	49	47	48	49	50	50	52	53	54
40%	55	55	52	48	47	48	49	49	50	51	53	53
50%	54	55	51	48	47	47	48	49	50	51	52	53
60%	54	55	51	47	46	47	48	49	49	51	52	52
70%	54	55	51	47	46	46	47	49	49	50	52	51
80%	54	54	50	47	45	46	47	48	49	50	51	51
90%	54	54	49	46	44	45	46	48	48	49	51	51
Long Term												
Full Simulation Period[b]	55	55	51	48	46	47	48	49	50	51	53	54
Water Year Types[c]												
Wet (32%)	53	53	49	47	46	46	48	49	49	51	52	51
Above Normal (16%)	55	55	51	47	46	46	48	49	49	50	51	51
Below Normal (13%)	54	55	52	48	47	48	48	49	50	51	52	53
Dry (24%)	55	55	52	48	47	48	49	49	50	51	53	54
Critical (15%)	58	56	52	48	47	48	49	51	53	54	58	61

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	2.1	0.3	0.1	0.2	-0.2	0.0	0.2	0.0	0.4	0.0	0.0	2.8
0.2	0.1	0.1	0.2	0.0	-0.2	0.0	0.0	0.1	0.1	0.1	0.2	0.1
0.3	0.0	0.2	0.4	0.0	-0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.0
0.4	0.0	0.3	0.4	0.0	-0.1	0.1	0.0	-0.1	0.0	0.0	0.0	-0.5
0.5	0.1	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.3
0.6	0.0	0.6	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.7
0.7	0.1	0.7	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	-0.9
0.8	0.1	0.5	0.2	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.8
0.9	0.4	0.2	-0.1	0.0	-0.1	0.0	0.0	0.1	0.0	-0.1	0.0	-0.5
Long Term												
Full Simulation Period[b]	0.2	0.4	0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	0.1	-0.2
Water Year Types[c]												
Wet (32%)	0.2	0.3	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	-0.9
Above Normal (16%)	0.1	0.3	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.8
Below Normal (13%)	0.3	0.6	0.5	0.1	0.0	0.1	-0.1	-0.2	0.0	0.0	0.3	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-0.2	0.0
Critical (15%)	0.9	0.3	0.0	-0.3	-0.2	-0.1	0.0	0.0	0.2	0.0	0.4	1.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

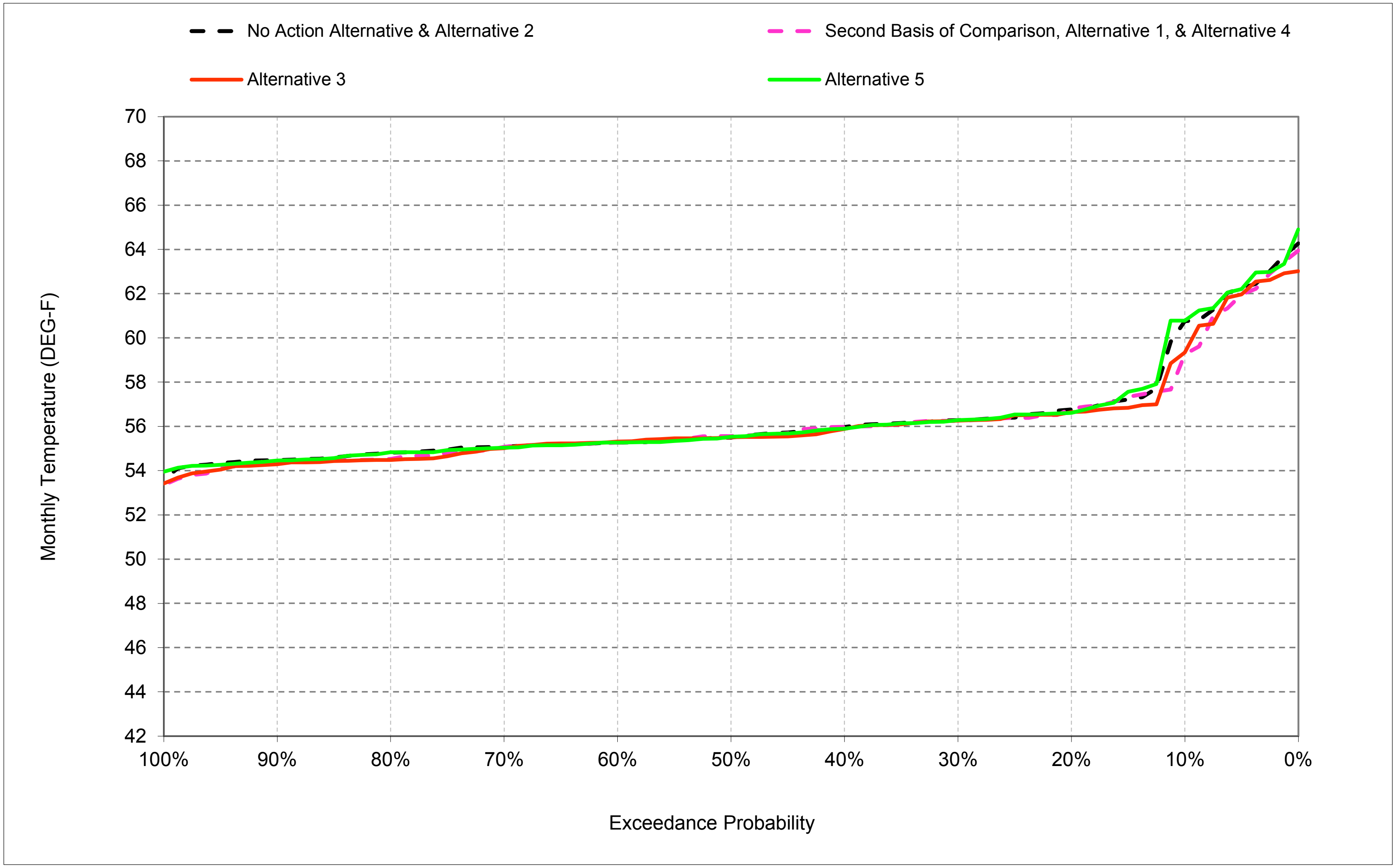
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

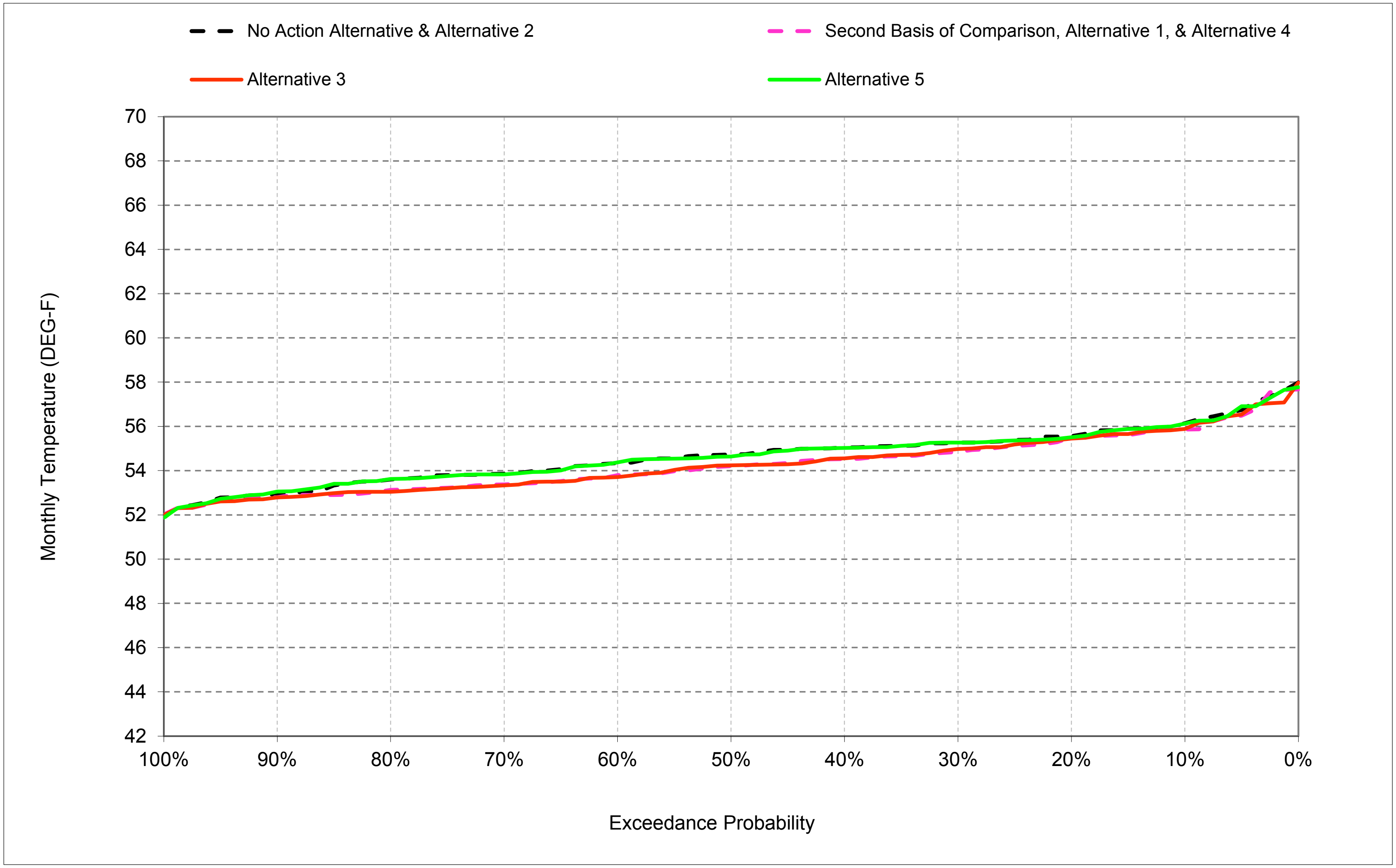
B.6. Sacramento River at Balls Ferry Temperature

Figure B-6-1. Sacramento River at Balls Ferry, October



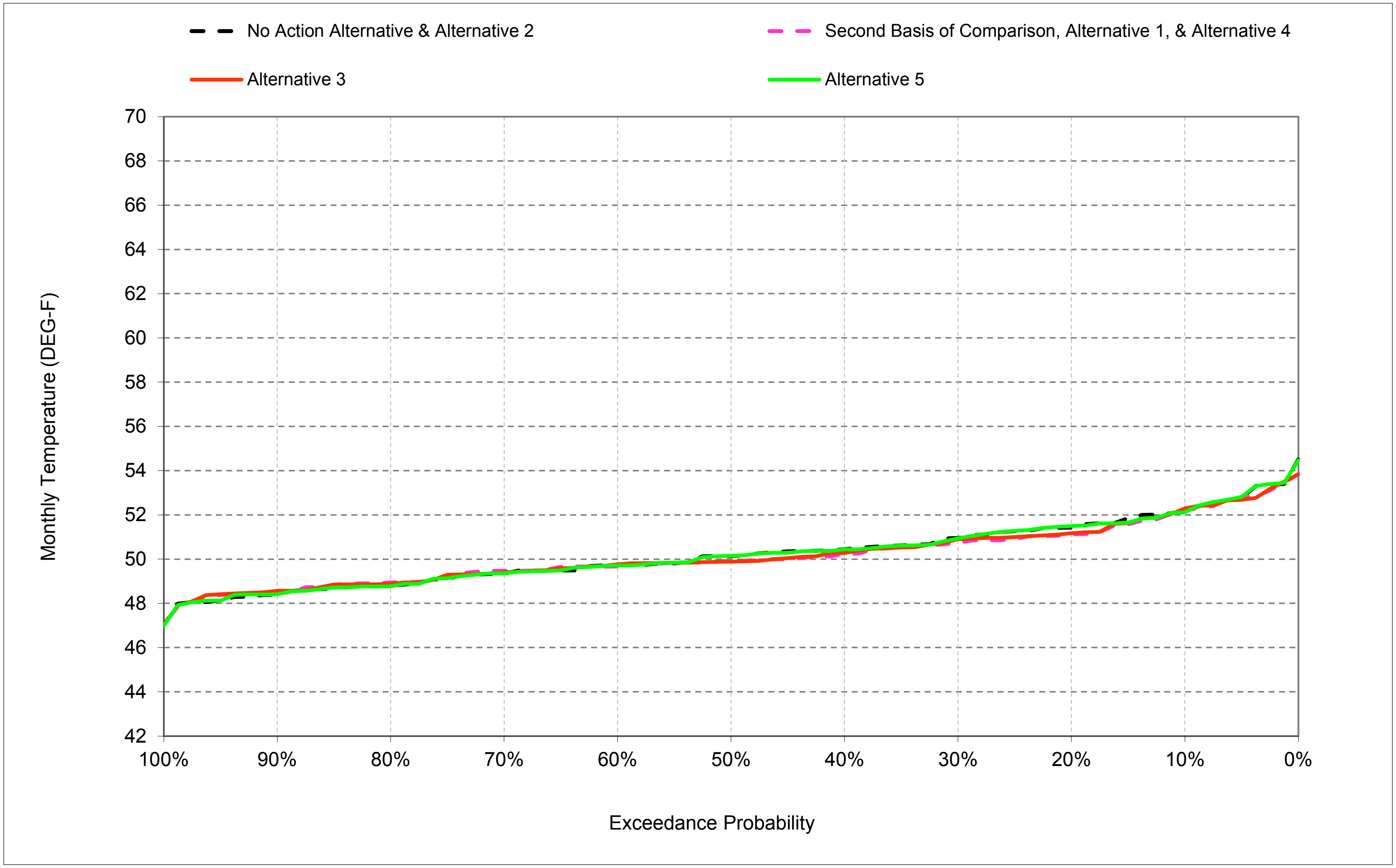
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-2. Sacramento River at Balls Ferry, November



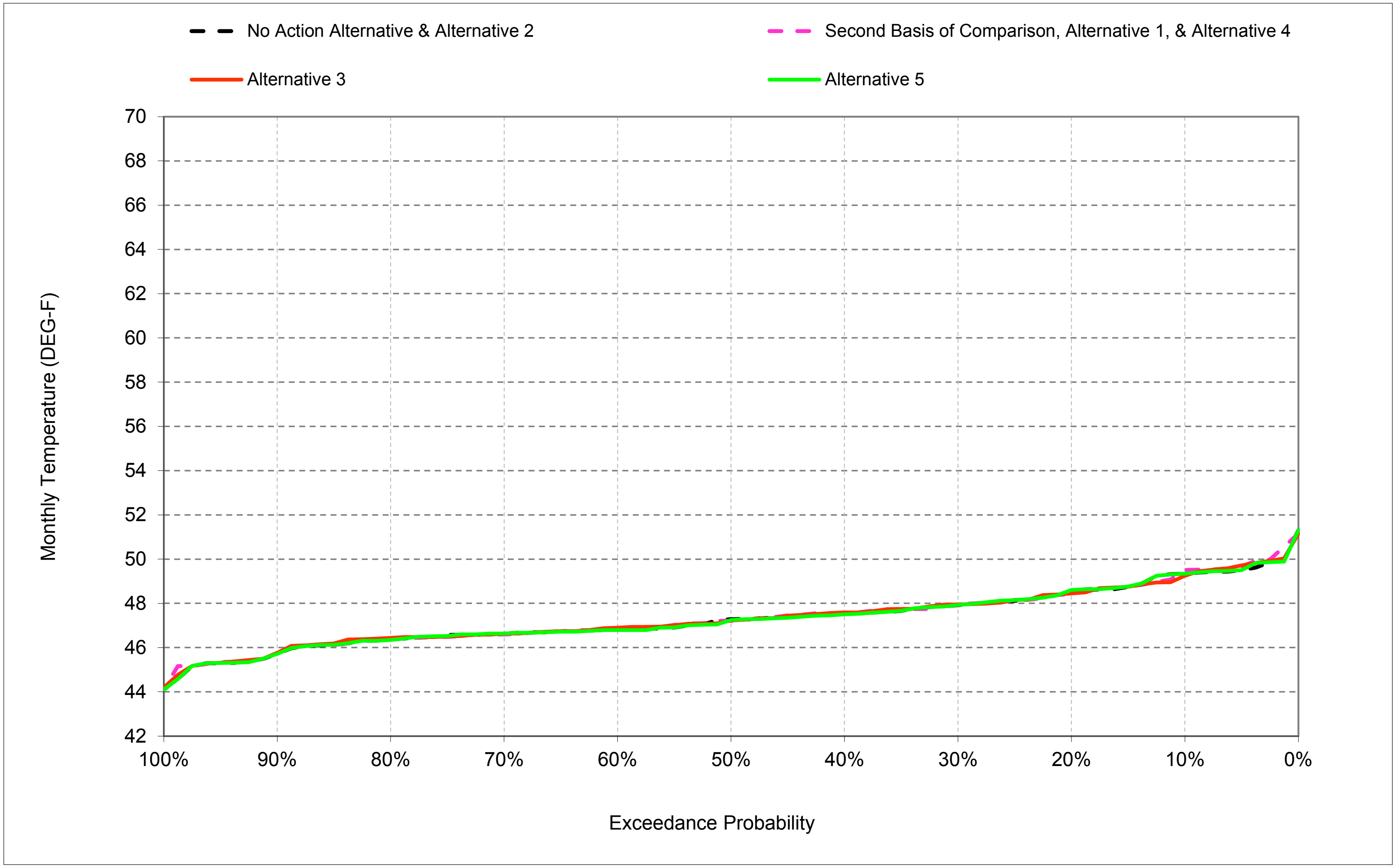
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-3. Sacramento River at Balls Ferry, December



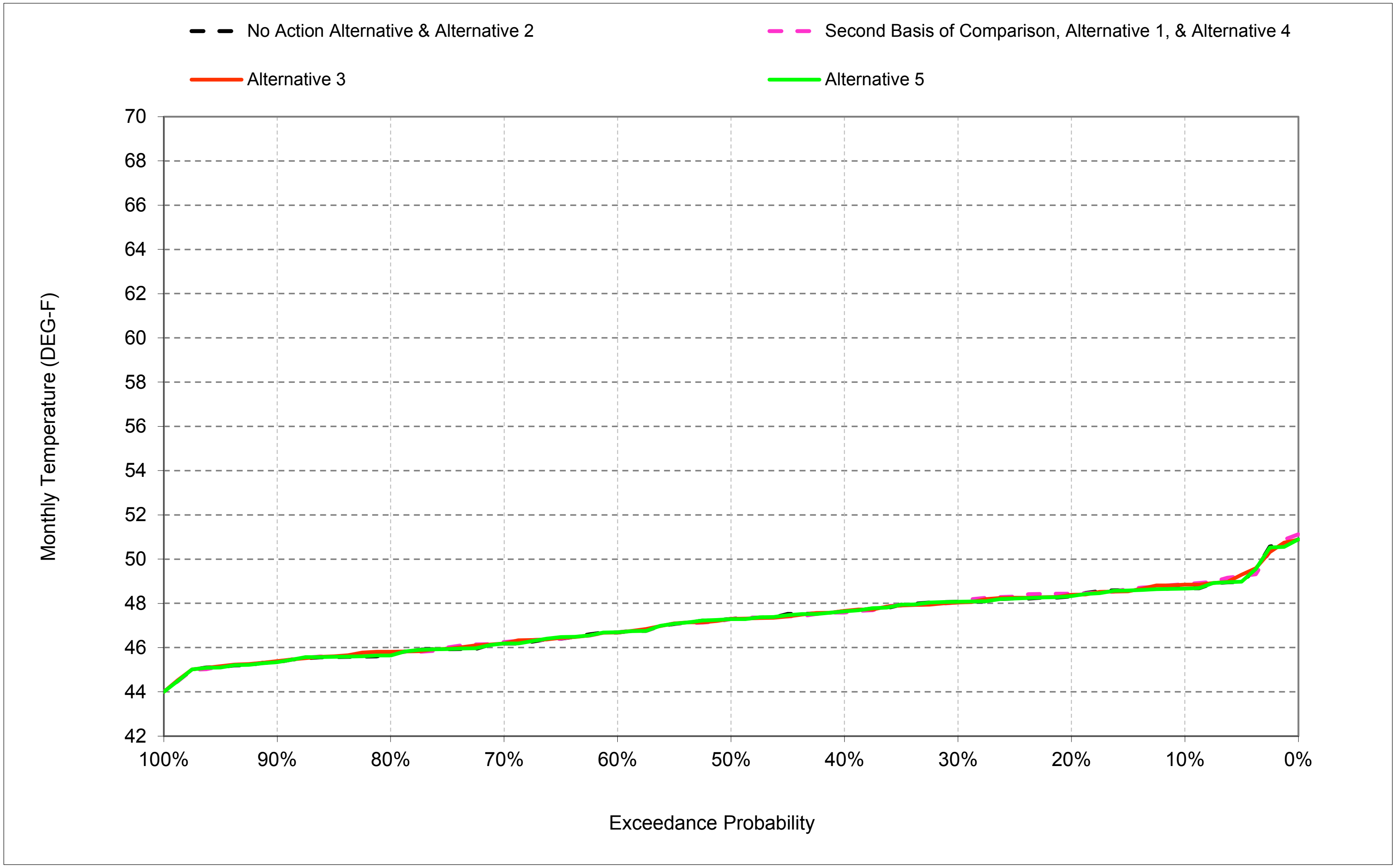
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-4. Sacramento River at Balls Ferry, January



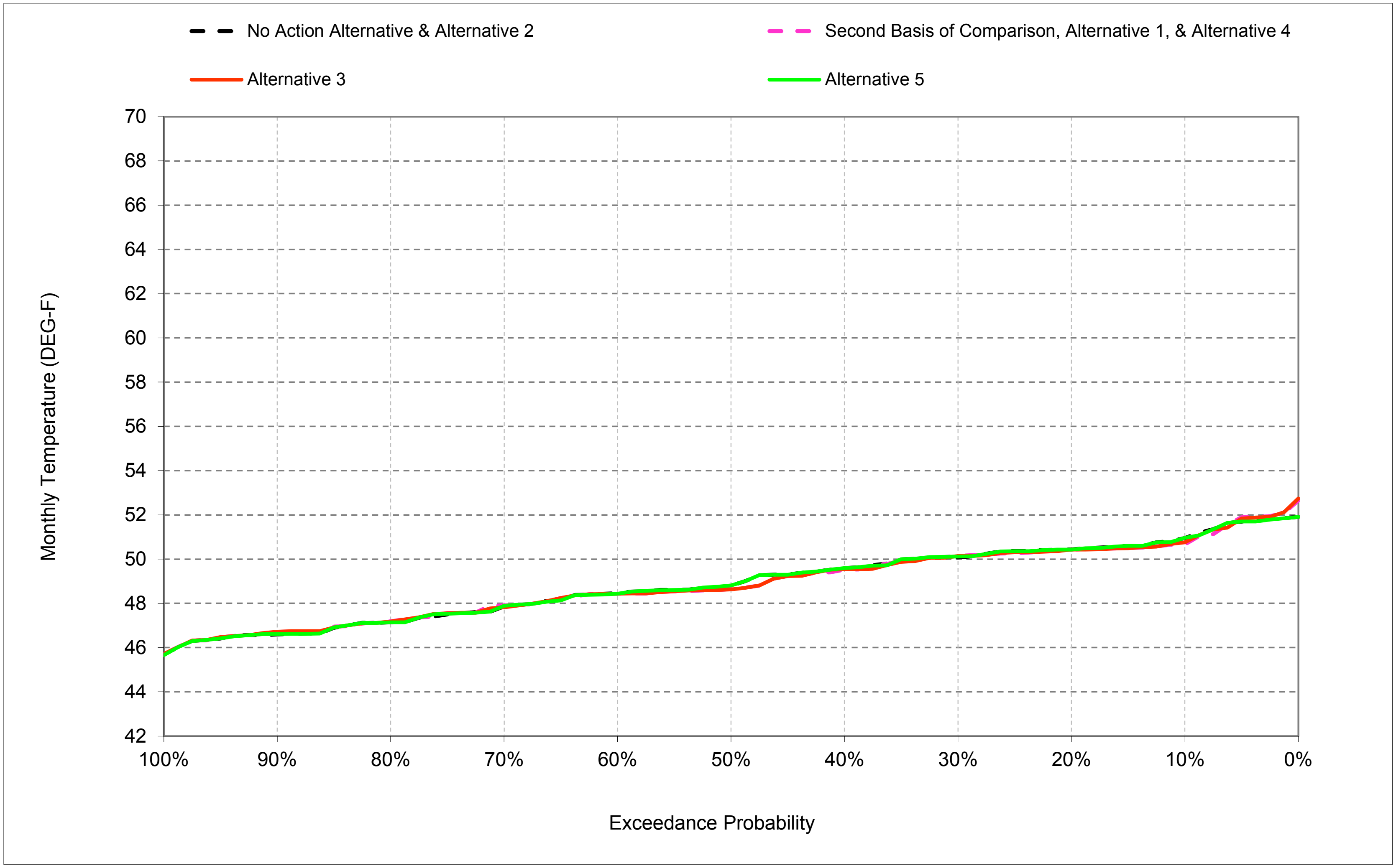
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-5. Sacramento River at Balls Ferry, February



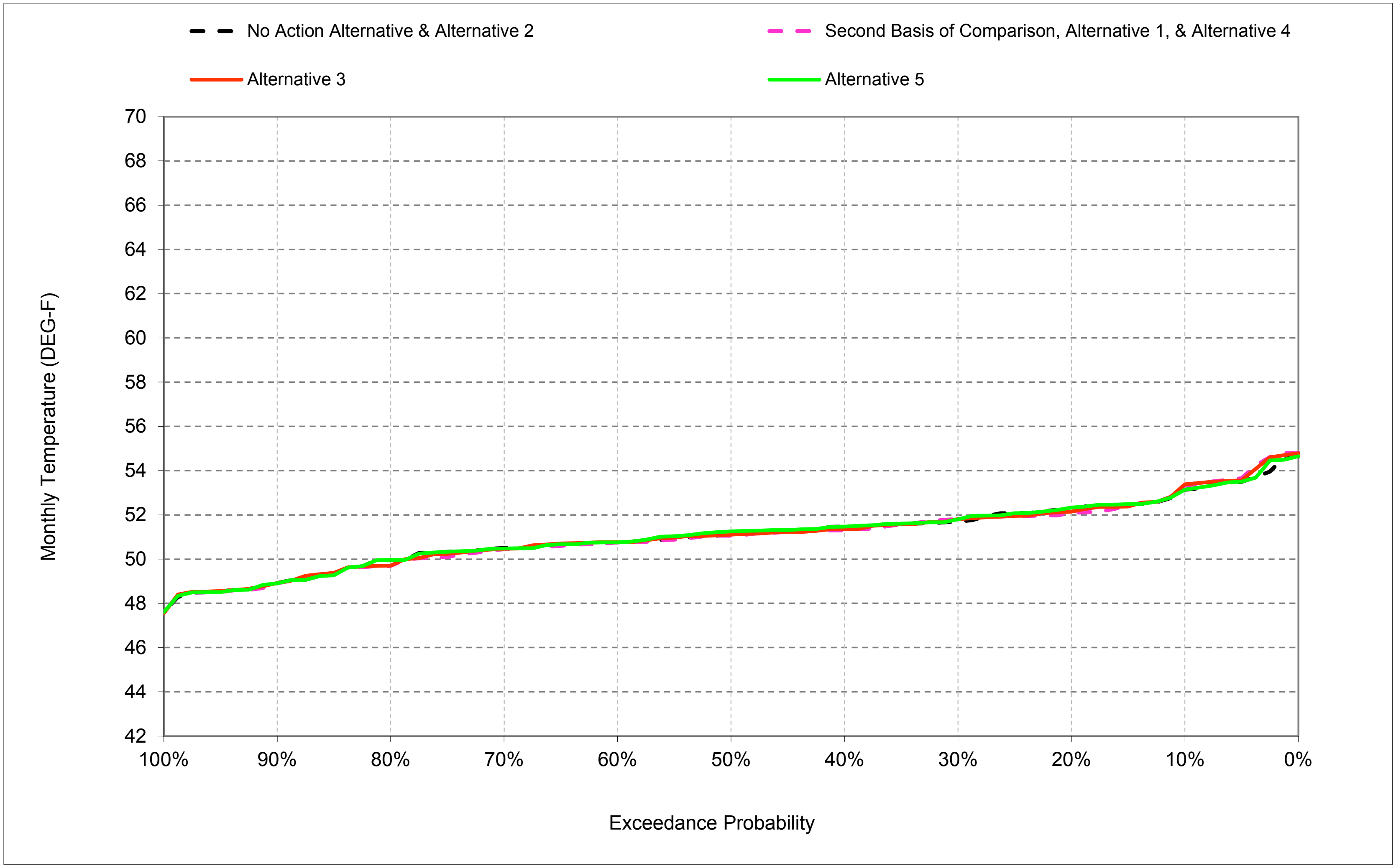
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-6. Sacramento River at Balls Ferry, March



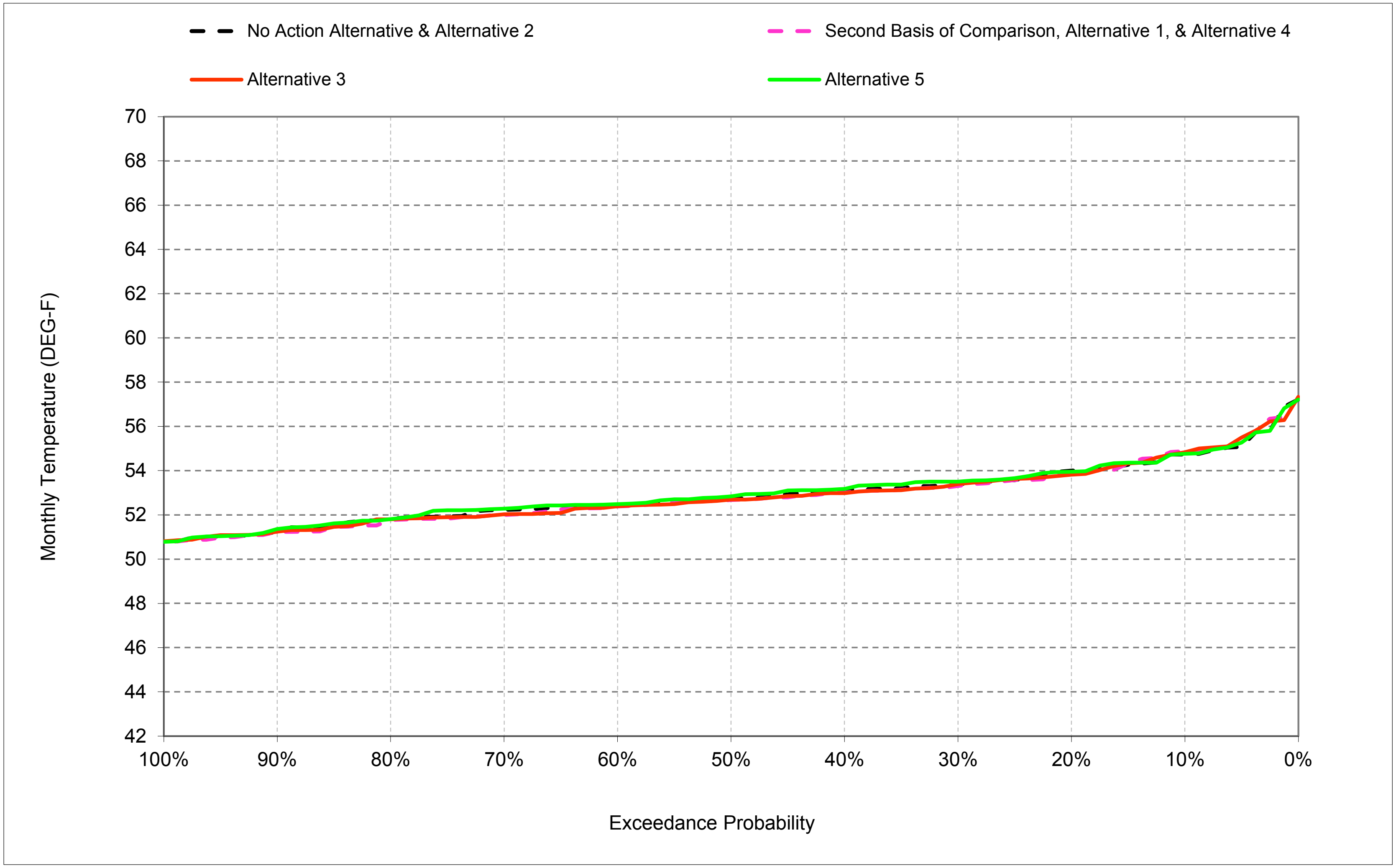
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-7. Sacramento River at Balls Ferry, April



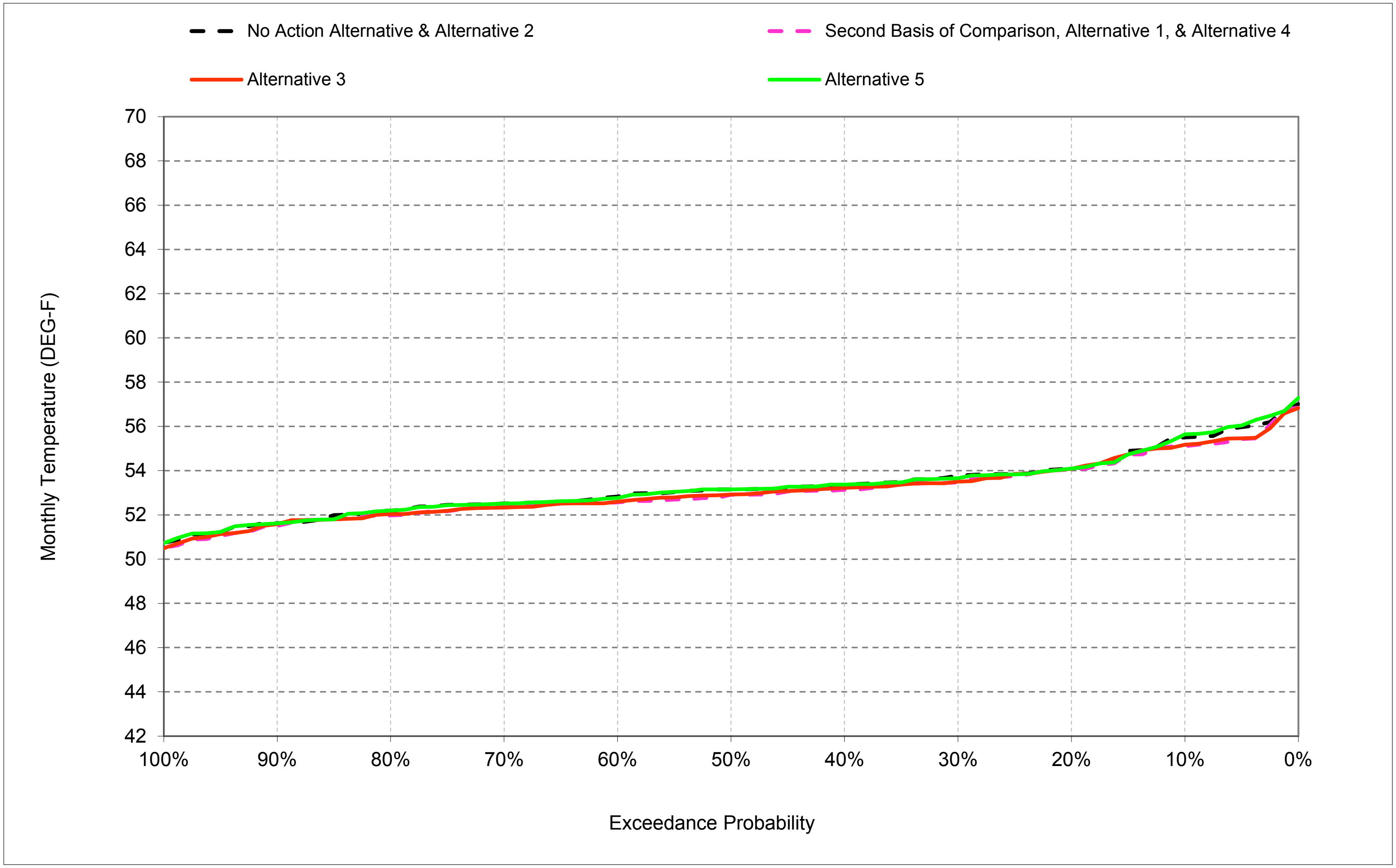
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-8. Sacramento River at Balls Ferry, May



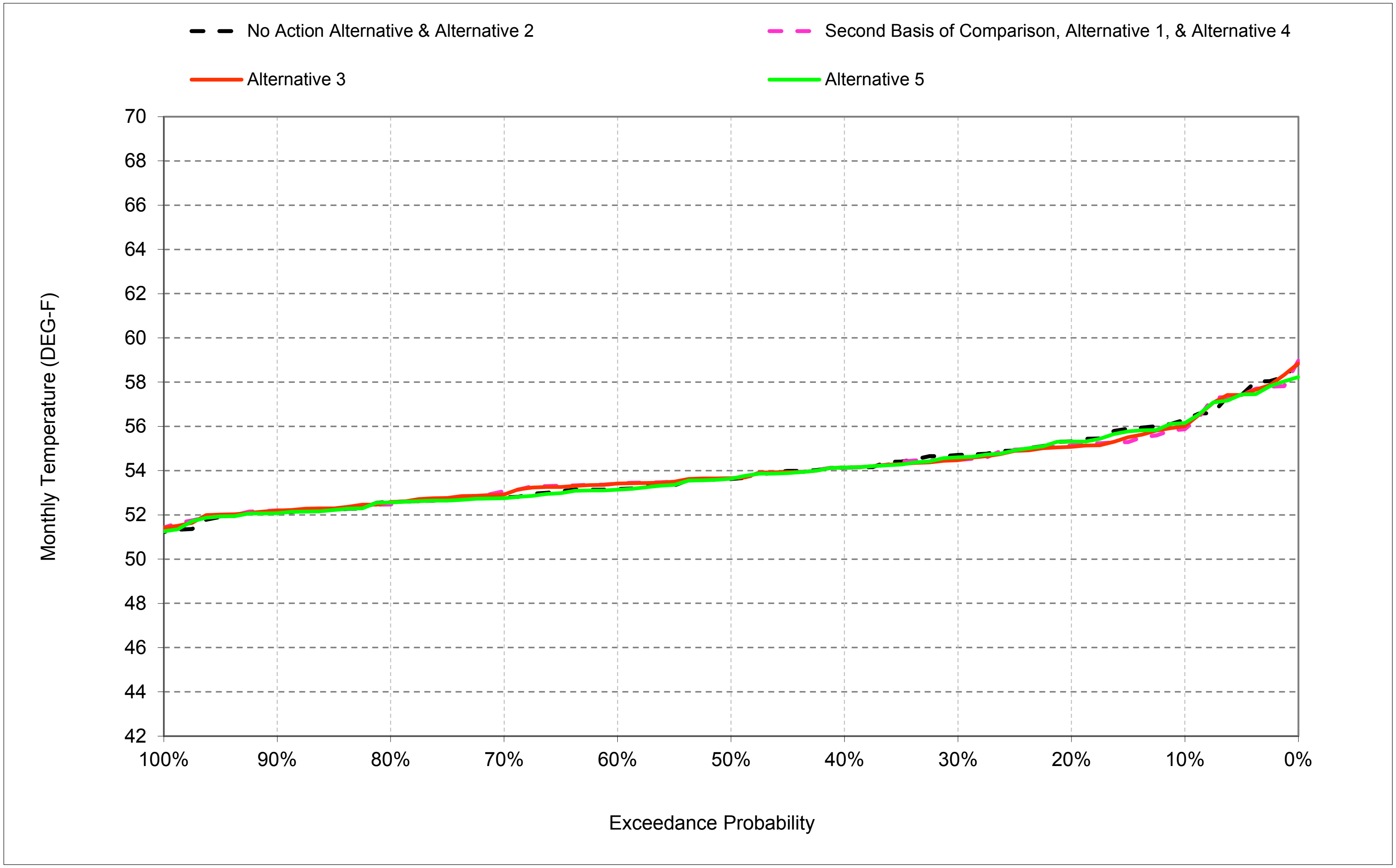
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-9. Sacramento River at Balls Ferry, June



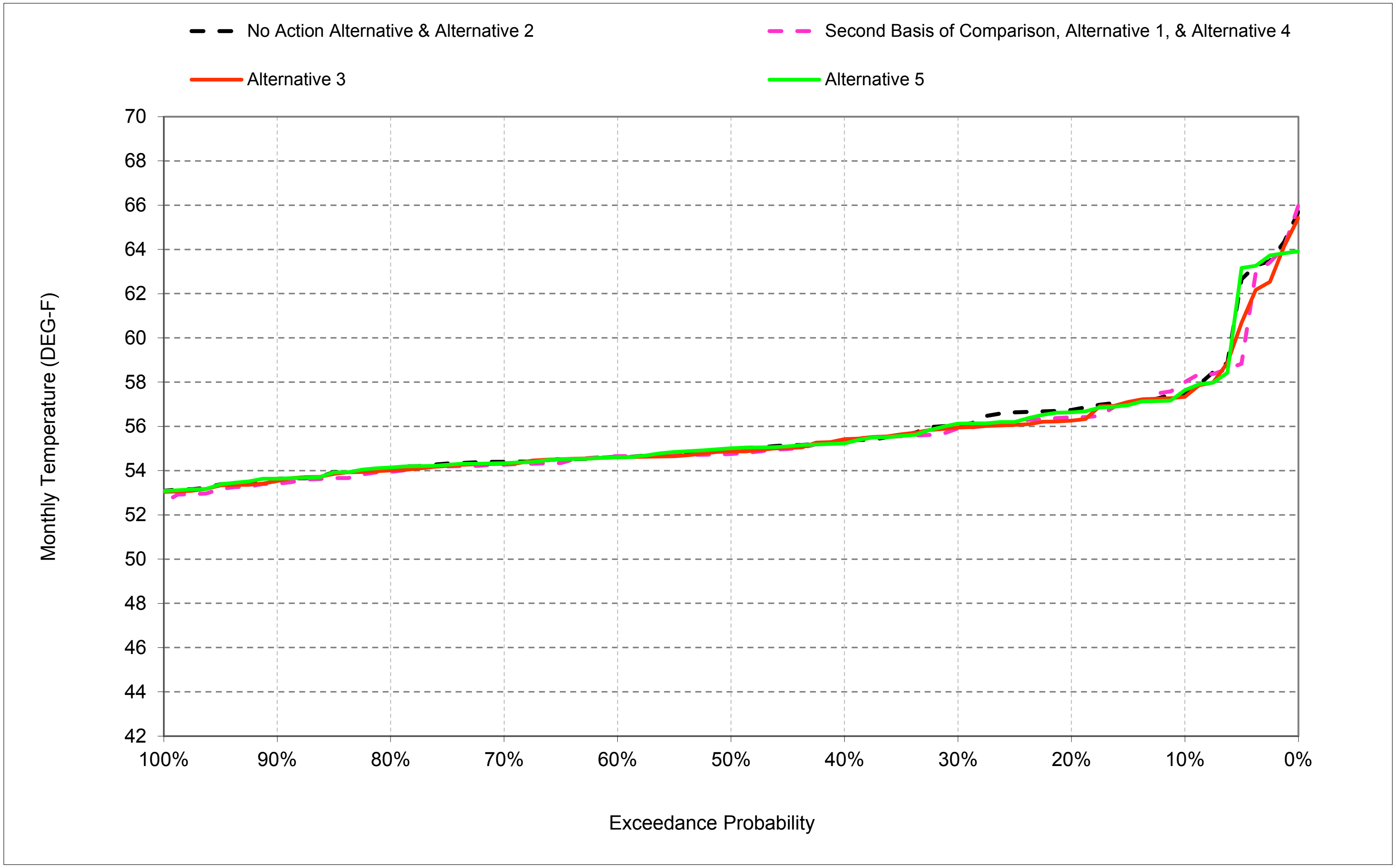
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-10. Sacramento River at Balls Ferry, July



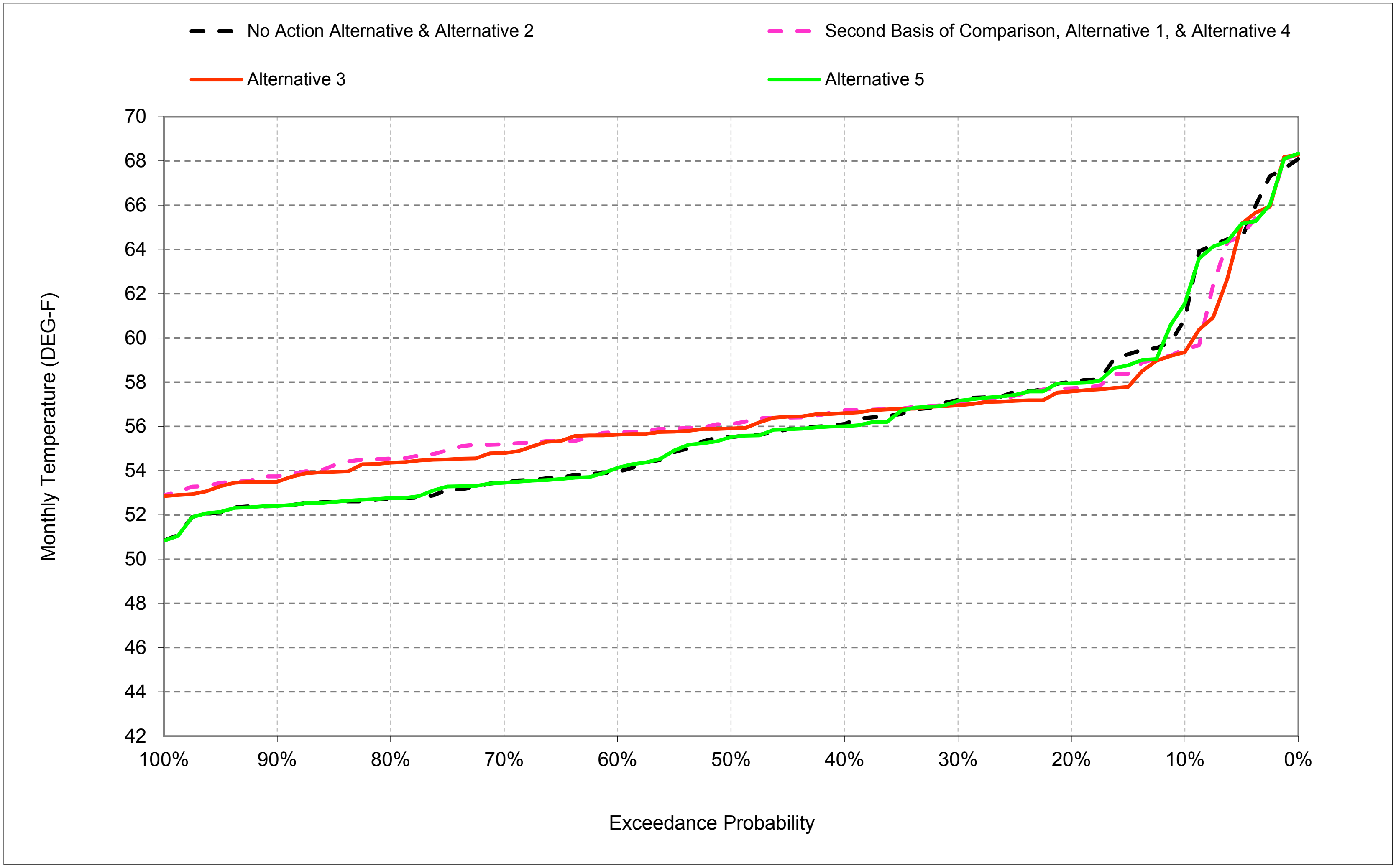
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-11. Sacramento River at Balls Ferry, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-12. Sacramento River at Balls Ferry, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-1. Sacramento River at Balls Ferry, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period[b]	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period[b]	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-1.5	-0.3	0.0	0.1	0.2	-0.3	0.2	0.1	-0.4	-0.4	0.5	-1.3
0.2	0.0	-0.1	-0.3	-0.1	0.1	0.0	-0.1	-0.1	0.0	-0.2	-0.3	-0.3
0.3	0.0	-0.4	-0.2	0.0	0.0	0.1	0.1	-0.1	-0.3	-0.2	-0.2	-0.2
0.4	0.0	-0.5	-0.2	0.1	0.0	-0.1	-0.2	-0.1	-0.2	0.0	-0.1	0.6
0.5	0.1	-0.5	-0.2	-0.1	0.0	-0.1	-0.1	-0.1	-0.3	0.0	-0.2	0.6
0.6	0.0	-0.5	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.2	0.0	1.7
0.7	0.0	-0.5	0.1	0.0	0.0	0.2	-0.1	-0.2	-0.1	0.2	-0.1	1.7
0.8	-0.3	-0.5	0.2	0.0	0.1	0.0	-0.3	-0.2	-0.2	-0.1	-0.1	1.8
0.9	0.0	-0.1	0.1	0.0	0.0	0.1	-0.1	0.0	-0.2	0.1	-0.1	1.3
Long Term												
Full Simulation Period[b]	-0.1	-0.4	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.2	0.7
Water Year Types[c]												
Wet (32%)	-0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	2.0
Above Normal (16%)	0.0	-0.4	-0.1	0.1	0.0	-0.1	0.0	-0.2	-0.2	0.1	-0.1	1.5
Below Normal (13%)	-0.3	-0.6	-0.4	0.0	0.0	-0.2	0.0	0.0	-0.2	0.0	-0.3	0.0
Dry (24%)	0.0	-0.3	-0.2	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.1	0.1	-0.1
Critical (15%)	-0.6	-0.3	0.0	0.2	0.2	0.0	0.0	0.0	-0.3	-0.1	-0.4	-1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-2. Sacramento River at Balls Ferry, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period[b]	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	52	49	49	51	53	55	55	56	57	59
20%	57	55	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	54	53	49	46	46	47	50	52	52	52	54	54
90%	54	53	49	46	45	47	49	51	52	52	53	54
Long Term												
Full Simulation Period[b]	56	54	50	47	47	49	51	53	53	54	56	57
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	50	51	52	53	53	55	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	52	54	55	57	59	62

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-1.4	-0.3	0.1	-0.1	0.2	-0.2	0.2	0.1	-0.3	-0.3	-0.2	-1.4
0.2	-0.1	-0.1	-0.3	-0.1	0.1	0.0	-0.1	-0.2	0.0	-0.2	-0.5	-0.4
0.3	0.0	-0.3	-0.1	0.0	0.0	0.0	0.1	0.0	-0.3	-0.2	-0.1	-0.2
0.4	-0.1	-0.5	-0.2	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.1	0.5
0.5	0.0	-0.5	-0.2	-0.1	0.0	-0.1	0.0	-0.1	-0.2	0.0	-0.1	0.4
0.6	0.1	-0.6	0.0	0.1	0.0	0.0	0.0	-0.1	-0.2	0.2	0.0	1.6
0.7	-0.1	-0.5	0.1	0.0	0.0	0.1	0.0	-0.2	-0.2	0.1	-0.1	1.3
0.8	-0.3	-0.6	0.1	0.1	0.2	0.0	-0.3	0.0	-0.2	-0.1	-0.1	1.6
0.9	-0.2	-0.2	0.2	0.0	0.0	0.1	0.0	0.0	-0.1	0.1	-0.1	1.1
Long Term												
Full Simulation Period[b]	-0.2	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	0.5
Water Year Types[c]												
Wet (32%)	-0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	1.8
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.1	0.2	0.1	1.5
Below Normal (13%)	-0.3	-0.6	-0.4	0.0	0.0	-0.2	0.0	0.0	-0.1	-0.1	-0.1	-0.7
Dry (24%)	-0.1	-0.4	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.1	-0.2	-0.2
Critical (15%)	-0.5	-0.2	0.0	0.2	0.1	0.0	0.1	0.0	-0.3	0.0	-0.5	-1.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-3. Sacramento River at Balls Ferry, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period[b]	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	52	49	49	51	53	55	56	56	58	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	54	54	55	56	57
40%	56	55	50	47	48	50	51	53	53	54	55	56
50%	56	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	54	52
Long Term												
Full Simulation Period[b]	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	55	54	51	47	48	50	51	53	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	52	54	56	57	60	63

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.7
0.2	-0.2	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
0.5	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.2	-0.1
Critical (15%)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-4. Sacramento River at Balls Ferry, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period[b]	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	52	49	49	51	53	55	55	56	57	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	53	54	55	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	56
50%	55	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	53	52
Long Term												
Full Simulation Period[b]	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	56	55	51	47	47	50	51	52	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	51	54	55	57	60	63

No Action Alternative minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.5	0.3	**0.0**	**-0.1**	**-0.2**	0.3	**-0.2**	**-0.1**	0.4	0.4	**-0.5**	1.3
0.2	**0.0**	0.1	0.3	0.1	**-0.1**	0.0	0.1	0.1	0.0	0.2	0.3	0.3
0.3	0.0	0.4	0.2	**0.0**	0.0	**-0.1**	**-0.1**	0.1	0.3	0.2	0.2	0.2
0.4	**0.0**	0.5	0.2	**-0.1**	0.0	0.1	0.2	0.1	0.2	**0.0**	0.1	**-0.6**
0.5	**-0.1**	0.5	0.2	0.1	0.0	0.1	0.1	0.1	0.3	**0.0**	0.2	**-0.6**
0.6	**0.0**	0.5	0.0	**0.0**	**0.0**	0.0	0.0	0.1	0.2	**-0.2**	**0.0**	**-1.7**
0.7	**0.0**	0.5	**-0.1**	0.0	**0.0**	**-0.2**	0.1	0.2	0.1	**-0.2**	0.1	**-1.7**
0.8	0.3	0.5	**-0.2**	**0.0**	**-0.1**	**0.0**	0.3	0.2	0.2	0.1	0.1	**-1.8**
0.9	0.0	0.1	**-0.1**	**0.0**	0.0	**-0.1**	0.1	0.0	0.2	**-0.1**	0.1	**-1.3**
Long Term												
Full Simulation Period[b]	0.1	0.4	0.1	**0.0**	**0.0**	0.0	0.0	0.1	0.2	0.0	0.2	**-0.7**
Water Year Types[c]												
Wet (32%)	0.1	0.3	**-0.1**	**0.0**	**0.0**	**0.0**	0.0	**0.0**	0.1	**0.0**	0.2	**-2.0**
Above Normal (16%)	0.0	0.4	0.1	**-0.1**	**0.0**	0.1	**0.0**	0.2	0.2	**-0.1**	0.1	**-1.5**
Below Normal (13%)	0.3	0.6	0.4	**0.0**	0.0	0.2	0.0	0.0	0.2	**0.0**	0.3	0.0
Dry (24%)	**0.0**	0.3	0.2	0.1	**0.0**	**0.0**	0.1	0.1	0.3	0.1	**-0.1**	0.1
Critical (15%)	0.6	0.3	**0.0**	**-0.2**	**-0.2**	**0.0**	**0.0**	0.0	0.3	0.1	0.4	1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-5. Sacramento River at Balls Ferry, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period[b]	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	52	49	49	51	53	55	55	56	57	59
20%	57	55	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	50	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	54	53	49	46	46	47	50	52	52	52	54	54
90%	54	53	49	46	45	47	49	51	52	52	53	54
Long Term												
Full Simulation Period[b]	56	54	50	47	47	49	51	53	53	54	56	57
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	50	51	52	53	53	55	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	52	54	55	57	59	62

Alternative 3 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	0.0	0.1	-0.3	0.0	0.1	0.0	-0.1	0.1	0.1	-0.6	-0.1
0.2	-0.2	-0.1	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	-0.1	-0.2	-0.1
0.3	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	-0.1
0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.2
0.6	0.1	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
0.7	-0.1	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.4
0.8	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	-0.2
0.9	-0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	-0.2
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.1	0.2	-0.6
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1
Critical (15%)	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-6. Sacramento River at Balls Ferry, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	52	49	49	51	53	55	55	56	58	59
20%	57	56	51	48	48	50	52	54	54	55	56	58
30%	56	55	51	48	48	50	52	53	53	54	56	57
40%	56	55	50	48	48	49	51	53	53	54	55	57
50%	56	54	50	47	47	49	51	53	53	54	55	56
60%	55	54	50	47	47	48	51	52	53	53	55	56
70%	55	53	49	47	46	48	50	52	52	53	54	55
80%	55	53	49	46	46	47	50	52	52	52	54	55
90%	54	53	48	46	45	47	49	51	51	52	53	54
Long Term												
Full Simulation Period[b]	56	54	50	47	47	49	51	53	53	54	55	57
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	48	50	53	53	53	54	55
Above Normal (16%)	56	54	50	47	46	48	51	52	52	53	54	55
Below Normal (13%)	55	54	50	47	47	49	51	52	53	53	54	56
Dry (24%)	56	54	50	48	48	50	52	53	53	54	56	57
Critical (15%)	58	56	51	48	48	50	51	54	55	57	60	62

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	52	49	49	51	53	55	56	56	58	61
20%	57	56	51	49	48	50	52	54	54	55	57	58
30%	56	55	51	48	48	50	52	54	54	55	56	57
40%	56	55	50	47	48	50	51	53	53	54	55	56
50%	56	55	50	47	47	49	51	53	53	54	55	55
60%	55	54	50	47	47	48	51	52	53	53	55	54
70%	55	54	49	47	46	48	50	52	52	53	54	53
80%	55	54	49	46	46	47	50	52	52	53	54	53
90%	54	53	48	46	45	47	49	51	52	52	54	52
Long Term												
Full Simulation Period[b]	56	55	50	47	47	49	51	53	53	54	56	56
Water Year Types[c]												
Wet (32%)	53	52	48	47	46	47	50	53	53	53	54	53
Above Normal (16%)	56	54	50	47	46	48	51	53	52	52	54	54
Below Normal (13%)	55	54	51	47	48	50	51	53	53	53	55	56
Dry (24%)	56	55	50	48	48	50	52	53	53	54	56	57
Critical (15%)	59	56	51	48	48	50	52	54	56	57	60	63

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.5	0.3	-0.1	-0.1	-0.2	0.3	-0.2	-0.1	0.5	0.3	-0.4	2.0
0.2	-0.2	0.0	0.4	0.1	-0.1	0.0	0.2	0.0	0.0	0.2	0.2	0.2
0.3	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.2	0.1
0.4	-0.1	0.5	0.2	-0.1	0.0	0.1	0.2	0.2	0.2	0.0	0.0	-0.7
0.5	0.0	0.4	0.2	-0.1	0.0	0.2	0.2	0.2	0.3	0.0	0.3	-0.7
0.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.2	-0.3	0.0	-1.5
0.7	0.0	0.5	-0.1	0.0	0.0	-0.2	0.1	0.3	0.1	-0.2	0.1	-1.7
0.8	0.3	0.5	-0.2	0.0	-0.1	0.0	0.3	0.2	0.2	0.1	0.2	-1.8
0.9	0.0	0.3	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	-0.1	0.2	-1.3
Long Term												
Full Simulation Period[b]	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	-0.7
Water Year Types[c]												
Wet (32%)	0.1	0.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	-2.0
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.2	0.2	-0.1	0.1	-1.5
Below Normal (13%)	0.2	0.5	0.4	0.0	0.0	0.2	0.1	0.1	0.2	0.0	0.5	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.3	0.3	0.0	-0.3	0.0
Critical (15%)	0.7	0.3	0.0	-0.2	-0.2	0.0	0.0	0.1	0.4	-0.1	0.2	1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

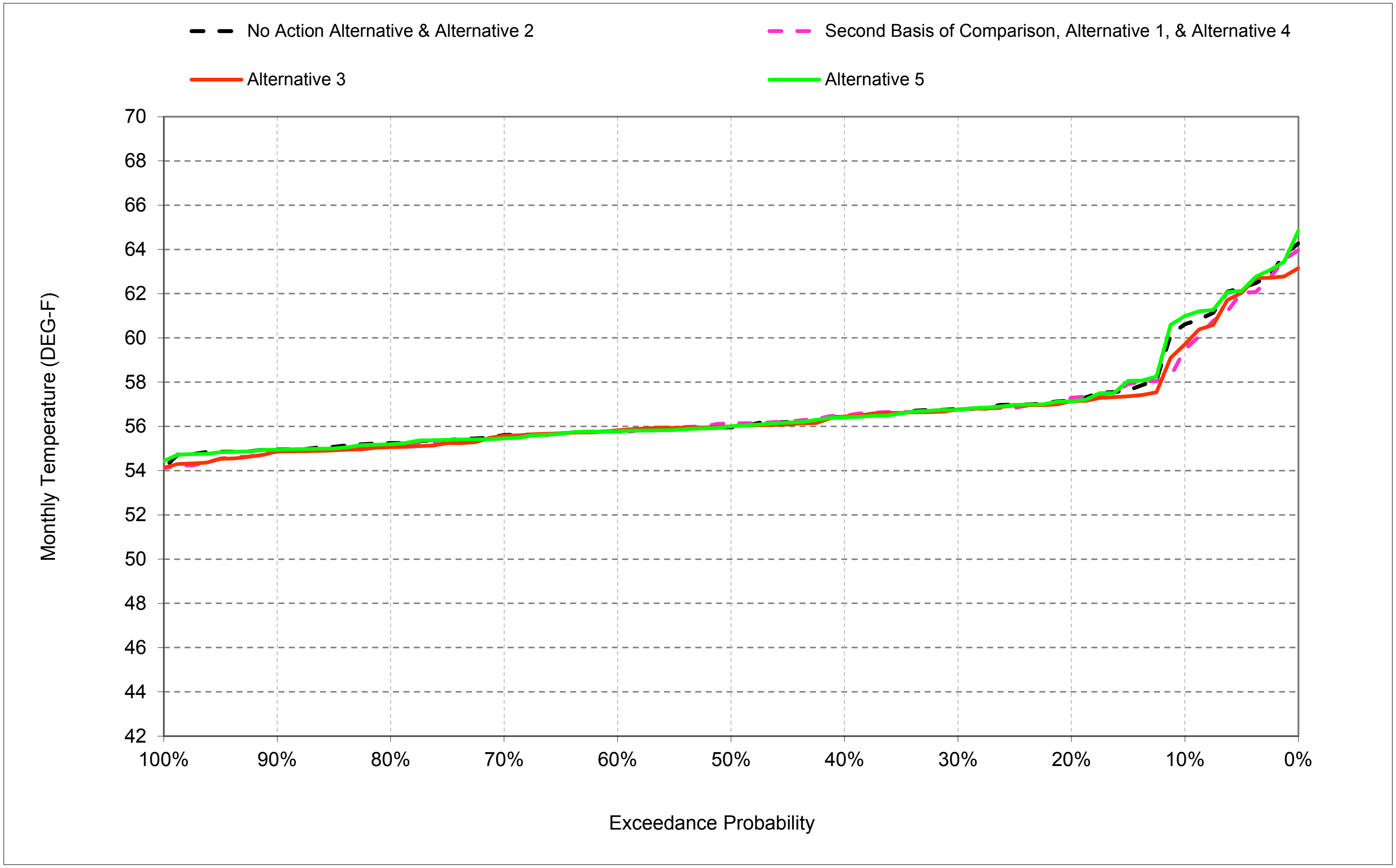
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

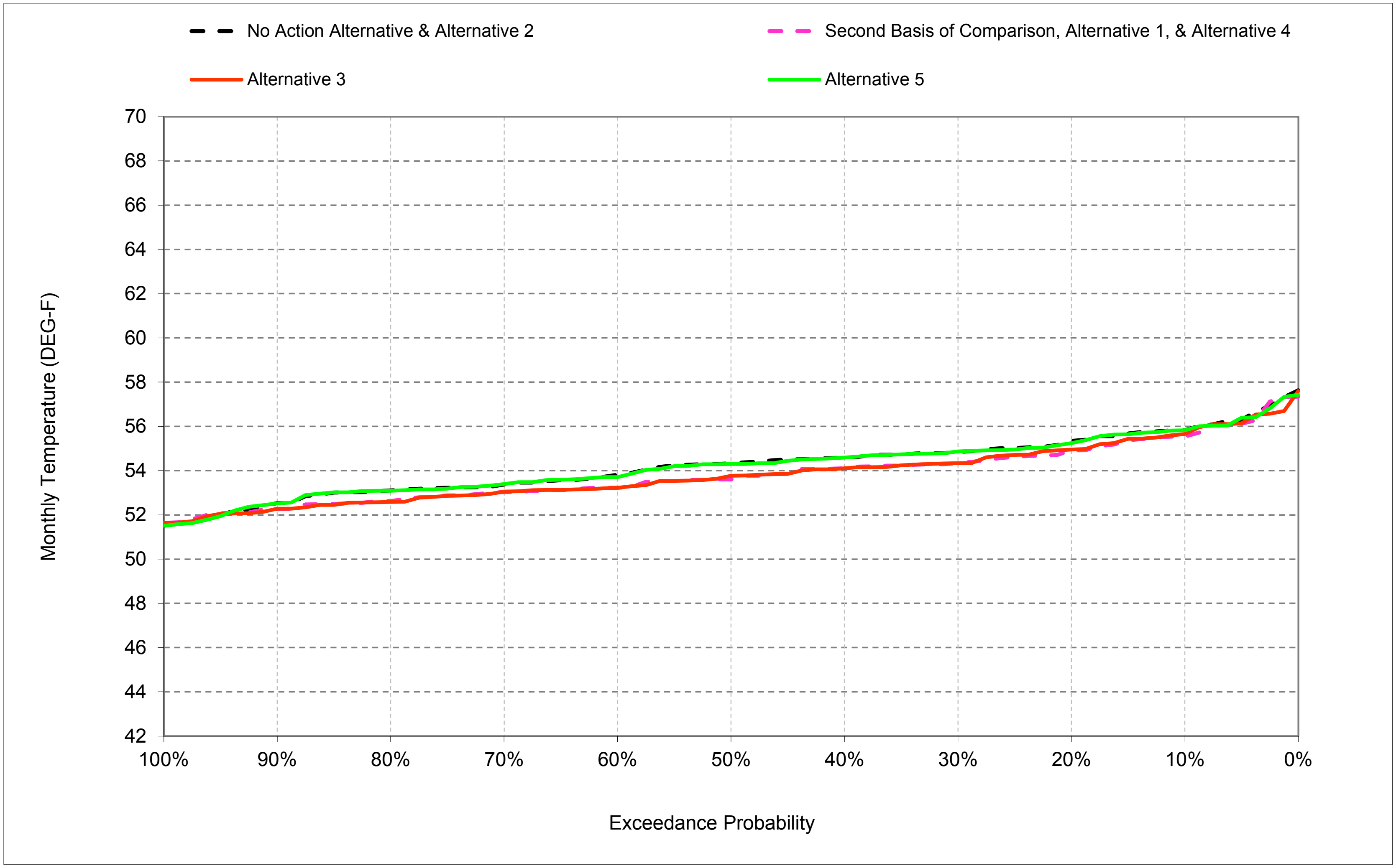
B.7. Sacramento River at Jellys Ferry Temperature

Figure B-7-1. Sacramento River at Jellys Ferry, October



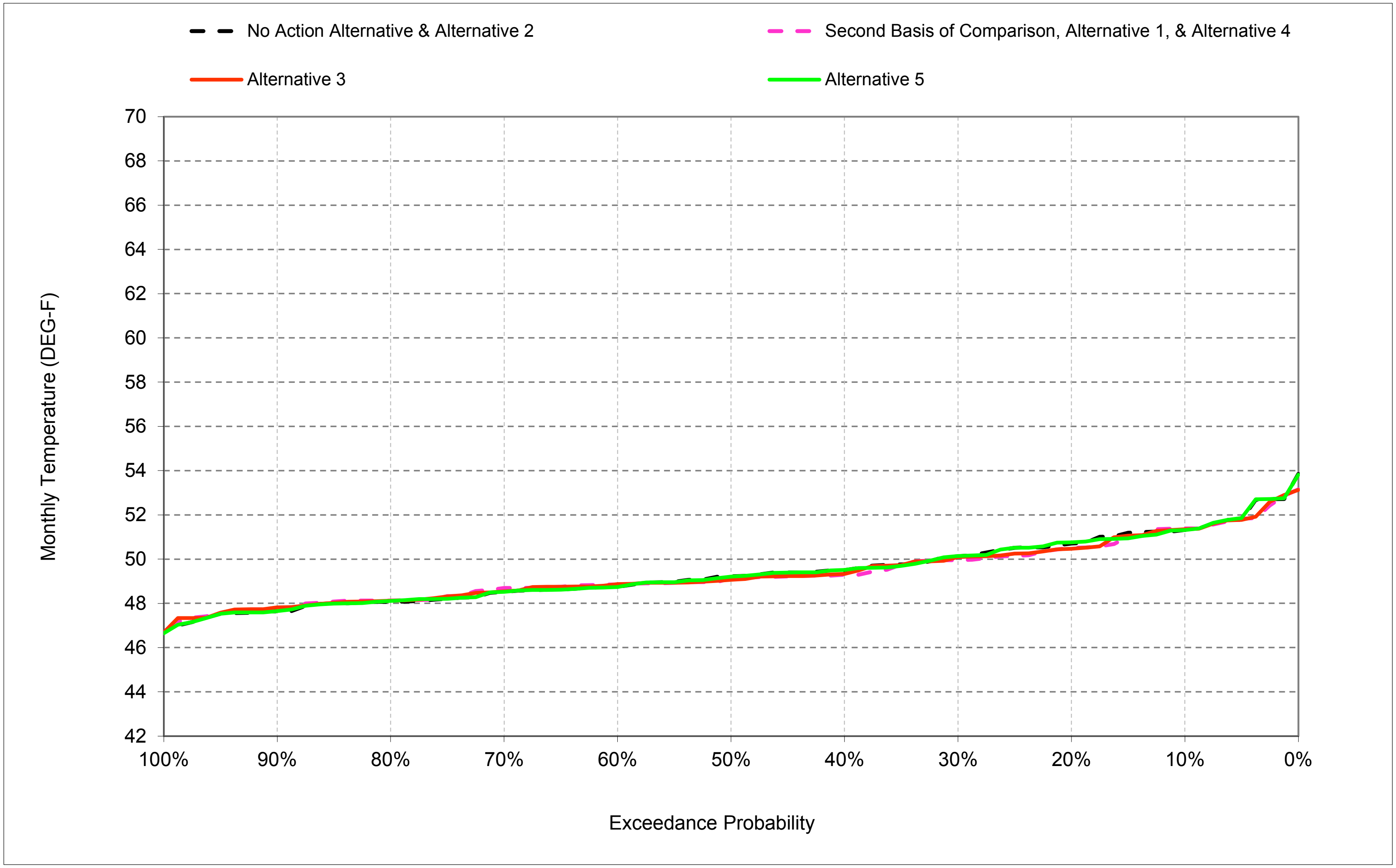
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-2. Sacramento River at Jellys Ferry, November



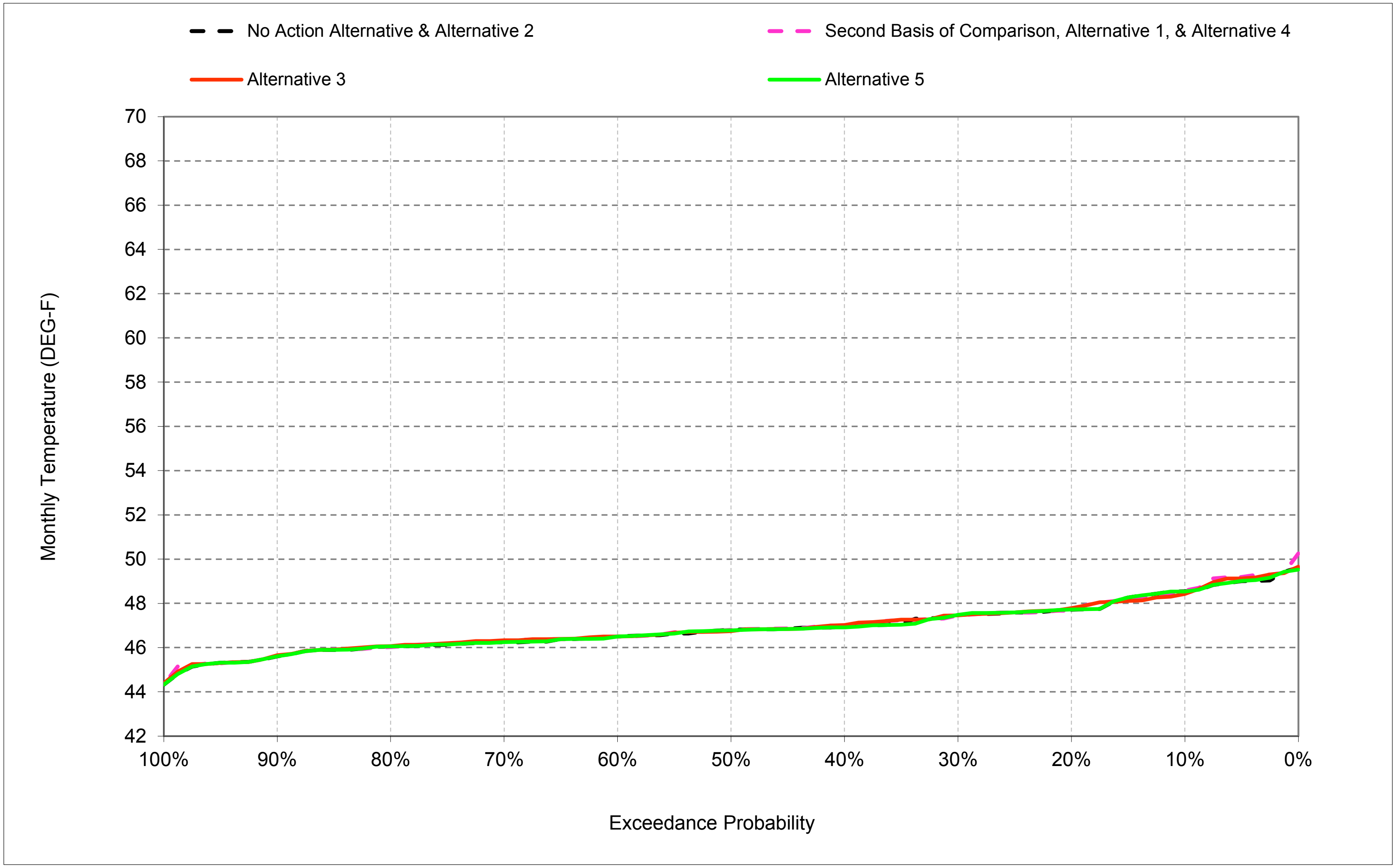
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-3. Sacramento River at Jellys Ferry, December



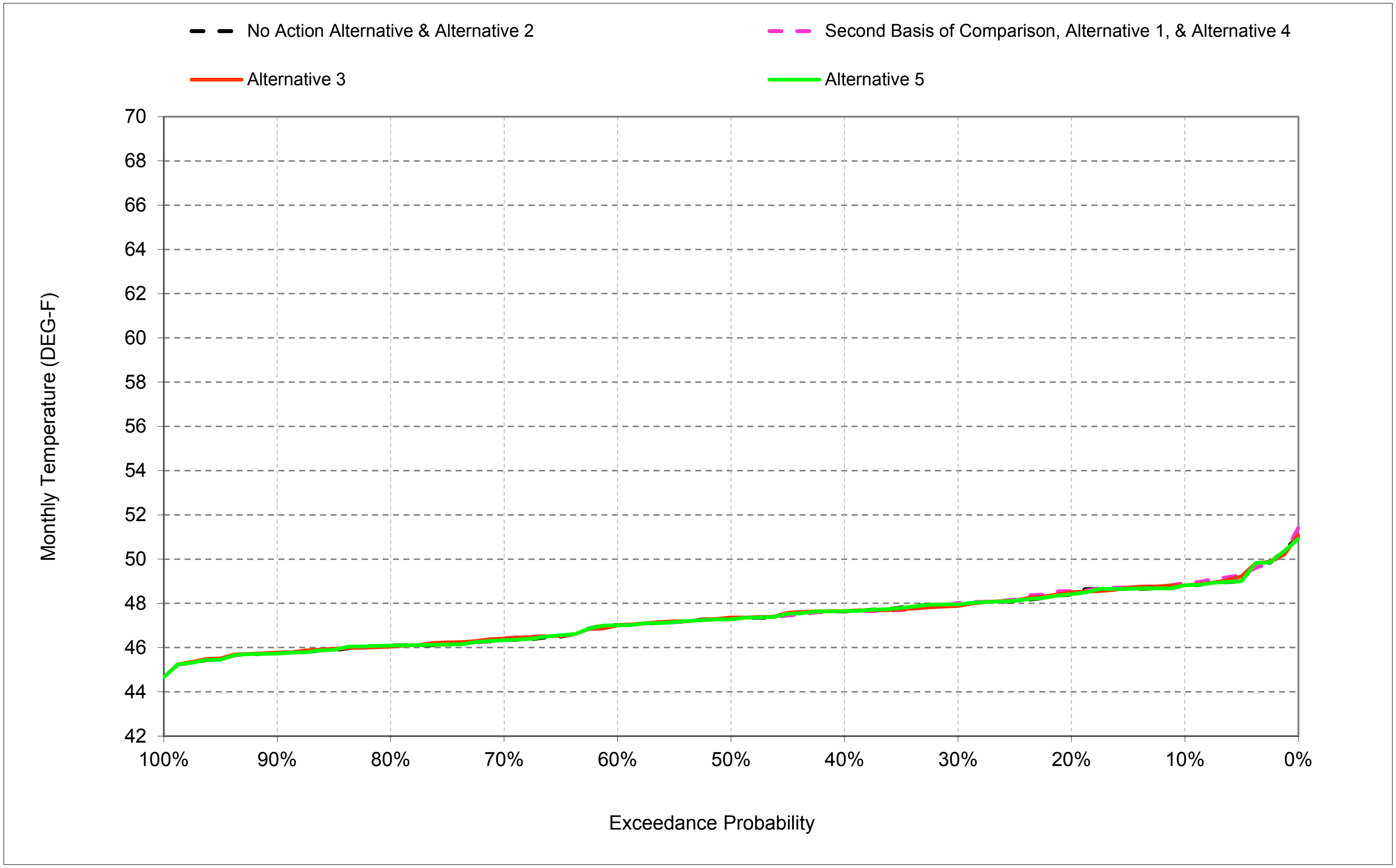
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-4. Sacramento River at Jellys Ferry, January



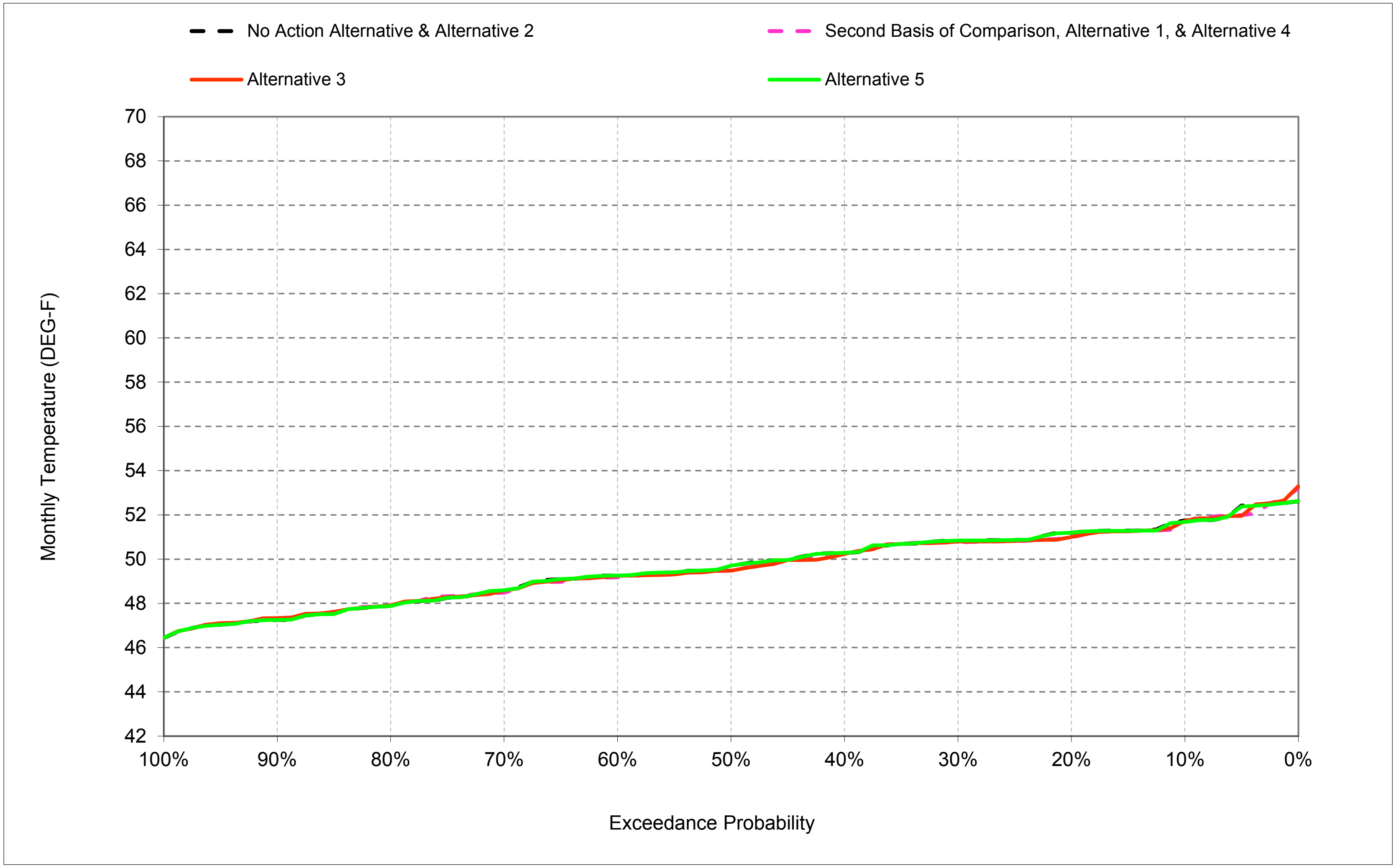
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-5. Sacramento River at Jellys Ferry, February



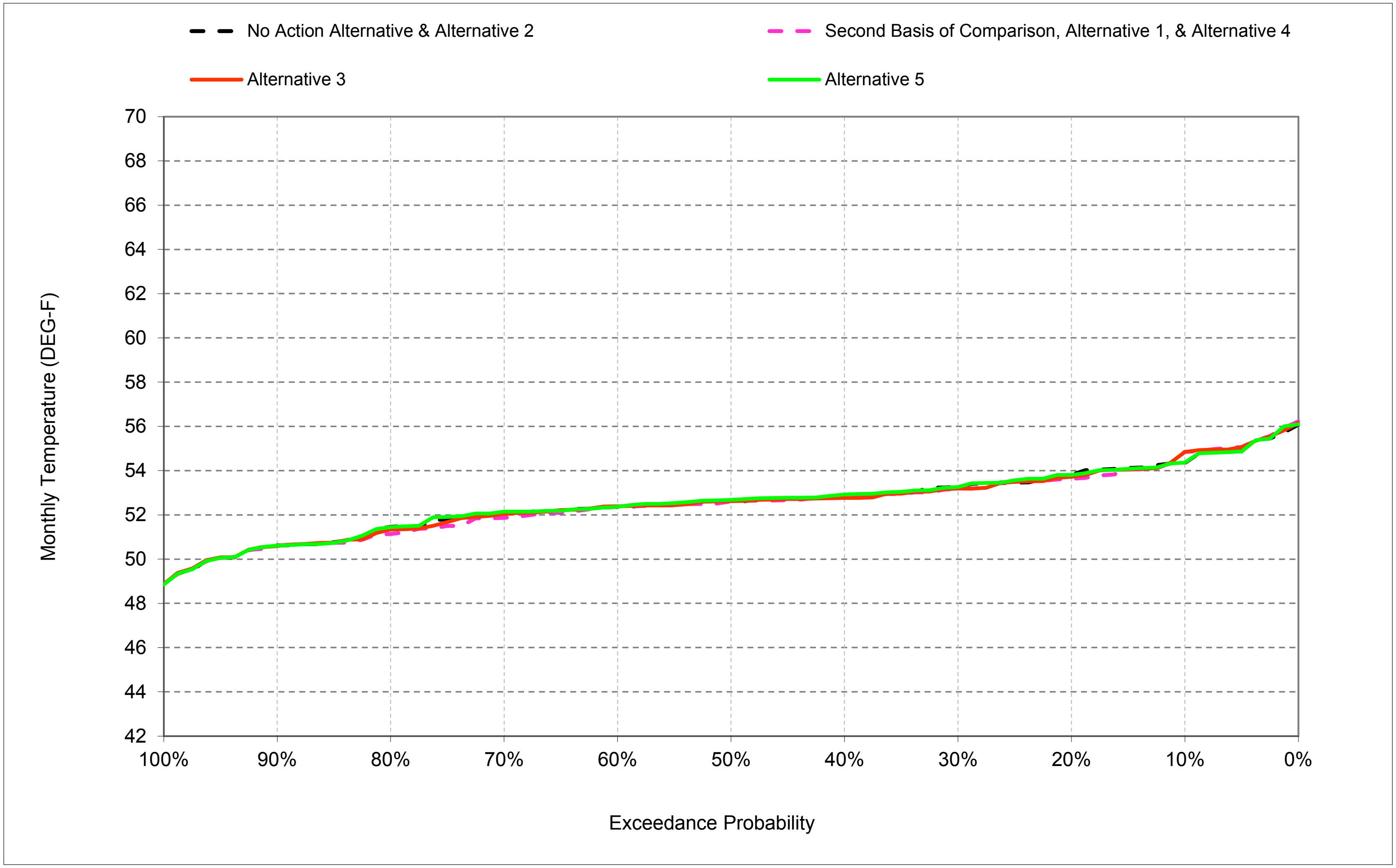
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-6. Sacramento River at Jellys Ferry, March



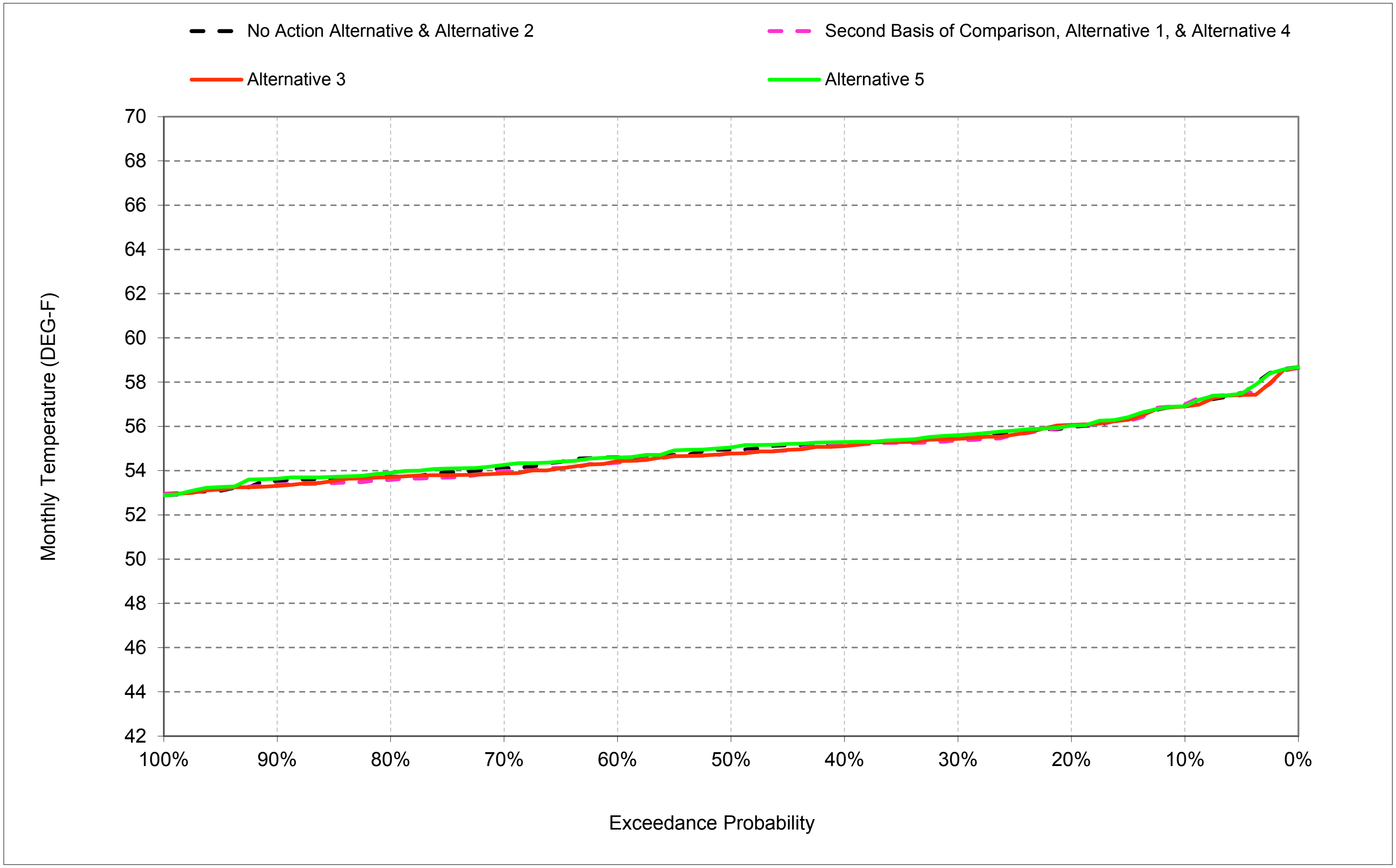
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-7. Sacramento River at Jellys Ferry, April



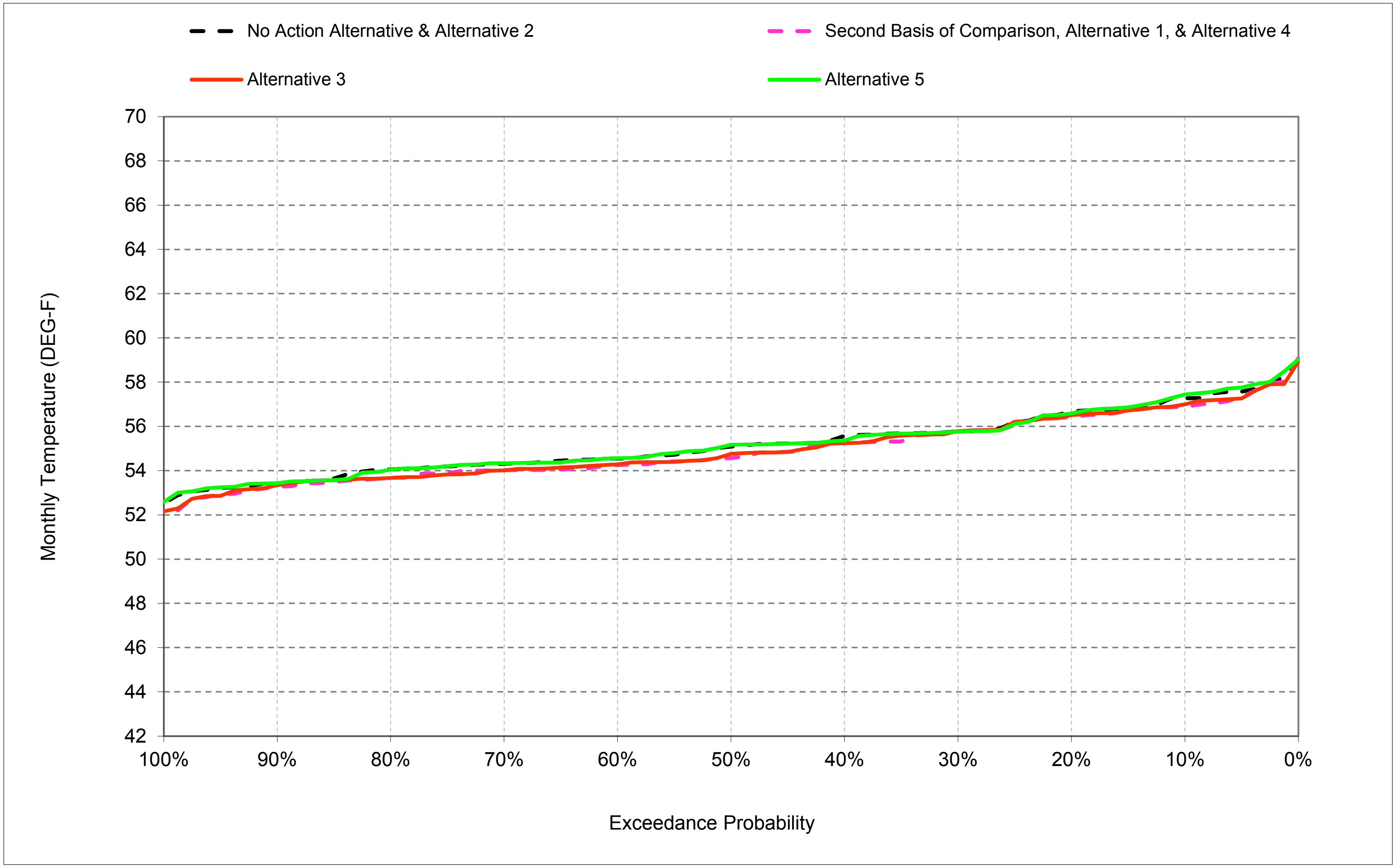
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-8. Sacramento River at Jellys Ferry, May



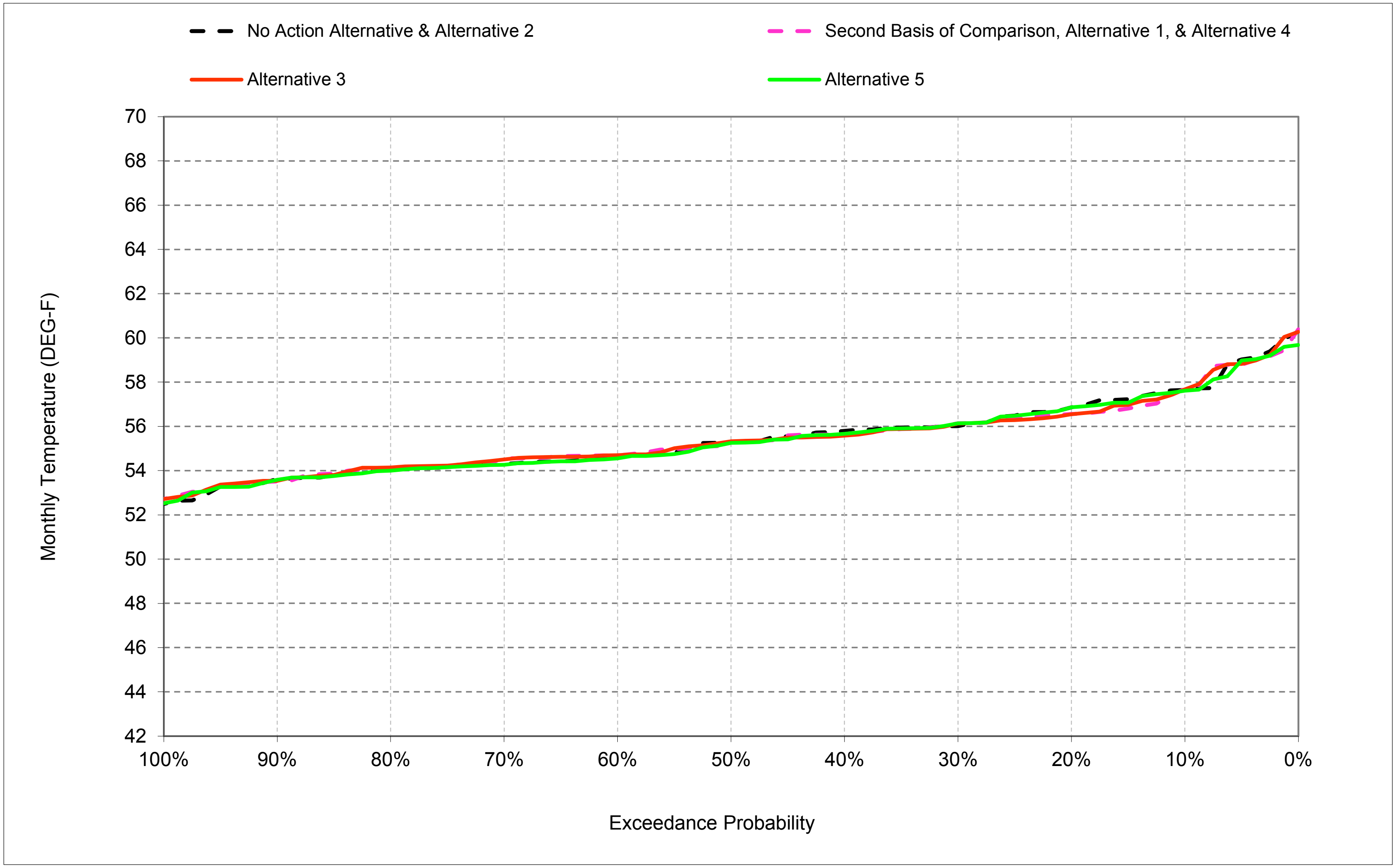
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-9. Sacramento River at Jellys Ferry, June



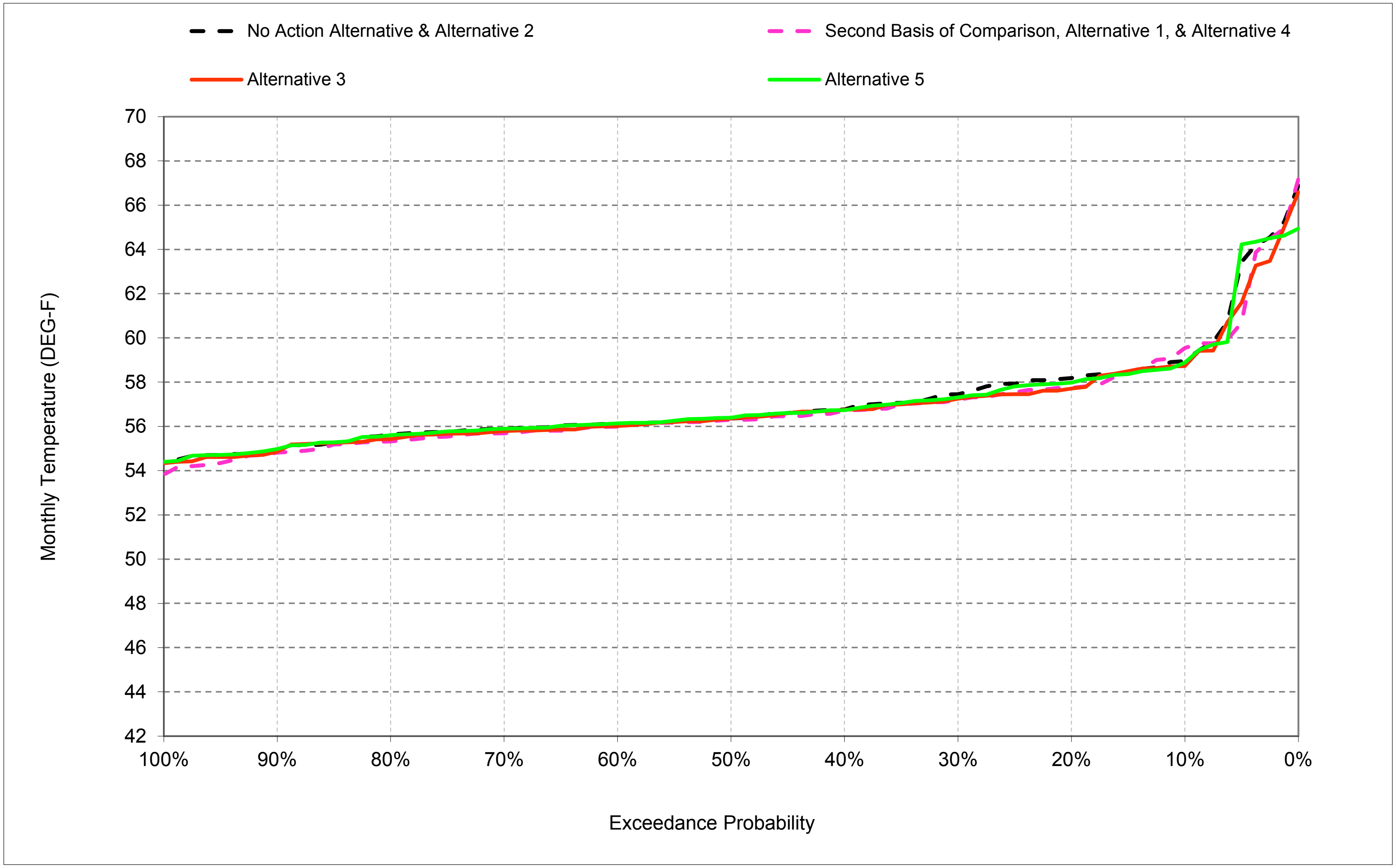
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-10. Sacramento River at Jellys Ferry, July



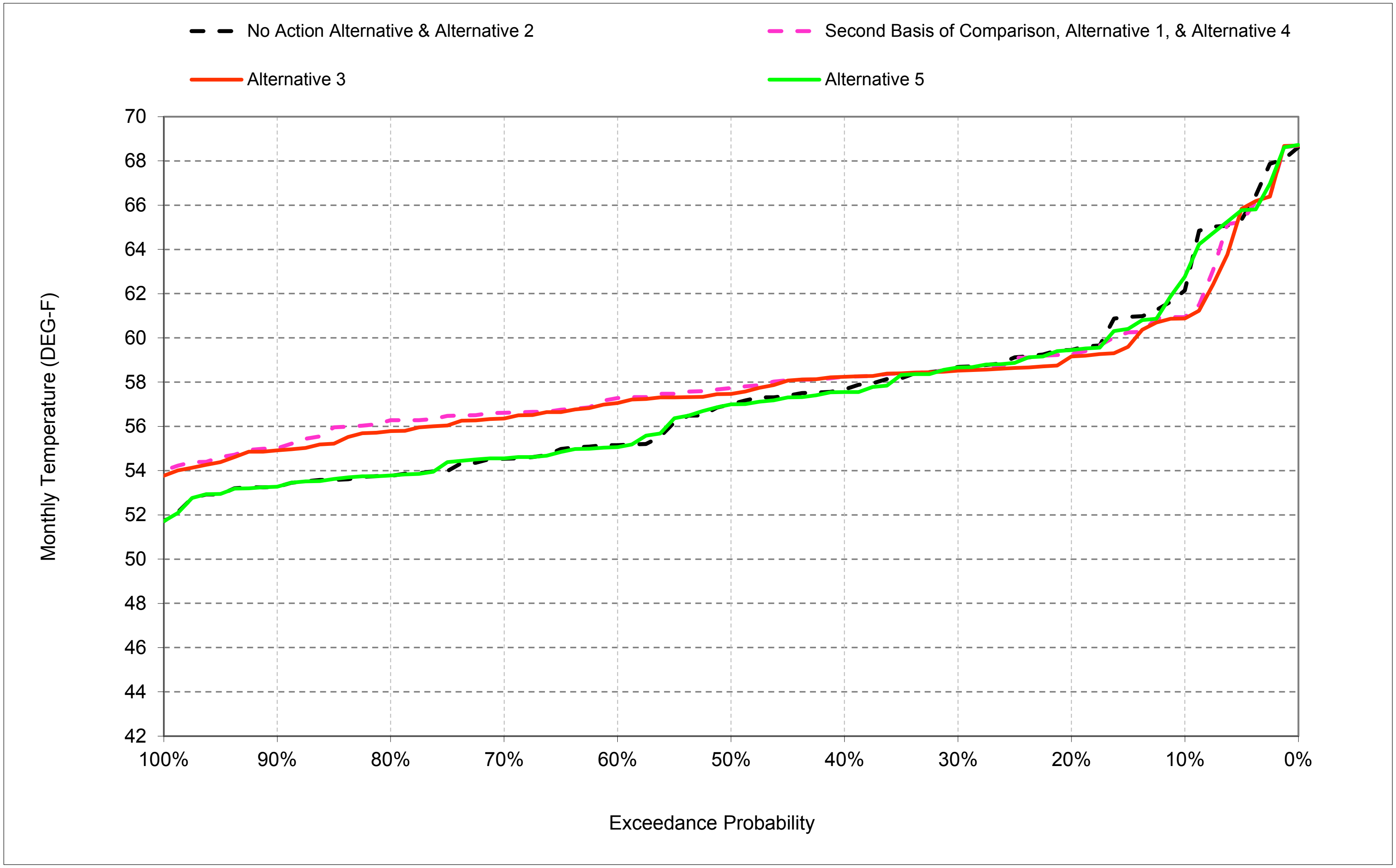
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-11. Sacramento River at Jellys Ferry, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-12. Sacramento River at Jellys Ferry, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-1. Sacramento River at Jellys Ferry, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types[c]												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types[c]												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-1.1	-0.3	0.1	0.0	0.1	-0.1	0.5	0.1	-0.4	0.0	0.5	-1.2
0.2	0.1	-0.4	-0.2	0.0	0.2	-0.2	-0.1	0.1	-0.2	-0.3	-0.4	-0.2
0.3	0.0	-0.5	-0.2	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.1	-0.3	-0.1
0.4	0.0	-0.5	-0.2	0.1	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.1	0.6
0.5	0.2	-0.7	-0.1	0.0	0.0	-0.1	0.0	-0.2	-0.5	-0.1	-0.1	0.8
0.6	0.0	-0.6	0.1	0.0	-0.1	-0.1	0.0	-0.3	-0.3	0.1	-0.1	2.1
0.7	-0.2	-0.3	0.2	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.1	-0.2	2.1
0.8	-0.1	-0.5	0.1	0.0	0.0	0.0	-0.3	-0.1	-0.4	0.1	-0.3	2.5
0.9	-0.1	-0.3	0.1	0.0	0.0	0.1	-0.1	-0.2	-0.2	0.0	-0.1	1.7
Long Term												
Full Simulation Period[b]	-0.1	-0.4	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.0	-0.2	0.9
Water Year Types[c]												
Wet (32%)	-0.1	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.3	2.5
Above Normal (16%)	0.0	-0.4	-0.2	0.1	0.0	-0.1	0.0	-0.2	-0.3	0.1	-0.2	1.8
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.3	-0.1	-0.1	-0.3	0.0	-0.4	-0.1
Dry (24%)	0.0	-0.3	-0.2	-0.1	0.0	0.0	-0.1	-0.2	-0.4	-0.1	0.1	-0.1
Critical (15%)	-0.5	-0.3	0.0	0.2	0.1	0.0	0.0	0.0	-0.4	-0.1	-0.4	-0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-2. Sacramento River at Jellys Ferry, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types[c]												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	56	51	48	49	52	55	57	57	58	59	61
20%	57	55	50	48	48	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	57
60%	56	53	49	47	47	49	52	54	54	55	56	57
70%	56	53	49	46	46	48	52	54	54	54	56	56
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	51	53	53	54	55	55
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	58
Water Year Types[c]												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	57
Dry (24%)	56	54	50	47	48	50	53	55	54	55	57	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.9	-0.2	0.0	-0.1	0.0	-0.1	0.5	0.0	-0.3	0.0	-0.2	-1.2
0.2	0.0	-0.4	-0.2	0.1	0.1	-0.2	-0.1	0.1	-0.2	-0.3	-0.5	-0.4
0.3	0.0	-0.5	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	-0.2	-0.1
0.4	0.0	-0.5	-0.2	0.1	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	0.0	0.6
0.5	0.1	-0.6	-0.2	-0.1	0.1	-0.1	0.0	-0.2	-0.4	0.0	0.0	0.5
0.6	0.0	-0.6	0.1	0.0	-0.1	0.0	0.0	-0.2	-0.3	0.1	-0.1	2.0
0.7	0.0	-0.3	0.0	0.1	0.1	0.0	0.0	-0.2	-0.3	0.2	-0.1	1.9
0.8	-0.2	-0.5	0.0	0.0	0.0	0.0	-0.2	0.0	-0.4	0.1	-0.1	2.0
0.9	-0.1	-0.2	0.2	0.0	0.0	0.1	0.0	-0.2	-0.2	0.1	-0.1	1.6
Long Term												
Full Simulation Period[b]	-0.2	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.2	0.7
Water Year Types[c]												
Wet (32%)	-0.1	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	2.3
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.2	0.2	0.0	1.9
Below Normal (13%)	-0.2	-0.6	-0.3	0.1	0.0	-0.2	-0.1	-0.1	-0.2	-0.1	-0.1	-0.9
Dry (24%)	-0.1	-0.4	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.4	-0.1	-0.2	-0.2
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.1	0.0	-0.3	0.1	-0.5	-1.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-3. Sacramento River at Jellys Ferry, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types[c]												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	49	49	52	54	57	57	58	59	63
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	56	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	55	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types[c]												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	57	59
Critical (15%)	59	56	50	47	48	51	53	56	57	58	61	64

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.4	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	0.0	-0.1	0.6
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	-0.2	0.0
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.2	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0	-0.1
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1
0.7	-0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.2	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-4. Sacramento River at Jellys Ferry, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types[c]												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	49	49	52	54	57	57	58	59	62
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	55	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	56	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types[c]												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	64

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	1.1	0.3	-0.1	0.0	-0.1	0.1	-0.5	-0.1	0.4	0.0	-0.5	1.2
0.2	-0.1	0.4	0.2	0.0	-0.2	0.2	0.1	-0.1	0.2	0.3	0.4	0.2
0.3	0.0	0.5	0.2	0.0	0.0	0.1	0.1	0.1	0.0	-0.1	0.3	0.1
0.4	0.0	0.5	0.2	-0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.1	-0.6
0.5	-0.2	0.7	0.1	0.0	0.0	0.1	0.0	0.2	0.5	0.1	0.1	-0.8
0.6	0.0	0.6	-0.1	0.0	0.1	0.1	0.0	0.3	0.3	-0.1	0.1	-2.1
0.7	0.2	0.3	-0.2	0.0	0.0	0.0	0.1	0.1	0.3	-0.1	0.2	-2.1
0.8	0.1	0.5	-0.1	0.0	0.0	0.0	0.3	0.1	0.4	-0.1	0.3	-2.5
0.9	0.1	0.3	-0.1	0.0	0.0	-0.1	0.1	0.2	0.2	0.0	0.1	-1.7
Long Term												
Full Simulation Period[b]	0.1	0.4	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.2	-0.9
Water Year Types[c]												
Wet (32%)	0.1	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-2.5
Above Normal (16%)	0.0	0.4	0.2	-0.1	0.0	0.1	0.0	0.2	0.3	-0.1	0.2	-1.8
Below Normal (13%)	0.2	0.5	0.3	-0.1	0.0	0.3	0.1	0.1	0.3	0.0	0.4	0.1
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.1	0.2	0.4	0.1	-0.1	0.1
Critical (15%)	0.5	0.3	0.0	-0.2	-0.1	0.0	0.0	0.0	0.4	0.1	0.4	0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-5. Sacramento River at Jellys Ferry, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types[c]												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	56	51	48	49	52	55	57	57	58	59	61
20%	57	55	50	48	48	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	57
60%	56	53	49	47	47	49	52	54	54	55	56	57
70%	56	53	49	46	46	48	52	54	54	54	56	56
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	51	53	53	54	55	55
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	58
Water Year Types[c]												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	57
Dry (24%)	56	54	50	47	48	50	53	55	54	55	57	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.2	0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.8	-0.1
0.2	-0.1	0.0	0.0	0.1	-0.1	0.0	0.1	0.0	0.1	0.0	0.0	-0.2
0.3	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.1	0.0
0.5	-0.1	0.2	-0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	-0.2
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
0.7	0.1	0.0	-0.1	0.0	0.1	0.0	0.1	-0.1	0.0	0.0	0.1	-0.2
0.8	-0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	-0.5
0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	-0.1
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.3	-0.8
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.2	-0.1
Critical (15%)	0.1	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-6. Sacramento River at Jellys Ferry, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	51	49	49	52	55	57	57	58	59	61
20%	57	55	51	48	49	51	54	56	56	57	58	59
30%	57	54	50	47	48	51	53	55	56	56	57	59
40%	56	54	49	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	49	53	55	55	55	56	58
60%	56	53	49	46	47	49	52	54	54	55	56	57
70%	55	53	49	46	46	48	52	54	54	54	56	57
80%	55	53	48	46	46	48	51	54	54	54	55	56
90%	55	52	48	45	46	47	50	53	53	53	55	55
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	52	55	55	55	57	58
Water Year Types[c]												
Wet (32%)	54	51	47	47	47	48	52	55	55	55	56	56
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	57
Below Normal (13%)	56	53	49	47	48	50	53	54	54	55	56	58
Dry (24%)	57	54	49	47	48	50	53	55	54	55	58	59
Critical (15%)	59	55	50	47	48	51	53	56	57	58	61	63

Alternative 5

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	49	49	52	54	57	57	58	59	63
20%	57	55	51	48	48	51	54	56	57	57	58	59
30%	57	55	50	47	48	51	53	56	56	56	57	59
40%	56	55	50	47	48	50	53	55	55	56	57	58
50%	56	54	49	47	47	50	53	55	55	55	56	57
60%	56	54	49	46	47	49	52	55	55	55	56	55
70%	55	53	49	46	46	49	52	54	54	54	56	55
80%	55	53	48	46	46	48	51	54	54	54	56	54
90%	55	53	48	45	46	47	51	54	53	53	55	53
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	55	55	55	57	57
Water Year Types[c]												
Wet (32%)	54	52	47	46	47	48	52	55	55	55	56	54
Above Normal (16%)	57	54	49	47	47	49	52	55	54	54	55	55
Below Normal (13%)	56	54	50	47	48	50	53	54	55	55	56	58
Dry (24%)	57	54	50	47	48	50	53	55	55	55	57	59
Critical (15%)	59	56	50	47	48	51	53	56	57	58	61	64

Alternative 5 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.5	0.3	-0.1	0.0	-0.1	0.0	-0.4	-0.1	0.5	0.0	-0.6	1.7
0.2	-0.2	0.3	0.2	0.1	-0.2	0.2	0.2	0.0	0.2	0.3	0.2	0.2
0.3	0.0	0.5	0.2	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.1	0.1
0.4	0.0	0.5	0.2	-0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	-0.7
0.5	-0.1	0.7	0.1	0.0	-0.1	0.1	0.1	0.3	0.5	0.0	0.1	-0.8
0.6	0.0	0.5	-0.1	0.0	0.1	0.1	0.0	0.2	0.3	-0.2	0.1	-2.2
0.7	0.0	0.4	-0.2	-0.1	0.0	0.1	0.2	0.3	0.3	-0.2	0.2	-2.0
0.8	0.0	0.5	0.0	0.0	0.1	0.0	0.3	0.3	0.3	-0.1	0.2	-2.5
0.9	0.1	0.3	-0.1	0.0	0.0	-0.1	0.1	0.3	0.2	0.0	0.2	-1.7
Long Term												
Full Simulation Period[b]	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.2	-0.9
Water Year Types[c]												
Wet (32%)	0.1	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.3	-2.5
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.3	0.3	-0.1	0.2	-1.8
Below Normal (13%)	0.2	0.5	0.3	0.0	0.0	0.2	0.1	0.2	0.3	0.0	0.6	0.0
Dry (24%)	0.0	0.3	0.2	0.1	0.0	0.0	0.2	0.4	0.4	0.0	-0.3	0.0
Critical (15%)	0.6	0.3	0.0	-0.2	-0.2	0.0	0.1	0.2	0.5	-0.1	0.2	0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

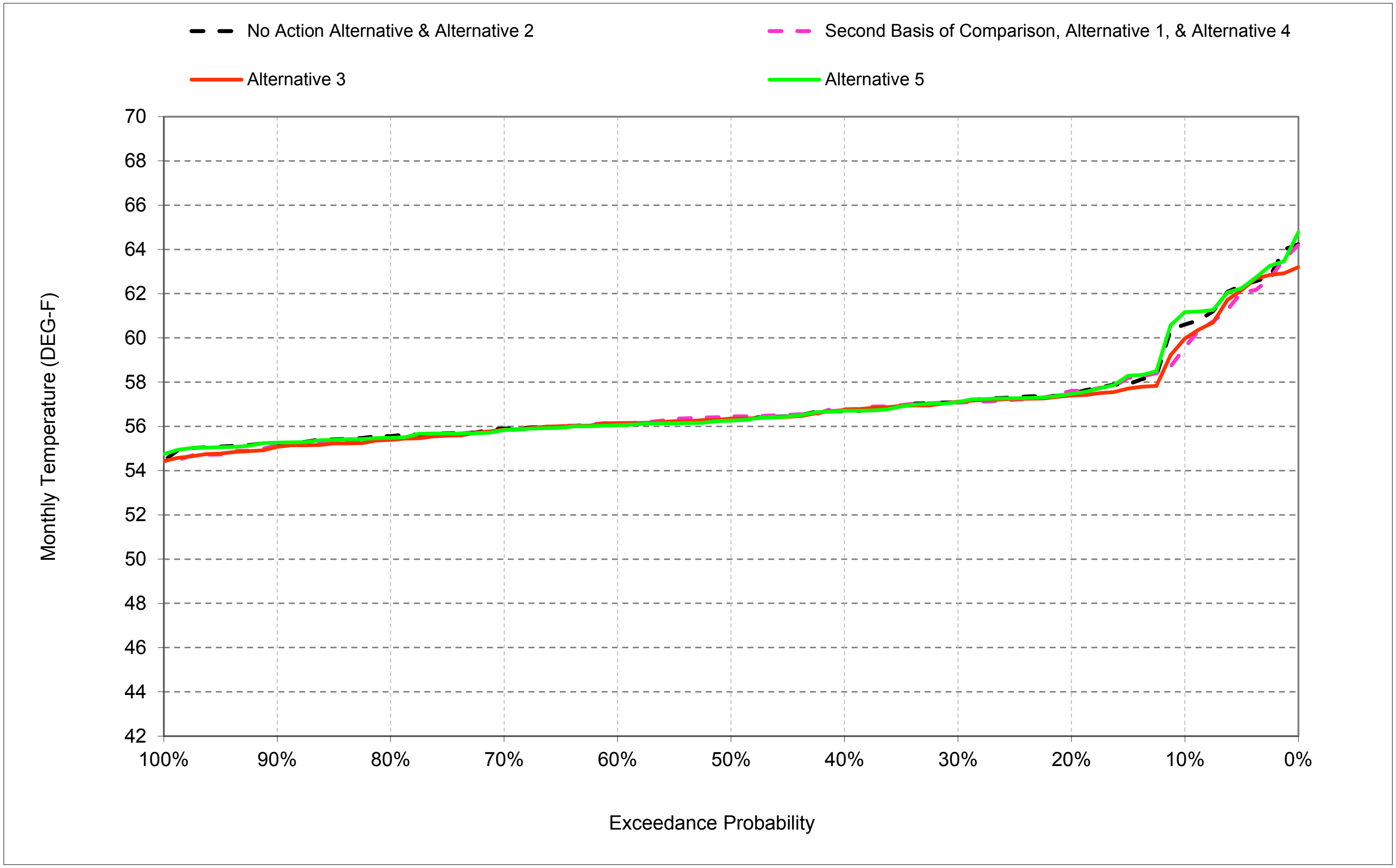
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

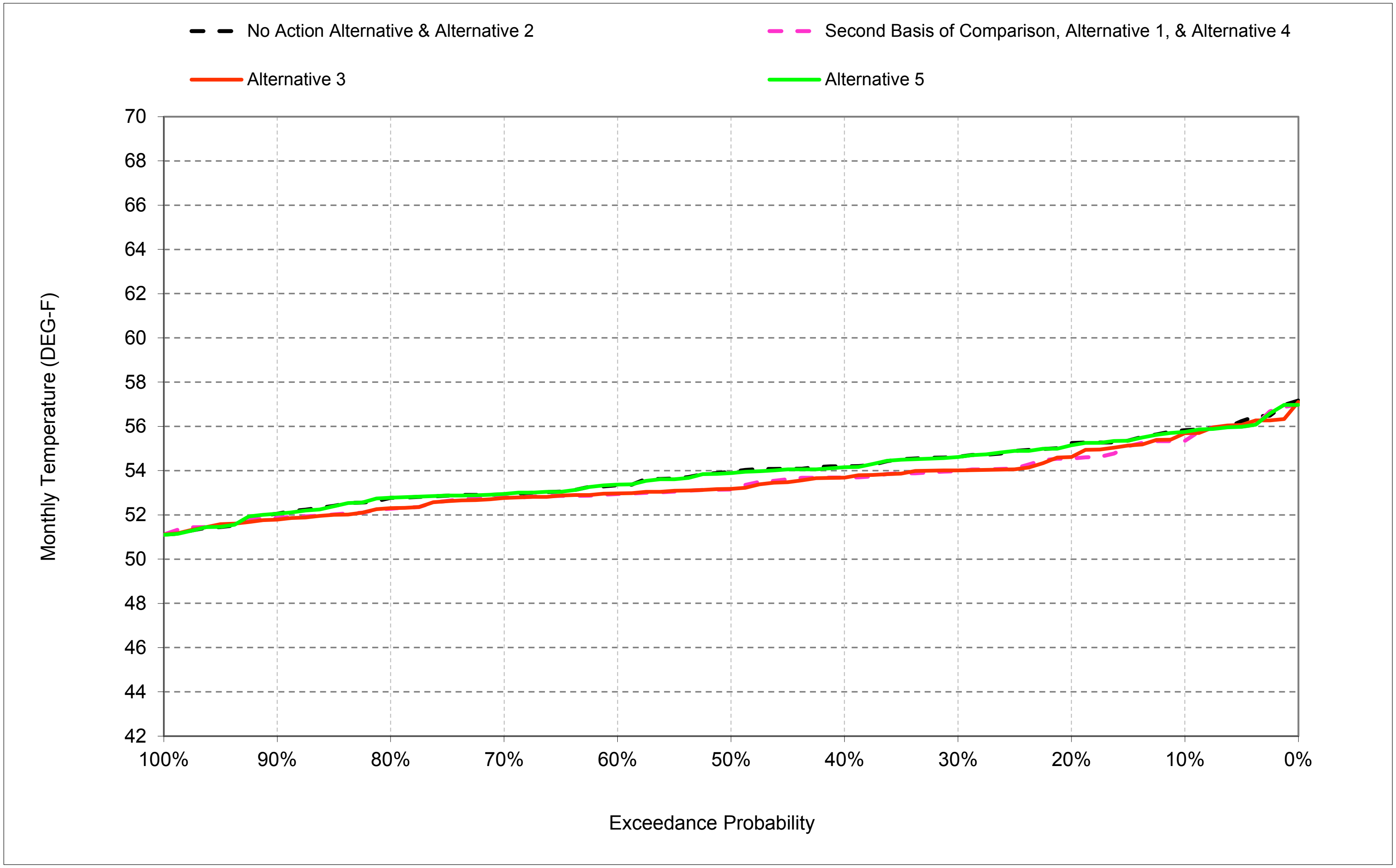
B.8. Sacramento River at Bend Bridge Temperature

Figure B-8-1. Sacramento River at Bend Bridge, October



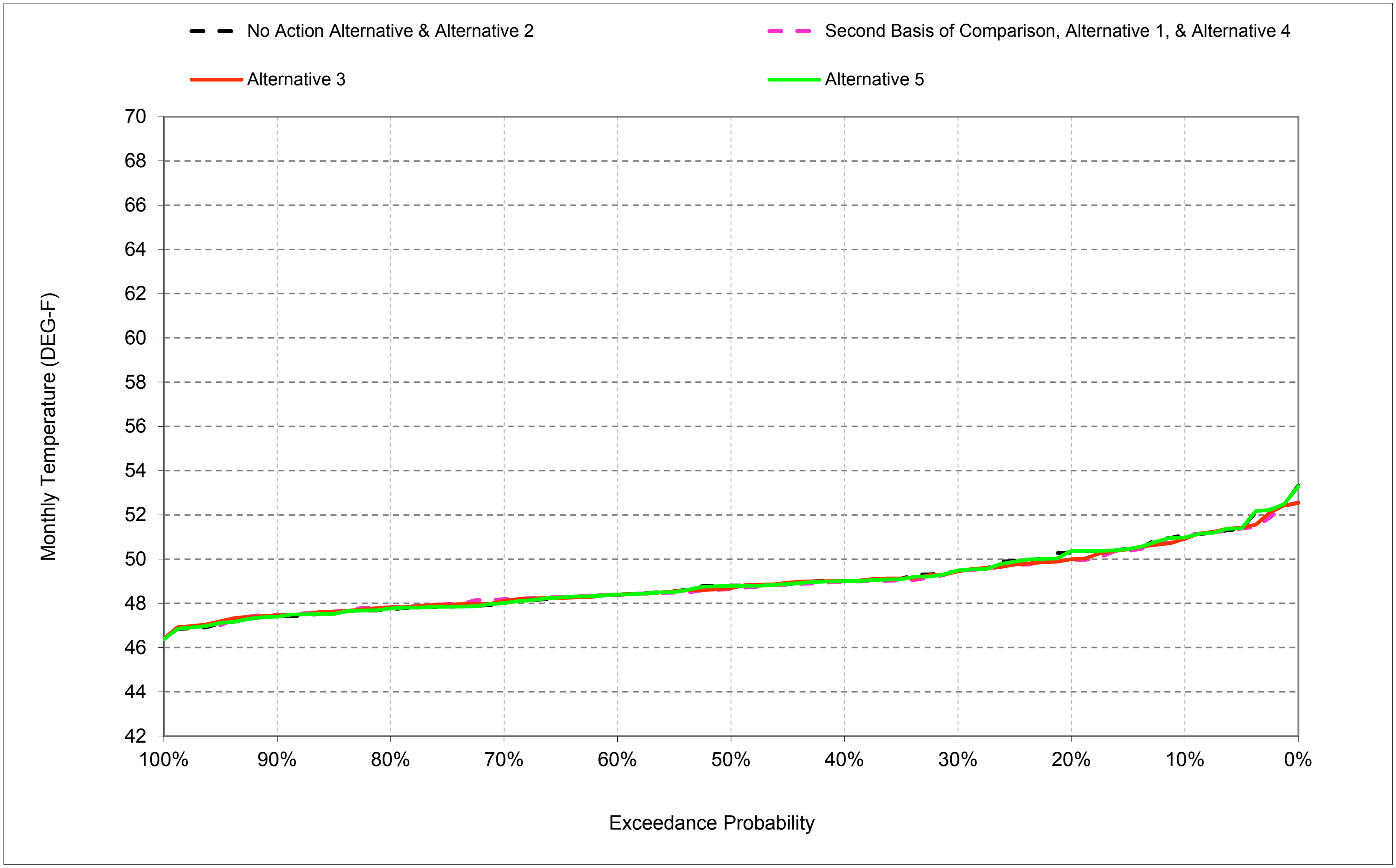
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-2. Sacramento River at Bend Bridge, November



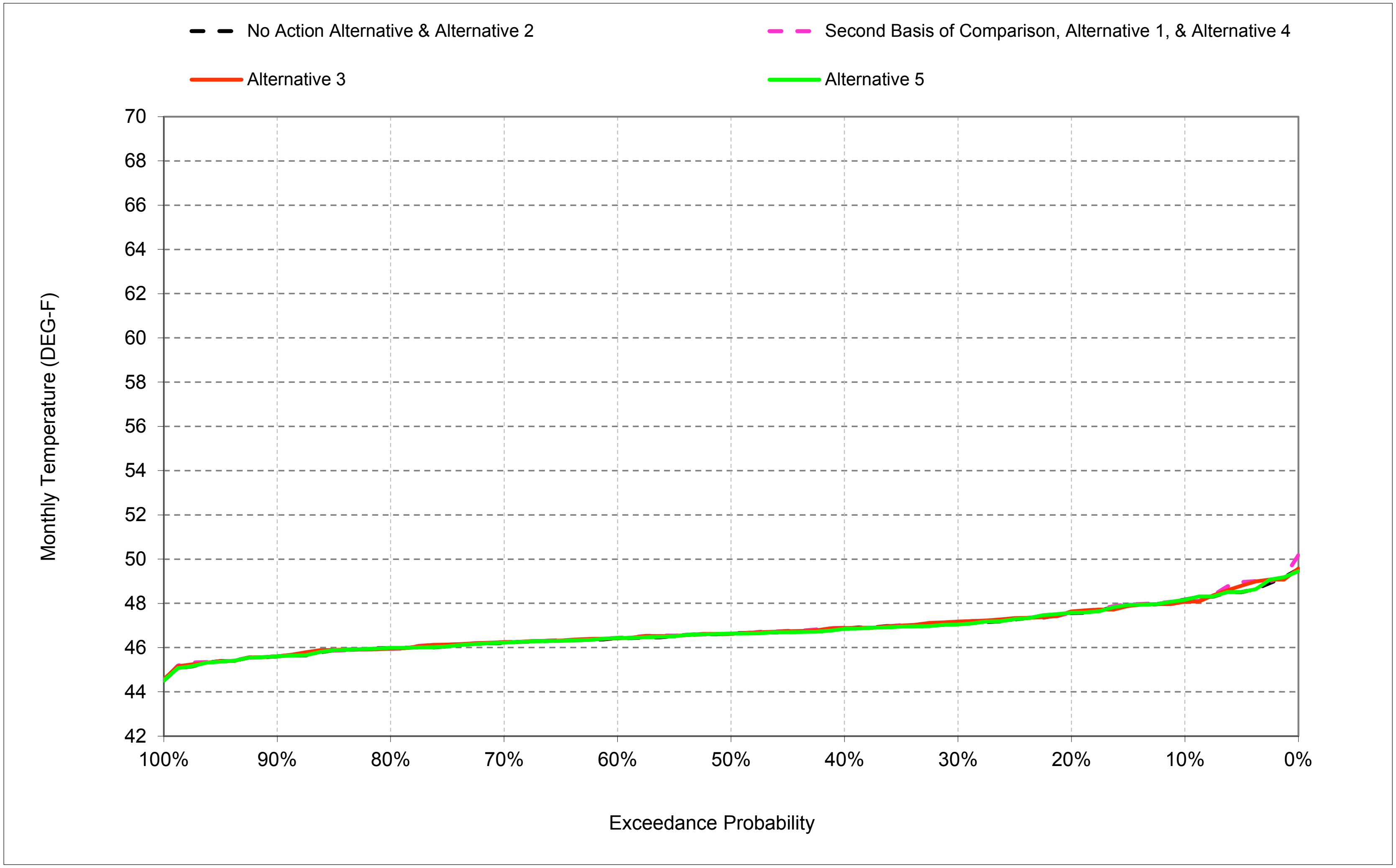
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-3. Sacramento River at Bend Bridge, December



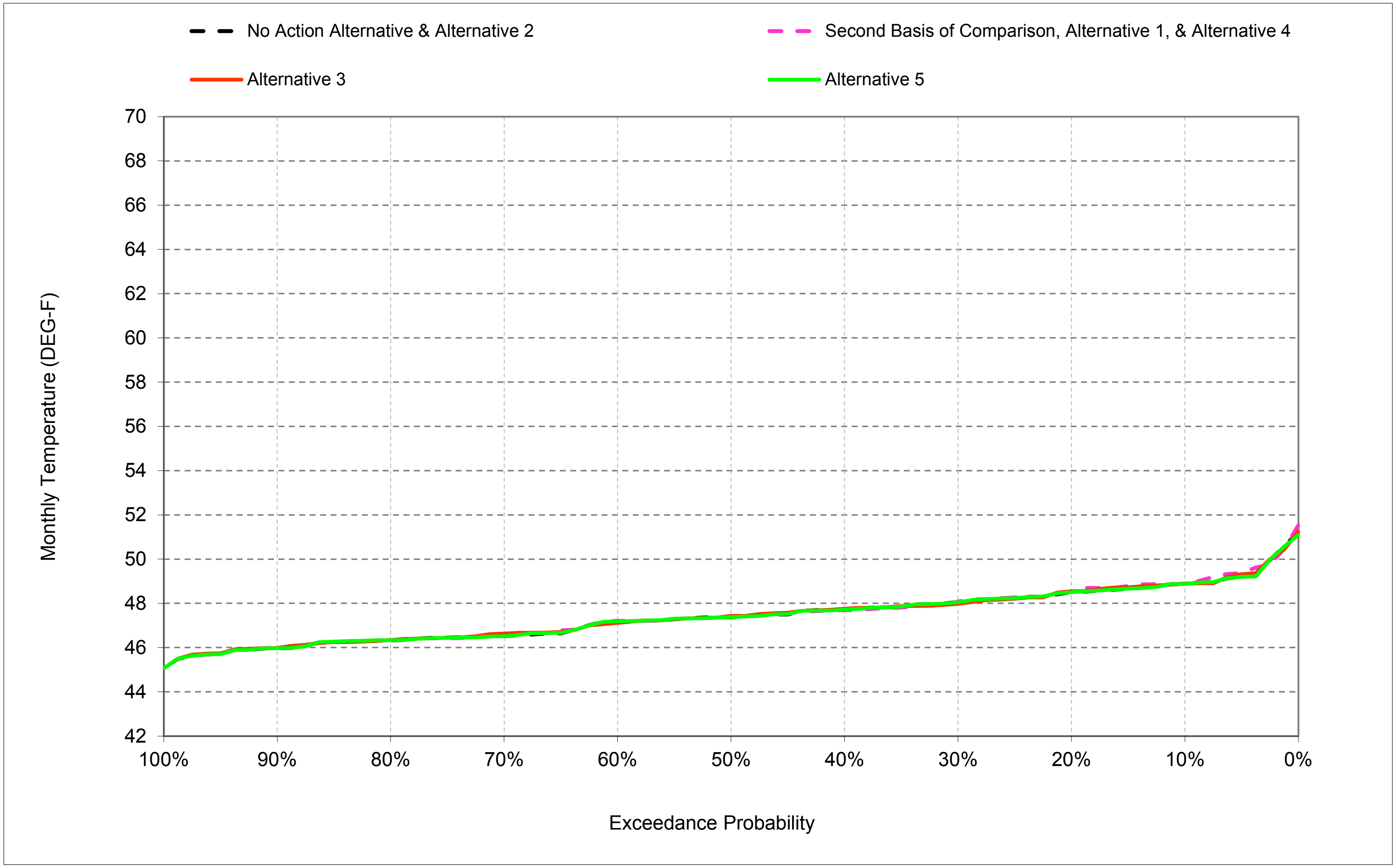
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-4. Sacramento River at Bend Bridge, January



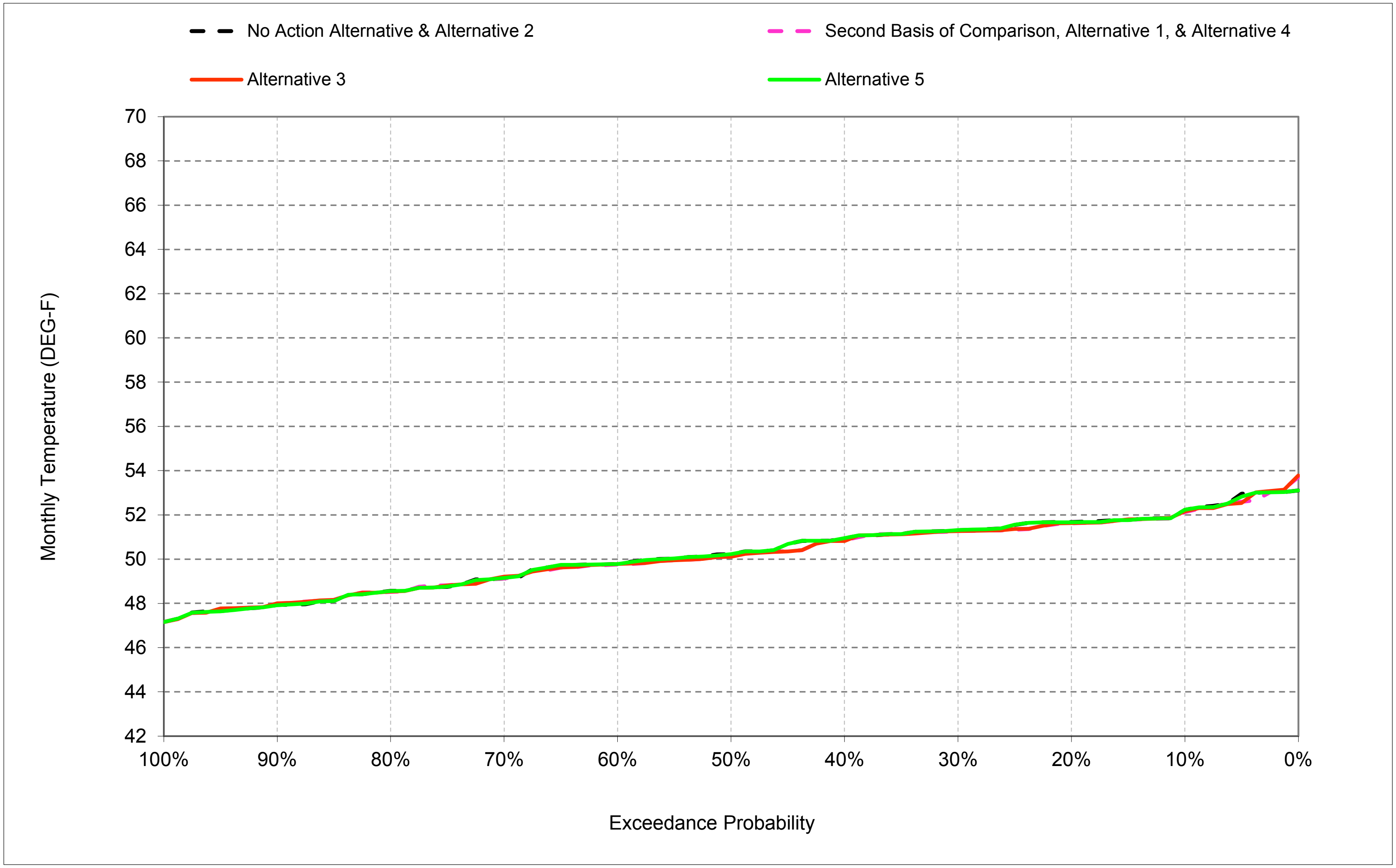
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-5. Sacramento River at Bend Bridge, February



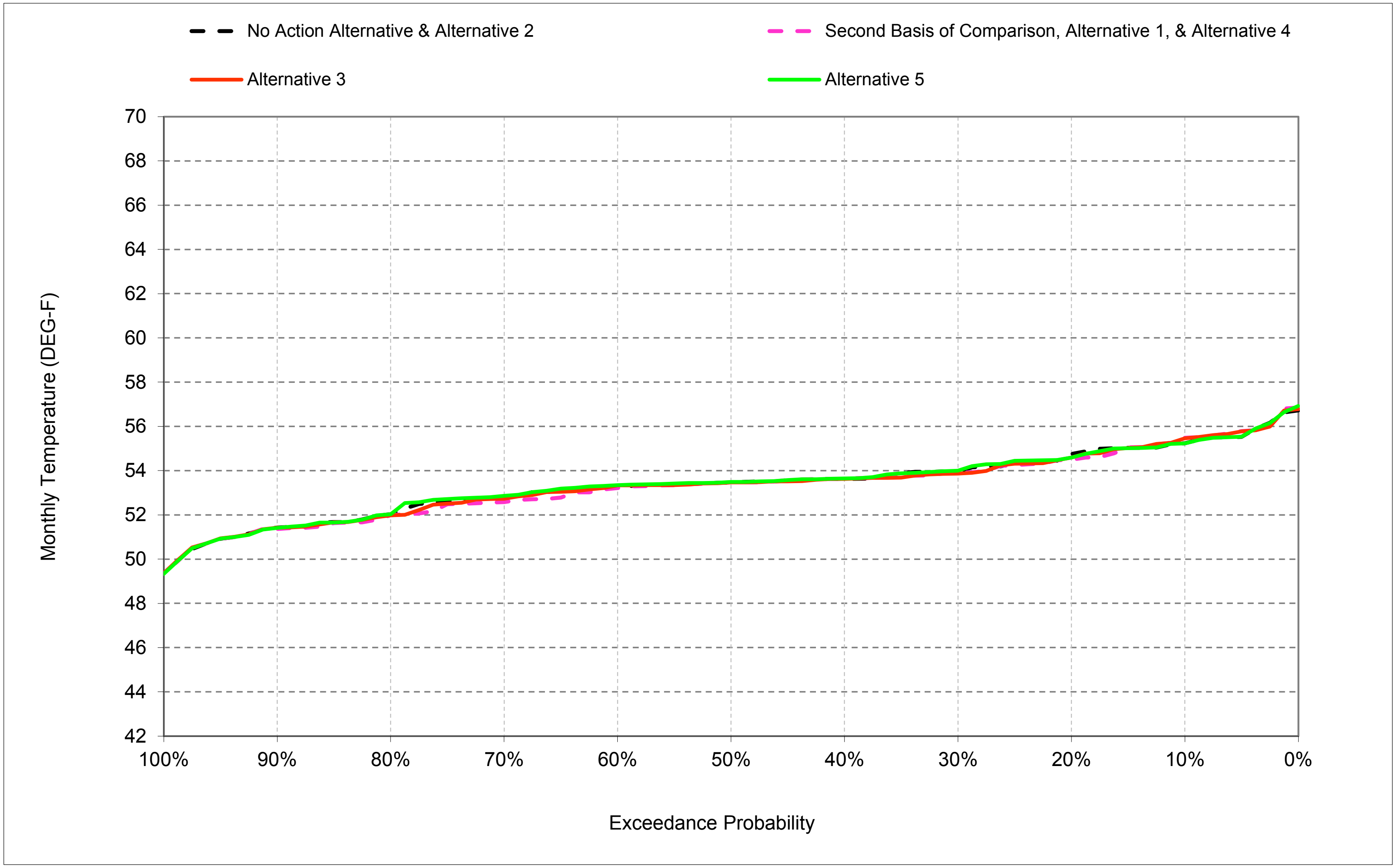
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-6. Sacramento River at Bend Bridge, March



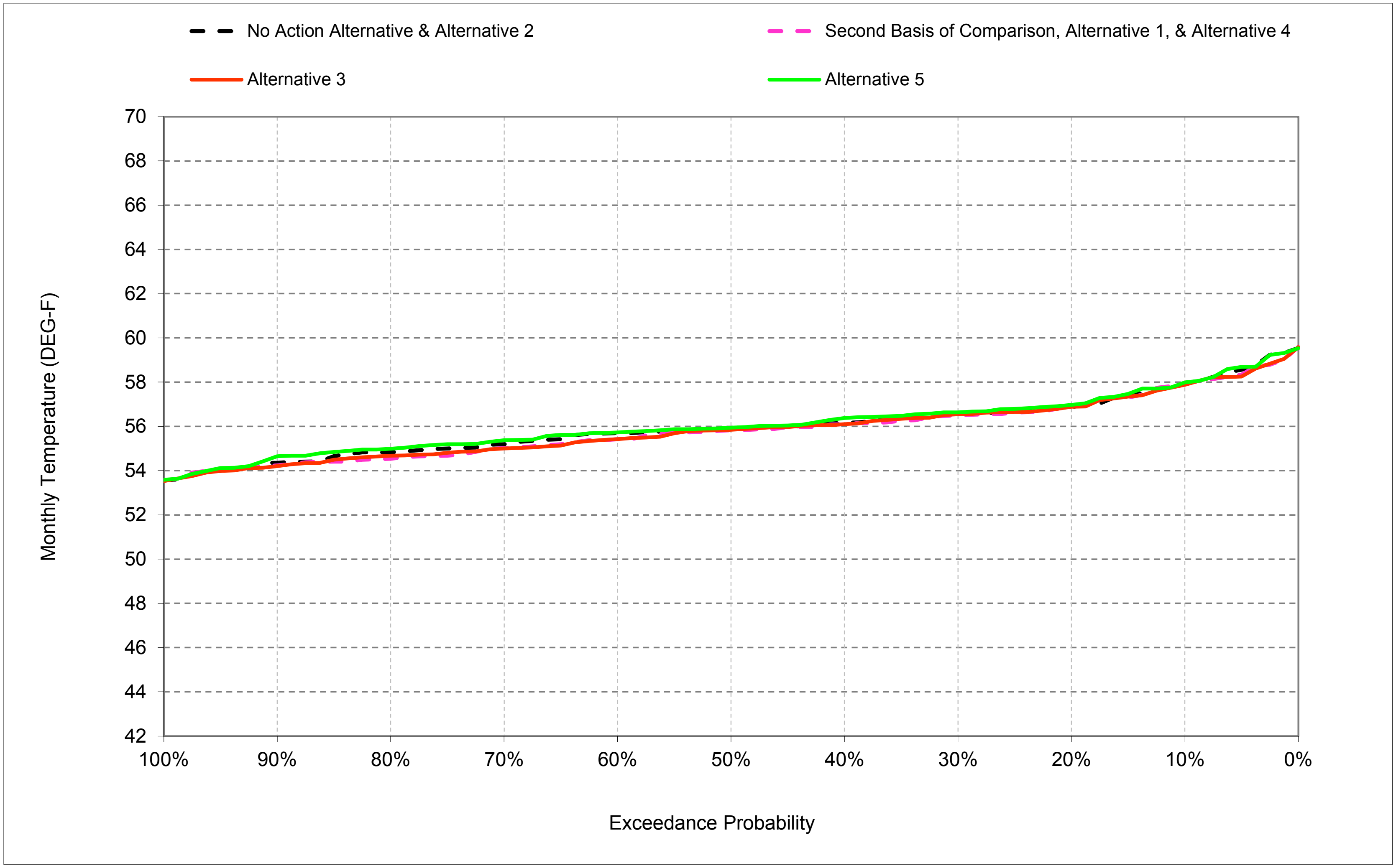
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-7. Sacramento River at Bend Bridge, April



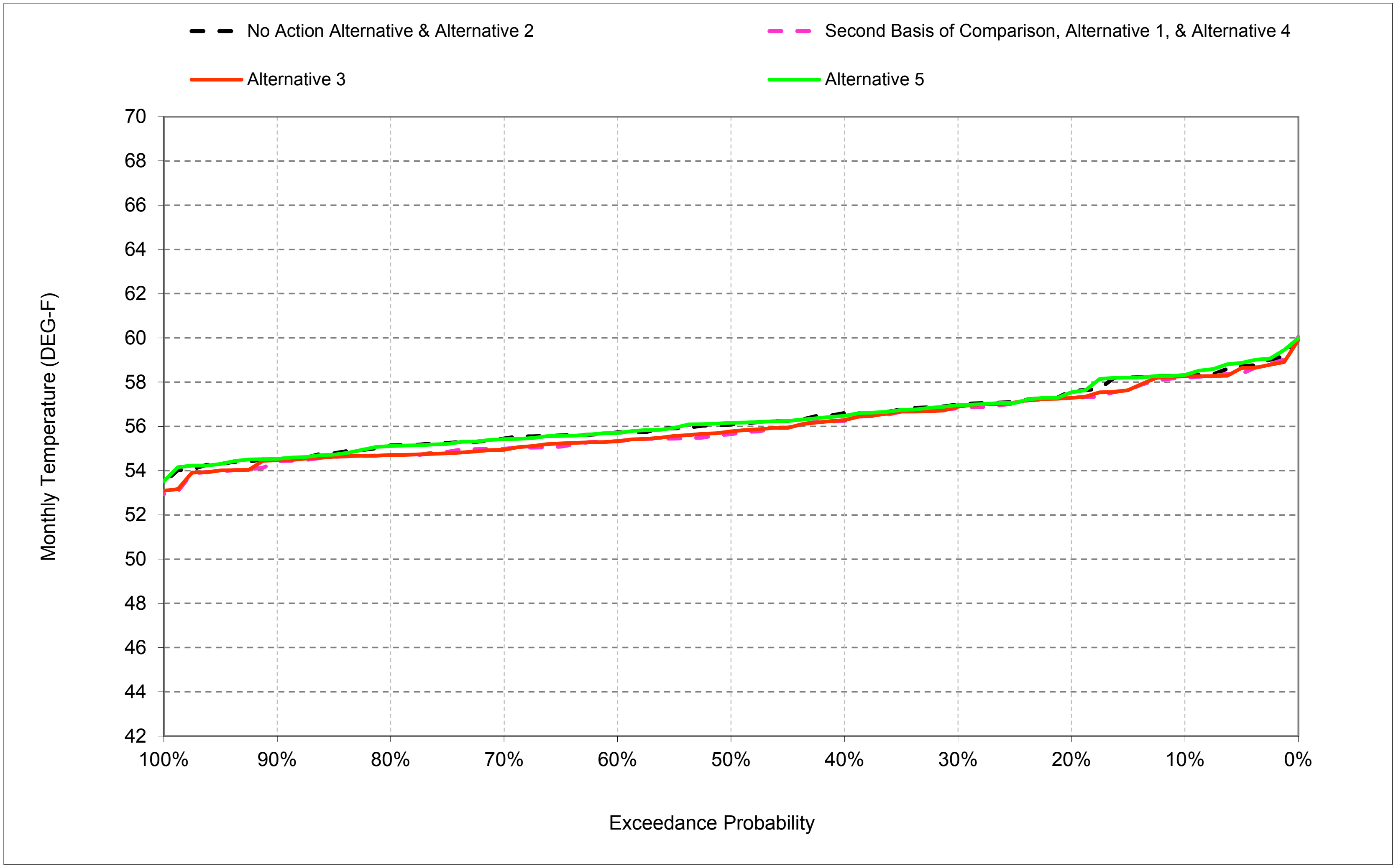
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-8. Sacramento River at Bend Bridge, May



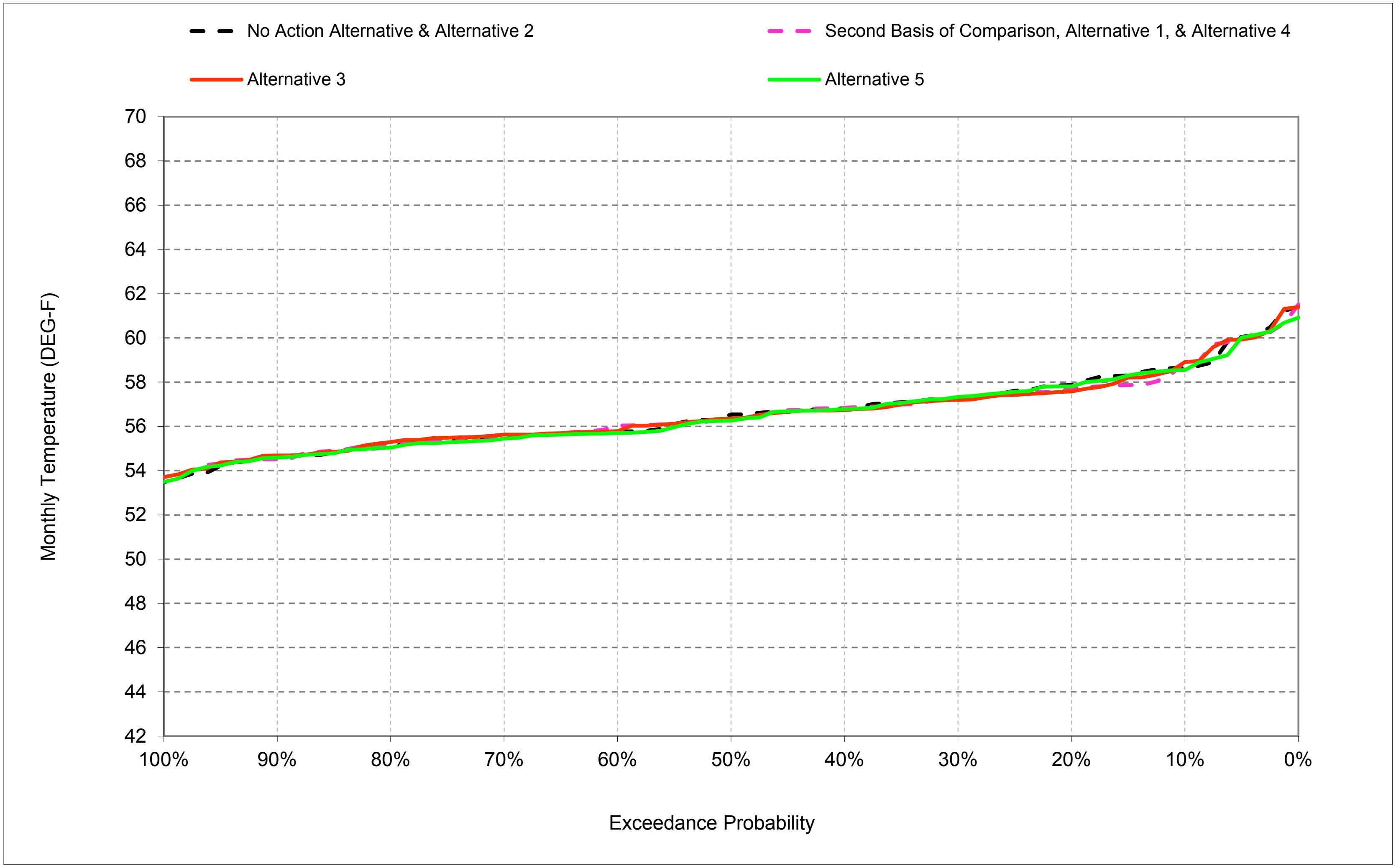
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-9. Sacramento River at Bend Bridge, June



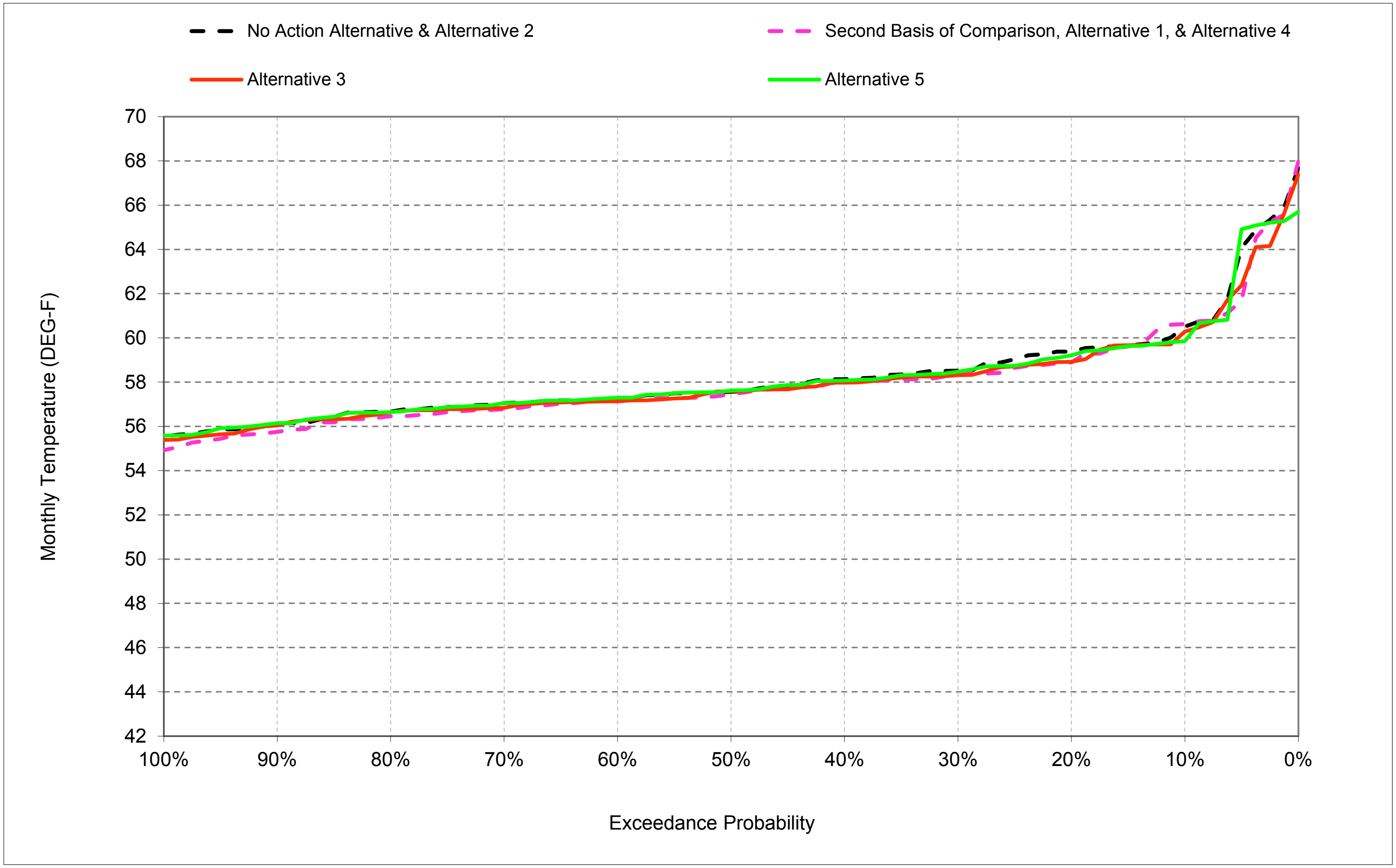
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-10. Sacramento River at Bend Bridge, July



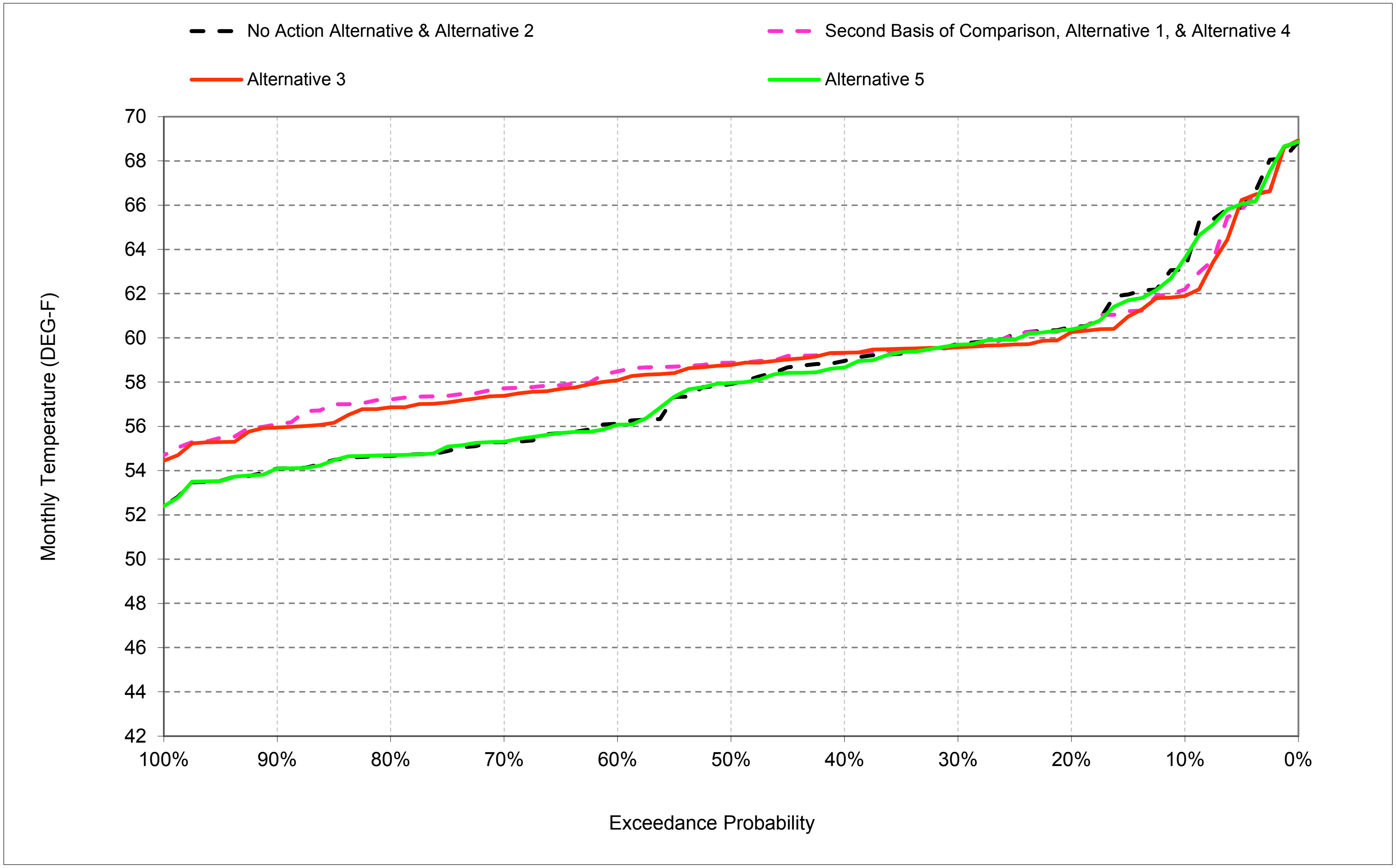
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-11. Sacramento River at Bend Bridge, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-12. Sacramento River at Bend Bridge, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-1. Sacramento River at Bend Bridge, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period[b]	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-1.0	-0.5	-0.2	-0.1	0.0	-0.1	0.2	0.0	-0.1	0.2	0.2	-0.9
0.2	0.1	-0.7	-0.3	0.0	0.0	-0.1	-0.2	0.0	-0.3	-0.2	-0.5	0.0
0.3	0.0	-0.6	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.2	0.0	-0.2	-0.1
0.4	0.1	-0.5	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.3	0.0	-0.2	0.4
0.5	0.2	-0.8	-0.2	0.0	0.0	-0.1	0.0	-0.1	-0.4	-0.1	-0.1	1.0
0.6	0.0	-0.4	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.4	0.2	-0.1	2.4
0.7	-0.1	-0.1	0.2	0.0	0.0	0.0	-0.2	-0.2	-0.4	0.1	-0.2	2.4
0.8	-0.1	-0.5	0.1	0.0	0.0	0.0	-0.2	-0.3	-0.4	0.1	-0.3	2.6
0.9	-0.1	-0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.1	-0.3	2.0
Long Term												
Full Simulation Period[b]	-0.1	-0.4	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.0	-0.3	1.0
Water Year Types[c]												
Wet (32%)	0.0	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.4	2.8
Above Normal (16%)	0.0	-0.4	-0.2	0.1	0.0	-0.1	0.0	-0.2	-0.3	0.1	-0.2	2.0
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.3	-0.2	-0.2	-0.4	0.0	-0.5	-0.1
Dry (24%)	0.0	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.2	-0.4	-0.1	0.1	-0.1
Critical (15%)	-0.5	-0.3	0.0	0.2	0.1	0.0	0.0	0.0	-0.4	0.0	-0.4	-0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-2. Sacramento River at Bend Bridge, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	56	51	48	49	52	55	58	58	59	60	62
20%	57	55	50	48	49	52	55	57	57	58	59	60
30%	57	54	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	58	59
60%	56	53	48	46	47	50	53	55	55	56	57	58
70%	56	53	48	46	47	49	53	55	55	56	57	57
80%	55	52	48	46	46	48	52	55	55	55	57	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period[b]	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	57	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	58
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	60	62	64

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.6	-0.1	-0.2	-0.1	0.0	0.0	0.2	-0.1	-0.1	0.2	-0.2	-1.2
0.2	-0.1	-0.6	-0.3	0.0	0.0	0.0	-0.1	0.0	-0.3	-0.3	-0.5	-0.3
0.3	0.0	-0.6	0.0	0.1	-0.1	0.0	-0.1	0.0	-0.1	-0.1	-0.2	-0.1
0.4	0.0	-0.5	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.1	-0.2	0.4
0.5	0.1	-0.8	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.3	-0.1	0.0	0.9
0.6	0.1	-0.4	0.0	0.0	-0.1	0.0	0.0	-0.3	-0.4	0.0	-0.1	2.0
0.7	0.0	-0.2	0.1	0.0	0.1	0.0	0.0	-0.2	-0.5	0.1	-0.2	2.1
0.8	-0.2	-0.5	0.1	0.0	0.0	0.0	-0.1	-0.2	-0.4	0.2	-0.1	2.2
0.9	-0.2	-0.3	0.1	0.0	0.0	0.0	0.0	-0.2	-0.1	0.1	0.0	1.8
Long Term												
Full Simulation Period[b]	-0.1	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0	-0.2	0.8
Water Year Types[c]												
Wet (32%)	-0.1	-0.4	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2	2.6
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.3	-0.2	0.1	0.0	2.0
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.2	-0.1	-0.2	-0.3	-0.1	-0.1	-1.0
Dry (24%)	-0.1	-0.4	-0.1	0.0	0.0	0.0	-0.1	-0.1	-0.4	-0.1	-0.2	-0.2
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.1	0.0	-0.3	0.1	-0.5	-0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-3. Sacramento River at Bend Bridge, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 5

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	52	55	58	58	59	60	64
20%	57	55	50	48	48	52	55	57	57	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	55	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	56	56	56	58	58
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.6	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.6	0.4
0.2	0.0	-0.1	0.1	0.0	0.0	0.0	-0.1	0.1	-0.1	-0.1	-0.2	-0.1
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0	-0.1	-0.3
0.5	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	0.0	0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.1
0.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	0.1
0.8	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.3	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	-0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-4. Sacramento River at Bend Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period[b]	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	52	55	58	58	59	60	63
20%	57	55	50	48	48	52	55	57	58	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	59	60
40%	57	54	49	47	48	51	54	56	57	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	56	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	56	56	57	58	58
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.0	0.5	0.2	0.1	0.0	0.1	-0.2	0.0	0.1	-0.2	-0.2	0.9
0.2	-0.1	0.7	0.3	0.0	0.0	0.1	0.2	0.0	0.3	0.2	0.5	0.0
0.3	0.0	0.6	0.0	-0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.2	0.1
0.4	-0.1	0.5	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.0	0.2	-0.4
0.5	-0.2	0.8	0.2	0.0	0.0	0.1	0.0	0.1	0.4	0.1	0.1	-1.0
0.6	0.0	0.4	0.0	0.0	0.1	0.0	0.1	0.3	0.4	-0.2	0.1	-2.4
0.7	0.1	0.1	-0.2	0.0	0.0	0.0	0.2	0.2	0.4	-0.1	0.2	-2.4
0.8	0.1	0.5	-0.1	0.0	0.0	0.0	0.2	0.3	0.4	-0.1	0.3	-2.6
0.9	0.1	0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.3	-2.0
Long Term												
Full Simulation Period[b]	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.3	-1.0
Water Year Types[c]												
Wet (32%)	0.0	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-2.8
Above Normal (16%)	0.0	0.4	0.2	-0.1	0.0	0.1	0.0	0.2	0.3	-0.1	0.2	-2.0
Below Normal (13%)	0.2	0.5	0.3	-0.1	0.0	0.3	0.2	0.2	0.4	0.0	0.5	0.1
Dry (24%)	0.0	0.3	0.2	0.0	0.0	0.0	0.2	0.2	0.4	0.1	-0.1	0.1
Critical (15%)	0.5	0.3	0.0	-0.2	-0.1	0.0	0.0	0.0	0.4	0.0	0.4	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-5. Sacramento River at Bend Bridge, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period[b]	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	56	51	48	49	52	55	58	58	59	60	62
20%	57	55	50	48	49	52	55	57	57	58	59	60
30%	57	54	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	58	59
60%	56	53	48	46	47	50	53	55	55	56	57	58
70%	56	53	48	46	47	49	53	55	55	56	57	57
80%	55	52	48	46	46	48	52	55	55	55	57	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period[b]	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	57	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	58
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	60	62	64

Alternative 3 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	-0.4	-0.3
0.2	-0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.3
0.3	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
0.4	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.0	-0.4
0.7	0.1	0.0	-0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.1	-0.3
0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	-0.4
0.9	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.3	0.2	0.3	-0.2
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.2
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.3	-0.9
Dry (24%)	-0.2	-0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.3	-0.1
Critical (15%)	0.0	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-6. Sacramento River at Bend Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	55	51	48	49	52	55	58	58	59	61	62
20%	58	55	50	48	49	52	54	57	57	58	59	60
30%	57	54	49	47	48	51	54	56	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	53	49	47	47	50	53	56	56	56	57	59
60%	56	53	48	46	47	50	53	55	55	56	57	59
70%	56	53	48	46	47	49	53	55	55	56	57	58
80%	55	52	48	46	46	48	52	55	55	55	56	57
90%	55	52	47	46	46	48	51	54	54	55	56	56
Long Term												
Full Simulation Period[b]	57	53	49	47	47	50	53	56	56	57	58	59
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	52	56	56	56	57	57
Above Normal (16%)	57	53	49	47	47	50	53	56	55	55	56	58
Below Normal (13%)	56	53	49	47	48	51	54	55	55	56	57	59
Dry (24%)	57	53	49	47	48	51	54	56	55	56	59	60
Critical (15%)	59	55	50	47	49	52	54	57	58	59	62	64

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	52	55	58	58	59	60	64
20%	57	55	50	48	48	52	55	57	57	58	59	60
30%	57	55	49	47	48	51	54	57	57	57	58	60
40%	57	54	49	47	48	51	54	56	56	57	58	59
50%	56	54	49	47	47	50	53	56	56	56	58	58
60%	56	53	48	46	47	50	53	56	56	56	57	56
70%	56	53	48	46	47	49	53	55	55	55	57	55
80%	55	53	48	46	46	49	52	55	55	55	57	55
90%	55	52	47	46	46	48	51	54	55	55	56	54
Long Term												
Full Simulation Period[b]	57	54	49	47	47	50	53	56	56	56	58	58
Water Year Types[c]												
Wet (32%)	54	51	47	46	47	49	53	56	57	56	57	55
Above Normal (16%)	57	54	49	47	47	50	53	56	55	55	57	56
Below Normal (13%)	56	54	49	47	48	51	54	55	56	56	57	59
Dry (24%)	57	54	49	47	48	51	54	56	56	57	59	60
Critical (15%)	59	55	50	47	48	52	54	57	58	59	62	65

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.6	0.4	0.1	0.1	0.0	0.1	-0.2	0.0	0.1	-0.3	-0.8	1.3
0.2	-0.1	0.6	0.4	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.3	-0.1
0.3	0.0	0.6	0.0	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
0.4	-0.1	0.5	0.0	-0.1	0.0	0.1	0.0	0.2	0.2	-0.1	0.1	-0.7
0.5	-0.2	0.7	0.1	0.0	0.0	0.1	0.0	0.1	0.5	0.0	0.2	-0.9
0.6	-0.1	0.4	0.0	0.0	0.1	0.0	0.1	0.3	0.4	-0.2	0.1	-2.5
0.7	0.0	0.2	-0.2	0.0	0.0	0.0	0.3	0.3	0.4	-0.1	0.2	-2.4
0.8	0.0	0.5	0.0	0.0	0.0	0.0	0.2	0.4	0.4	-0.1	0.2	-2.5
0.9	0.1	0.2	-0.1	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.4	-2.0
Long Term												
Full Simulation Period[b]	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.0	0.2	-1.1
Water Year Types[c]												
Wet (32%)	0.1	0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-2.8
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.3	0.3	-0.1	0.2	-2.0
Below Normal (13%)	0.2	0.5	0.3	-0.1	0.0	0.2	0.2	0.2	0.4	0.0	0.6	0.0
Dry (24%)	0.0	0.3	0.1	0.1	0.0	0.0	0.2	0.4	0.4	0.1	-0.3	0.0
Critical (15%)	0.5	0.3	0.0	-0.2	-0.2	0.0	0.1	0.2	0.5	-0.2	0.1	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

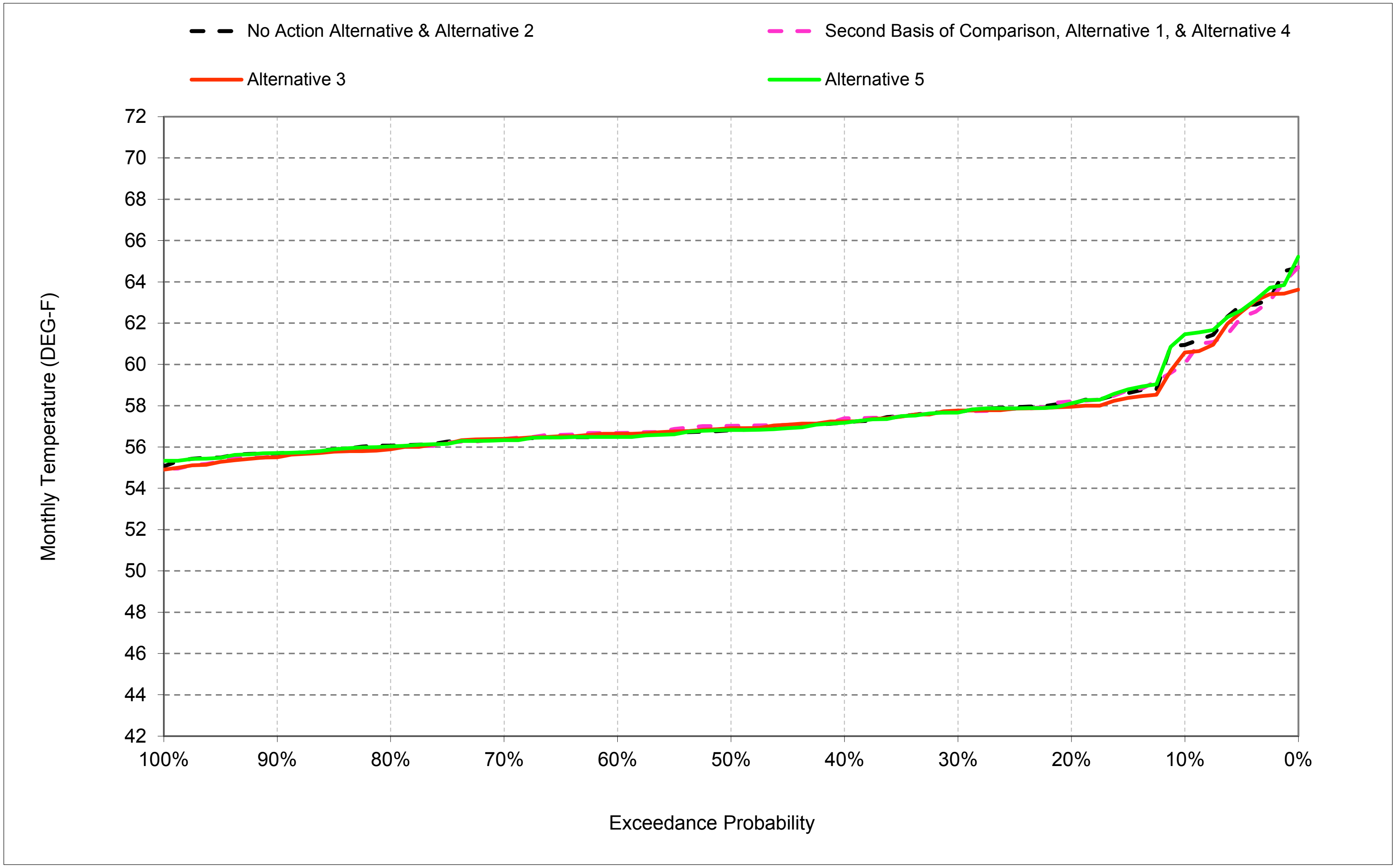
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

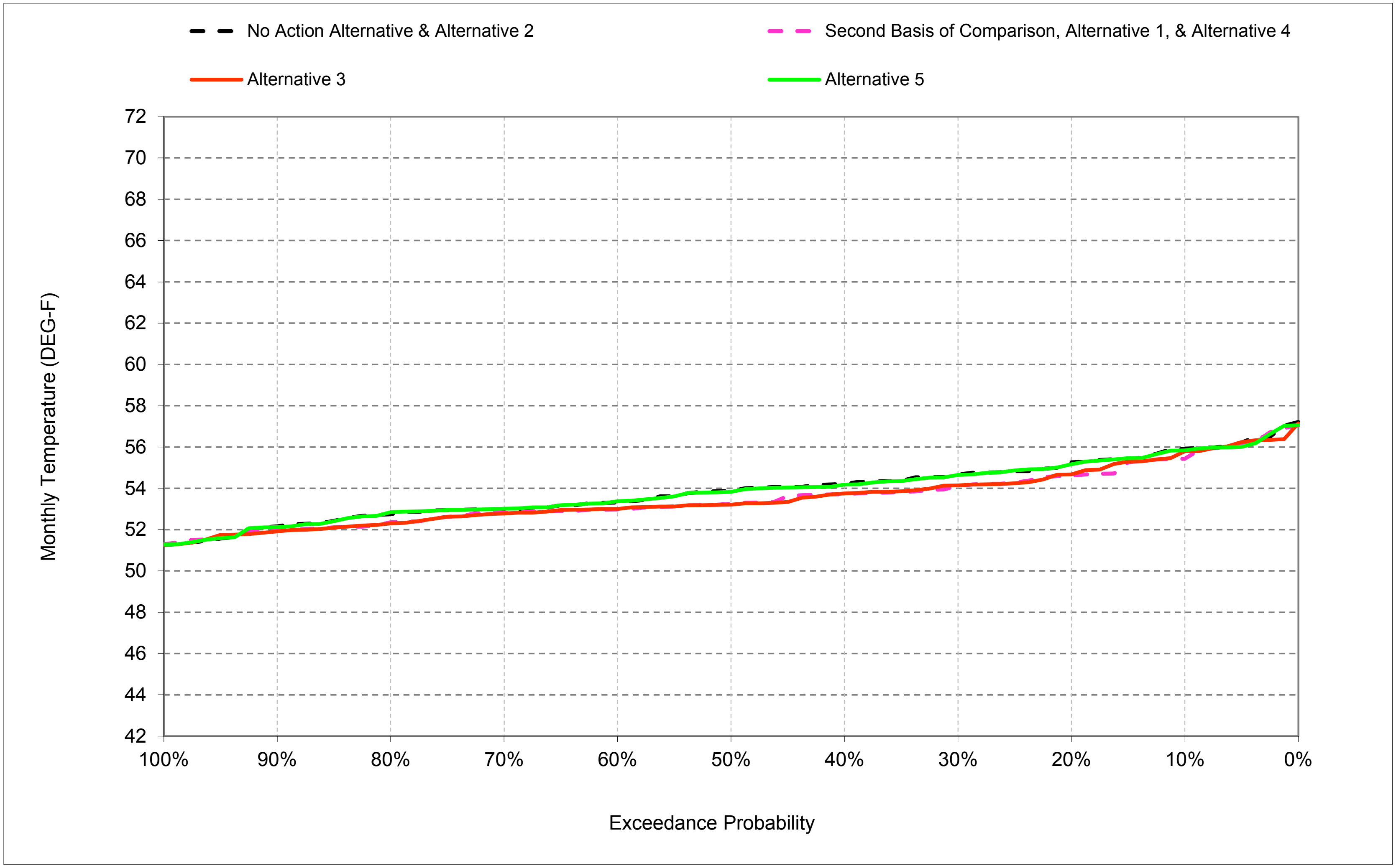
B.9. Sacramento River at Red Bluff Temperature

Figure B-9-1. Sacramento River at Red Bluff, October



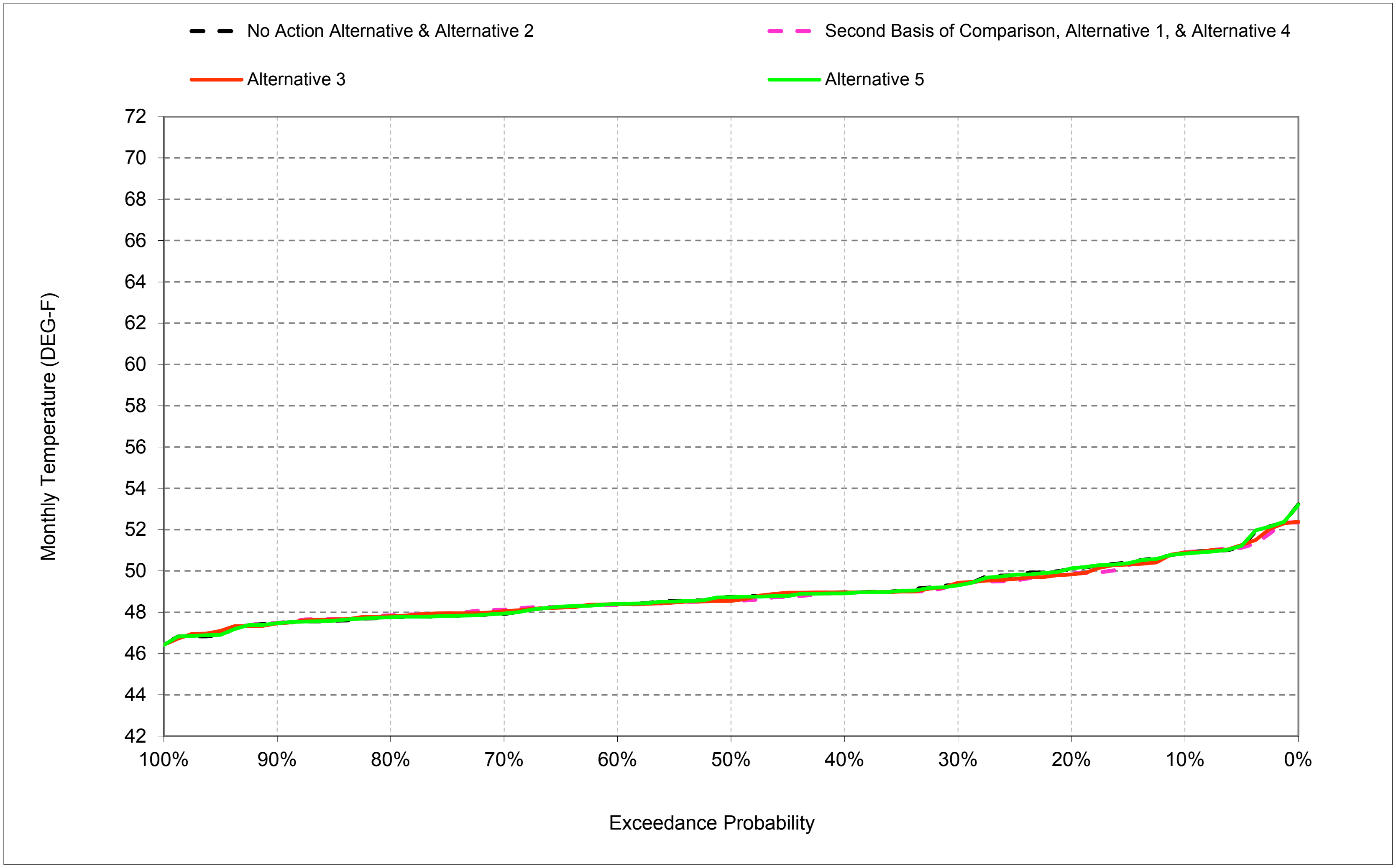
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-2. Sacramento River at Red Bluff, November



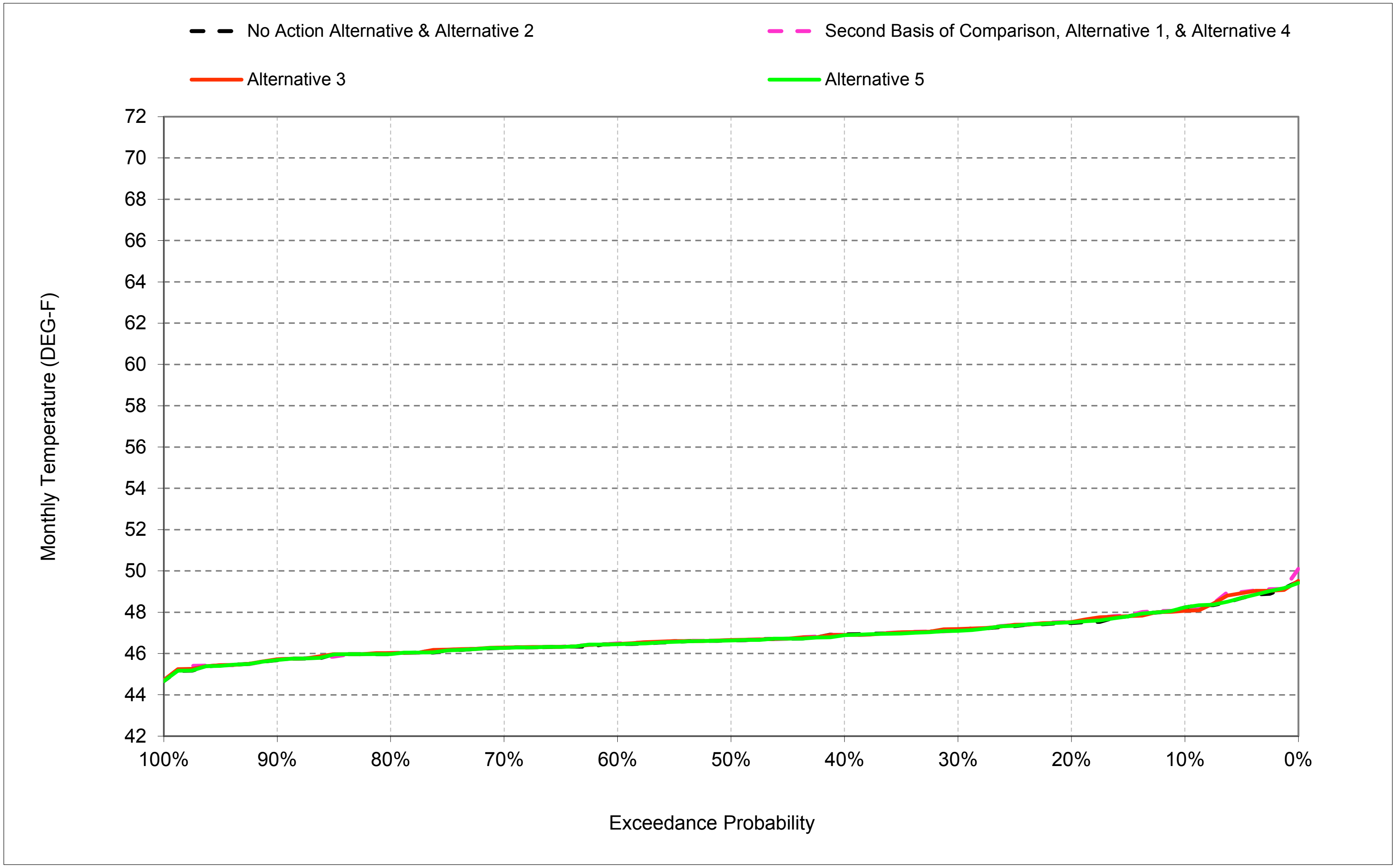
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-3. Sacramento River at Red Bluff, December



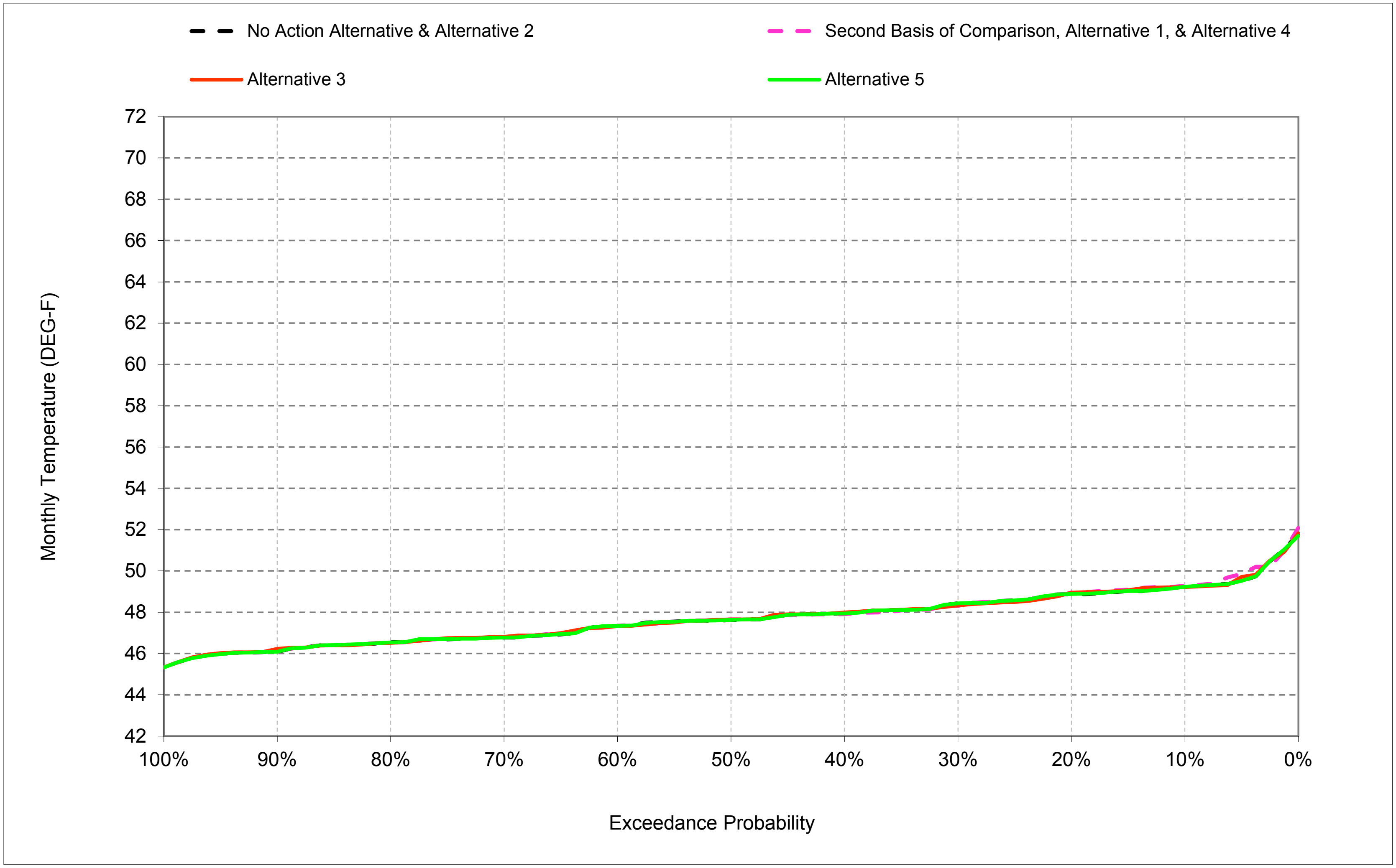
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-4. Sacramento River at Red Bluff, January



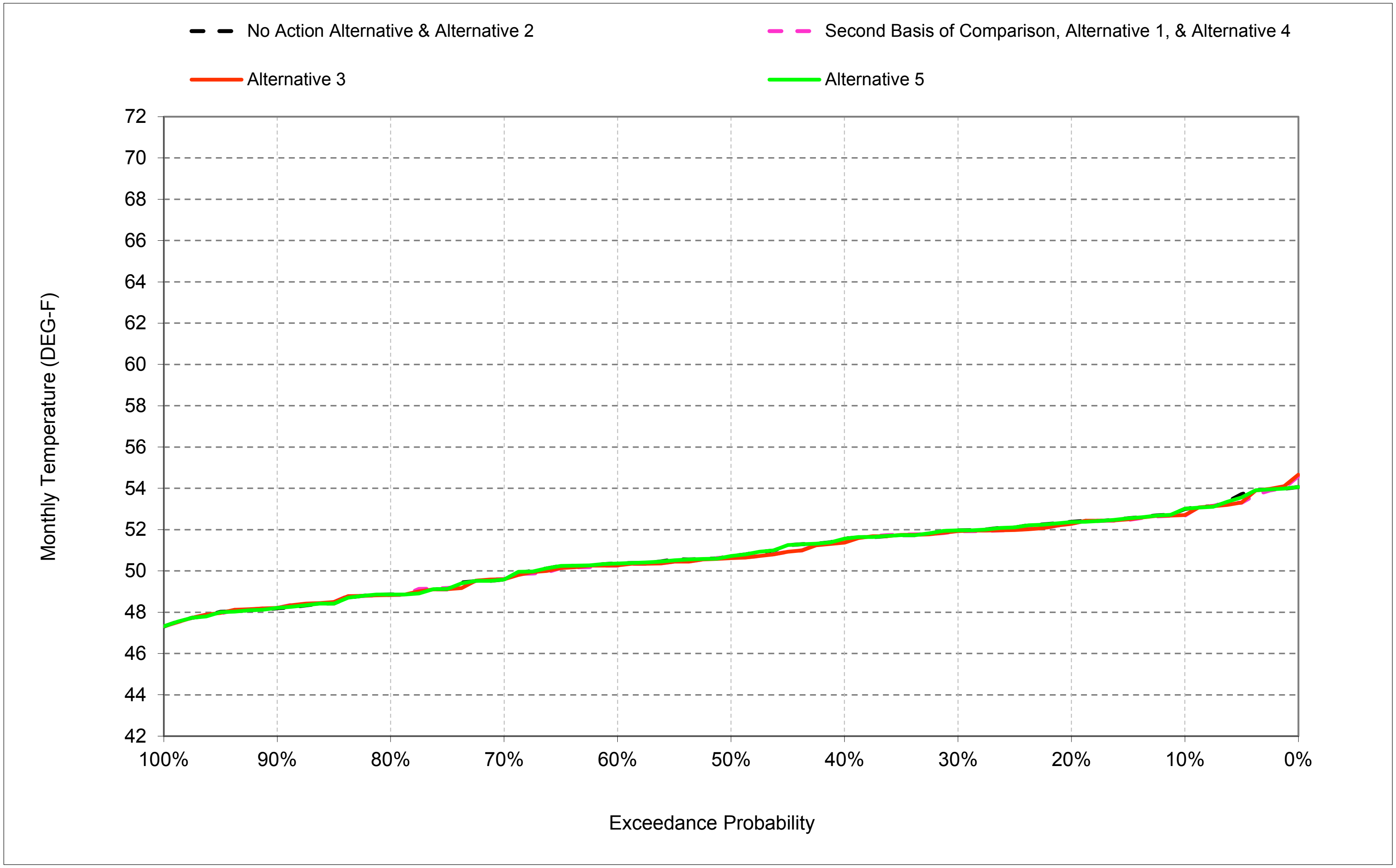
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-5. Sacramento River at Red Bluff, February



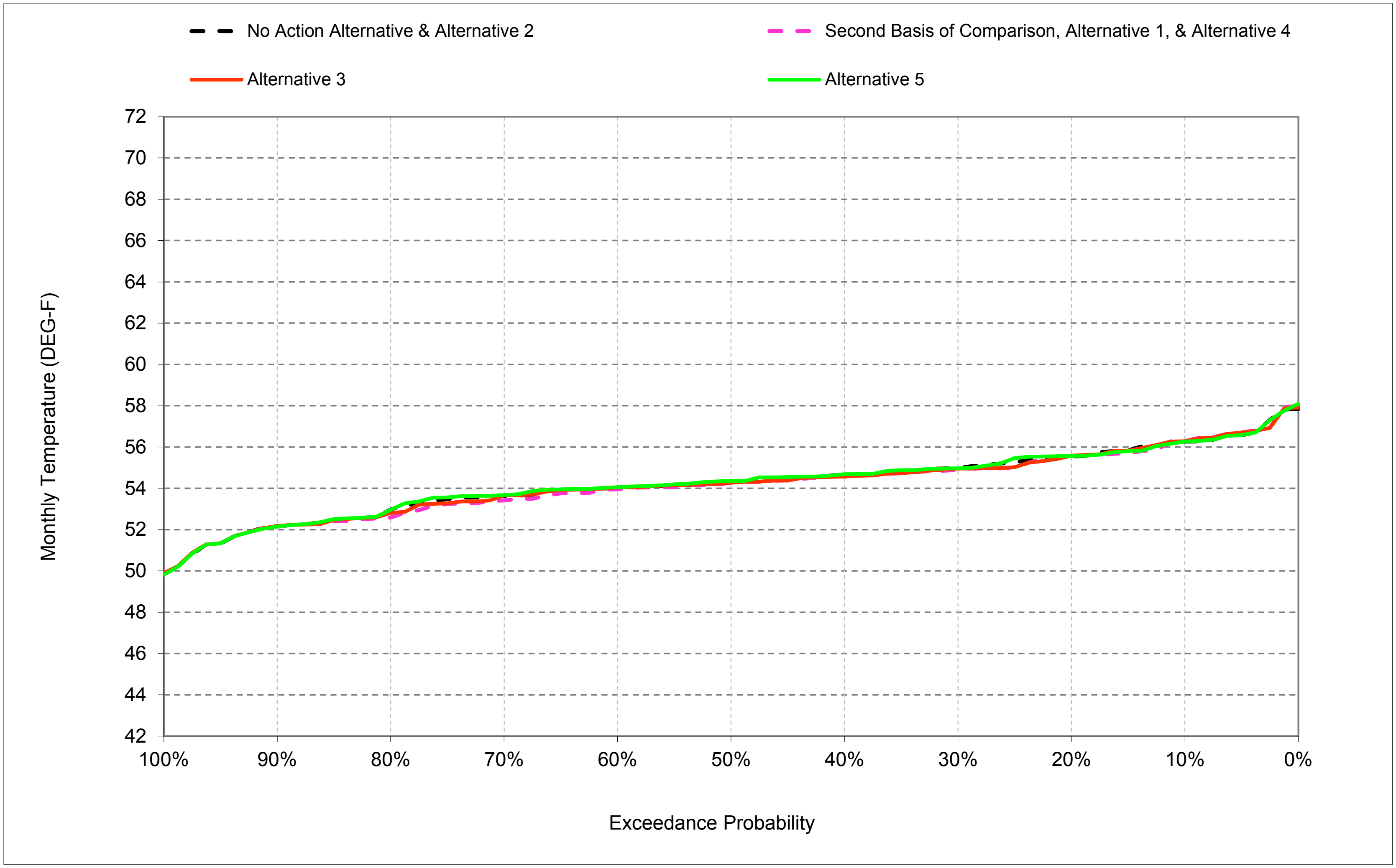
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-6. Sacramento River at Red Bluff, March



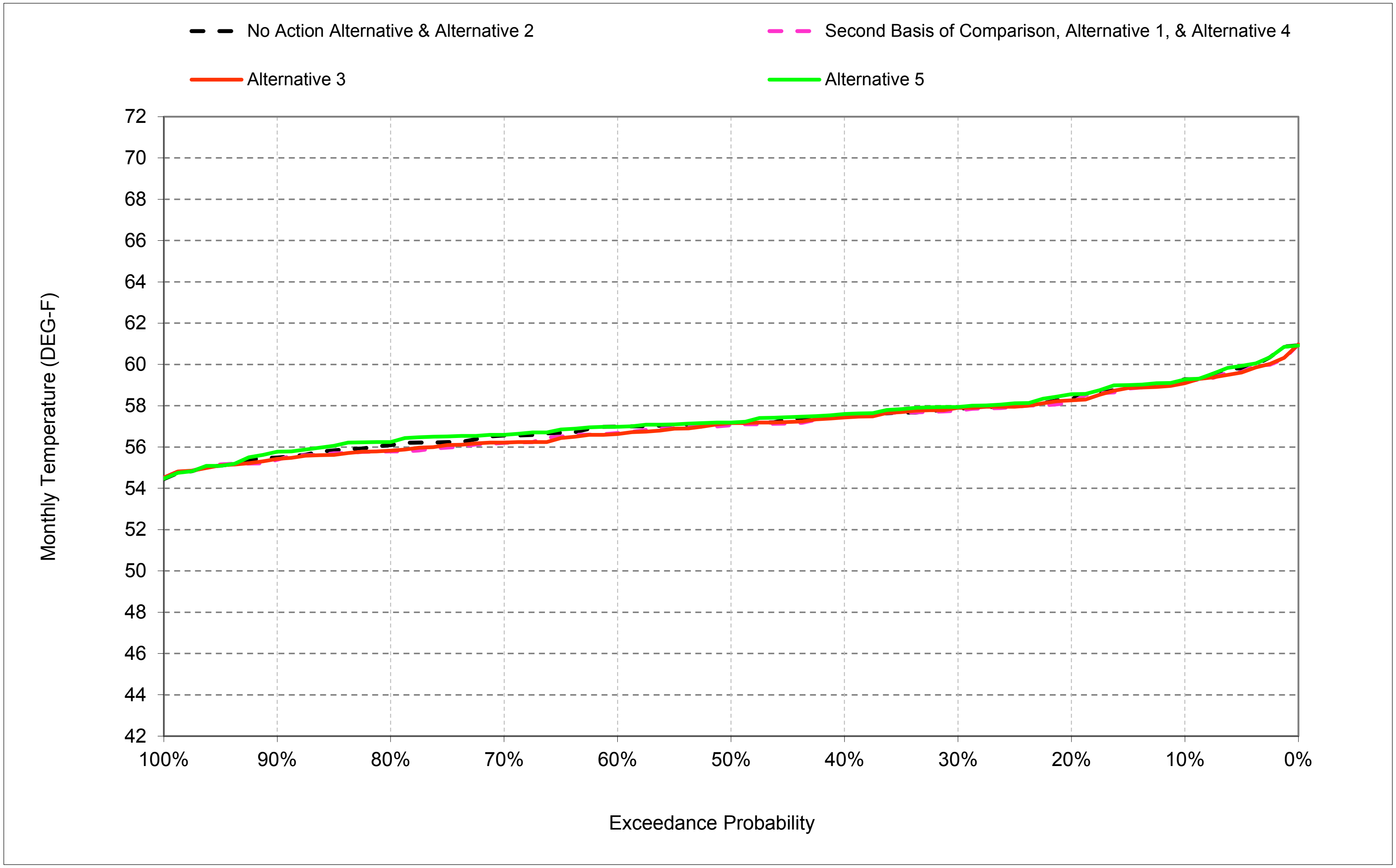
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-7. Sacramento River at Red Bluff, April



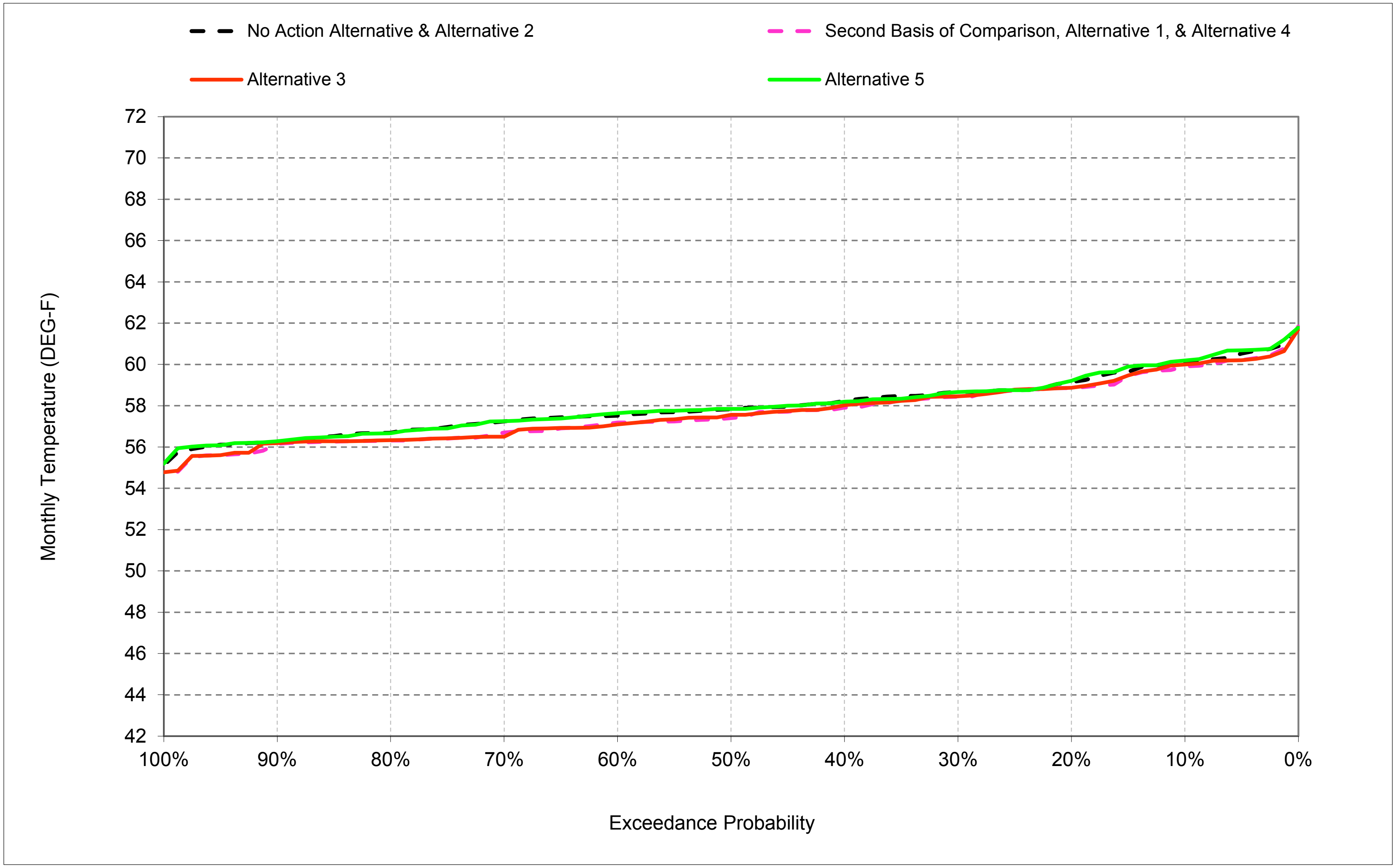
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-8. Sacramento River at Red Bluff, May



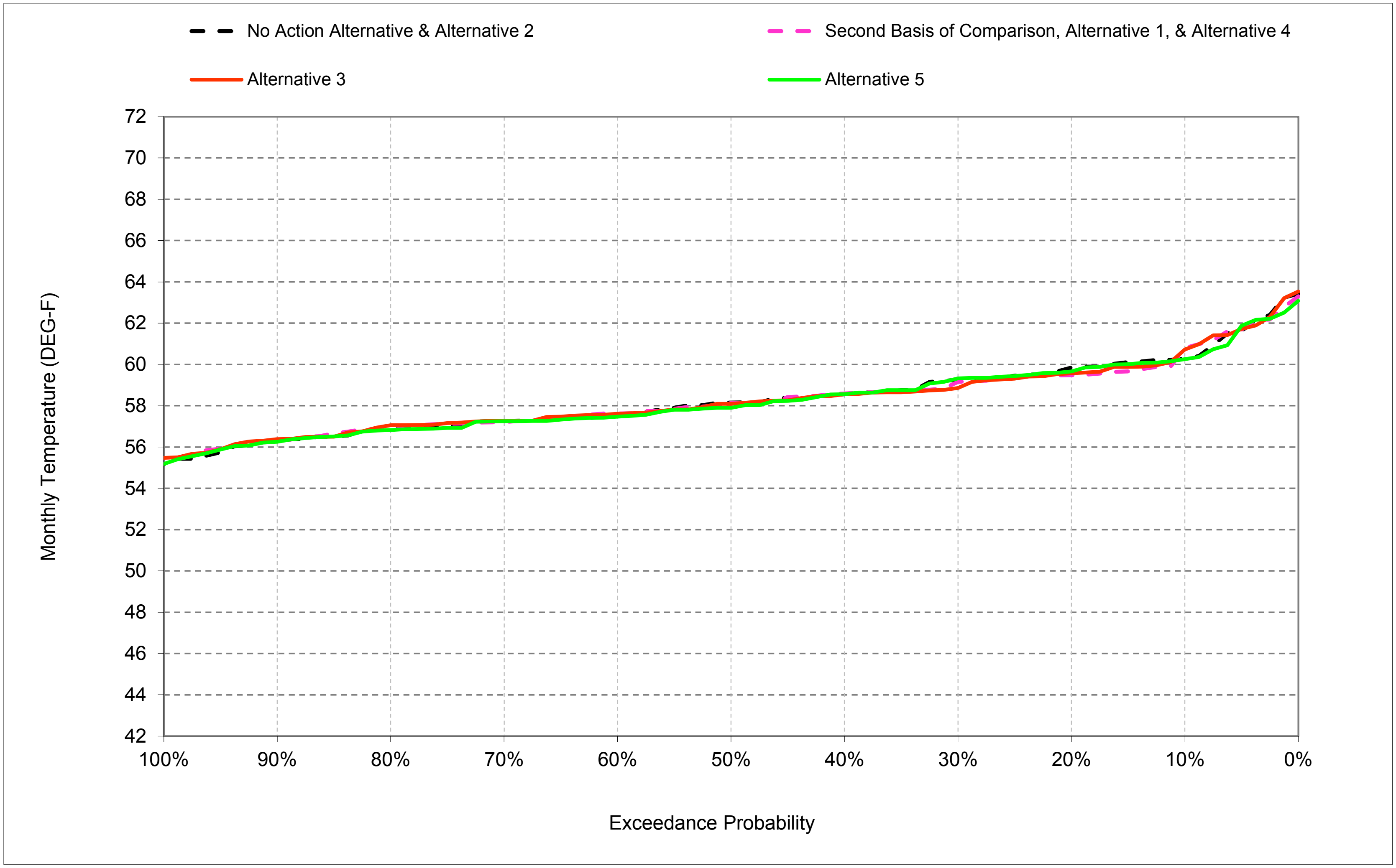
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-9. Sacramento River at Red Bluff, June



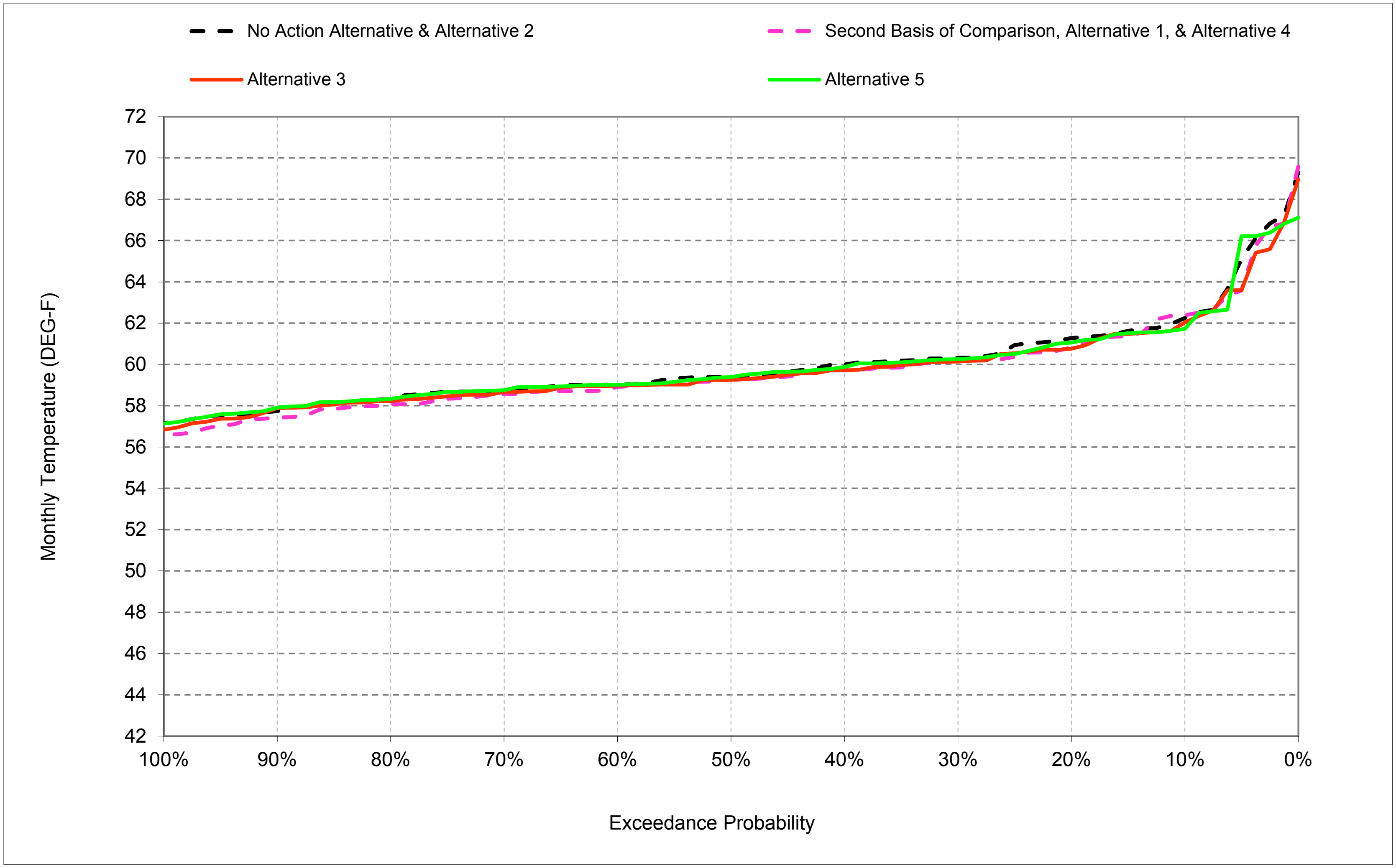
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-10. Sacramento River at Red Bluff, July



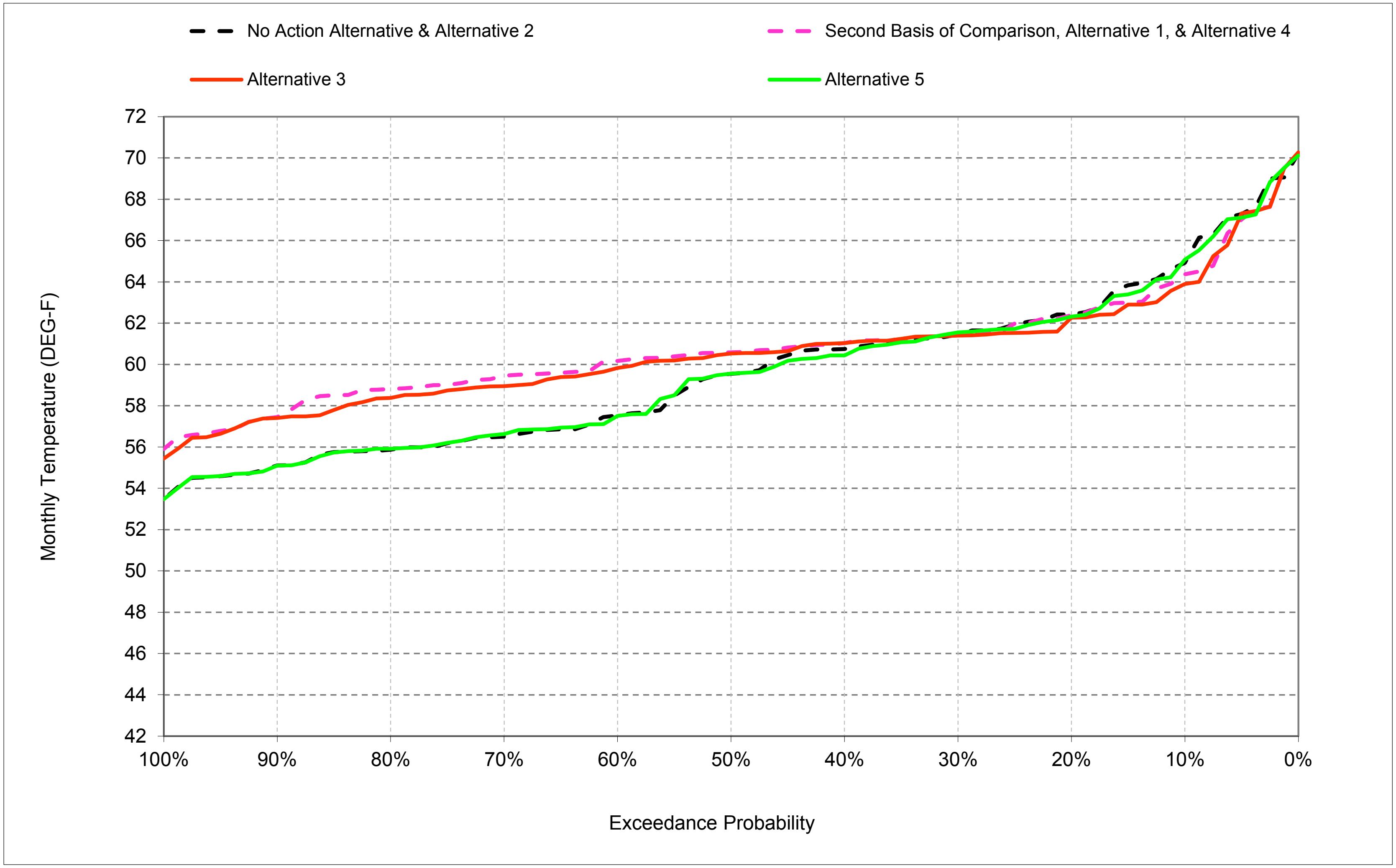
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-11. Sacramento River at Red Bluff, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-12. Sacramento River at Red Bluff, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-1. Sacramento River at Red Bluff, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period[b]	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period[b]	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.9	-0.5	0.0	-0.1	0.1	-0.3	0.0	-0.1	-0.2	0.4	0.2	-0.6
0.2	0.1	-0.7	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.3	-0.3	-0.5	-0.1
0.3	0.0	-0.6	0.1	0.0	-0.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	0.0
0.4	0.2	-0.5	0.0	0.0	0.0	-0.1	0.0	0.0	-0.3	0.0	-0.3	0.3
0.5	0.2	-0.6	-0.2	0.0	0.0	0.0	-0.1	-0.1	-0.4	-0.1	-0.2	1.1
0.6	0.1	-0.3	0.0	0.0	0.0	-0.1	-0.1	-0.3	-0.4	0.2	-0.2	2.6
0.7	0.0	-0.2	0.2	0.0	0.0	0.1	-0.2	-0.4	-0.6	-0.1	-0.2	2.9
0.8	-0.2	-0.4	0.1	0.0	0.0	0.0	-0.1	-0.3	-0.4	0.1	-0.3	2.9
0.9	-0.1	-0.2	0.0	0.0	0.0	0.1	0.0	-0.2	-0.4	0.0	-0.3	2.4
Long Term												
Full Simulation Period[b]	-0.1	-0.4	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.3	0.0	-0.3	1.2
Water Year Types[c]												
Wet (32%)	0.0	-0.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.4	3.2
Above Normal (16%)	0.0	-0.4	-0.2	0.1	0.0	-0.1	0.0	-0.2	-0.4	0.1	-0.3	2.3
Below Normal (13%)	-0.1	-0.5	-0.3	0.1	0.0	-0.3	-0.2	-0.2	-0.5	0.0	-0.5	-0.2
Dry (24%)	0.1	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.2	-0.5	-0.2	0.1	-0.1
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	-0.5	0.0	-0.3	-0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-2. Sacramento River at Red Bluff, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period[b]	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	60	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	56	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	58
90%	56	52	47	46	46	48	52	55	56	56	58	57
Long Term												
Full Simulation Period[b]	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	55	57	57	57	59	59
Dry (24%)	57	53	49	47	48	52	55	57	57	58	60	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 3 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.4	-0.1	0.0	-0.2	0.0	-0.3	0.0	-0.2	-0.1	0.4	-0.2	-1.0
0.2	-0.1	-0.6	-0.3	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.2	-0.5	-0.3
0.3	0.1	-0.5	0.1	0.1	-0.1	0.0	0.0	0.0	-0.2	-0.4	-0.2	0.0
0.4	0.1	-0.5	0.0	0.0	0.0	-0.2	0.0	-0.1	-0.2	0.0	-0.3	0.3
0.5	0.1	-0.7	-0.2	0.0	0.0	-0.1	-0.1	0.0	-0.3	0.0	-0.2	1.0
0.6	0.1	-0.3	0.0	0.0	-0.1	-0.1	0.0	-0.4	-0.5	0.1	-0.1	2.3
0.7	0.0	-0.2	0.1	0.0	0.0	0.1	-0.1	-0.3	-0.7	0.0	-0.1	2.4
0.8	-0.2	-0.4	0.0	0.1	0.0	0.0	0.0	-0.3	-0.4	0.1	-0.1	2.5
0.9	-0.2	-0.2	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.1	0.0	2.3
Long Term												
Full Simulation Period[b]	-0.1	-0.4	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0	-0.2	1.0
Water Year Types[c]												
Wet (32%)	0.0	-0.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	3.0
Above Normal (16%)	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.3	-0.3	0.1	0.0	2.3
Below Normal (13%)	-0.2	-0.5	-0.3	0.1	0.0	-0.3	-0.1	-0.2	-0.3	-0.1	-0.2	-1.1
Dry (24%)	-0.1	-0.4	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.5	-0.2	-0.2	-0.2
Critical (15%)	-0.4	-0.2	0.0	0.1	0.1	0.0	0.1	0.0	-0.4	0.2	-0.5	-0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-3. Sacramento River at Red Bluff, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period[b]	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

Alternative 5

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	48	49	52	56	59	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	62
40%	57	54	49	47	48	51	55	58	58	59	60	60
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	56	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	47	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	56	56	56	58	55
Long Term												
Full Simulation Period[b]	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	60
Dry (24%)	57	54	49	47	48	52	55	58	58	58	60	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	63	66

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.5	0.1
0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.2	-0.2	-0.1
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	0.1
0.4	0.0	0.0	-0.1	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.2	-0.3
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0
0.6	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
0.7	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	0.0	0.0	0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	-0.3	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	-0.2	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-4. Sacramento River at Red Bluff, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period[b]	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	47	49	52	56	58	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	57	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	46	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	55	56	56	58	55
Long Term												
Full Simulation Period[b]	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	61
Dry (24%)	57	54	49	47	48	52	55	57	58	58	61	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	64	66

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.9	0.5	0.0	0.1	-0.1	0.3	0.0	0.1	0.2	-0.4	-0.2	0.6
0.2	-0.1	0.7	0.2	0.0	0.0	0.1	0.0	0.2	0.3	0.3	0.5	0.1
0.3	0.0	0.6	-0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.0
0.4	-0.2	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.3	-0.3
0.5	-0.2	0.6	0.2	0.0	0.0	0.0	0.1	0.1	0.4	0.1	0.2	-1.1
0.6	-0.1	0.3	0.0	0.0	0.0	0.1	0.1	0.3	0.4	-0.2	0.2	-2.6
0.7	0.0	0.2	-0.2	0.0	0.0	-0.1	0.2	0.4	0.6	0.1	0.2	-2.9
0.8	0.2	0.4	-0.1	0.0	0.0	0.0	0.1	0.3	0.4	-0.1	0.3	-2.9
0.9	0.1	0.2	0.0	0.0	0.0	-0.1	0.0	0.2	0.4	0.0	0.3	-2.4
Long Term												
Full Simulation Period[b]	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.3	-1.2
Water Year Types[c]												
Wet (32%)	0.0	0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-3.2
Above Normal (16%)	0.0	0.4	0.2	-0.1	0.0	0.1	0.0	0.2	0.4	-0.1	0.3	-2.3
Below Normal (13%)	0.1	0.5	0.3	-0.1	0.0	0.3	0.2	0.2	0.5	0.0	0.5	0.2
Dry (24%)	-0.1	0.3	0.2	0.0	0.0	0.0	0.2	0.2	0.5	0.2	-0.1	0.1
Critical (15%)	0.4	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.5	0.0	0.3	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-5. Sacramento River at Red Bluff, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period[b]	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	60	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	56	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	58
90%	56	52	47	46	46	48	52	55	56	56	58	57
Long Term												
Full Simulation Period[b]	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	55	57	57	57	59	59
Dry (24%)	57	53	49	47	48	52	55	57	57	58	60	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.5	0.4	0.0	0.0	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.4	-0.5
0.2	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	-0.2
0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	-0.2	0.0	0.0
0.4	-0.2	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.1	-0.1	0.0	0.0
0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.2	-0.3
0.7	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.1	-0.5
0.8	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	-0.4
0.9	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.3	-0.1
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.2
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.3	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	-1.0
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.3	-0.1
Critical (15%)	0.0	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-6. Sacramento River at Red Bluff, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	55	51	48	49	53	56	59	60	61	62	64
20%	58	55	50	48	49	52	56	58	59	59	61	62
30%	58	54	49	47	48	52	55	58	58	59	60	61
40%	57	54	49	47	48	51	55	57	58	59	60	61
50%	57	53	49	47	48	51	54	57	57	58	59	61
60%	57	53	48	46	47	50	54	57	57	58	59	60
70%	56	53	48	46	47	50	53	56	57	57	59	59
80%	56	52	48	46	47	49	53	56	56	57	58	59
90%	56	52	47	46	46	48	52	55	56	56	57	57
Long Term												
Full Simulation Period[b]	57	54	49	47	48	51	54	57	58	58	60	61
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	59
Above Normal (16%)	58	53	49	47	47	50	54	57	57	57	58	59
Below Normal (13%)	57	53	49	47	48	51	54	56	57	57	58	60
Dry (24%)	57	54	49	47	48	52	55	57	57	58	61	62
Critical (15%)	59	55	50	47	49	52	55	58	59	61	63	65

Alternative 5

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	51	48	49	53	56	59	60	60	62	65
20%	58	55	50	48	49	52	56	59	59	60	61	62
30%	58	55	49	47	48	52	55	58	59	59	60	62
40%	57	54	49	47	48	51	55	58	58	59	60	60
50%	57	54	49	47	48	51	54	57	58	58	59	60
60%	56	53	48	46	47	50	54	57	58	57	59	58
70%	56	53	48	46	47	50	54	57	57	57	59	57
80%	56	53	48	46	47	49	53	56	57	57	58	56
90%	56	52	47	46	46	48	52	56	56	56	58	55
Long Term												
Full Simulation Period[b]	58	54	49	47	48	51	54	57	58	58	60	60
Water Year Types[c]												
Wet (32%)	55	51	47	46	47	49	53	57	58	58	59	56
Above Normal (16%)	58	54	49	47	47	50	54	57	57	57	58	57
Below Normal (13%)	57	54	49	47	48	52	55	57	57	57	59	60
Dry (24%)	57	54	49	47	48	52	55	58	58	58	60	62
Critical (15%)	60	55	50	47	49	52	55	58	60	61	63	66

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.4	0.4	-0.1	0.1	-0.1	0.3	0.0	0.1	0.3	-0.4	-0.7	0.7
0.2	-0.1	0.6	0.3	0.0	0.0	0.1	0.0	0.4	0.3	0.2	0.3	-0.1
0.3	0.0	0.5	-0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1
0.4	-0.2	0.5	0.0	-0.1	0.0	0.1	0.0	0.1	0.3	0.0	0.1	-0.6
0.5	-0.2	0.6	0.2	0.0	0.0	0.0	0.1	0.2	0.5	-0.2	0.1	-1.1
0.6	-0.2	0.4	0.1	0.0	0.1	0.1	0.1	0.3	0.5	-0.2	0.2	-2.7
0.7	-0.1	0.2	-0.2	0.0	0.0	-0.1	0.3	0.4	0.6	0.0	0.2	-2.8
0.8	0.1	0.5	-0.1	0.0	0.0	0.0	0.1	0.5	0.4	-0.1	0.3	-2.9
0.9	0.1	0.2	0.0	0.0	0.0	-0.1	0.0	0.4	0.4	0.0	0.4	-2.4
Long Term												
Full Simulation Period[b]	0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.0	0.2	-1.3
Water Year Types[c]												
Wet (32%)	0.0	0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.4	-3.2
Above Normal (16%)	0.0	0.3	0.2	-0.1	0.0	0.1	0.0	0.3	0.4	-0.1	0.3	-2.2
Below Normal (13%)	0.1	0.4	0.3	0.0	0.0	0.3	0.2	0.3	0.5	0.0	0.7	0.0
Dry (24%)	0.0	0.3	0.1	0.0	0.0	0.0	0.2	0.5	0.5	0.1	-0.4	0.0
Critical (15%)	0.4	0.3	0.0	-0.2	-0.2	0.0	0.1	0.2	0.6	-0.2	0.0	0.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

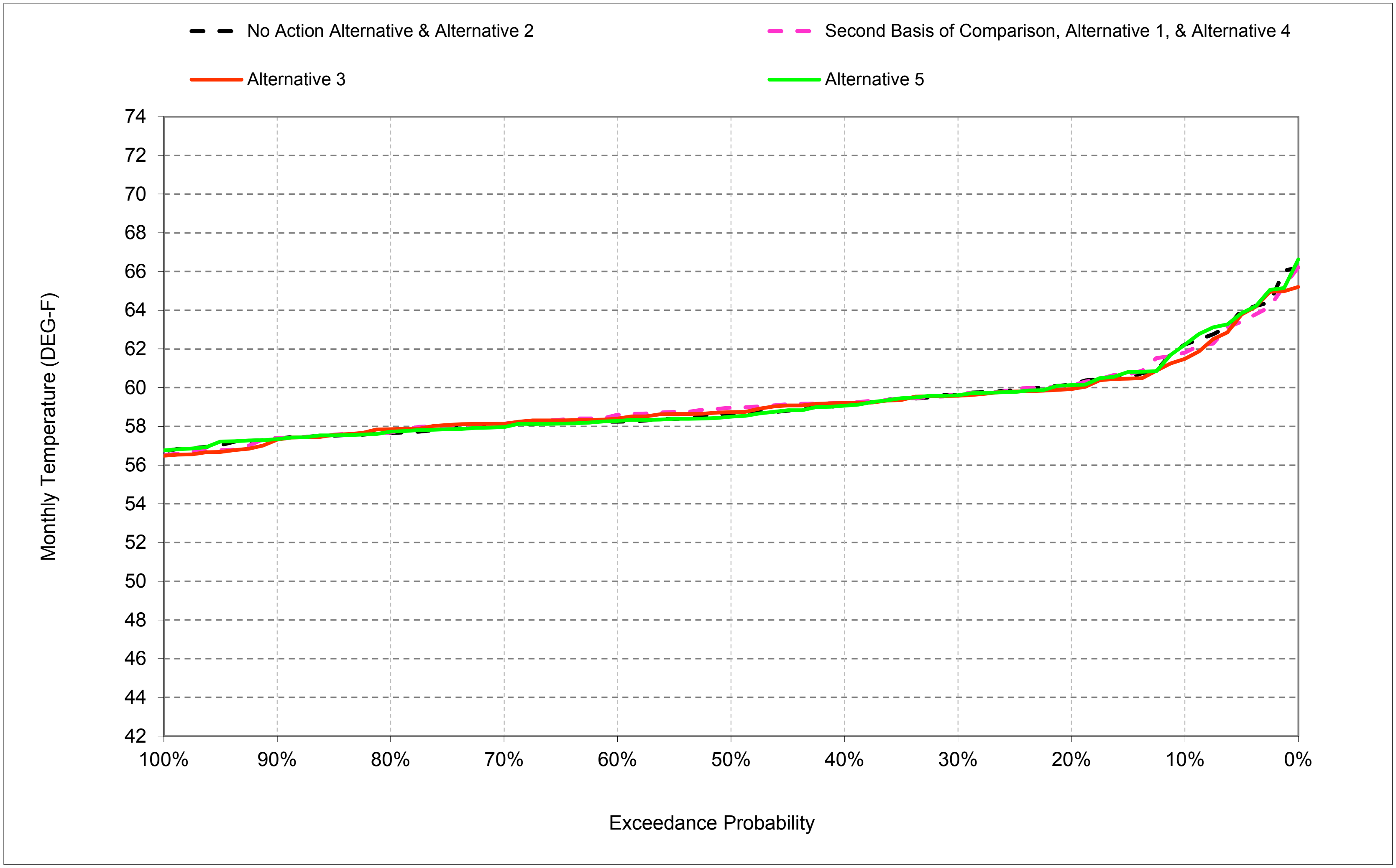
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

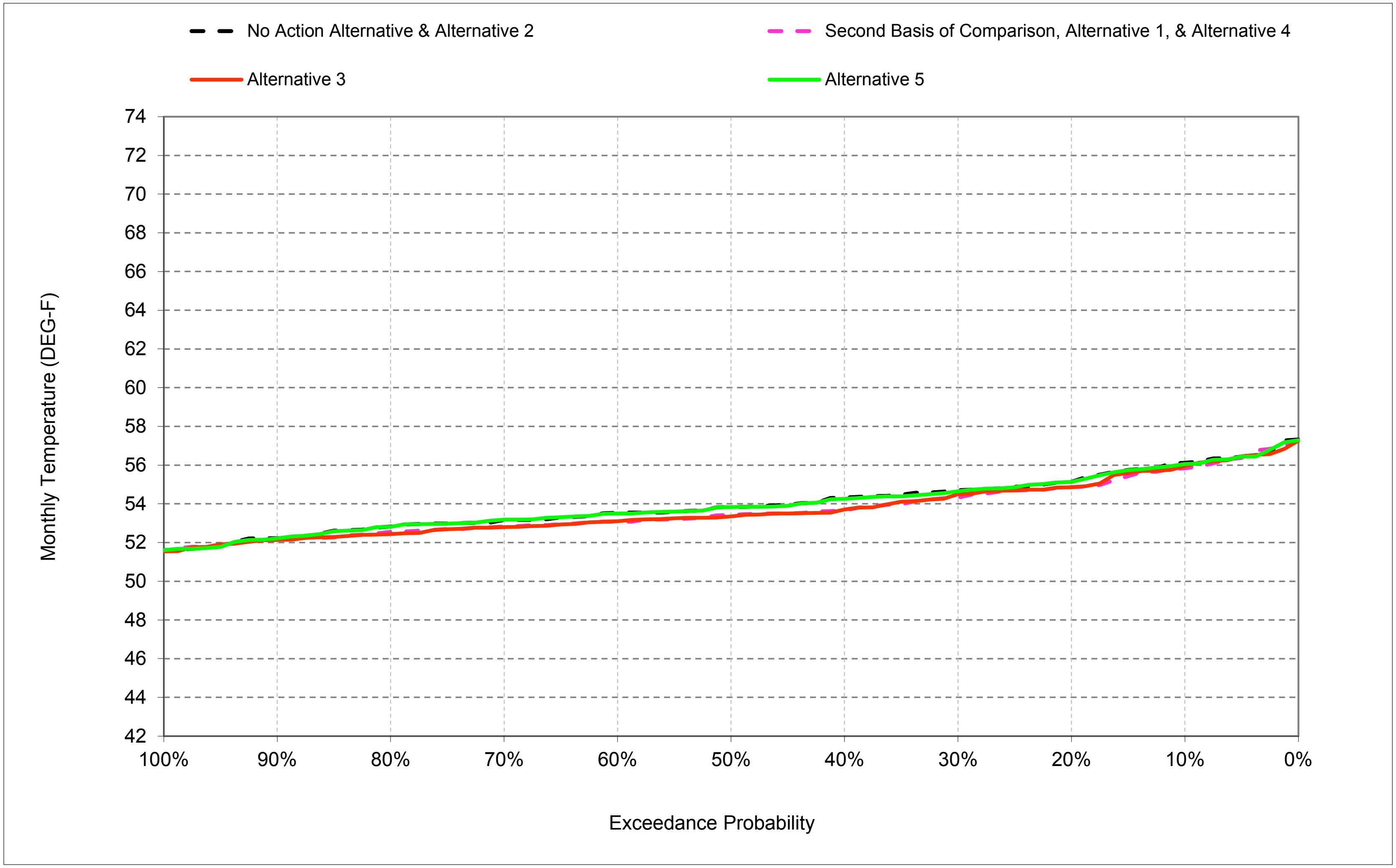
B.10. Sacramento River at Hamilton City Temperature

Figure B-10-1. Sacramento River below Hamilton City, October



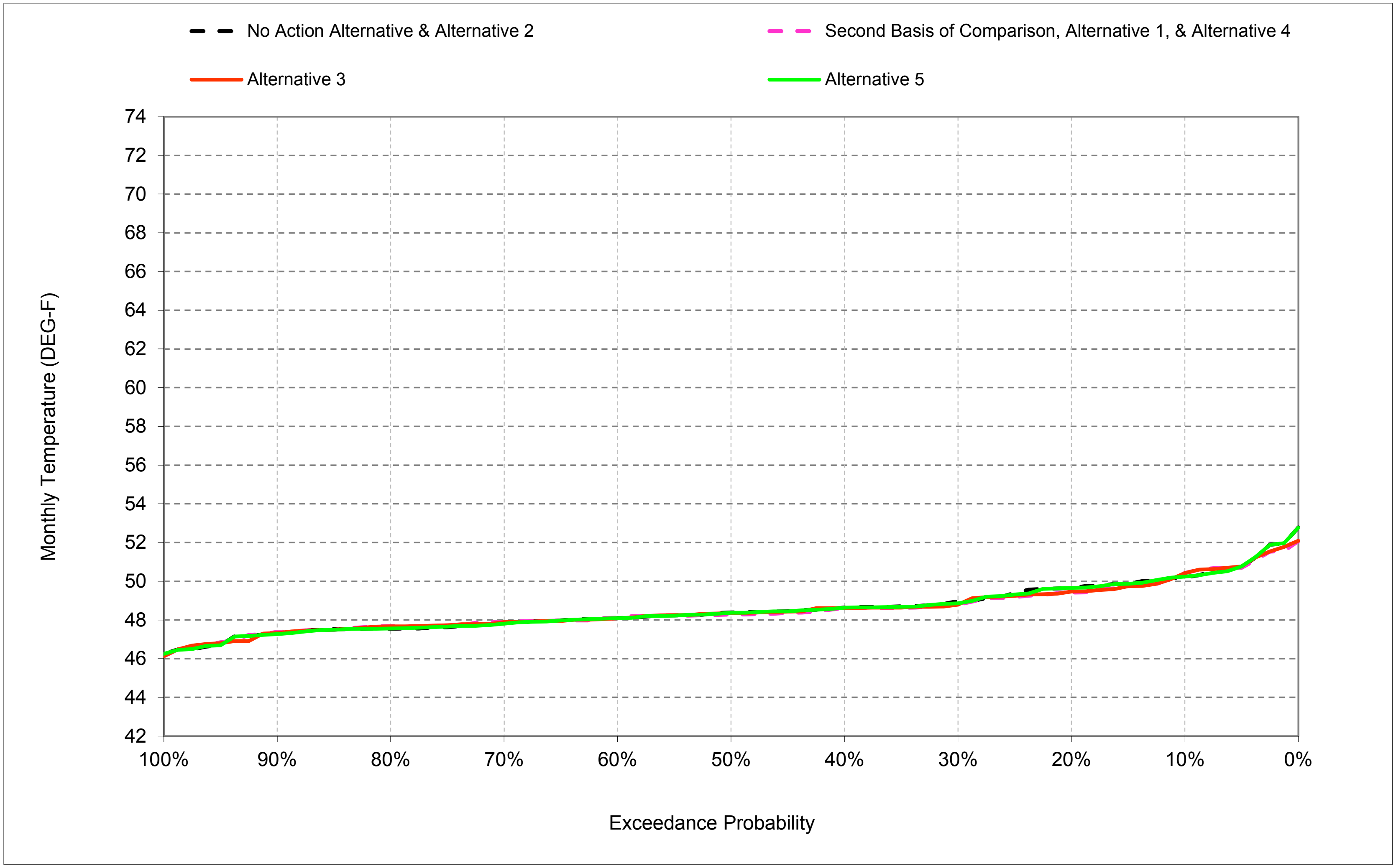
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-2. Sacramento River below Hamilton City, November



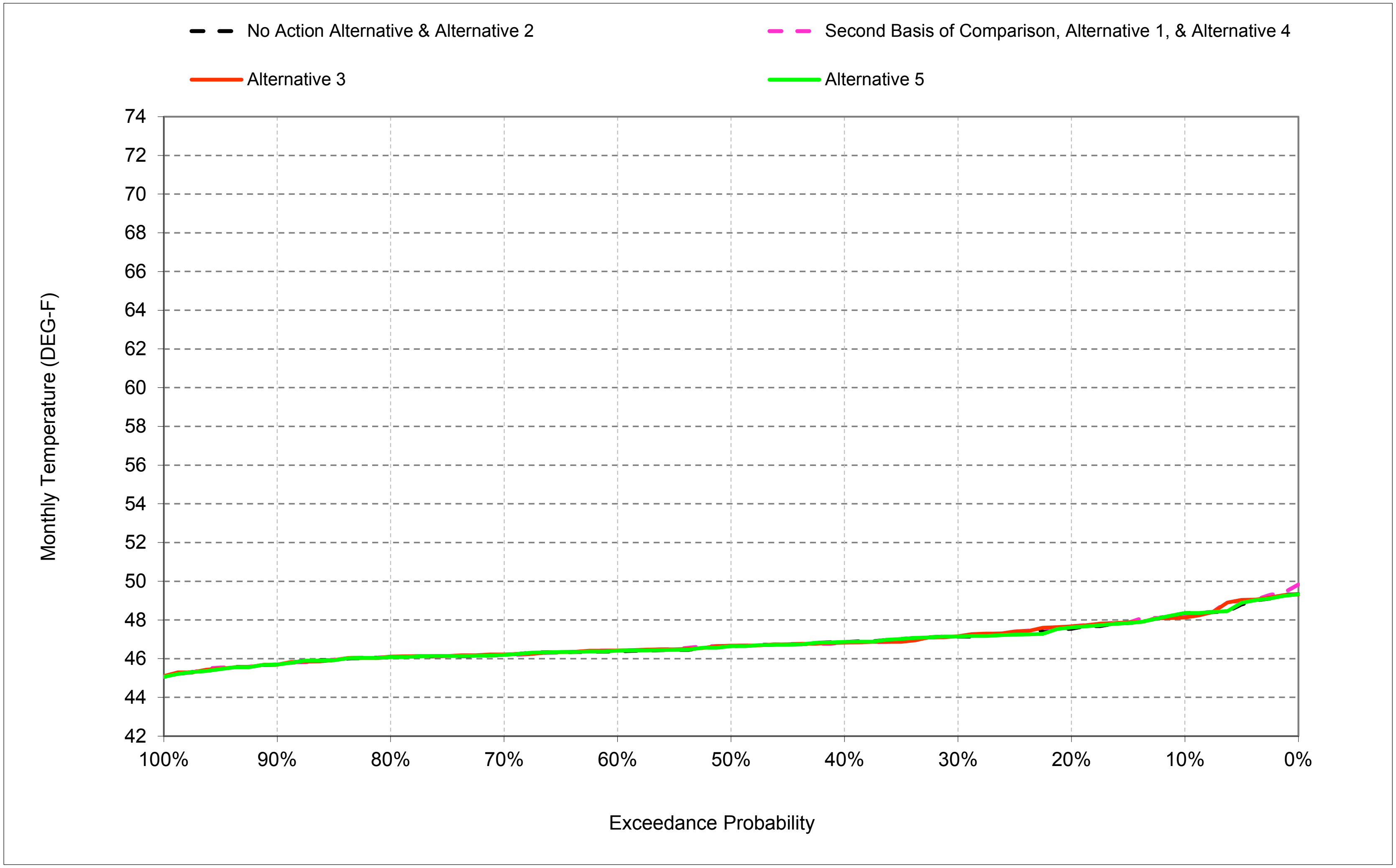
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-3. Sacramento River below Hamilton City, December



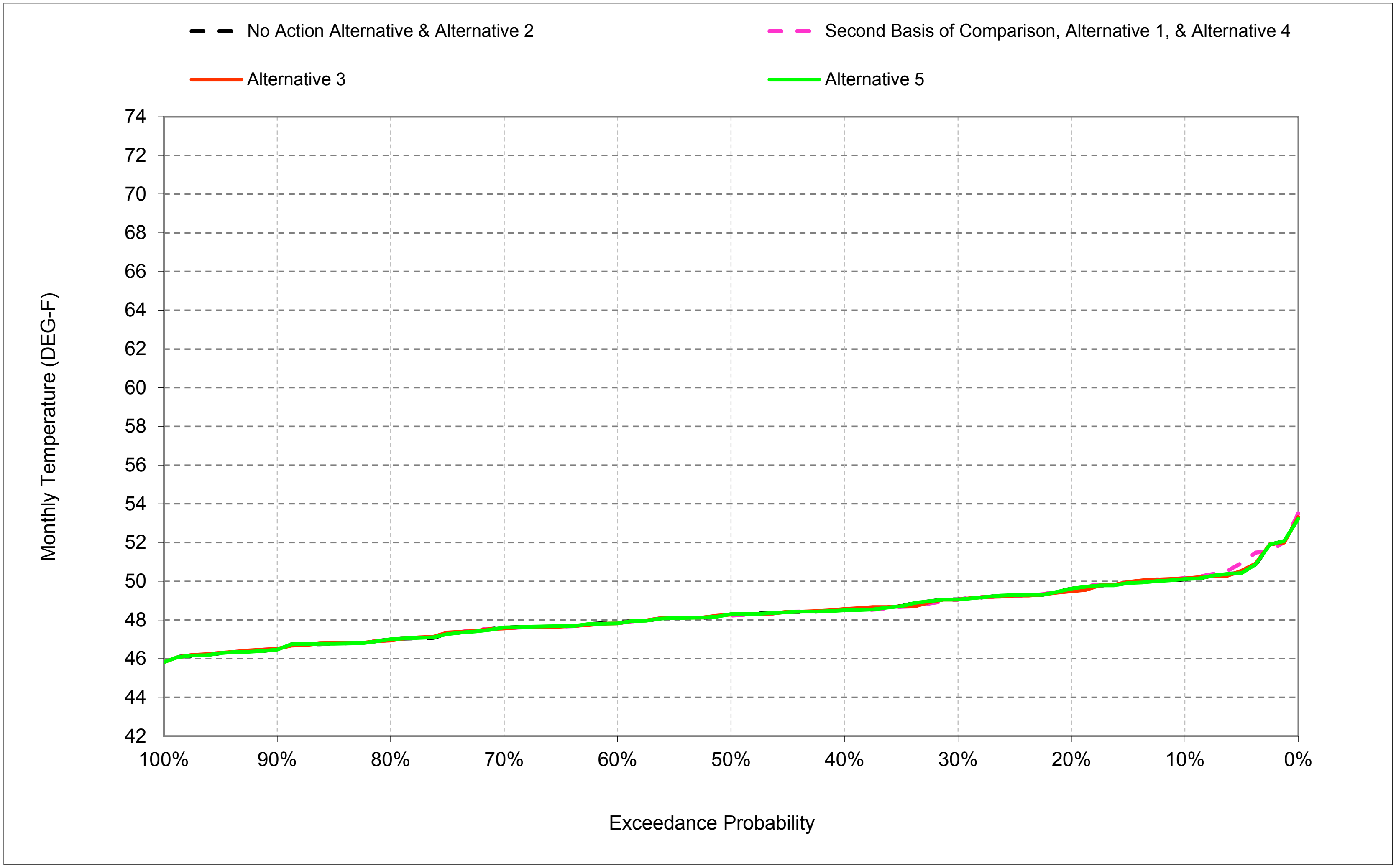
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-4. Sacramento River below Hamilton City, January



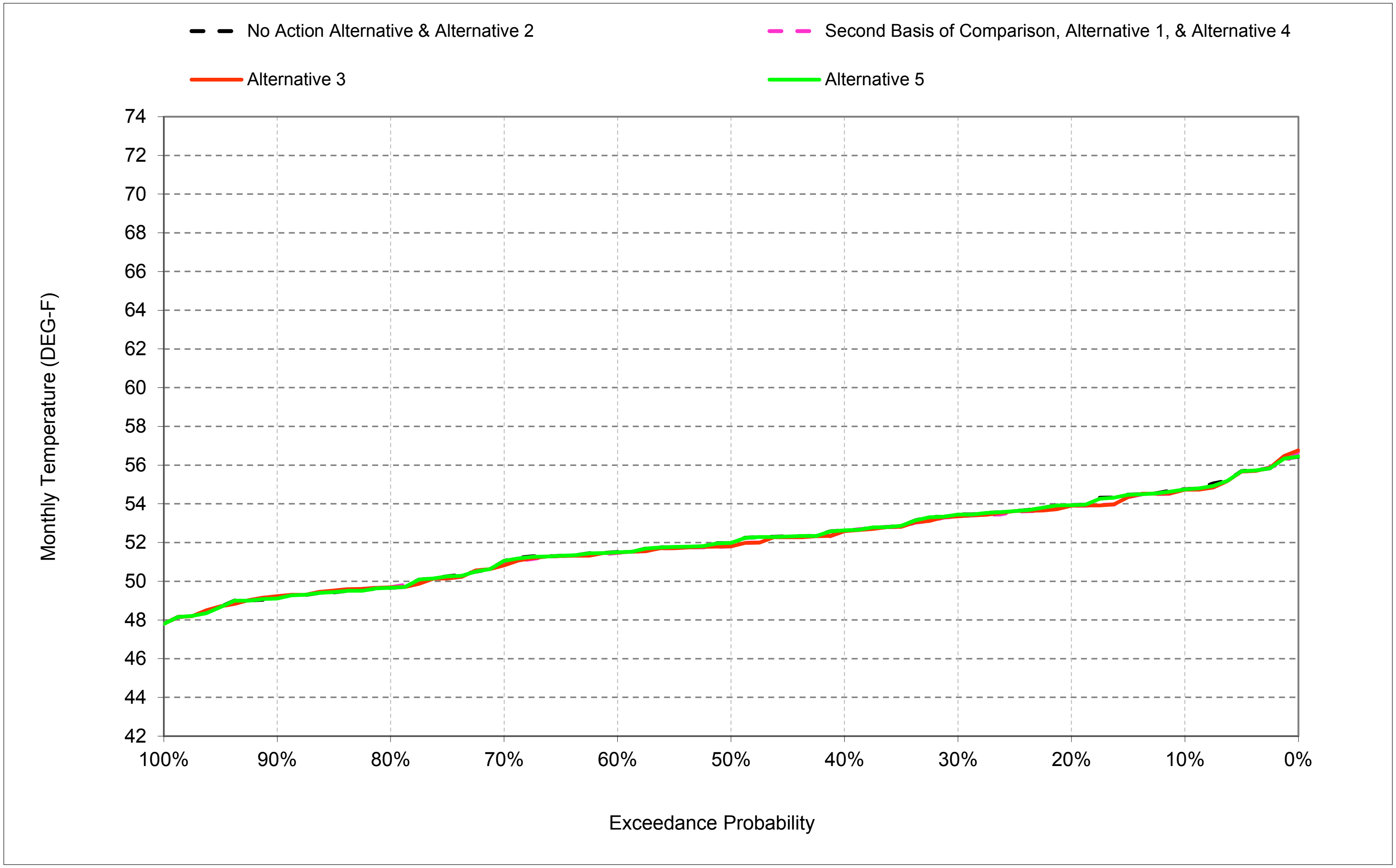
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-5. Sacramento River below Hamilton City, February



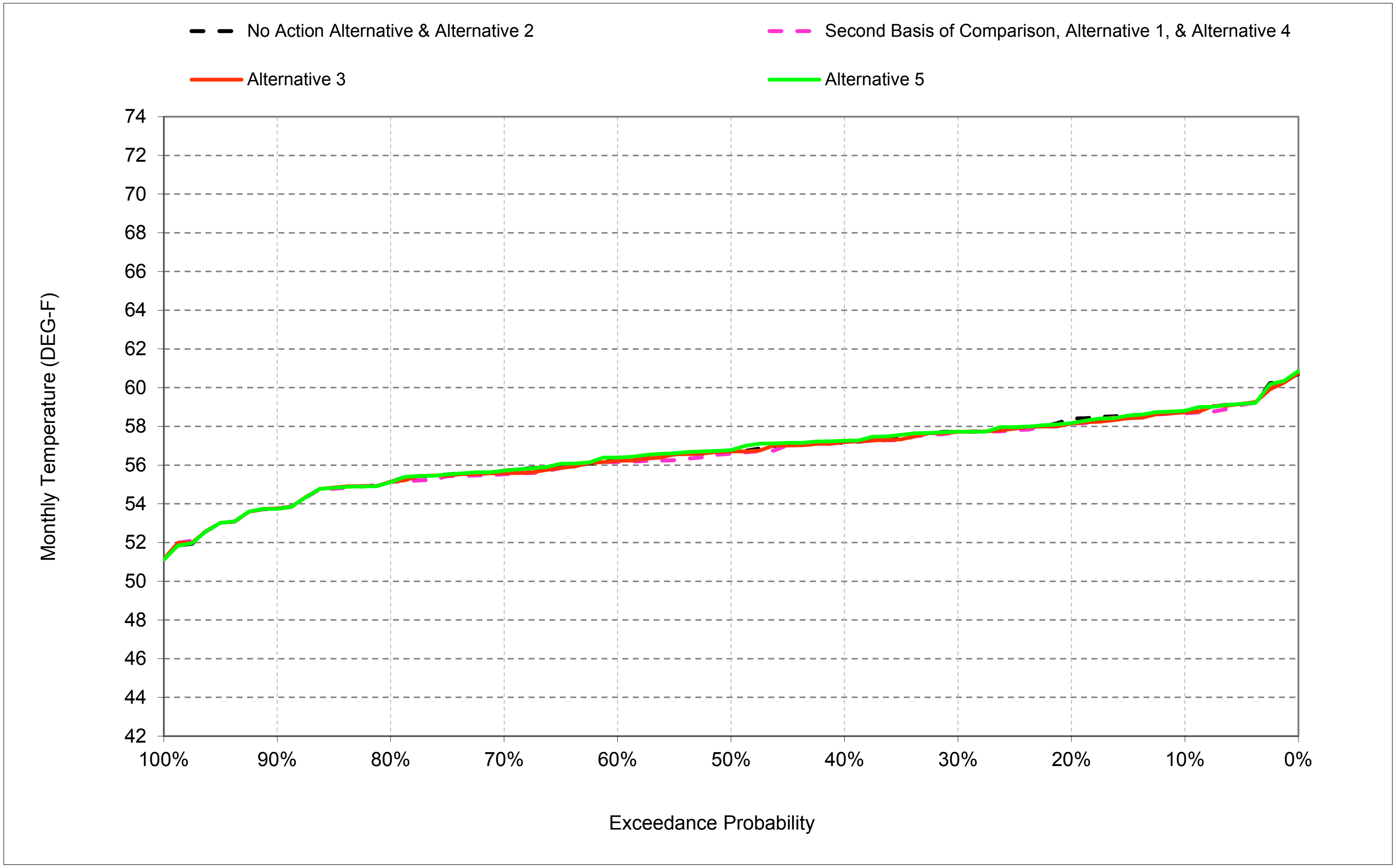
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-6. Sacramento River below Hamilton City, March



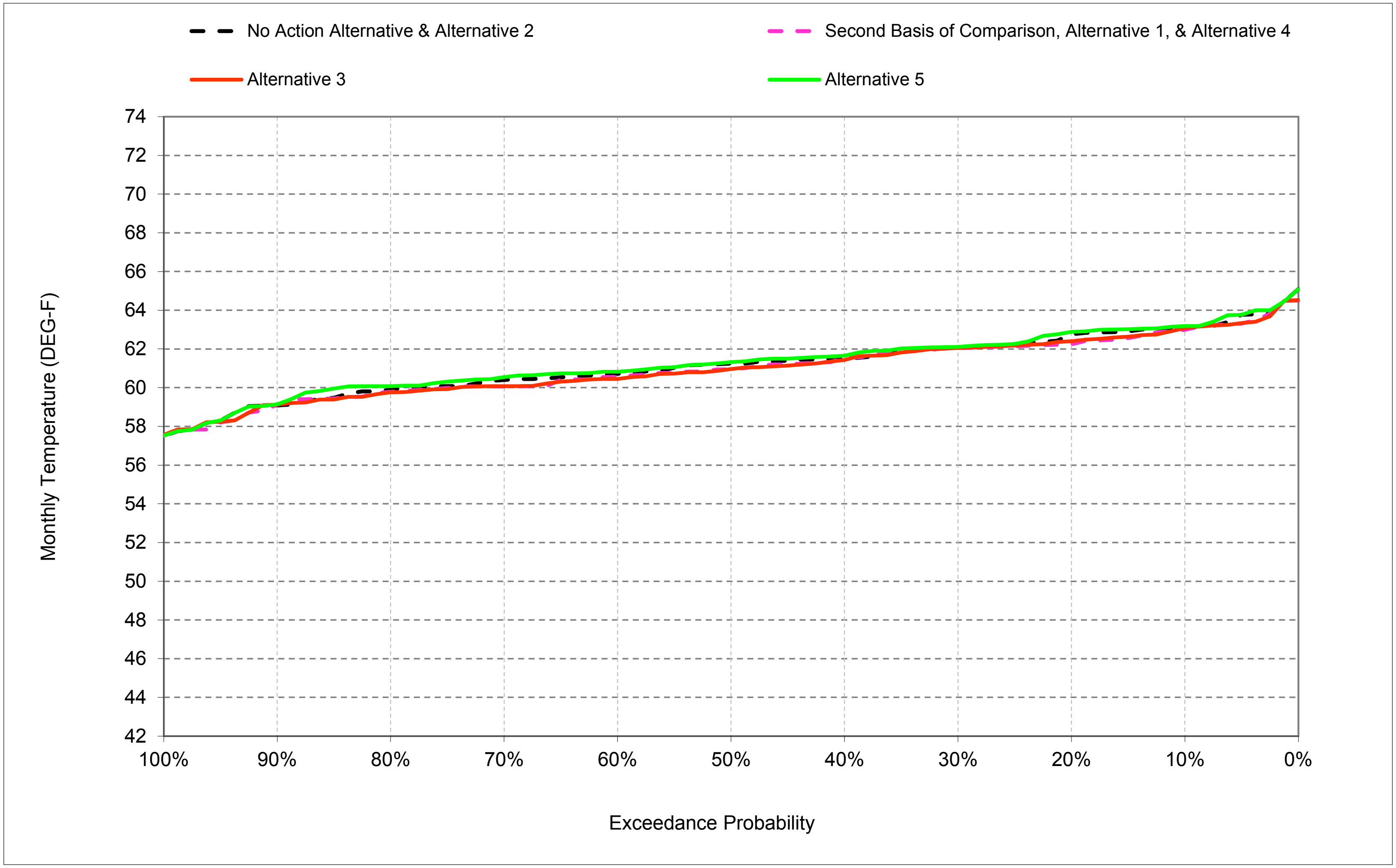
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-7. Sacramento River below Hamilton City, April



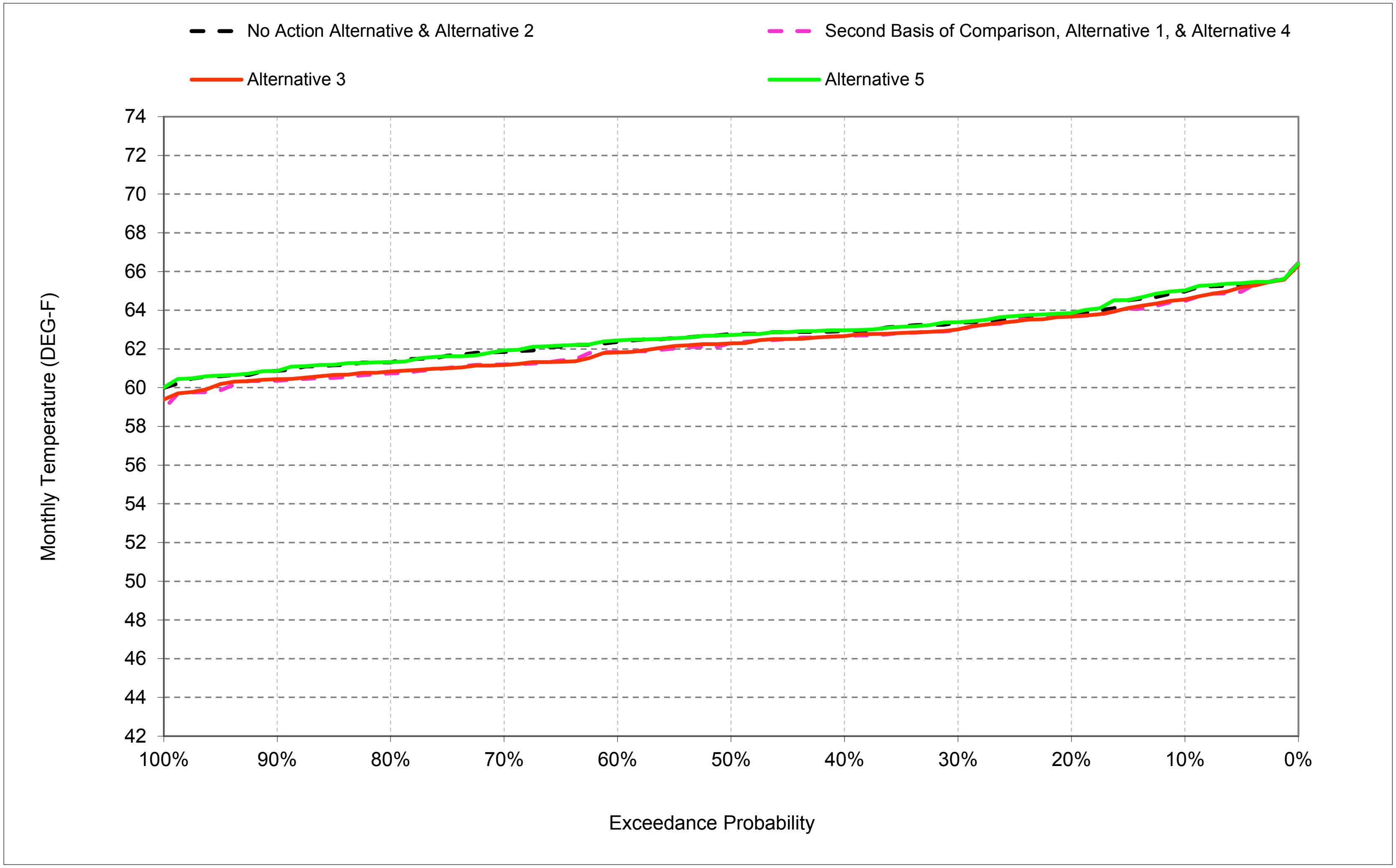
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-8. Sacramento River below Hamilton City, May



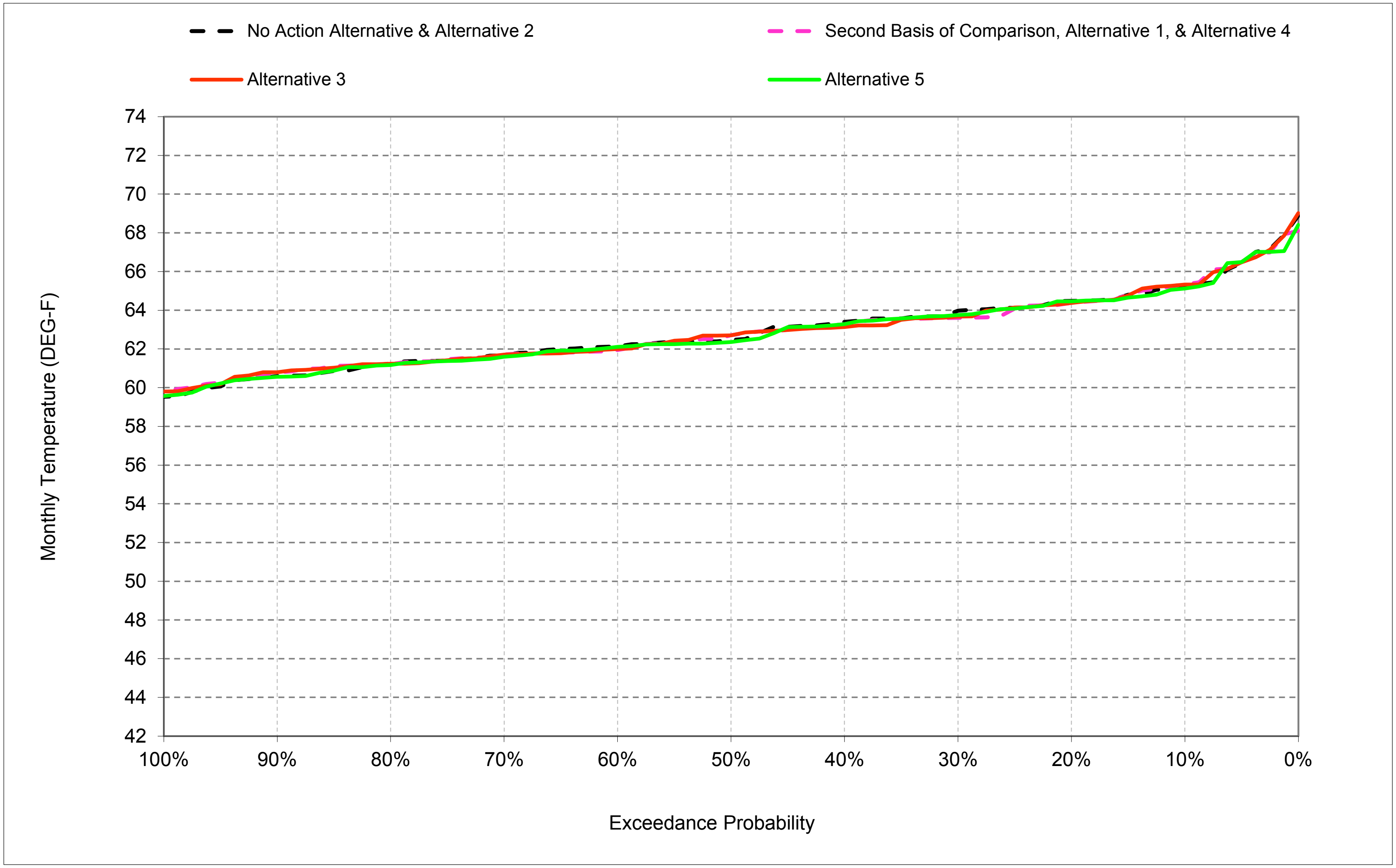
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-9. Sacramento River below Hamilton City, June



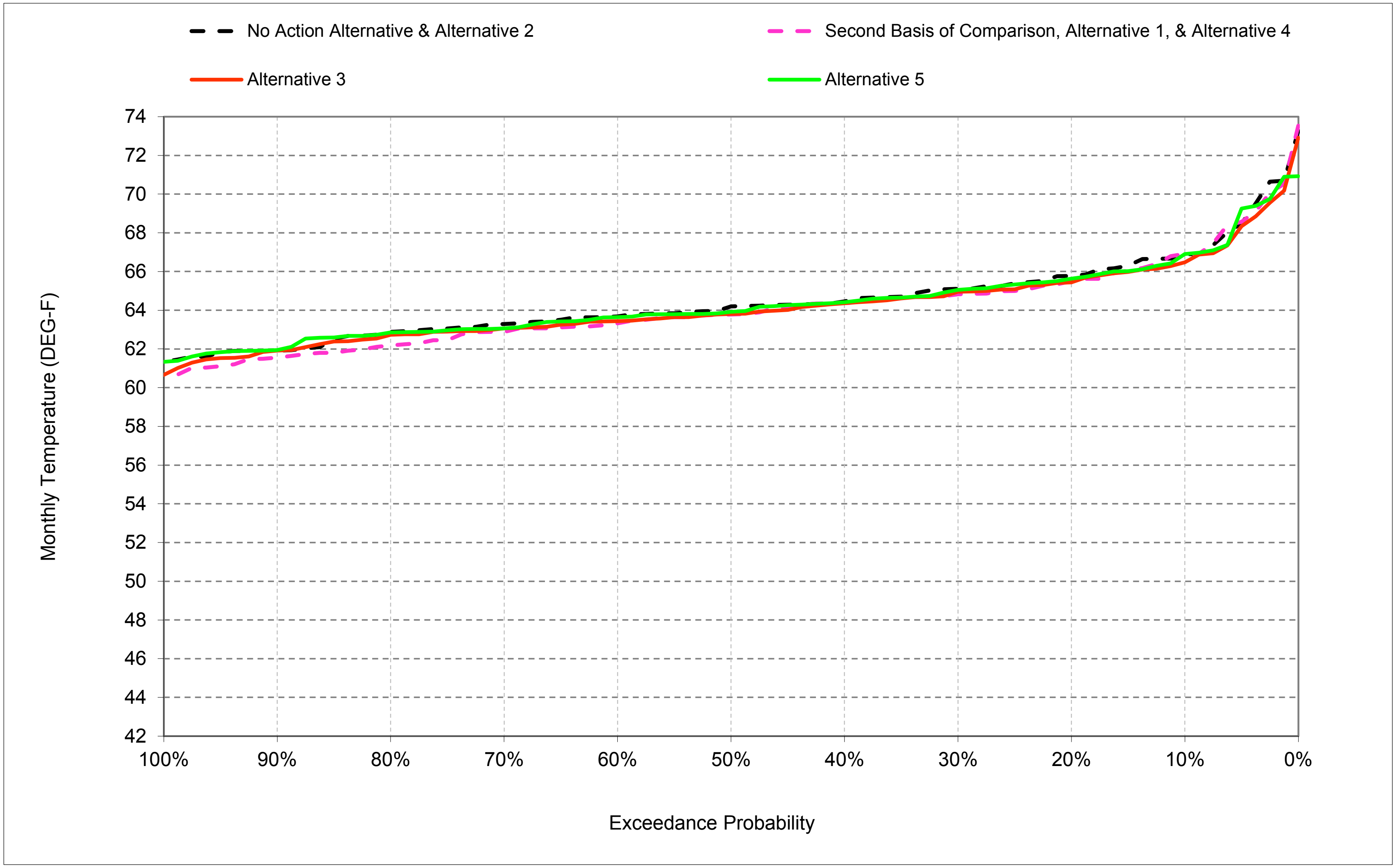
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-10. Sacramento River below Hamilton City, July



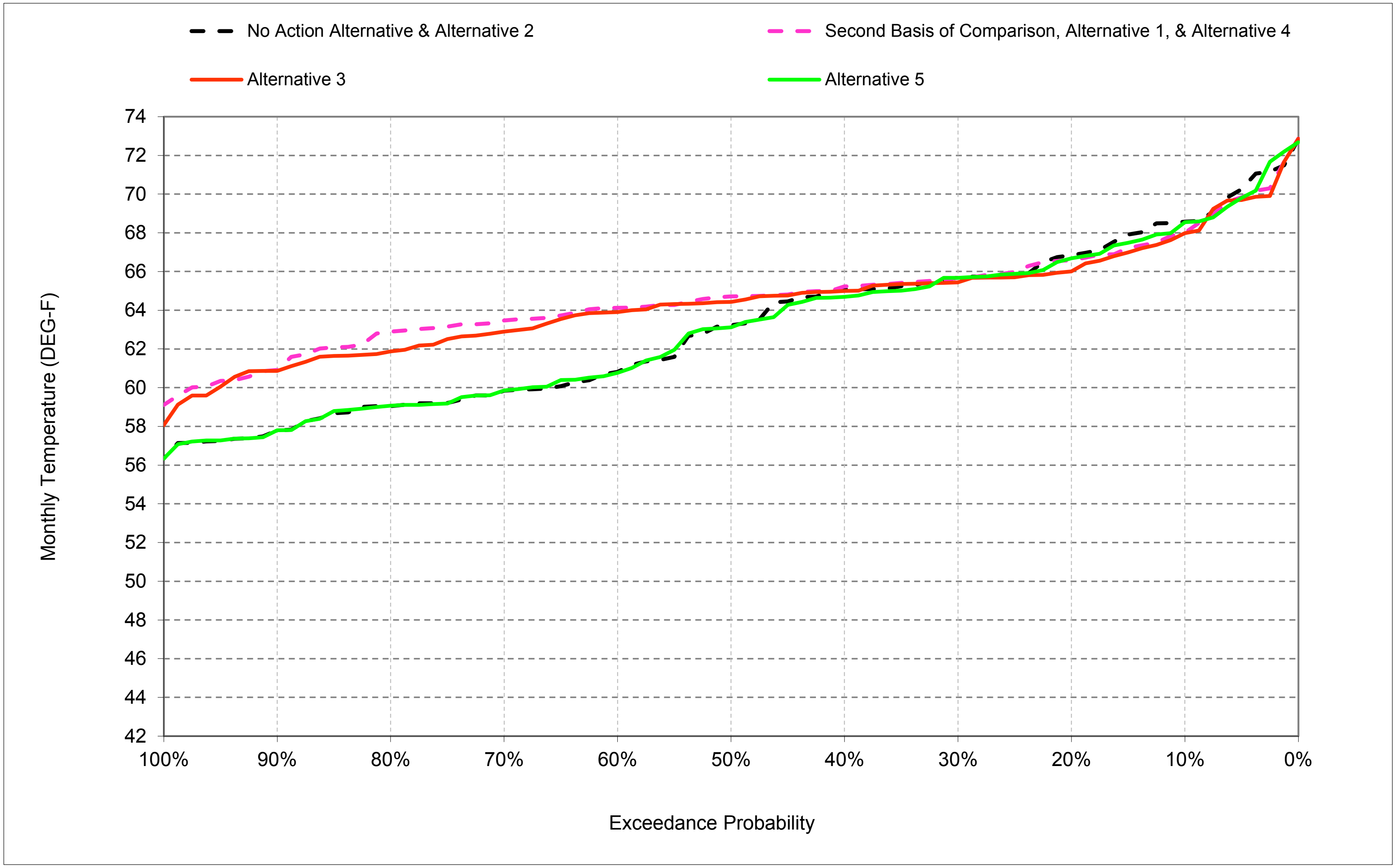
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-11. Sacramento River below Hamilton City, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-12. Sacramento River below Hamilton City, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-1. Sacramento River below Hamilton City, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types[c]												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types[c]												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.4	-0.3	0.2	-0.2	0.1	0.0	-0.1	-0.2	-0.5	0.1	0.0	-0.6
0.2	-0.1	-0.3	-0.2	0.1	-0.1	0.0	-0.2	-0.5	-0.1	-0.1	-0.3	-0.2
0.3	0.1	-0.4	-0.2	0.0	0.0	-0.1	0.0	0.0	-0.4	-0.3	-0.3	0.0
0.4	0.1	-0.7	0.0	0.0	0.0	-0.1	0.0	0.0	-0.3	-0.1	-0.1	0.1
0.5	0.3	-0.4	-0.1	0.0	0.0	-0.2	-0.1	-0.3	-0.5	0.2	-0.3	1.5
0.6	0.4	-0.5	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.5	-0.2	-0.4	3.2
0.7	0.0	-0.3	0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.6	0.0	-0.4	3.6
0.8	0.0	-0.3	0.1	0.0	0.0	0.0	0.0	-0.1	-0.6	0.0	-0.6	3.8
0.9	0.0	-0.1	0.1	0.0	0.1	0.1	0.0	-0.2	-0.5	0.1	-0.4	3.2
Long Term												
Full Simulation Period[b]	0.0	-0.3	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.4	0.0	-0.3	1.6
Water Year Types[c]												
Wet (32%)	0.1	-0.3	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1	-0.6	4.2
Above Normal (16%)	0.1	-0.3	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.5	0.1	-0.4	2.9
Below Normal (13%)	0.0	-0.4	-0.2	0.0	0.0	-0.3	-0.3	-0.3	-0.6	0.0	-0.6	-0.2
Dry (24%)	0.1	-0.2	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.6	-0.2	0.2	-0.1
Critical (15%)	-0.2	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	-0.6	0.1	-0.2	-0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-2. Sacramento River below Hamilton City, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types[c]												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	56	50	48	50	55	59	63	65	65	66	68
20%	60	55	49	48	49	54	58	62	64	64	65	66
30%	60	54	49	47	49	53	58	62	63	64	65	65
40%	59	54	49	47	49	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	64
60%	58	53	48	46	48	51	56	60	62	62	63	64
70%	58	53	48	46	48	51	56	60	61	62	63	63
80%	58	52	48	46	47	50	55	60	61	61	63	62
90%	57	52	47	46	46	49	54	59	60	61	62	61
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	56	61	62	63	64	64
Water Year Types[c]												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	63	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	63	63
Dry (24%)	59	54	49	47	49	53	58	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.7	-0.2	0.2	-0.2	0.1	0.0	0.0	-0.1	-0.4	0.1	-0.4	-0.6
0.2	-0.2	-0.3	-0.2	0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.1	-0.3	-0.8
0.3	-0.1	-0.2	-0.2	0.0	0.0	-0.1	0.0	0.0	-0.4	-0.2	-0.2	-0.2
0.4	0.1	-0.6	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.3	-0.2	-0.1	0.0
0.5	0.0	-0.5	0.0	0.1	0.0	-0.2	0.0	-0.3	-0.5	0.3	-0.3	1.3
0.6	0.2	-0.4	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.5	-0.1	-0.2	3.0
0.7	0.0	-0.4	0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.7	0.0	-0.3	3.1
0.8	0.2	-0.4	0.1	0.0	0.0	0.0	0.0	-0.1	-0.5	0.0	-0.2	2.8
0.9	-0.1	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.5	0.3	0.0	3.1
Long Term												
Full Simulation Period[b]	0.0	-0.3	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.4	0.0	-0.3	1.3
Water Year Types[c]												
Wet (32%)	0.1	-0.3	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	-0.4	3.9
Above Normal (16%)	0.0	-0.3	-0.2	0.0	0.0	-0.1	0.0	-0.3	-0.4	0.1	-0.1	2.9
Below Normal (13%)	0.0	-0.4	-0.2	0.0	0.0	-0.3	-0.2	-0.3	-0.5	-0.1	-0.2	-1.4
Dry (24%)	-0.1	-0.3	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.6	-0.2	-0.2	-0.2
Critical (15%)	-0.3	-0.2	0.0	0.1	0.0	0.0	0.0	0.0	-0.5	0.3	-0.4	-0.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-3. Sacramento River below Hamilton City, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types[c]												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	65	65	67	68
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	58	54	48	47	48	52	57	61	63	62	64	63
60%	58	53	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types[c]												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	64
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	63	64	65	67	69

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.1	0.0	-0.1
0.2	0.0	0.0	0.0	0.1	0.0	0.0	-0.2	0.2	0.0	0.0	-0.2	-0.2
0.3	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	-0.3
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.1
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-0.1	0.0	-0.1
0.7	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	0.0
0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.2
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	-0.1	-0.3	-0.2
Critical (15%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	-0.2	-0.3	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-4. Sacramento River below Hamilton City, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types[c]												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	65	65	67	69
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	59	54	48	47	48	52	57	61	63	62	64	63
60%	58	54	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types[c]												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	65
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	68	69

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.4	0.3	-0.2	0.2	-0.1	0.0	0.1	0.2	0.5	-0.1	0.0	0.6
0.2	0.1	0.3	0.2	-0.1	0.1	0.0	0.2	0.5	0.1	0.1	0.3	0.2
0.3	-0.1	0.4	0.2	0.0	0.0	0.1	0.0	0.0	0.4	0.3	0.3	0.0
0.4	-0.1	0.7	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.1	0.1	-0.1
0.5	-0.3	0.4	0.1	0.0	0.0	0.2	0.1	0.3	0.5	-0.2	0.3	-1.5
0.6	-0.4	0.5	0.0	0.0	0.0	0.1	0.1	0.1	0.5	0.2	0.4	-3.2
0.7	0.0	0.3	-0.1	0.0	0.0	0.1	0.1	0.3	0.6	0.0	0.4	-3.6
0.8	0.0	0.3	-0.1	0.0	0.0	0.0	0.0	0.1	0.6	0.0	0.6	-3.8
0.9	0.0	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.2	0.5	-0.1	0.4	-3.2
Long Term												
Full Simulation Period[b]	0.0	0.3	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.0	0.3	-1.6
Water Year Types[c]												
Wet (32%)	-0.1	0.3	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.6	-4.2
Above Normal (16%)	-0.1	0.3	0.2	0.0	0.0	0.1	0.0	0.2	0.5	-0.1	0.4	-2.9
Below Normal (13%)	0.0	0.4	0.2	0.0	0.0	0.3	0.3	0.3	0.6	0.0	0.6	0.2
Dry (24%)	-0.1	0.2	0.1	0.0	0.0	0.0	0.2	0.2	0.6	0.2	-0.2	0.1
Critical (15%)	0.2	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.6	-0.1	0.2	0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-5. Sacramento River below Hamilton City, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types[c]												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	56	50	48	50	55	59	63	65	65	66	68
20%	60	55	49	48	49	54	58	62	64	64	65	66
30%	60	54	49	47	49	53	58	62	63	64	65	65
40%	59	54	49	47	49	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	64
60%	58	53	48	46	48	51	56	60	62	62	63	64
70%	58	53	48	46	48	51	56	60	61	62	63	63
80%	58	52	48	46	47	50	55	60	61	61	63	62
90%	57	52	47	46	46	49	54	59	60	61	62	61
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	56	61	62	63	64	64
Water Year Types[c]												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	63	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	63	63
Dry (24%)	59	54	49	47	49	53	58	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.5	0.0
0.2	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	0.0	0.0	0.0	-0.6
0.3	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.2
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	-0.2
0.5	-0.2	-0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	-0.2
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.2	-0.2
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	-0.6
0.8	0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.4	-1.0
0.9	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.4	-0.1
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.3
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	-0.3
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.3	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.4	-1.2
Dry (24%)	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.4	-0.1
Critical (15%)	-0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	0.2	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-6. Sacramento River below Hamilton City, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	64	65	67	68
20%	60	55	49	48	50	54	58	62	64	64	65	67
30%	60	54	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	52	57	61	63	63	64	65
50%	59	53	48	47	48	52	57	61	62	63	64	65
60%	59	53	48	46	48	51	56	61	62	62	63	64
70%	58	53	48	46	48	51	55	60	61	62	63	63
80%	58	53	48	46	47	50	55	60	61	61	62	63
90%	57	52	47	46	46	49	54	59	60	61	61	61
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	56	61	62	63	64	65
Water Year Types[c]												
Wet (32%)	56	51	47	46	47	50	55	60	63	63	63	63
Above Normal (16%)	59	54	48	47	48	51	56	61	62	61	62	63
Below Normal (13%)	58	53	48	47	49	53	57	60	61	62	62	64
Dry (24%)	59	54	49	47	49	53	57	61	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	62	64	66	67	69

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	56	50	48	50	55	59	63	65	65	67	68
20%	60	55	50	48	50	54	58	63	64	64	66	67
30%	60	55	49	47	49	53	58	62	63	64	65	66
40%	59	54	49	47	48	53	57	62	63	63	64	65
50%	58	54	48	47	48	52	57	61	63	62	64	63
60%	58	53	48	46	48	51	56	61	62	62	64	61
70%	58	53	48	46	48	51	56	60	62	62	63	60
80%	58	53	48	46	47	50	55	60	61	61	63	59
90%	57	52	47	46	46	49	54	59	61	61	62	58
Long Term												
Full Simulation Period[b]	59	54	49	47	48	52	57	61	63	63	64	63
Water Year Types[c]												
Wet (32%)	56	52	46	46	47	50	55	60	63	63	64	59
Above Normal (16%)	59	54	49	47	48	51	56	61	62	61	63	61
Below Normal (13%)	58	54	49	47	49	53	57	61	62	62	63	64
Dry (24%)	59	54	49	47	49	53	58	62	62	63	65	66
Critical (15%)	61	55	49	47	50	54	58	63	64	65	67	69

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.4	0.2	-0.2	0.2	0.0	0.0	0.1	0.2	0.5	-0.2	-0.1	0.5
0.2	0.0	0.3	0.2	-0.1	0.1	0.0	0.0	0.6	0.1	0.1	0.1	0.1
0.3	-0.1	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.4	0.1	0.2	0.0
0.4	-0.2	0.6	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.0	0.0	-0.5
0.5	-0.5	0.4	0.1	0.0	0.0	0.2	0.2	0.3	0.5	-0.3	0.1	-1.6
0.6	-0.3	0.4	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.2	0.4	-3.3
0.7	-0.2	0.4	-0.1	0.0	0.0	0.1	0.2	0.4	0.7	-0.1	0.2	-3.6
0.8	0.0	0.2	-0.1	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.6	-3.8
0.9	-0.1	0.1	-0.1	0.0	-0.1	-0.1	0.0	0.2	0.5	-0.1	0.4	-3.2
Long Term												
Full Simulation Period[b]	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.3	0.5	-0.1	0.2	-1.7
Water Year Types[c]												
Wet (32%)	-0.1	0.3	-0.2	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.6	-4.1
Above Normal (16%)	-0.1	0.3	0.2	0.0	0.0	0.1	0.0	0.3	0.6	-0.1	0.5	-2.8
Below Normal (13%)	0.0	0.4	0.2	0.0	0.0	0.3	0.2	0.4	0.7	0.0	0.8	0.0
Dry (24%)	0.0	0.2	0.1	0.0	0.0	0.0	0.2	0.5	0.6	0.1	-0.5	-0.1
Critical (15%)	0.1	0.2	0.0	-0.1	-0.1	0.0	0.2	0.3	0.8	-0.3	-0.2	0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

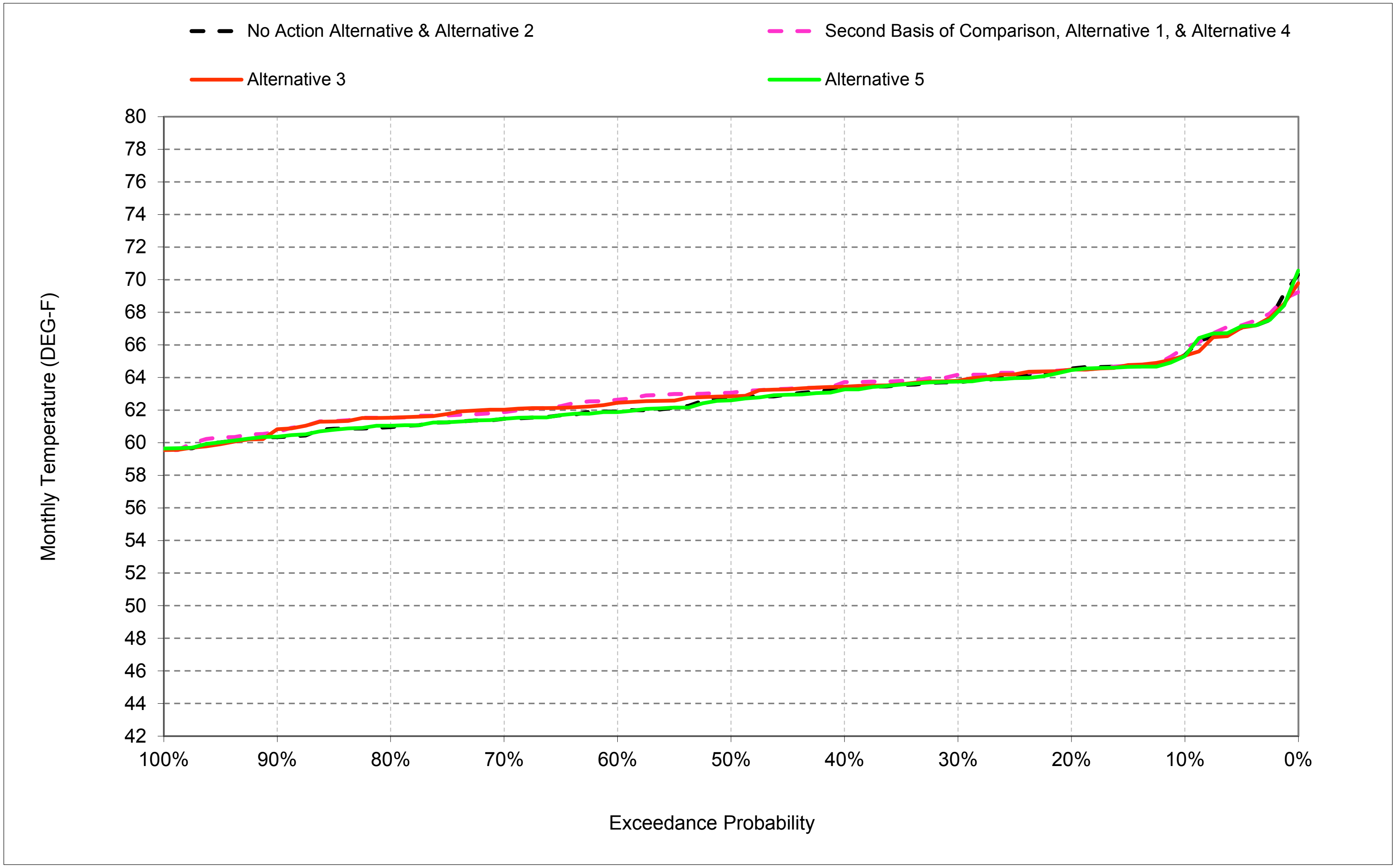
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

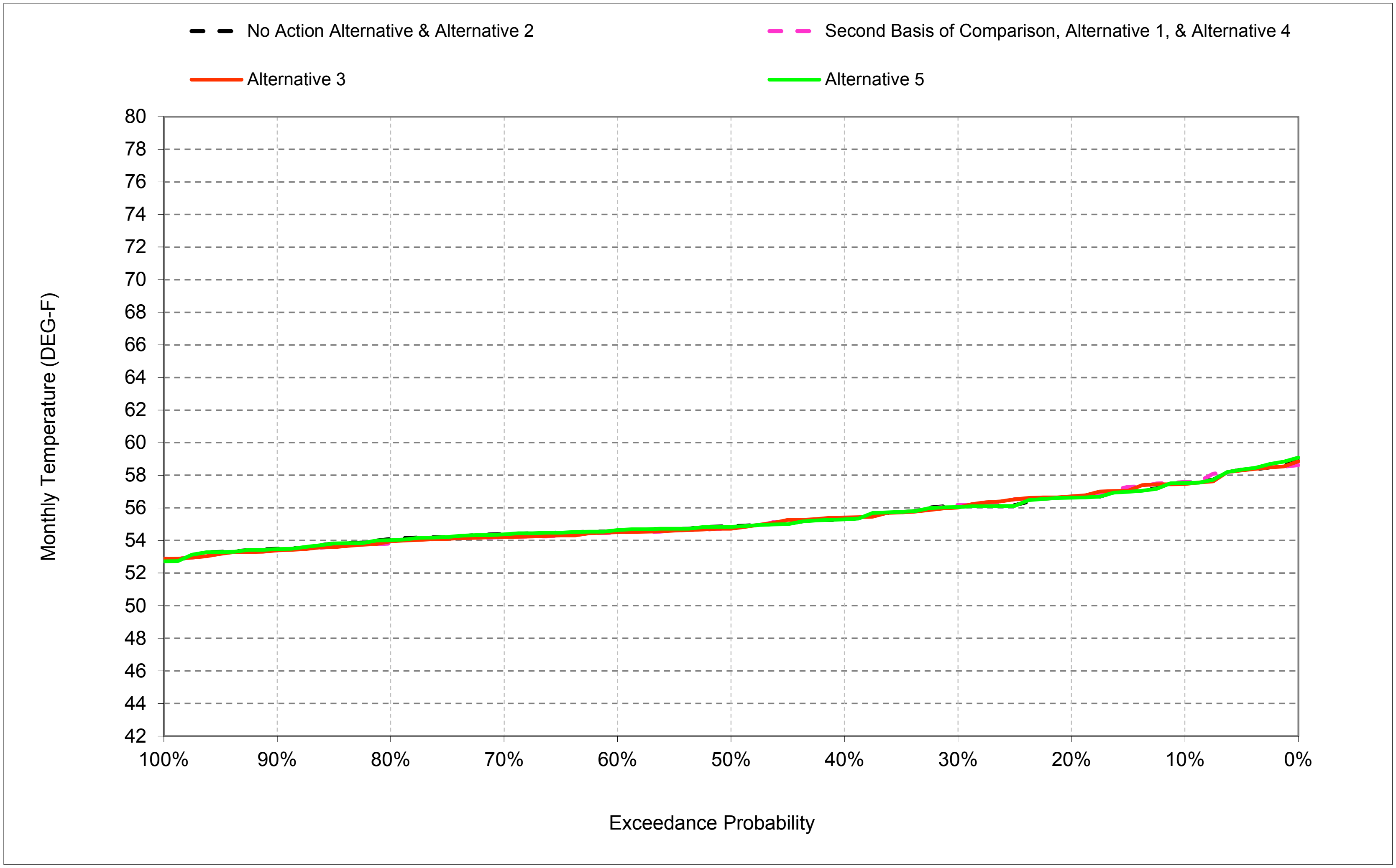
B.11. Sacramento River at Knights Landing Temperature

Figure B-11-1. Sacramento River at Knights Landing, October



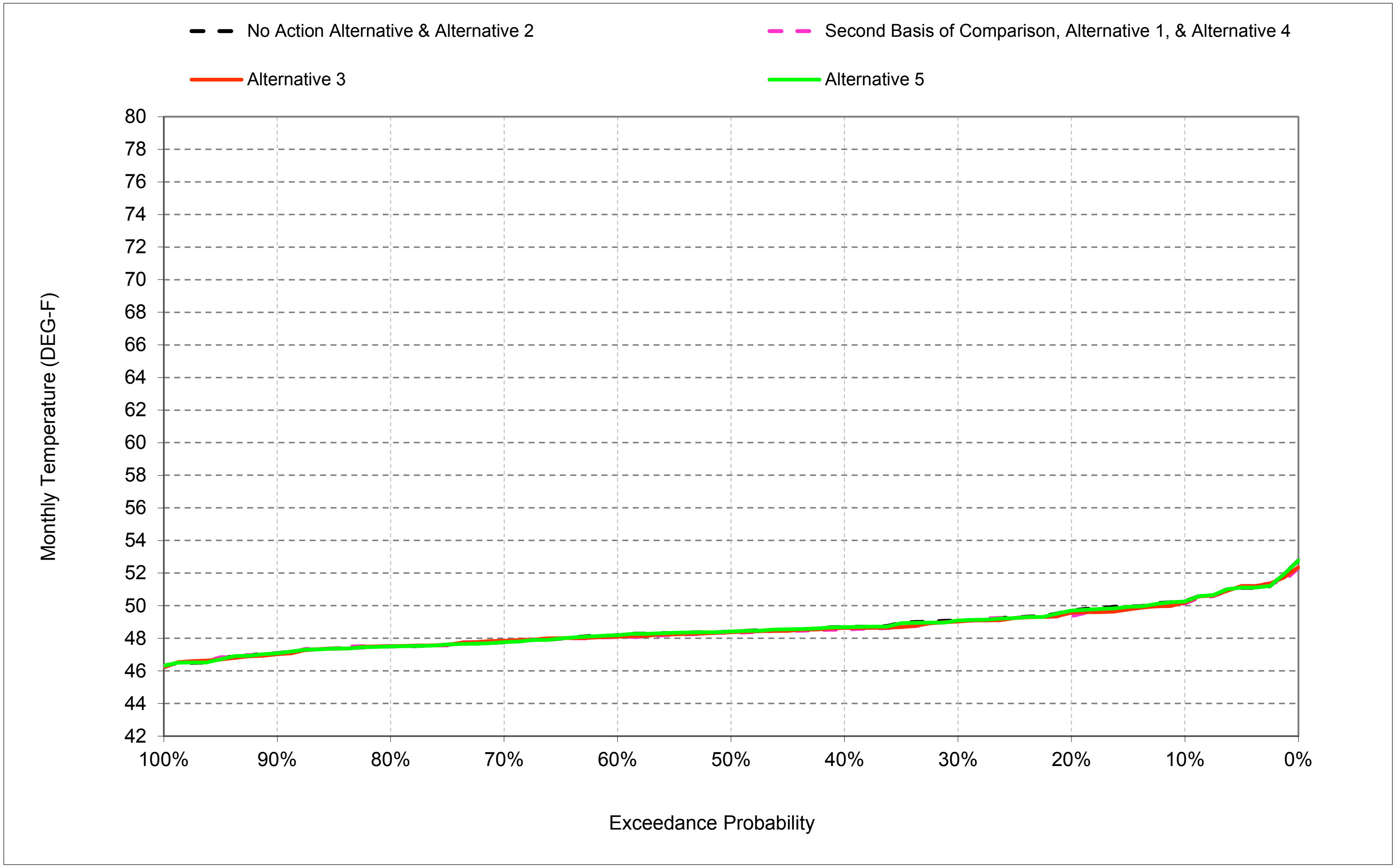
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-2. Sacramento River at Knights Landing, November



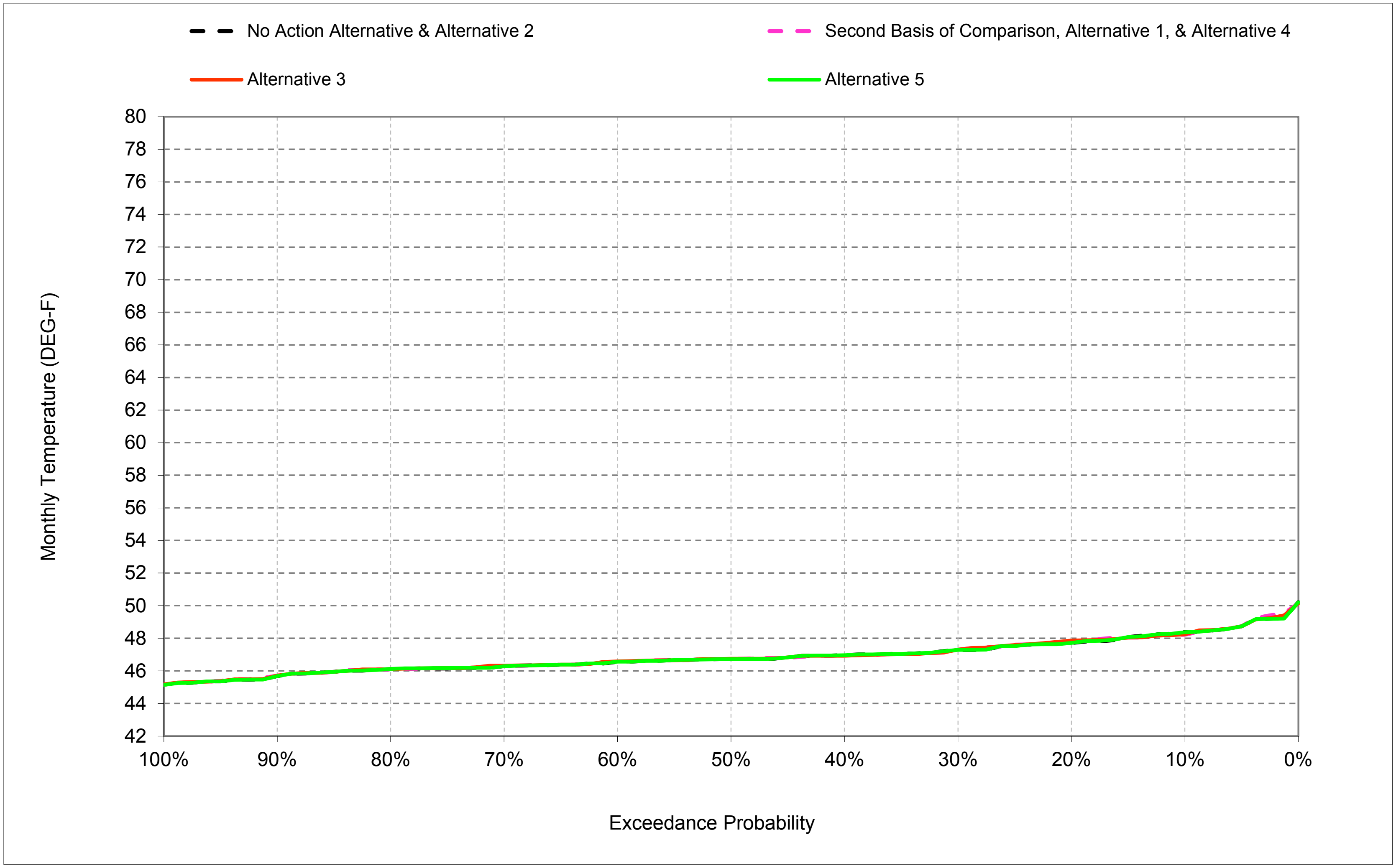
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-3. Sacramento River at Knights Landing, December



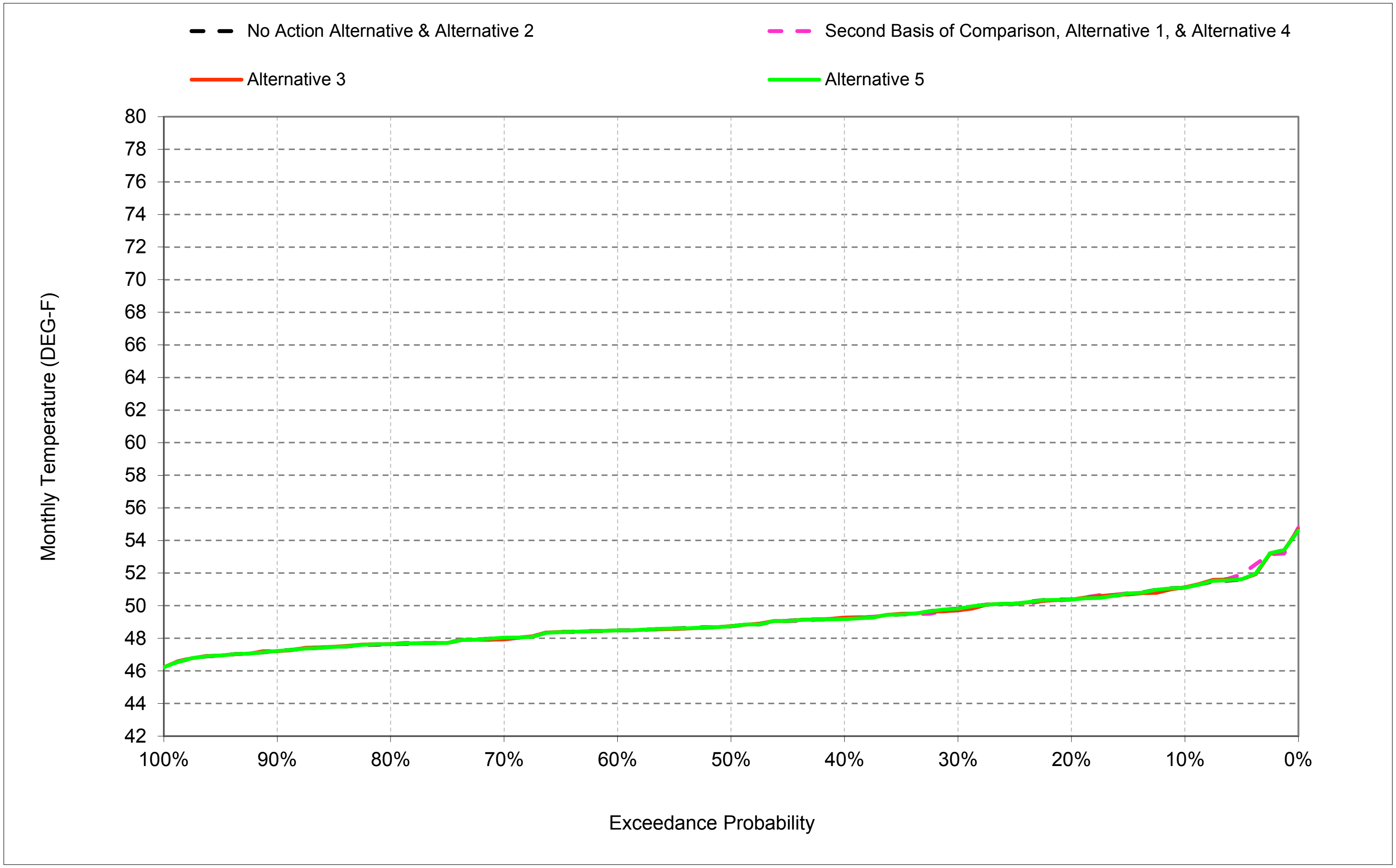
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-4. Sacramento River at Knights Landing, January



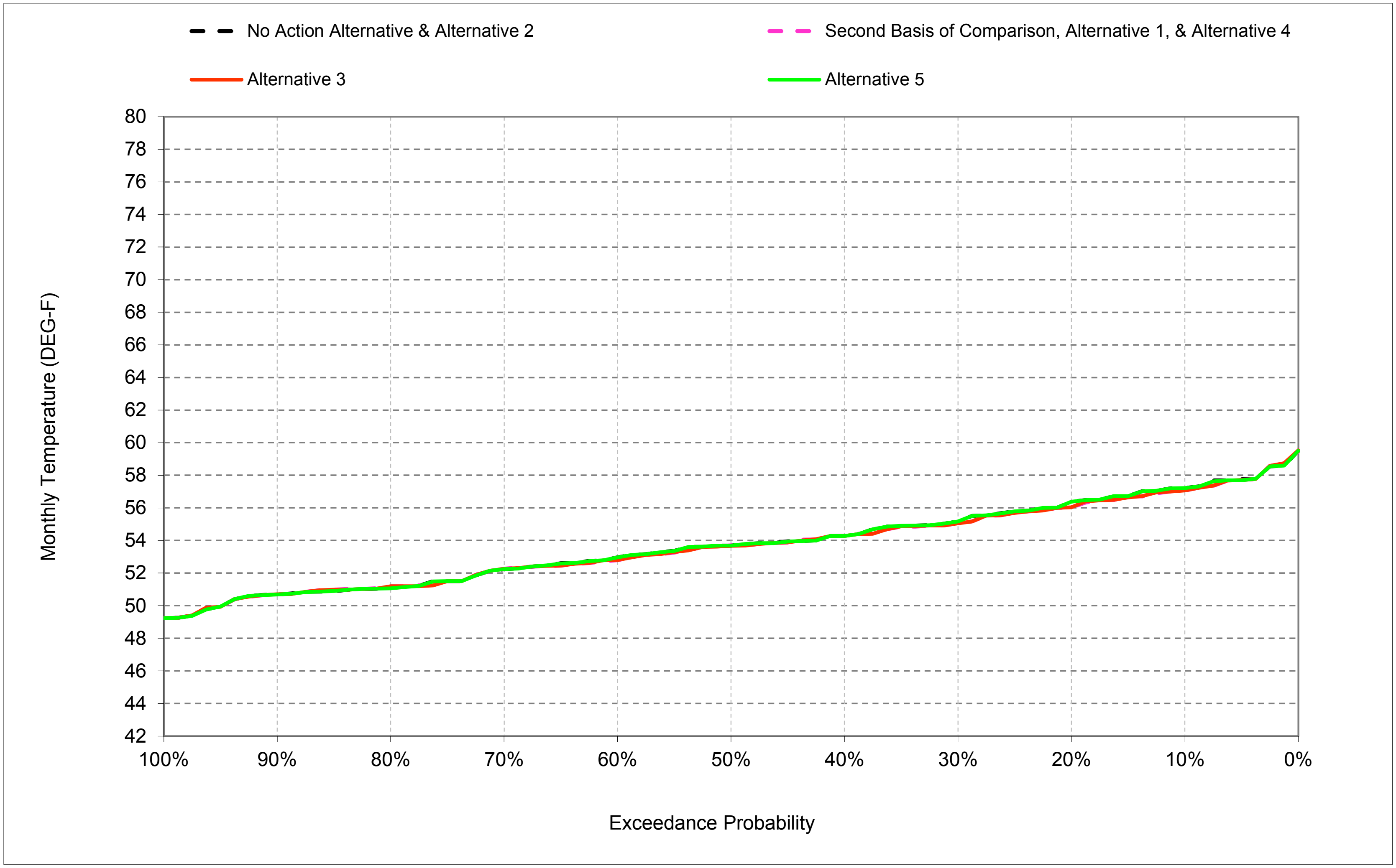
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-5. Sacramento River at Knights Landing, February



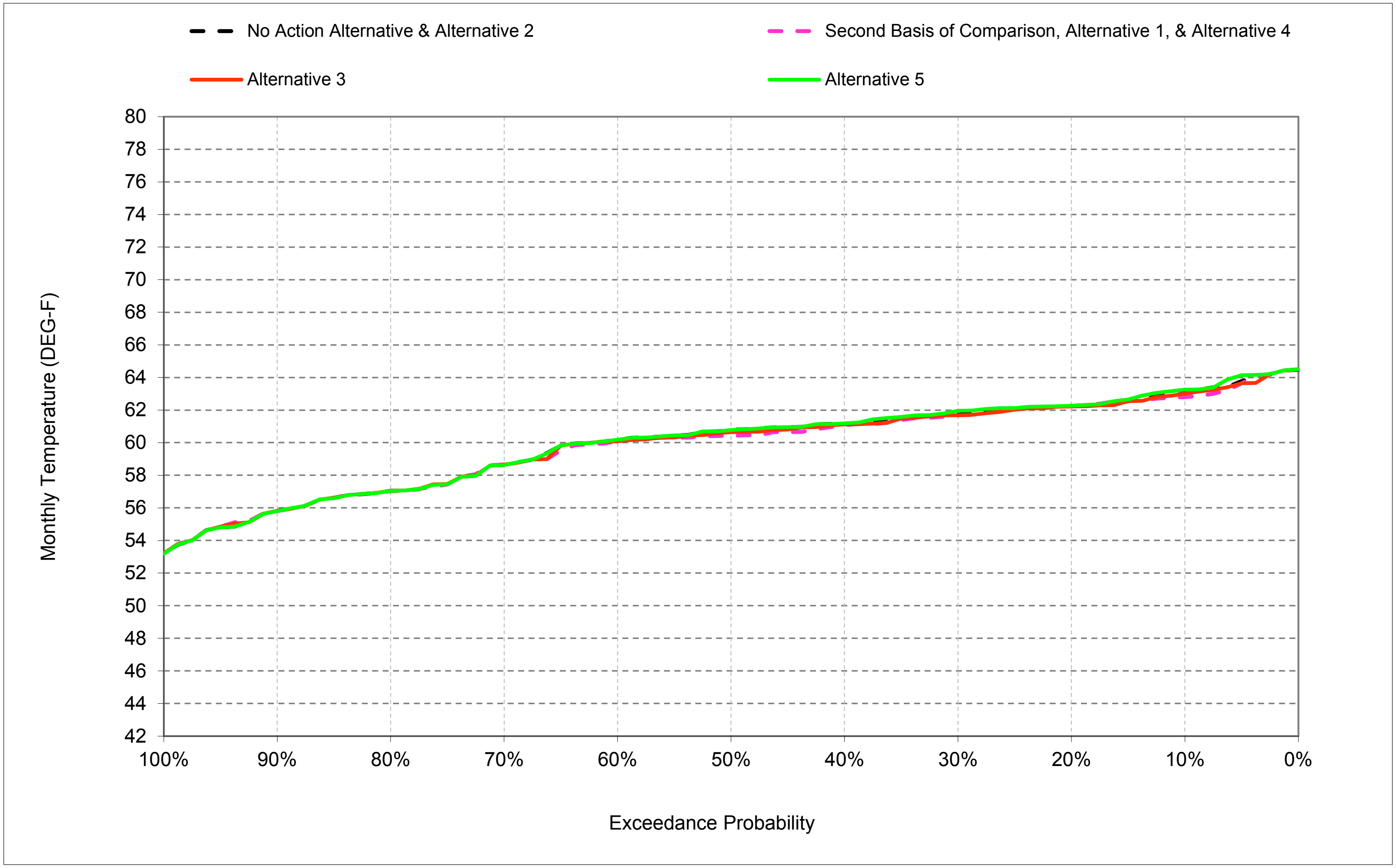
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-6. Sacramento River at Knights Landing, March



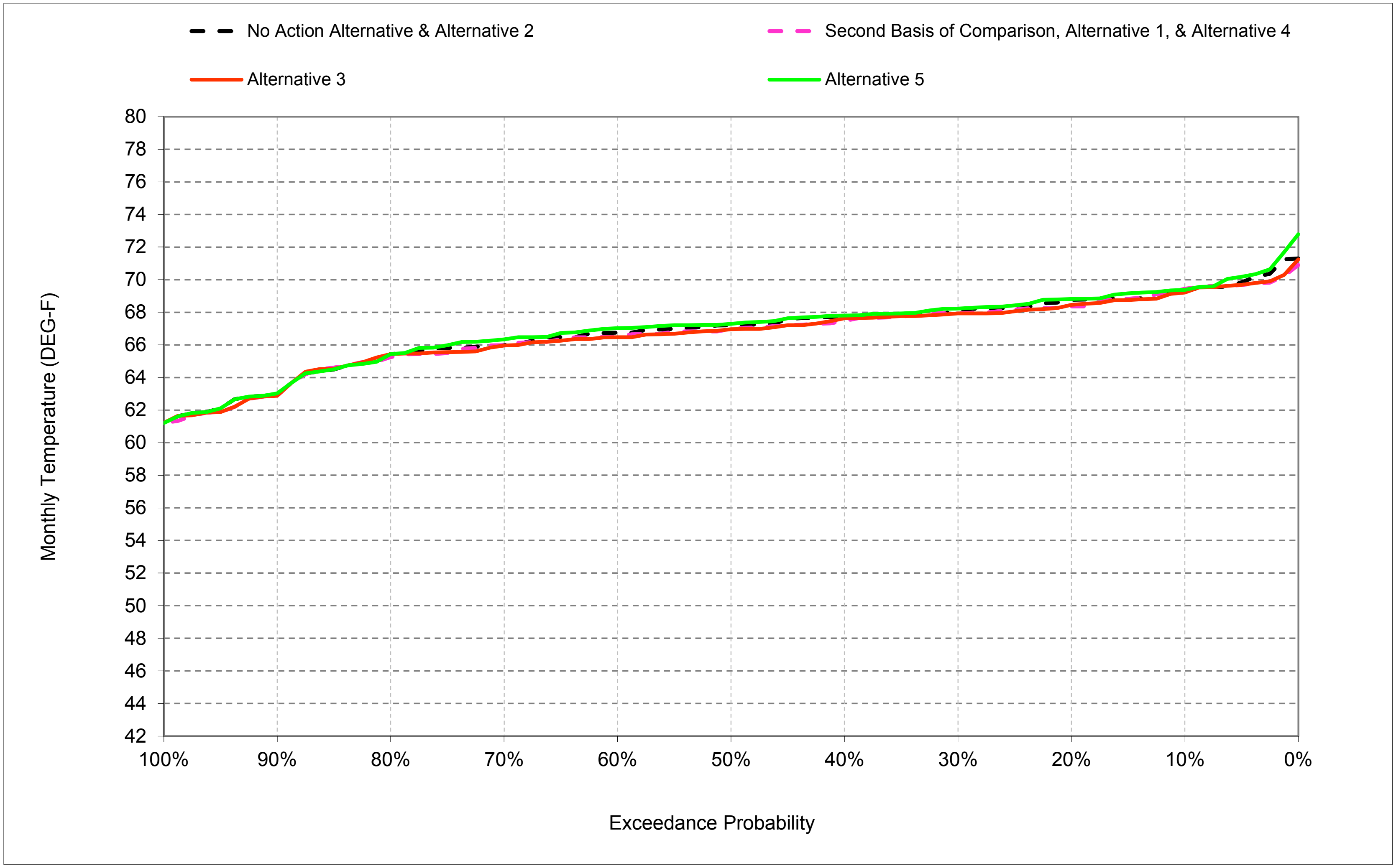
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-7. Sacramento River at Knights Landing, April



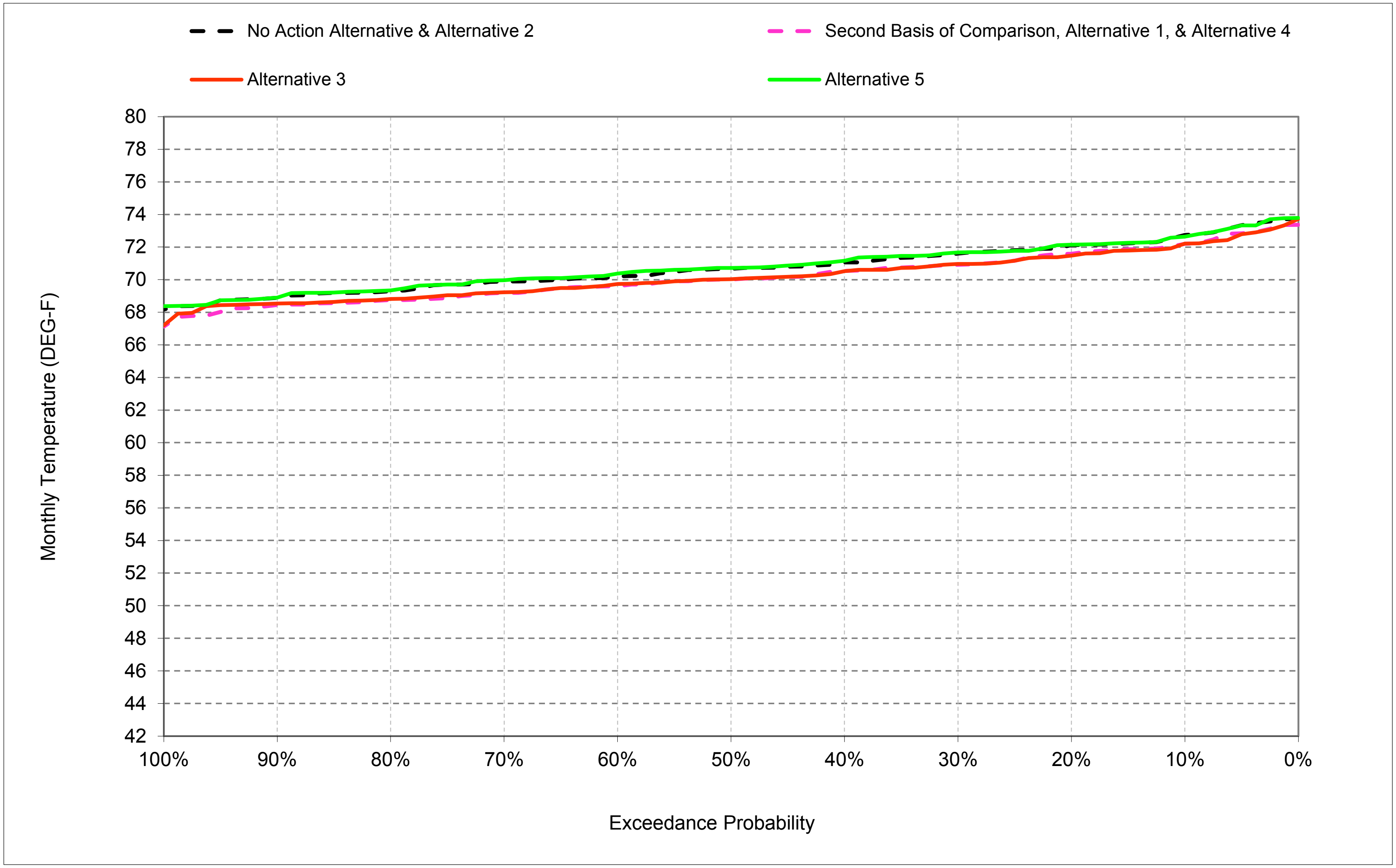
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-8. Sacramento River at Knights Landing, May



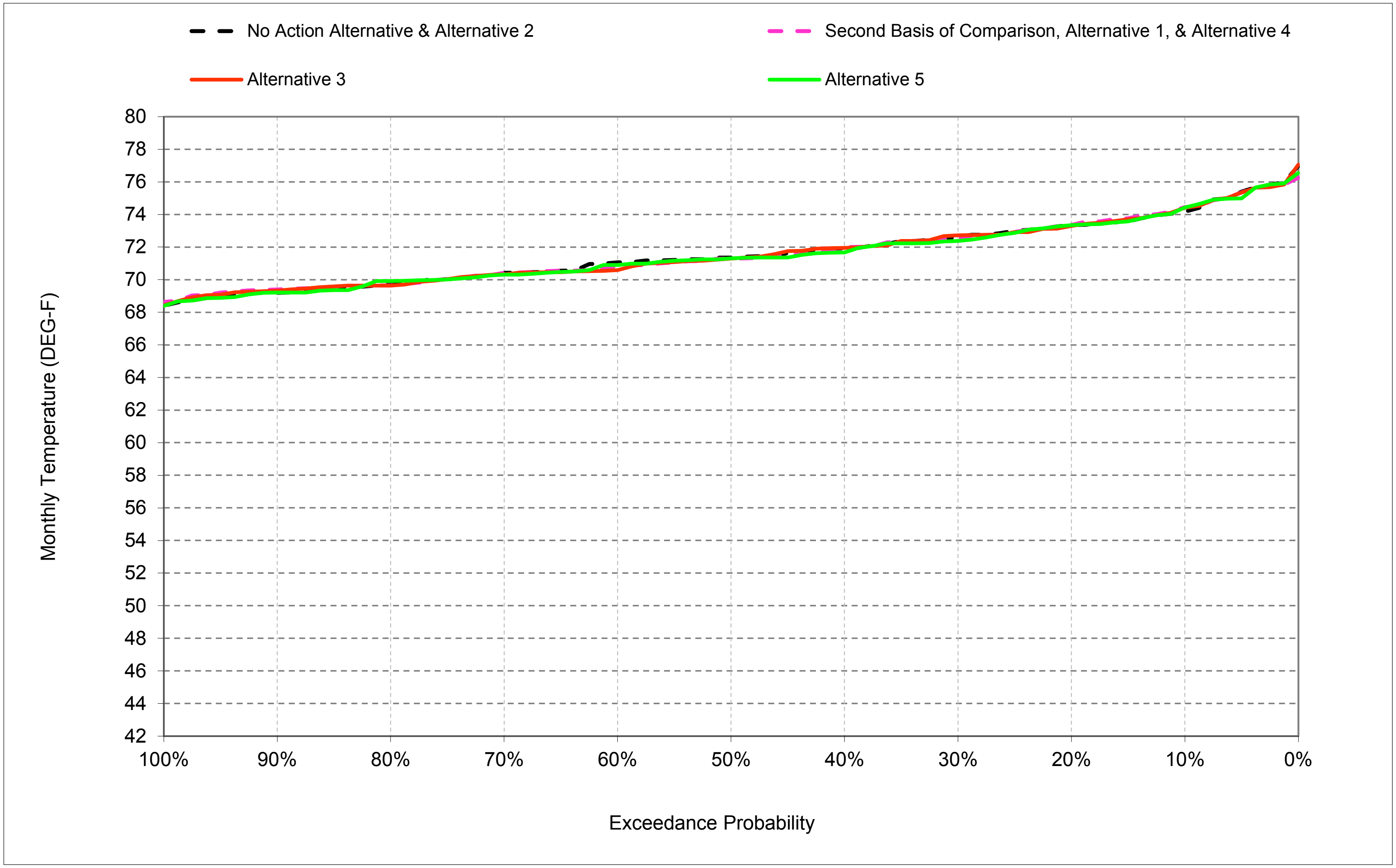
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-9. Sacramento River at Knights Landing, June



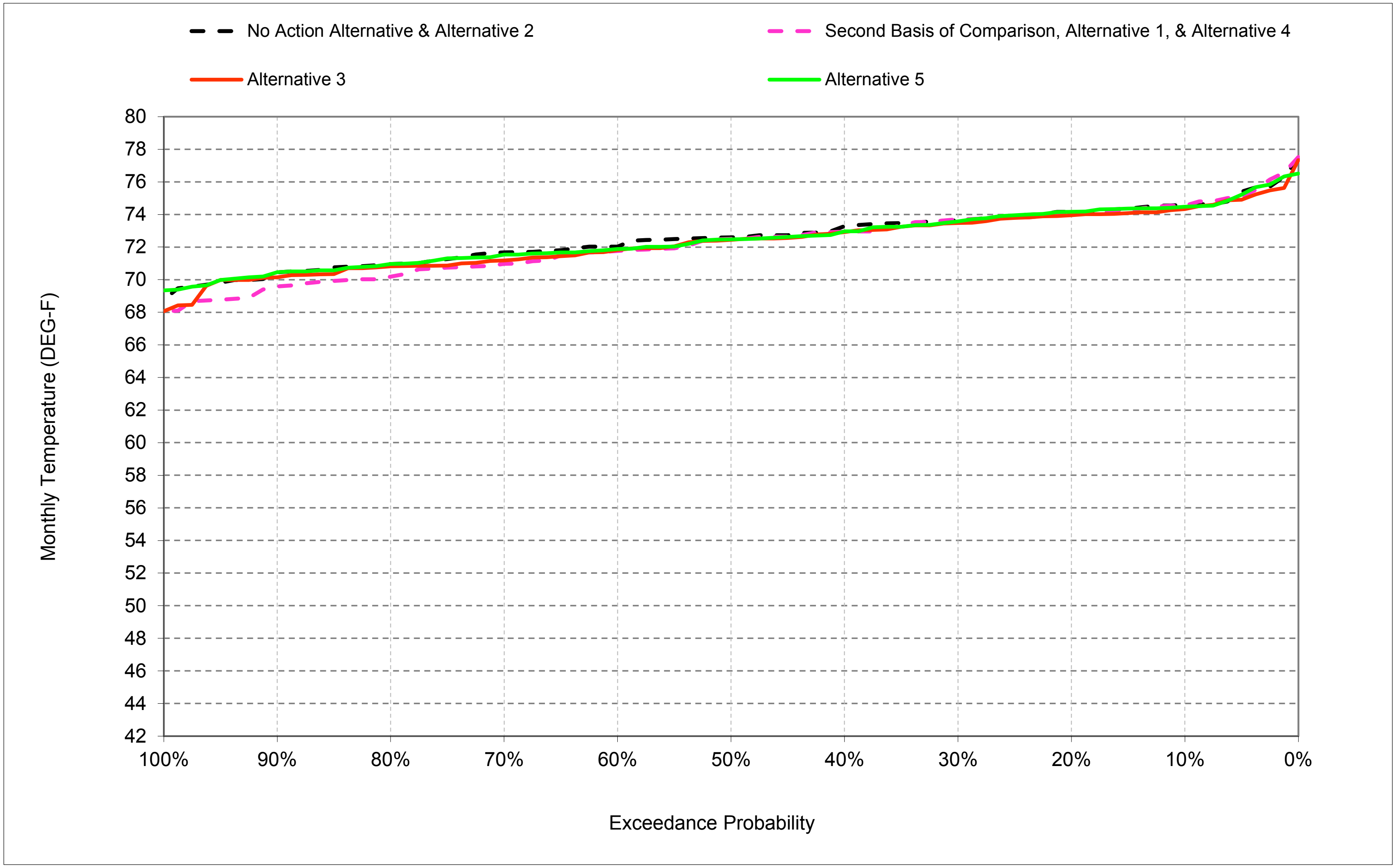
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-10. Sacramento River at Knights Landing, July



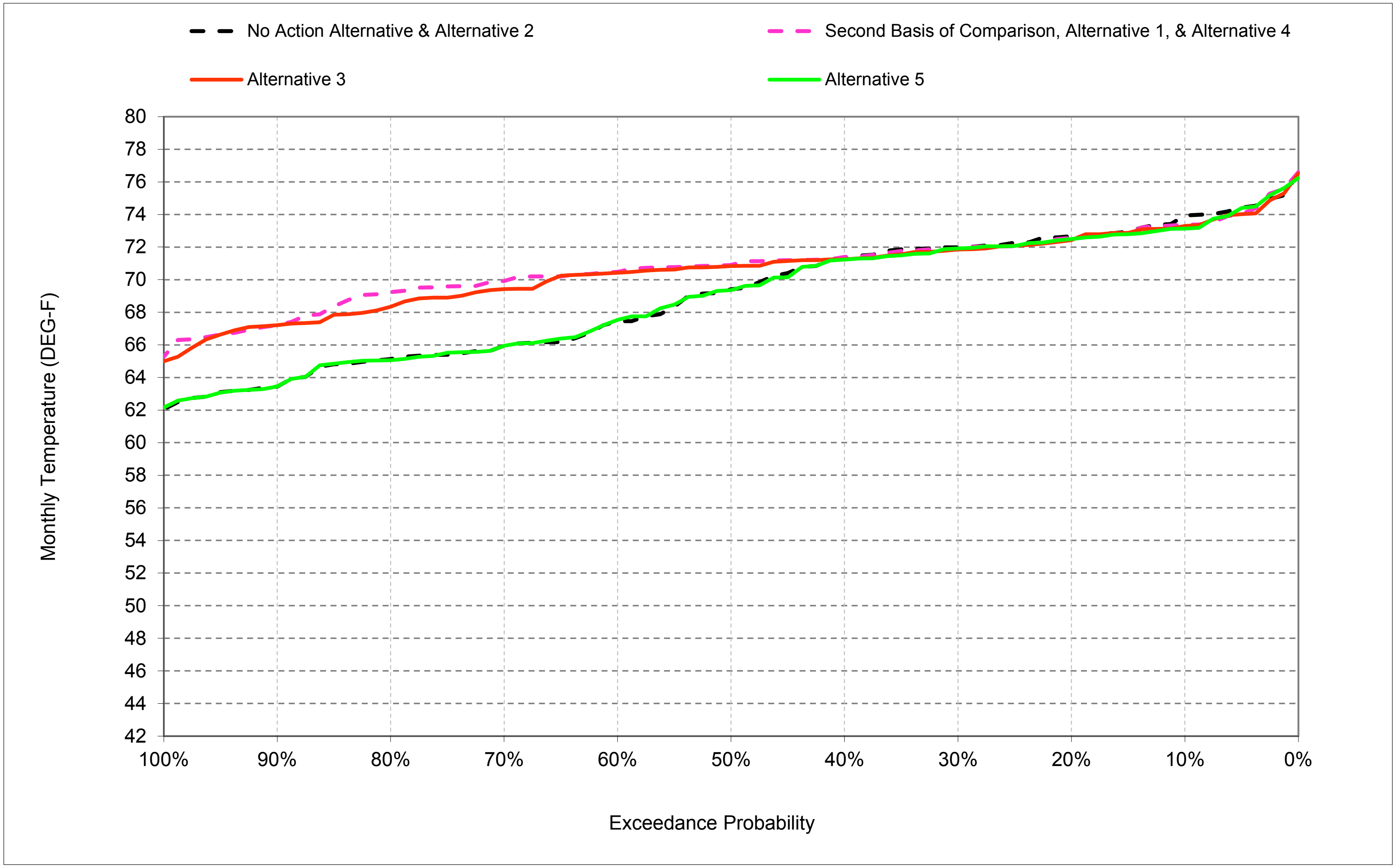
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-11. Sacramento River at Knights Landing, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-12. Sacramento River at Knights Landing, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-1. Sacramento River at Knights Landing, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.5	0.0	-0.1	-0.2	0.0	-0.2	-0.4	0.1	-0.5	0.3	0.0	-0.5
0.2	-0.1	0.0	-0.3	0.1	0.0	-0.3	0.0	-0.4	-0.5	0.0	-0.1	-0.1
0.3	0.5	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.7	-0.1	0.1	-0.1
0.4	0.4	0.1	-0.2	0.0	0.0	0.0	-0.1	-0.3	-0.5	0.0	-0.2	0.1
0.5	0.3	-0.1	-0.1	0.0	0.0	0.0	-0.3	-0.3	-0.6	-0.1	-0.1	1.6
0.6	0.7	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.3	-0.6	-0.3	-0.3	3.2
0.7	0.4	-0.2	0.1	0.0	-0.1	0.0	0.0	0.0	-0.7	0.0	-0.8	4.1
0.8	0.6	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	-0.8	4.1
0.9	0.3	-0.1	-0.1	0.1	0.1	0.0	0.0	-0.1	-0.5	0.2	-0.7	3.7
Long Term												
Full Simulation Period[b]	0.3	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.6	0.0	-0.4	1.8
Water Year Types[c]												
Wet (32%)	0.4	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	-0.7	4.6
Above Normal (16%)	0.3	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.2	-0.7	0.0	-0.6	2.8
Below Normal (13%)	0.4	-0.1	-0.2	0.0	0.0	-0.3	-0.3	-0.4	-0.9	-0.1	-0.7	-0.2
Dry (24%)	0.2	0.0	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.7	-0.3	0.3	-0.1
Critical (15%)	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.7	0.1	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-2. Sacramento River at Knights Landing, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	57	50	48	51	57	63	69	72	74	74	73
20%	64	57	50	48	50	56	62	68	71	73	74	72
30%	64	56	49	47	50	55	62	68	71	73	73	72
40%	63	55	49	47	49	54	61	68	70	72	73	71
50%	63	55	48	47	49	54	61	67	70	71	72	71
60%	62	55	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	69
80%	62	54	48	46	48	51	57	65	69	70	71	68
90%	61	53	47	46	47	51	56	63	69	69	70	67
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	70	72	72	70
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	71	69
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	-0.1	-0.1	-0.1	0.0	-0.2	-0.2	-0.2	-0.5	0.2	-0.3	-0.6
0.2	-0.1	0.0	-0.1	0.1	0.0	-0.3	0.0	-0.3	-0.6	-0.1	-0.2	-0.3
0.3	0.1	-0.1	-0.1	0.0	-0.1	-0.1	0.0	-0.1	-0.6	0.1	-0.2	-0.2
0.4	0.1	0.1	-0.1	0.0	0.1	0.0	-0.1	-0.2	-0.6	0.0	-0.3	0.0
0.5	0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.6	-0.1	-0.2	1.5
0.6	0.5	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.3	-0.5	-0.5	-0.3	3.1
0.7	0.6	-0.2	0.1	0.1	-0.1	0.0	0.0	-0.1	-0.7	0.0	-0.5	3.7
0.8	0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	-0.5	0.0	-0.1	3.1
0.9	0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.3	0.1	0.0	3.8
Long Term												
Full Simulation Period[b]	0.2	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.5	0.0	-0.3	1.6
Water Year Types[c]												
Wet (32%)	0.4	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	-0.4	4.4
Above Normal (16%)	0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	-0.3	-0.6	0.0	-0.2	2.9
Below Normal (13%)	0.4	-0.1	-0.2	0.0	0.0	-0.3	-0.2	-0.4	-0.8	-0.1	-0.2	-1.4
Dry (24%)	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.7	-0.3	-0.2	-0.1
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.6	0.4	-0.2	-0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-3. Sacramento River at Knights Landing, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	58	50	48	51	57	63	69	73	74	74	73
20%	64	57	50	48	50	56	62	69	72	73	74	72
30%	64	56	49	47	50	55	62	68	72	72	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	72	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	71	66
80%	61	54	47	46	48	51	57	65	69	70	71	65
90%	60	53	47	45	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	71	72	72	69
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	71	73	72
Critical (15%)	65	57	49	47	51	57	63	69	72	73	74	74

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	-0.1	-0.8
0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	-0.2
0.3	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	-0.2	-0.1	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.3	-0.3	-0.1
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	0.0
0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	-0.1	-0.2	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	-0.2	0.0
0.8	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0
0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	-0.1	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	-0.1	-0.3	-0.2
Critical (15%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	-0.2	-0.3	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-4. Sacramento River at Knights Landing, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	58	50	48	51	57	63	69	73	74	75	74
20%	65	57	50	48	50	56	62	69	72	73	74	73
30%	64	56	49	47	50	55	62	68	72	73	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	73	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	72	66
80%	61	54	48	46	48	51	57	65	69	70	71	65
90%	60	53	47	46	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	71	72	73	69
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	72	73	72
Critical (15%)	65	57	49	47	51	57	63	68	72	74	74	74

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.5	0.0	0.1	0.2	0.0	0.2	0.4	-0.1	0.5	-0.3	0.0	0.5
0.2	0.1	0.0	0.3	-0.1	0.0	0.3	0.0	0.4	0.5	0.0	0.1	0.1
0.3	-0.5	-0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.7	0.1	-0.1	0.1
0.4	-0.4	-0.1	0.2	0.0	0.0	0.0	0.1	0.3	0.5	0.0	0.2	-0.1
0.5	-0.3	0.1	0.1	0.0	0.0	0.0	0.3	0.3	0.6	0.1	0.1	-1.6
0.6	-0.7	0.1	0.1	0.0	0.0	0.1	0.1	0.3	0.6	0.3	0.3	-3.2
0.7	-0.4	0.2	-0.1	0.0	0.1	0.0	0.0	0.0	0.7	0.0	0.8	-4.1
0.8	-0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.8	-4.1
0.9	-0.3	0.1	0.1	-0.1	-0.1	0.0	0.0	0.1	0.5	-0.2	0.7	-3.7
Long Term												
Full Simulation Period[b]	-0.3	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.6	0.0	0.4	-1.8
Water Year Types[c]												
Wet (32%)	-0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.2	0.7	-4.6
Above Normal (16%)	-0.3	0.1	0.1	0.0	0.0	0.1	0.0	0.2	0.7	0.0	0.6	-2.8
Below Normal (13%)	-0.4	0.1	0.2	0.0	0.0	0.3	0.3	0.4	0.9	0.1	0.7	0.2
Dry (24%)	-0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.7	0.3	-0.3	0.1
Critical (15%)	-0.2	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.7	-0.1	0.0	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-5. Sacramento River at Knights Landing, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	57	50	48	51	57	63	69	72	74	74	73
20%	64	57	50	48	50	56	62	68	71	73	74	72
30%	64	56	49	47	50	55	62	68	71	73	73	72
40%	63	55	49	47	49	54	61	68	70	72	73	71
50%	63	55	48	47	49	54	61	67	70	71	72	71
60%	62	55	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	69
80%	62	54	48	46	48	51	57	65	69	70	71	68
90%	61	53	47	46	47	51	56	63	69	69	70	67
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	70	72	72	70
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	71	69
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 3 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.5	-0.1	0.1	0.0	0.0	0.0	0.2	-0.2	0.0	0.0	-0.2	-0.1
0.2	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	-0.2
0.3	-0.4	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.2	-0.1
0.4	-0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.2	-0.1	0.0	-0.1	-0.1
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-0.1	-0.1
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	-0.2	0.0	-0.1
0.7	0.1	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.3	-0.5
0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.7	-1.0
0.9	0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	-0.1	0.7	0.0
Long Term												
Full Simulation Period[b]	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2
Water Year Types[c]												
Wet (32%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.3	-0.2
Above Normal (16%)	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.4	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	-1.2
Dry (24%)	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.5	-0.1
Critical (15%)	-0.2	0.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	0.2	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-6. Sacramento River at Knights Landing, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	50	48	51	57	63	69	72	74	75	73
20%	64	57	49	48	50	56	62	68	72	73	74	73
30%	64	56	49	47	50	55	62	68	71	73	74	72
40%	64	55	49	47	49	54	61	67	71	72	73	71
50%	63	55	48	47	49	54	60	67	70	71	72	71
60%	63	54	48	47	48	53	60	66	70	71	72	70
70%	62	54	48	46	48	52	59	66	69	70	71	70
80%	62	54	48	46	48	51	57	65	69	70	70	69
90%	61	53	47	46	47	51	56	63	68	69	69	67
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	70	72	72	71
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	69
Above Normal (16%)	63	55	49	47	48	52	59	66	70	70	71	70
Below Normal (13%)	62	54	48	47	49	55	61	67	69	70	70	70
Dry (24%)	63	55	49	47	50	55	61	68	70	71	73	72
Critical (15%)	65	57	49	47	51	57	63	68	71	74	74	73

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	58	50	48	51	57	63	69	73	74	74	73
20%	64	57	50	48	50	56	62	69	72	73	74	72
30%	64	56	49	47	50	55	62	68	72	72	74	72
40%	63	55	49	47	49	54	61	68	71	72	73	71
50%	63	55	48	47	49	54	61	67	71	71	72	69
60%	62	55	48	47	48	53	60	67	70	71	72	67
70%	61	54	48	46	48	52	59	66	70	70	71	66
80%	61	54	47	46	48	51	57	65	69	70	71	65
90%	60	53	47	45	47	51	56	63	69	69	70	63
Long Term												
Full Simulation Period[b]	63	55	49	47	49	54	60	67	71	72	72	69
Water Year Types[c]												
Wet (32%)	60	53	46	46	48	52	57	65	70	72	72	65
Above Normal (16%)	63	55	49	47	48	53	59	67	71	70	72	67
Below Normal (13%)	62	54	48	47	49	55	62	67	70	71	71	71
Dry (24%)	63	55	49	47	50	55	61	68	71	71	73	72
Critical (15%)	65	57	49	47	51	57	63	69	72	73	74	74

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.5	0.0	0.1	0.2	0.0	0.2	0.5	0.0	0.5	0.0	-0.1	-0.2
0.2	0.0	0.0	0.3	-0.1	0.0	0.3	0.0	0.5	0.6	0.0	0.1	-0.1
0.3	-0.4	-0.1	0.0	0.0	0.1	0.1	0.3	0.3	0.8	-0.1	-0.1	0.0
0.4	-0.4	-0.1	0.1	0.0	0.0	0.0	0.1	0.4	0.6	-0.3	-0.1	-0.1
0.5	-0.5	0.1	0.1	0.0	0.0	0.0	0.3	0.4	0.7	0.0	0.0	-1.6
0.6	-0.8	0.1	0.1	0.0	0.0	0.1	0.1	0.5	0.7	0.1	0.1	-3.1
0.7	-0.4	0.2	-0.1	0.0	0.1	0.0	0.0	0.3	0.8	0.0	0.6	-4.1
0.8	-0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.8	-4.1
0.9	-0.3	0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.5	-0.2	0.8	-3.8
Long Term												
Full Simulation Period[b]	-0.4	0.0	0.1	0.0	0.0	0.1	0.1	0.3	0.6	-0.1	0.3	-1.9
Water Year Types[c]												
Wet (32%)	-0.4	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.2	0.7	-4.6
Above Normal (16%)	-0.4	0.1	0.1	0.0	0.0	0.1	0.0	0.3	0.8	0.0	0.6	-2.7
Below Normal (13%)	-0.4	0.1	0.2	0.0	0.0	0.3	0.3	0.4	1.0	0.1	1.0	0.1
Dry (24%)	-0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.6	0.8	0.2	-0.6	-0.1
Critical (15%)	-0.3	0.0	0.0	-0.1	-0.1	0.0	0.2	0.3	1.0	-0.3	-0.3	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

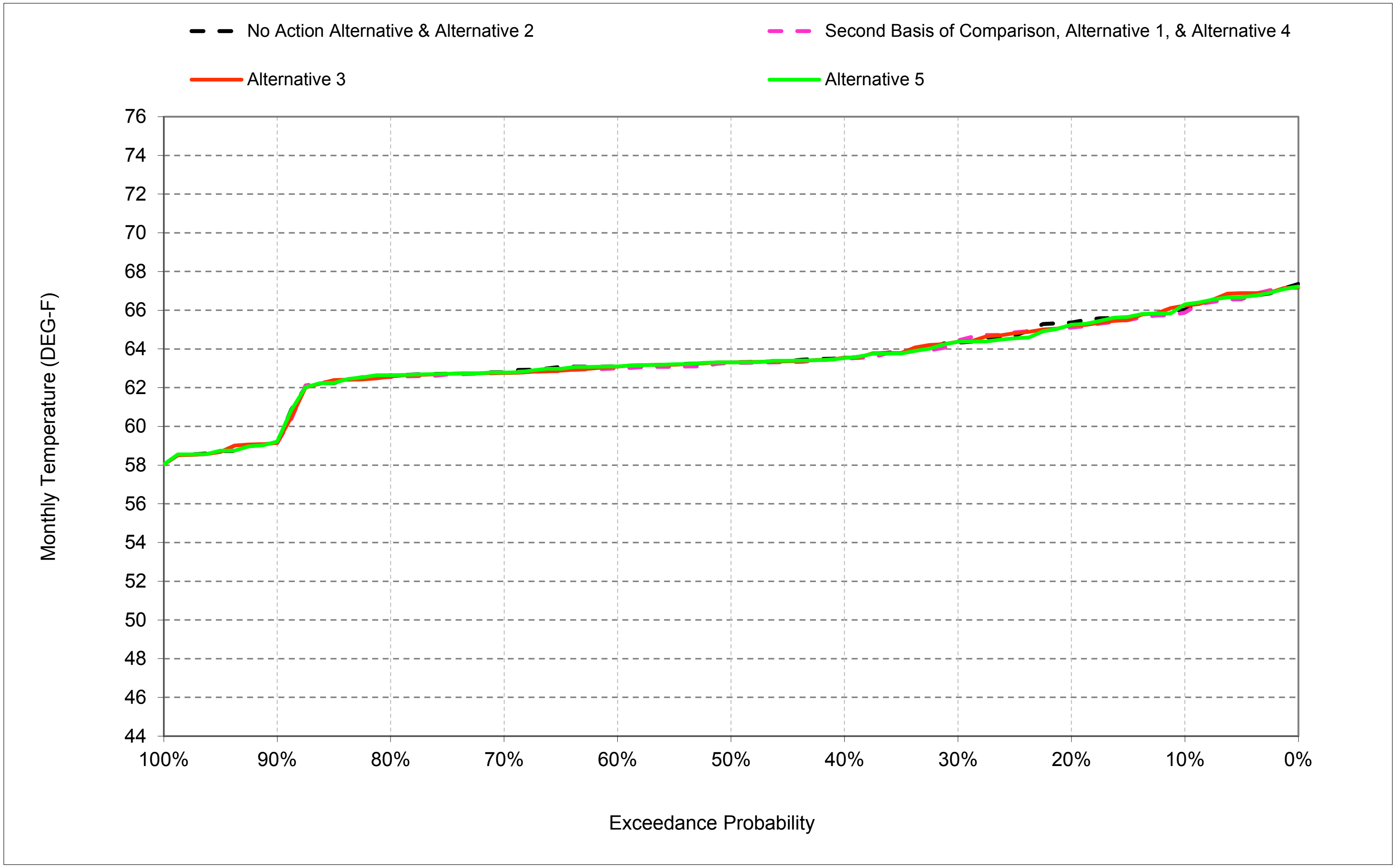
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

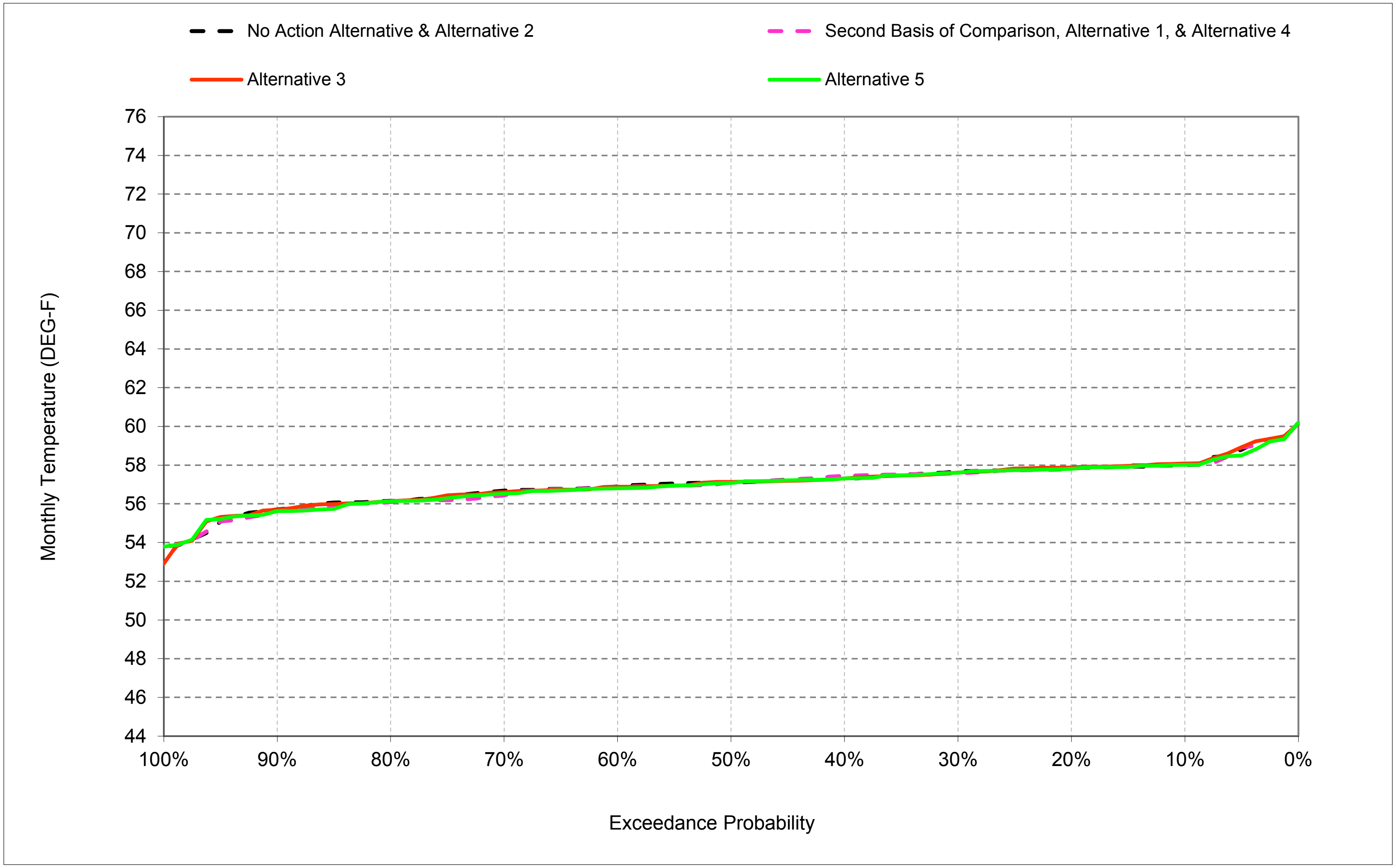
B.12. American River below Nimbus Temperature

Figure B-12-1. American River below Nimbus Dam, October



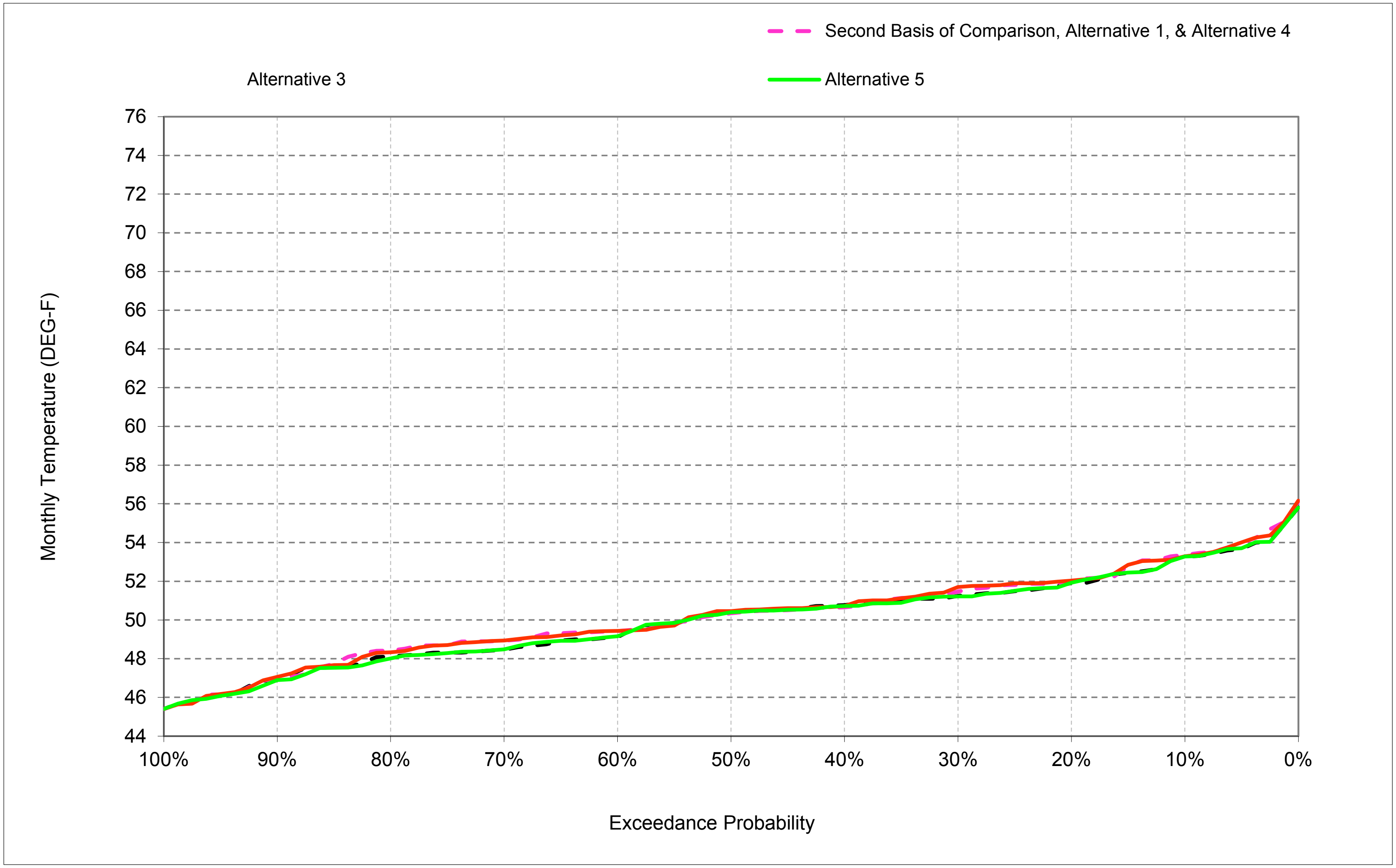
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-2. American River below Nimbus Dam, November



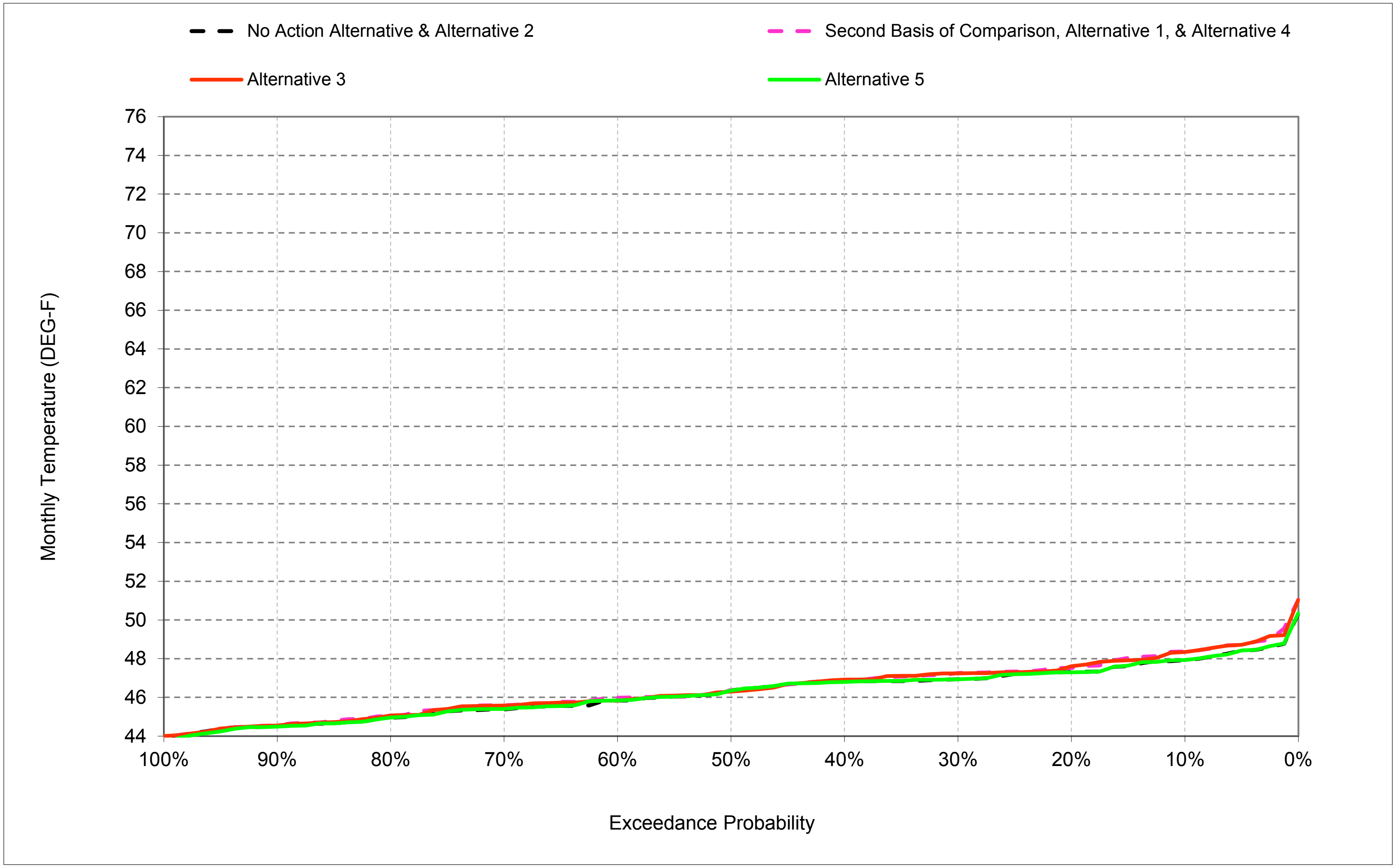
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-3. American River below Nimbus Dam, December



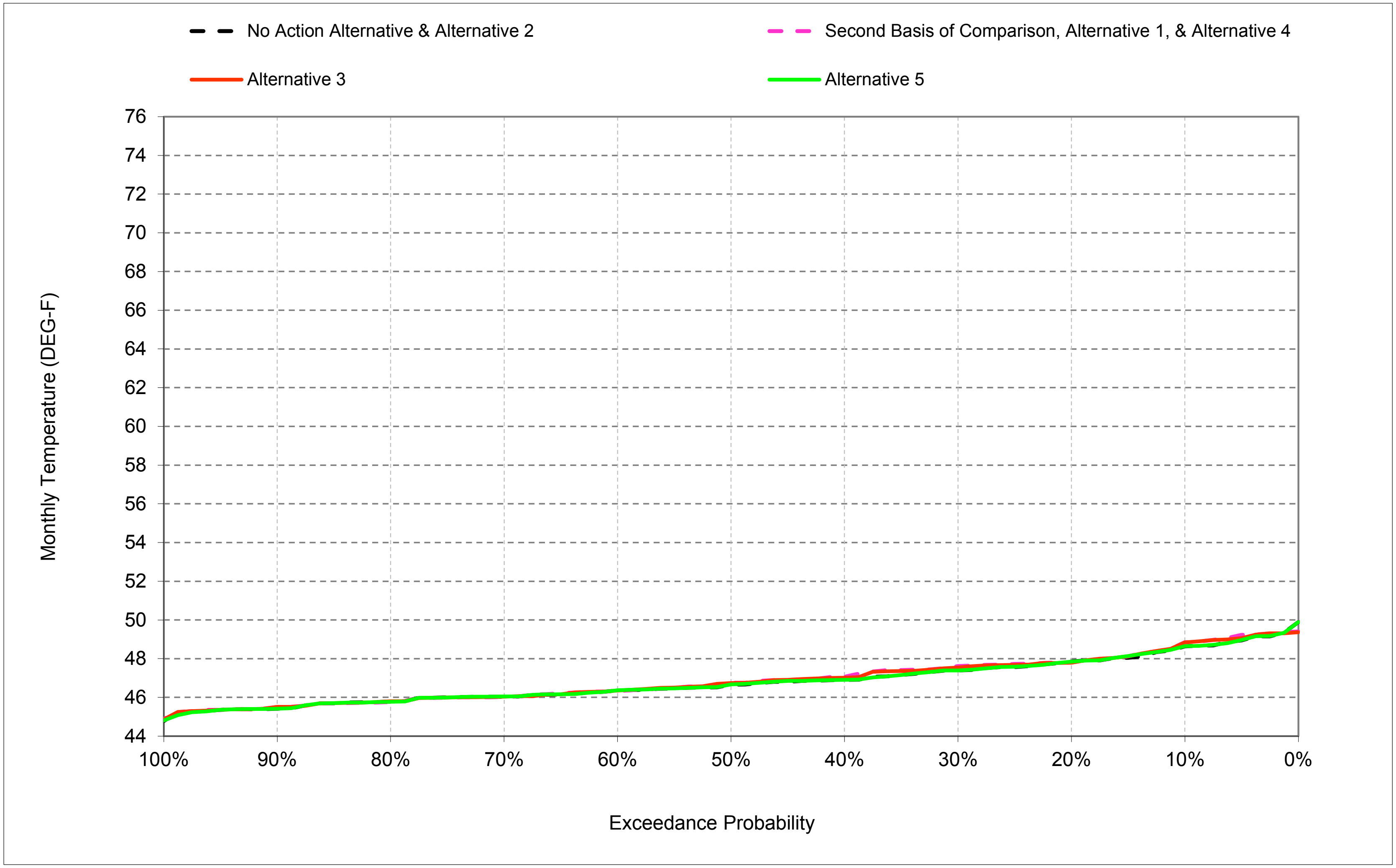
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-4. American River below Nimbus Dam, January



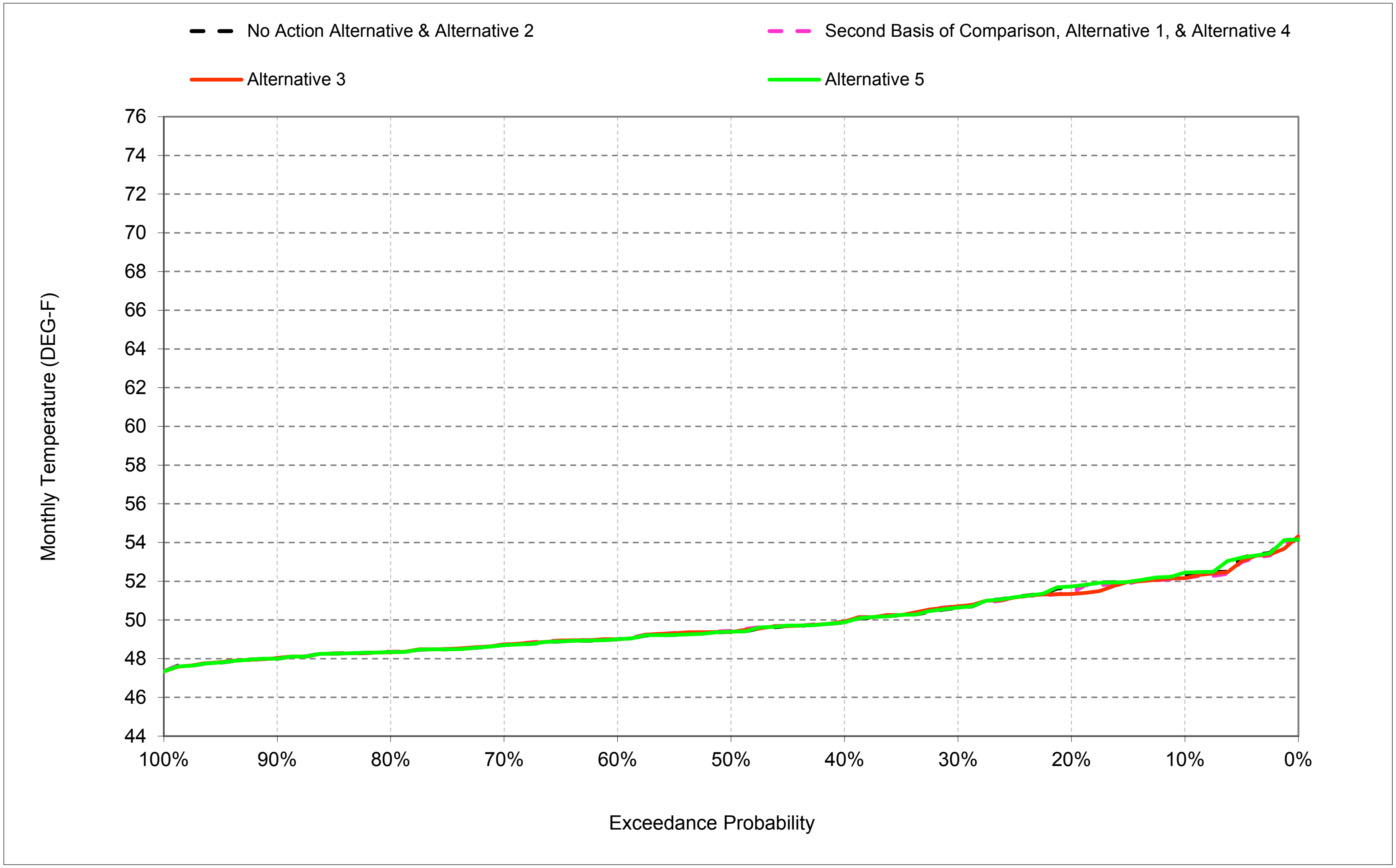
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-5. American River below Nimbus Dam, February



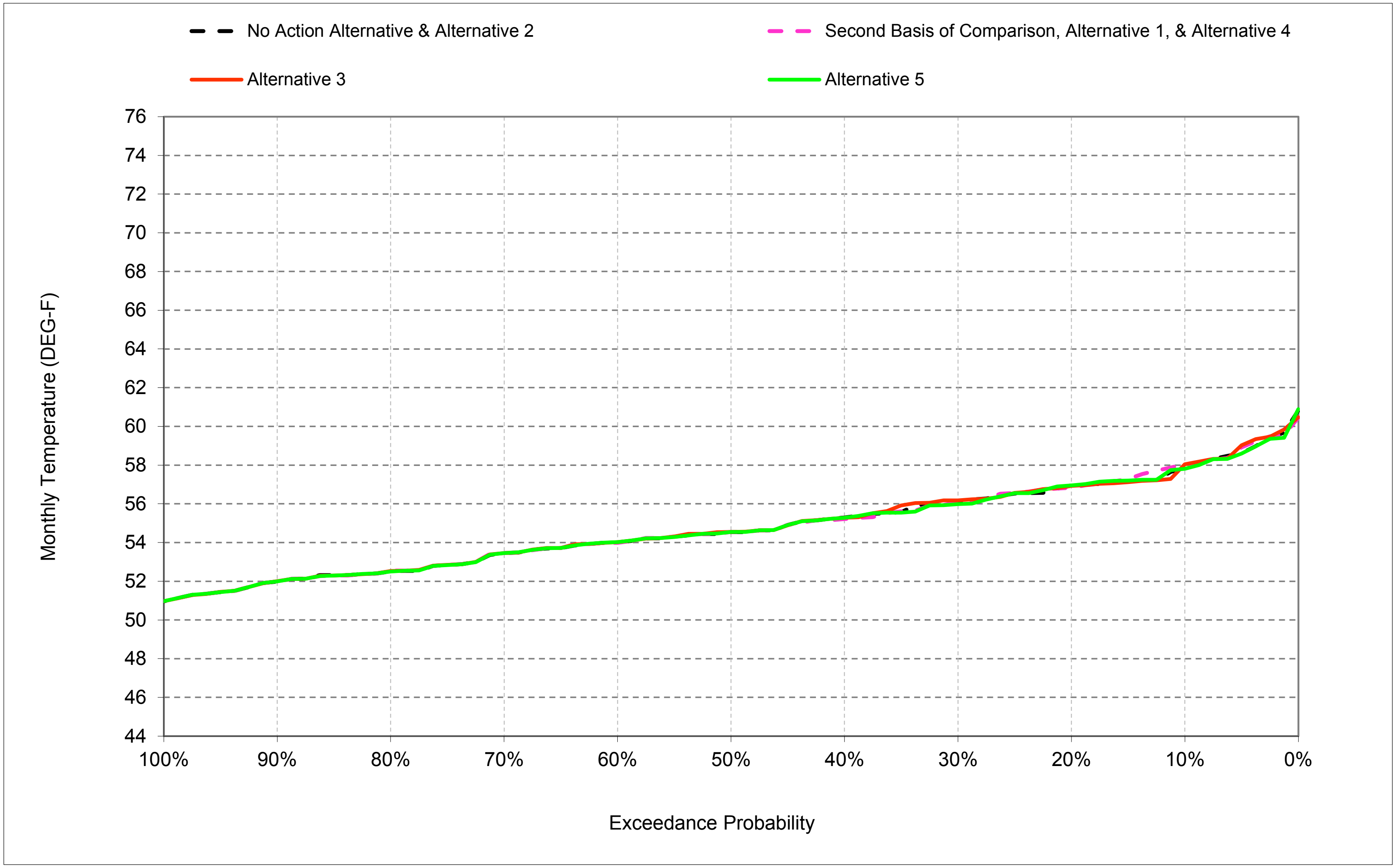
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-6. American River below Nimbus Dam, March



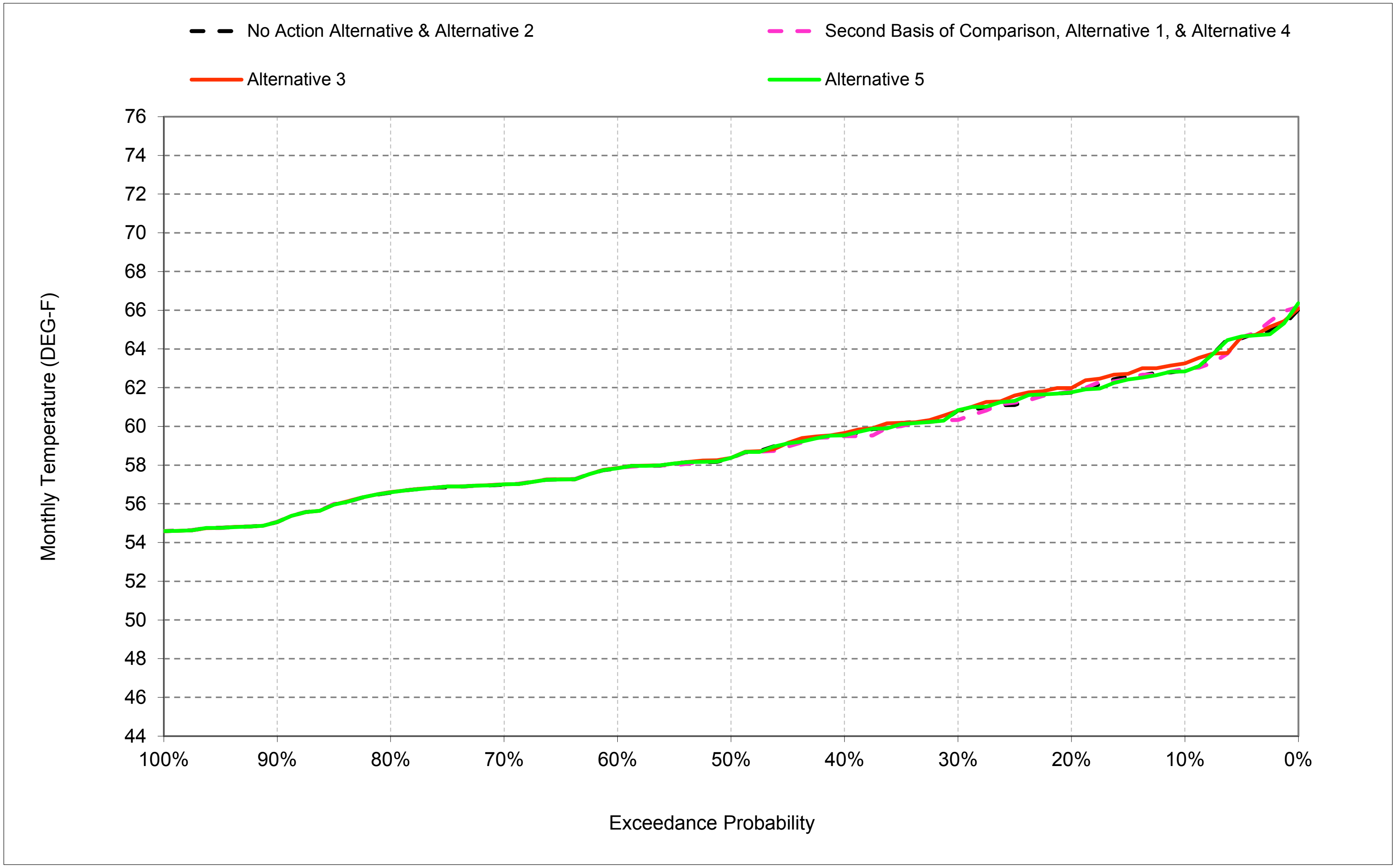
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-7. American River below Nimbus Dam, April



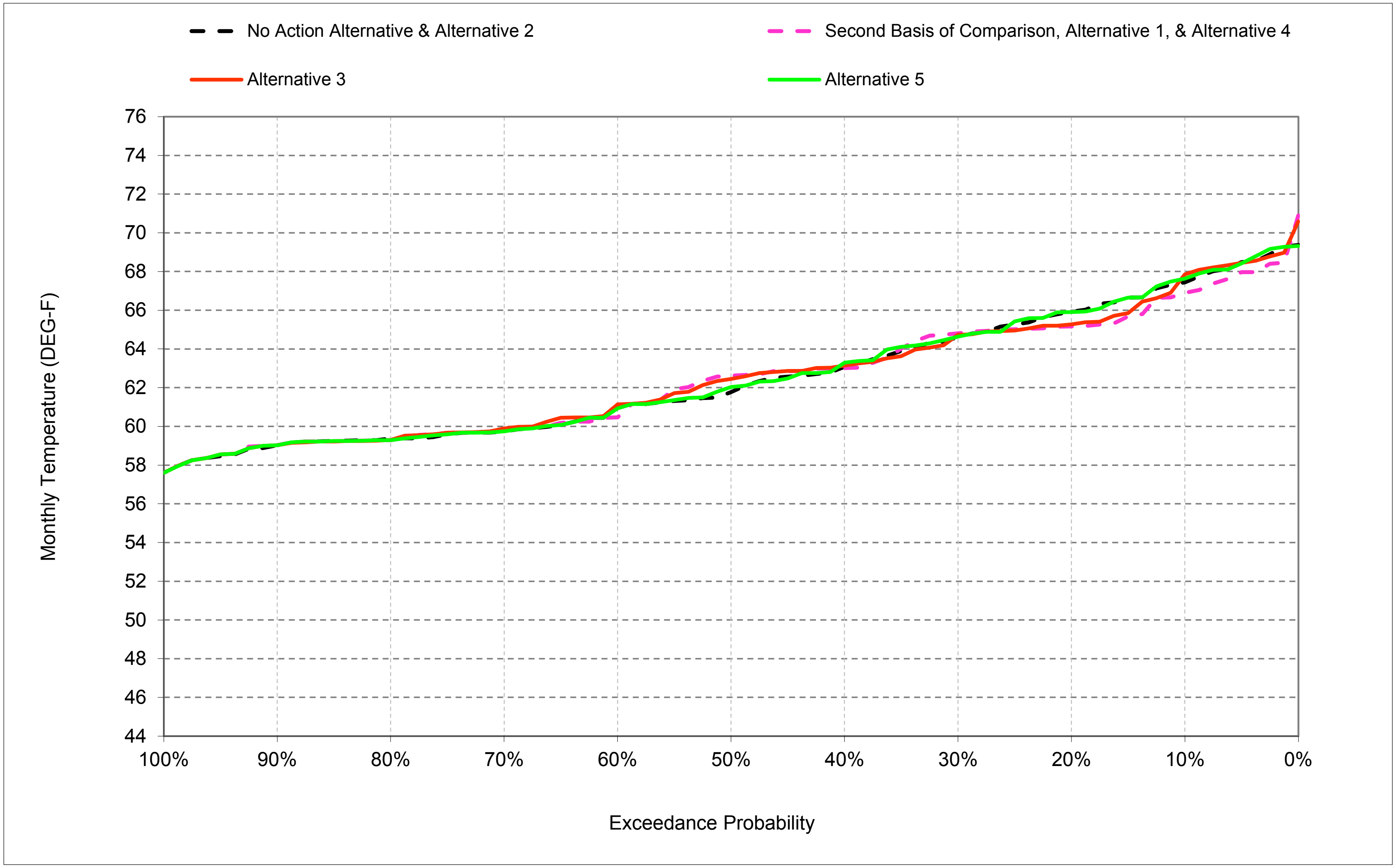
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-8. American River below Nimbus Dam, May



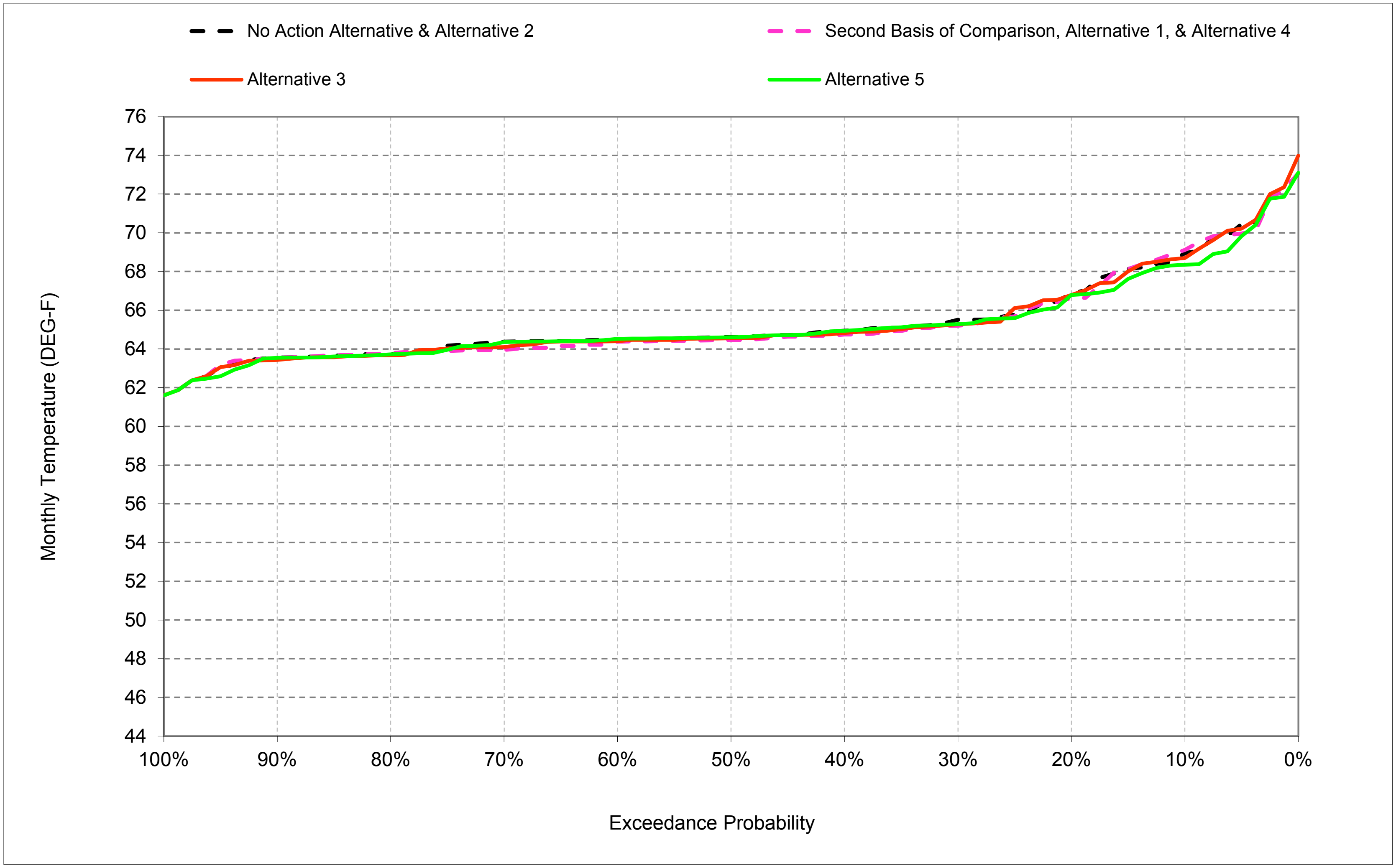
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-9. American River below Nimbus Dam, June



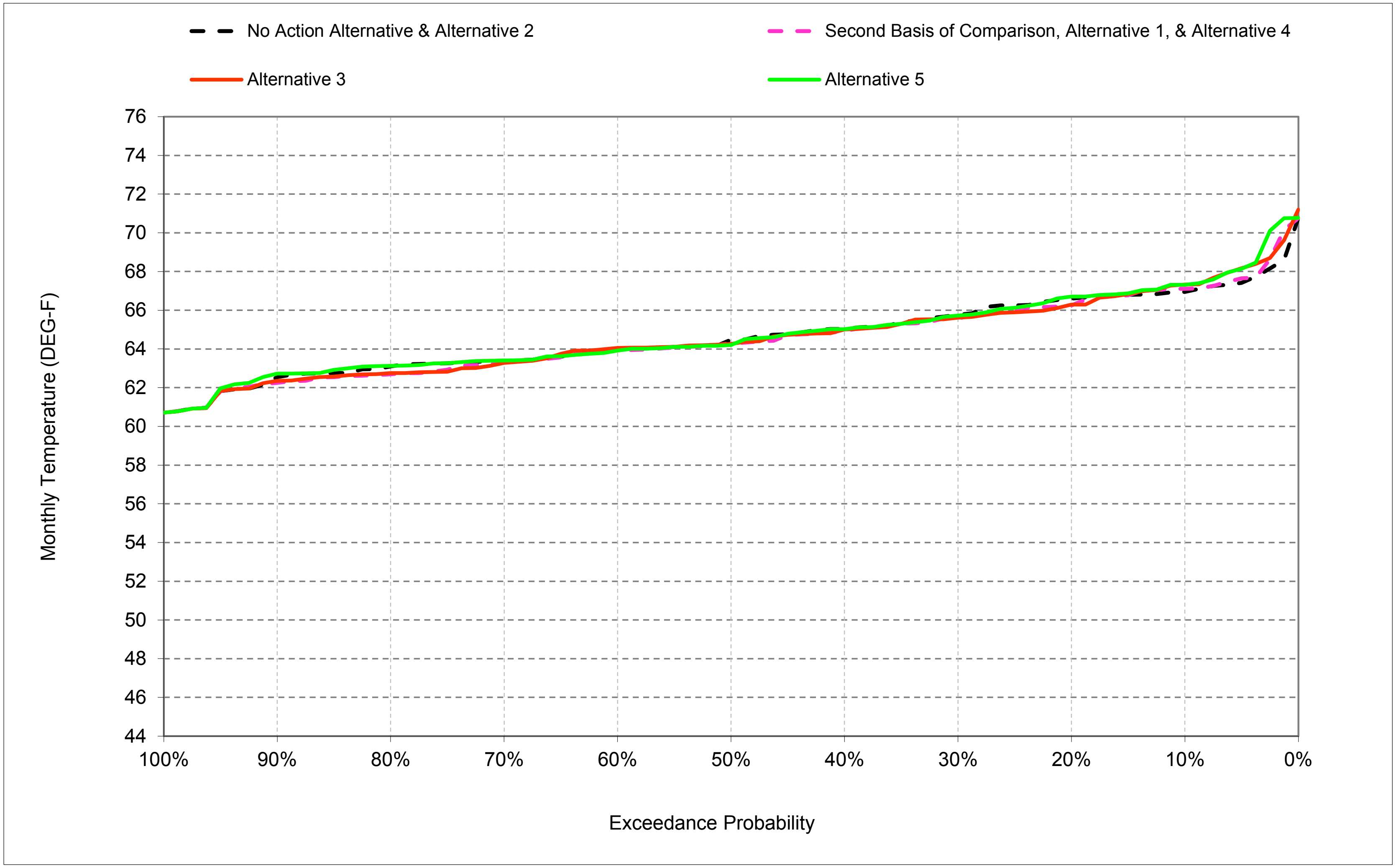
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-10. American River below Nimbus Dam, July



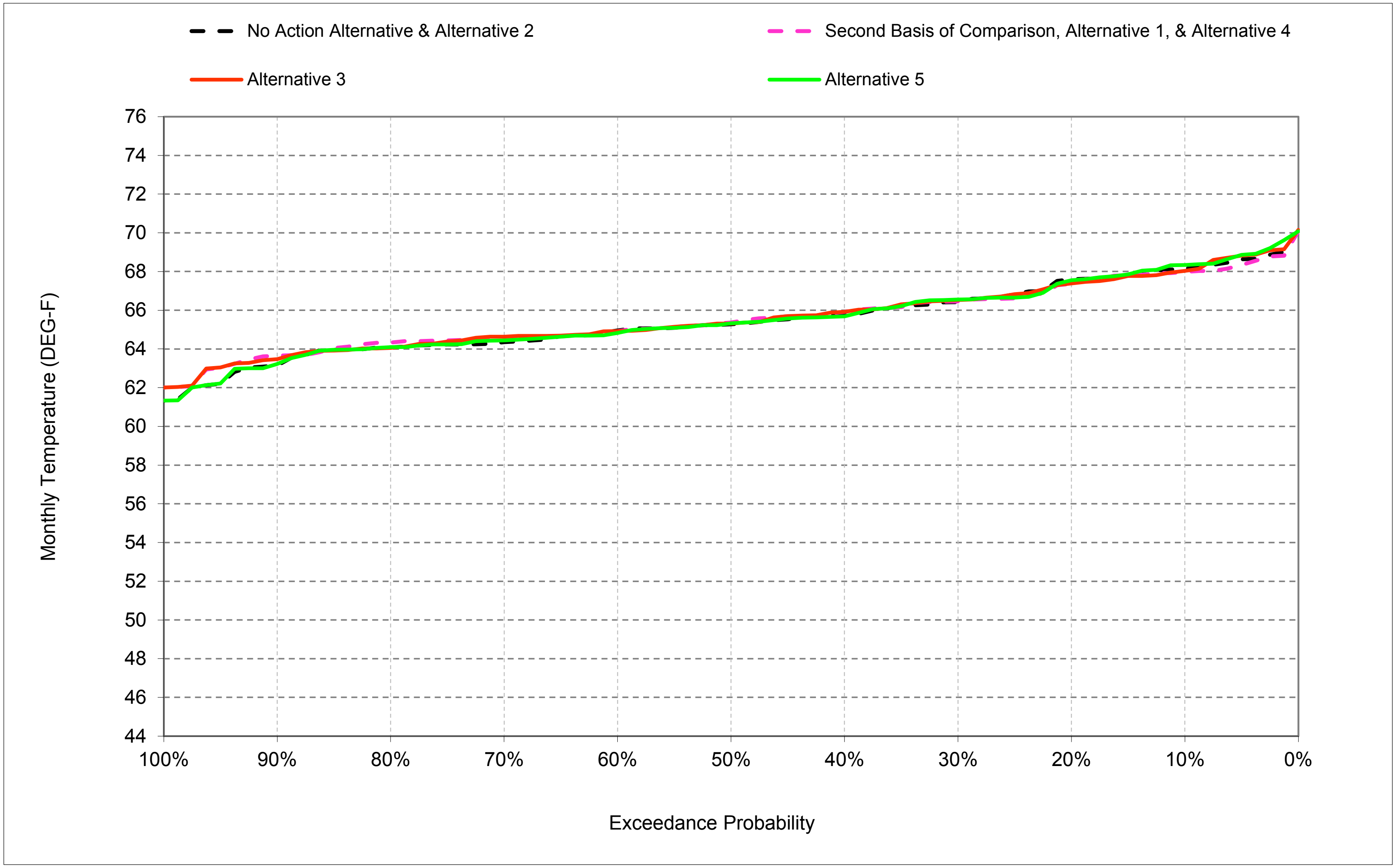
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-11. American River below Nimbus Dam, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-12. American River below Nimbus Dam, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-1. American River below Nimbus Dam, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types[c]												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types[c]												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.1	0.0	0.1	0.4	0.2	-0.1	0.2	0.1	-0.6	0.2	0.2	-0.2
0.2	-0.3	0.0	0.0	0.2	0.0	-0.3	-0.1	0.1	-0.7	-0.2	-0.4	-0.2
0.3	0.1	-0.1	0.2	0.3	0.2	0.1	0.0	-0.3	0.2	-0.3	-0.2	0.0
0.4	0.0	0.1	-0.1	0.0	0.2	0.0	-0.1	-0.1	0.0	-0.2	-0.1	0.1
0.5	0.0	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	1.0	-0.1	-0.1	0.1
0.6	-0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	-0.1	-0.1
0.7	0.0	-0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.1	-0.4	-0.1	0.3
0.8	-0.1	-0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.2
0.9	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5
Long Term												
Full Simulation Period[b]	-0.1	-0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1
Water Year Types[c]												
Wet (32%)	-0.1	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.3	0.3
Above Normal (16%)	-0.5	-0.4	0.1	0.3	0.1	0.0	0.0	0.0	0.4	-0.2	0.1	0.1
Below Normal (13%)	0.0	0.1	0.3	0.3	0.2	0.0	-0.2	-0.1	-0.9	-0.2	-0.6	0.3
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2	-0.1	-0.2	0.1	-0.1
Critical (15%)	0.2	0.2	0.1	0.2	0.1	-0.1	0.1	-0.4	0.1	0.2	0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

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No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types[c]												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	68	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	52	47	48	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types[c]												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	61	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.2	0.1	0.0	0.4	0.2	**-0.1**	0.1	0.4	0.3	**-0.2**	0.4	**-0.1**
0.2	**-0.1**	0.1	0.1	0.3	**0.0**	**-0.3**	**0.0**	0.2	**-0.6**	**-0.1**	**-0.3**	**-0.2**
0.3	0.1	**-0.1**	0.5	0.3	0.1	0.1	0.1	0.1	0.0	**-0.2**	**-0.1**	0.1
0.4	0.0	**0.0**	**-0.1**	0.1	0.1	0.0	**0.0**	0.0	0.1	**-0.1**	**-0.1**	0.2
0.5	**0.0**	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.8	**-0.1**	**-0.1**	0.1
0.6	**0.0**	**0.0**	0.3	0.0	0.0	0.0	**0.0**	0.0	0.1	**-0.1**	0.0	0.0
0.7	**0.0**	**-0.1**	0.5	0.2	**0.0**	0.0	0.0	0.0	0.1	**-0.3**	**-0.2**	0.3
0.8	**-0.1**	**0.0**	0.2	0.1	0.0	**0.0**	0.0	0.0	**0.0**	**-0.1**	**-0.3**	**0.0**
0.9	**0.0**	**0.0**	0.2	0.0	0.0	**0.0**	**0.0**	0.0	0.1	**-0.1**	0.0	0.3
Long Term												
Full Simulation Period[b]	**0.0**	**0.0**	0.2	0.2	0.1	**0.0**	0.0	0.1	0.0	**0.0**	**0.0**	0.1
Water Year Types[c]												
Wet (32%)	**-0.1**	**-0.1**	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	**-0.2**	0.2
Above Normal (16%)	**-0.2**	**-0.2**	**0.0**	0.2	0.1	0.0	0.0	0.0	0.4	**-0.2**	0.2	0.1
Below Normal (13%)	0.1	0.4	0.4	0.4	0.2	0.0	**-0.1**	0.4	**-0.3**	**-0.1**	**-0.3**	0.4
Dry (24%)	0.0	0.0	0.2	0.1	0.0	**0.0**	0.1	0.3	**-0.1**	**0.0**	0.1	**-0.2**
Critical (15%)	0.1	0.1	0.1	0.1	0.0	**-0.2**	0.1	**-0.4**	**-0.1**	0.1	0.1	**0.0**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-3. American River below Nimbus Dam, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types[c]												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

Alternative 5

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	68	68	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	63	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types[c]												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	46	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	57	51	47	48	52	57	62	66	68	67	68

Alternative 5 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	-0.6	0.4	0.2
0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.1	-0.1
0.3	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.2	0.0	0.1
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	-0.1
0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.1	0.0
0.6	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
0.7	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1
0.8	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
0.9	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	-0.1
Long Term												
Full Simulation Period[b]	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0
Water Year Types[c]												
Wet (32%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.0
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.1	-0.1	-0.1	0.1	-0.6	0.2	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-4. American River below Nimbus Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types[c]												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	66
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	54	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	56	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	62	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	65
Water Year Types[c]												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	62	66	69	67	68

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	0.0	-0.1	-0.4	-0.2	0.1	-0.2	-0.1	0.6	-0.2	-0.2	0.2
0.2	0.3	0.0	0.0	-0.2	0.0	0.3	0.1	-0.1	0.7	0.2	0.4	0.2
0.3	-0.1	0.1	-0.2	-0.3	-0.2	-0.1	0.0	0.3	-0.2	0.3	0.2	0.0
0.4	0.0	-0.1	0.1	0.0	-0.2	0.0	0.1	0.1	0.0	0.2	0.1	-0.1
0.5	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	-1.0	0.1	0.1	-0.1
0.6	0.1	0.0	-0.3	-0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.1
0.7	0.0	0.2	-0.5	-0.2	0.0	0.0	0.0	0.0	-0.1	0.4	0.1	-0.3
0.8	0.1	0.1	-0.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.2
0.9	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-0.5
Long Term												
Full Simulation Period[b]	0.1	0.1	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.1
Water Year Types[c]												
Wet (32%)	0.1	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.3	-0.3
Above Normal (16%)	0.5	0.4	-0.1	-0.3	-0.1	0.0	0.0	0.0	-0.4	0.2	-0.1	-0.1
Below Normal (13%)	0.0	-0.1	-0.3	-0.3	-0.2	0.0	0.2	0.1	0.9	0.2	0.6	-0.3
Dry (24%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	-0.1	-0.2	0.1	0.2	-0.1	0.1
Critical (15%)	-0.2	-0.2	-0.1	-0.2	-0.1	0.1	-0.1	0.4	-0.1	-0.2	-0.2	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-5. American River below Nimbus Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types[c]												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	68	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	52	47	48	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types[c]												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	61	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.4	0.0	-0.1	0.0	0.0	0.0	-0.1	0.3	0.9	-0.4	0.2	0.0
0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0
0.3	-0.1	0.0	0.2	0.0	-0.1	0.0	0.1	0.4	-0.2	0.1	0.0	0.1
0.4	0.1	-0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0
0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	0.0	0.0
0.6	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.1
0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-0.1	0.0
0.8	0.0	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.3
0.9	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Above Normal (16%)	0.3	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.5	0.6	0.1	0.3	0.2
Dry (24%)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	-0.1
Critical (15%)	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.2	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-6. American River below Nimbus Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	67	69	67	68
20%	65	58	52	48	48	51	57	62	65	67	66	67
30%	64	58	51	47	48	51	56	60	65	65	66	66
40%	63	57	51	47	47	50	55	59	63	65	65	66
50%	63	57	50	46	47	49	54	58	63	64	64	65
60%	63	57	49	46	46	49	54	58	60	64	64	65
70%	63	56	49	46	46	49	53	57	60	64	63	65
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	45	45	48	52	55	59	63	62	64
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	62	65	65	66
Water Year Types[c]												
Wet (32%)	60	54	48	46	46	49	53	57	60	64	63	64
Above Normal (16%)	63	57	50	47	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	47	47	50	56	60	63	65	65	66
Dry (24%)	64	57	51	47	47	51	56	60	64	66	66	66
Critical (15%)	65	58	51	47	48	52	57	61	66	69	67	68

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	53	48	49	52	58	63	68	68	67	68
20%	65	58	52	47	48	52	57	62	66	67	67	68
30%	64	58	51	47	47	51	56	61	65	65	66	67
40%	64	57	51	47	47	50	55	60	63	65	65	66
50%	63	57	50	46	47	49	55	58	62	65	64	65
60%	63	57	49	46	46	49	54	58	61	64	64	65
70%	63	57	48	45	46	49	53	57	60	64	63	64
80%	63	56	48	45	46	48	52	57	59	64	63	64
90%	59	56	47	44	45	48	52	55	59	64	63	63
Long Term												
Full Simulation Period[b]	63	57	50	46	47	50	55	59	63	65	65	66
Water Year Types[c]												
Wet (32%)	60	55	47	46	46	49	53	57	60	64	63	64
Above Normal (16%)	64	57	50	46	47	49	54	58	62	64	64	65
Below Normal (13%)	62	57	51	46	47	50	56	60	64	65	65	66
Dry (24%)	64	57	51	47	47	51	55	60	64	66	66	66
Critical (15%)	65	57	51	47	48	52	57	62	66	68	67	68

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.4	0.0	-0.1	-0.4	-0.2	0.3	-0.2	-0.1	0.7	-0.7	0.2	0.4
0.2	0.2	0.0	0.0	-0.2	0.0	0.3	0.1	-0.1	0.7	0.1	0.5	0.2
0.3	-0.1	0.0	-0.3	-0.3	-0.2	-0.1	-0.1	0.3	-0.2	0.1	0.1	0.1
0.4	0.0	-0.1	0.1	0.0	-0.2	0.0	0.1	0.1	0.1	0.2	0.1	-0.2
0.5	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	-0.7	0.1	-0.1	-0.1
0.6	0.1	-0.1	-0.3	-0.1	0.0	0.0	0.0	0.0	0.2	0.2	-0.1	-0.1
0.7	0.0	0.1	-0.4	-0.2	0.0	0.0	0.0	0.0	-0.1	0.3	0.1	-0.2
0.8	0.1	0.0	-0.4	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.4	-0.3
0.9	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	-0.6
Long Term												
Full Simulation Period[b]	0.0	0.0	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.1	0.0	0.2	-0.1
Water Year Types[c]												
Wet (32%)	0.1	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.3	-0.3
Above Normal (16%)	0.5	0.2	-0.1	-0.3	-0.1	0.0	0.0	0.0	-0.4	0.2	-0.1	-0.1
Below Normal (13%)	0.0	-0.1	-0.5	-0.5	-0.2	0.0	0.2	0.1	0.9	0.1	0.7	-0.2
Dry (24%)	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.2	0.1	0.0	0.1
Critical (15%)	-0.2	-0.3	-0.2	-0.2	-0.1	0.2	-0.2	0.3	0.0	-0.8	0.0	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

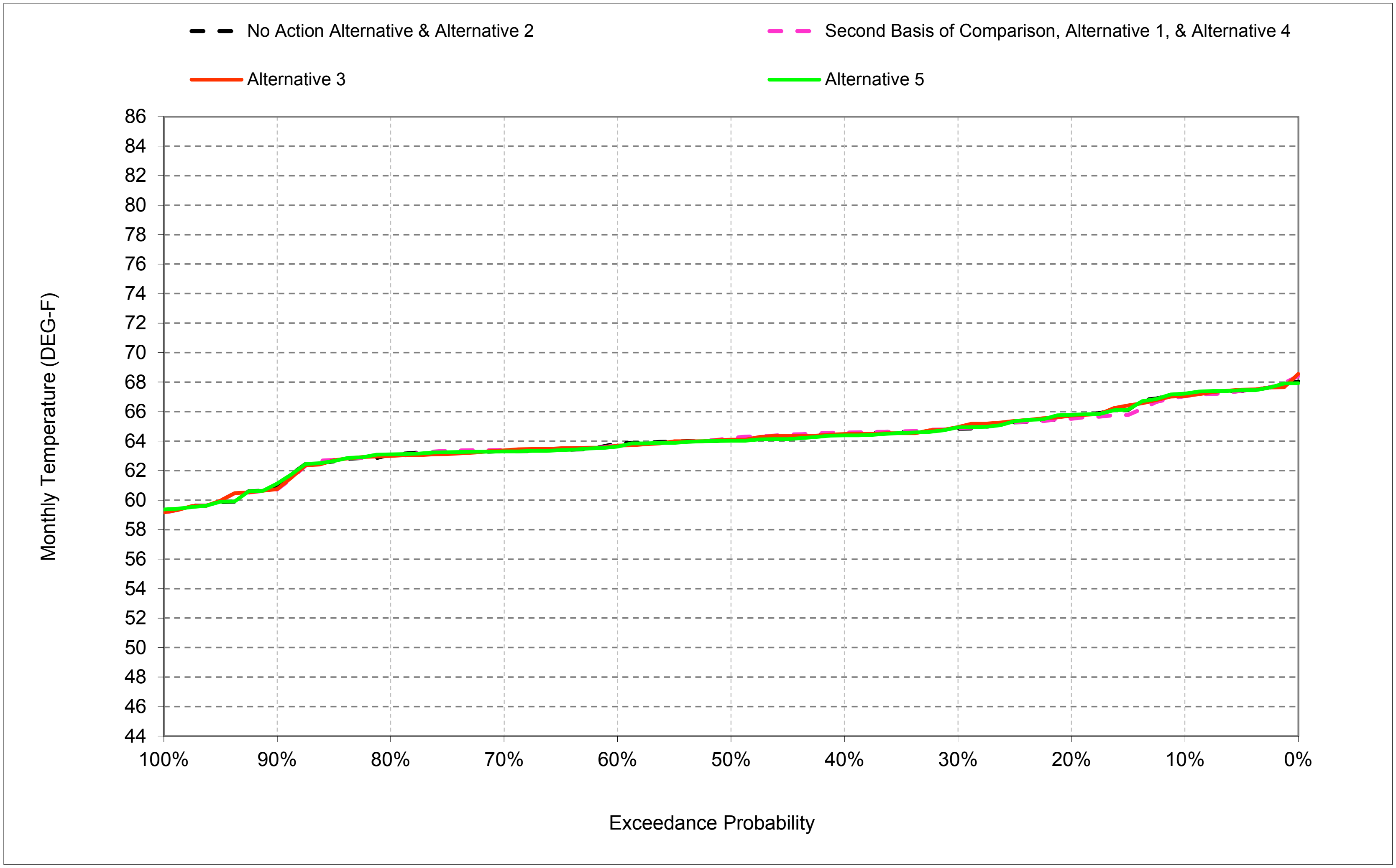
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

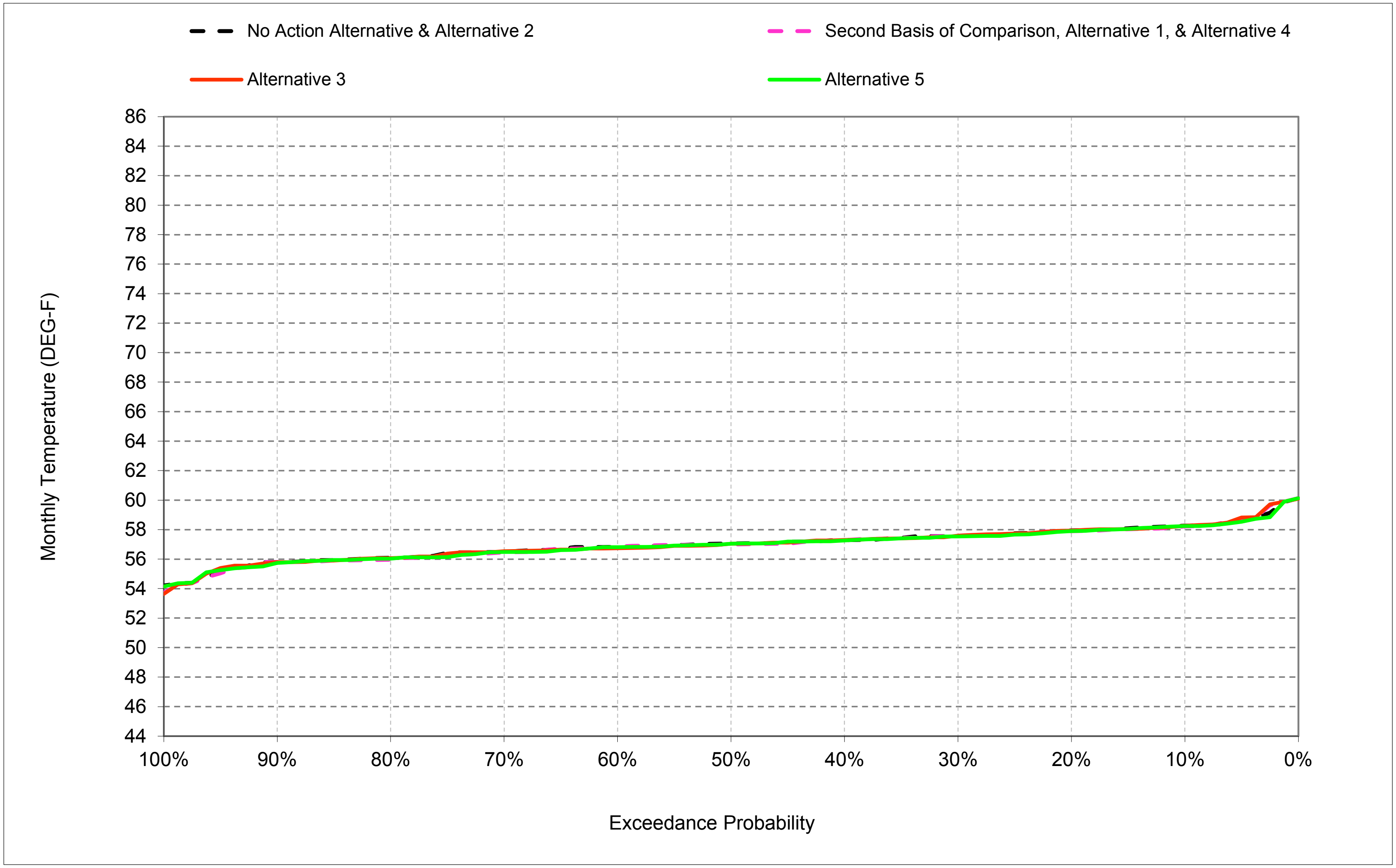
B.13. American River at Watt Avenue Temperature

Figure B-13-1. American River at Watt Avenue, October



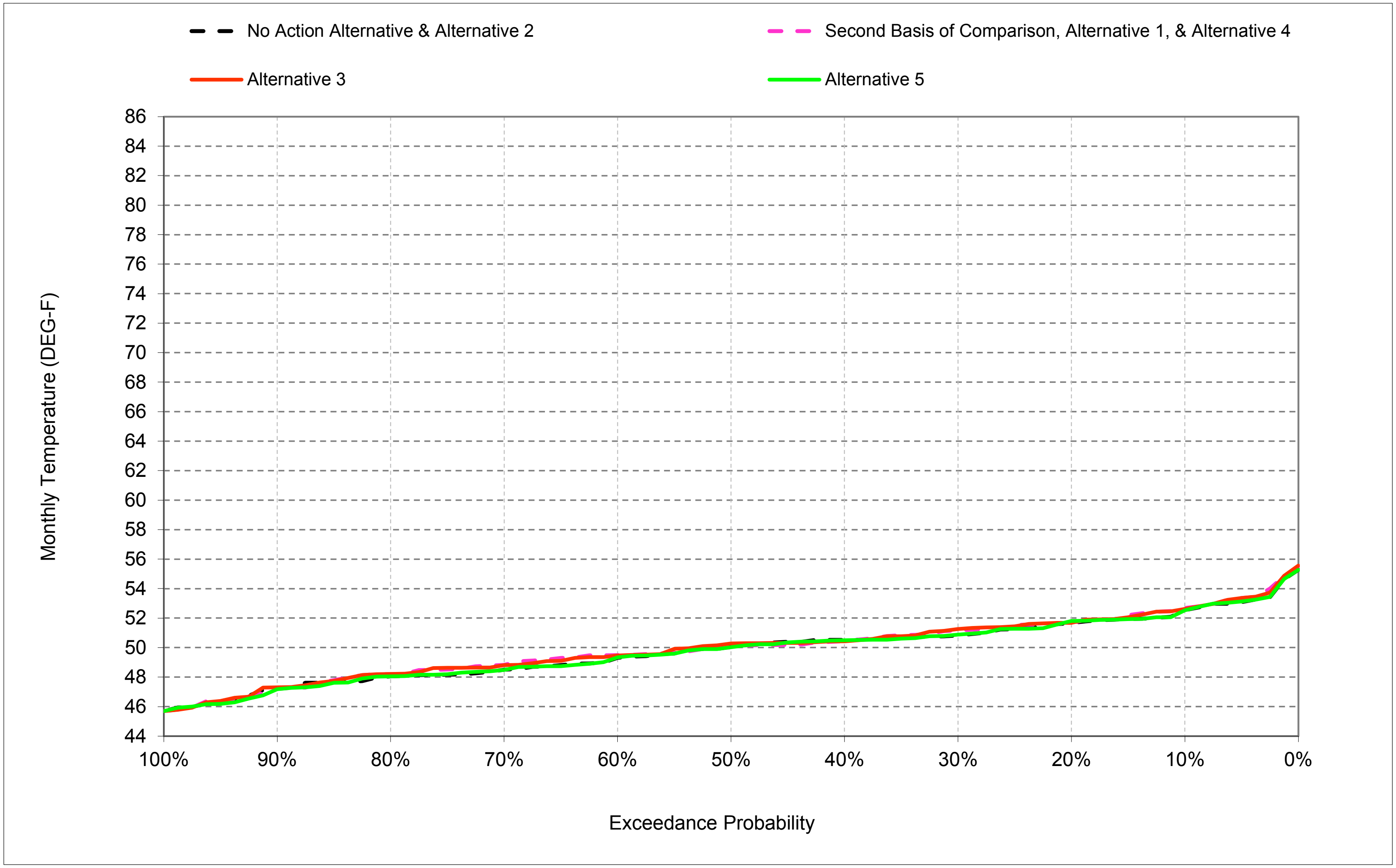
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-2. American River at Watt Avenue, November



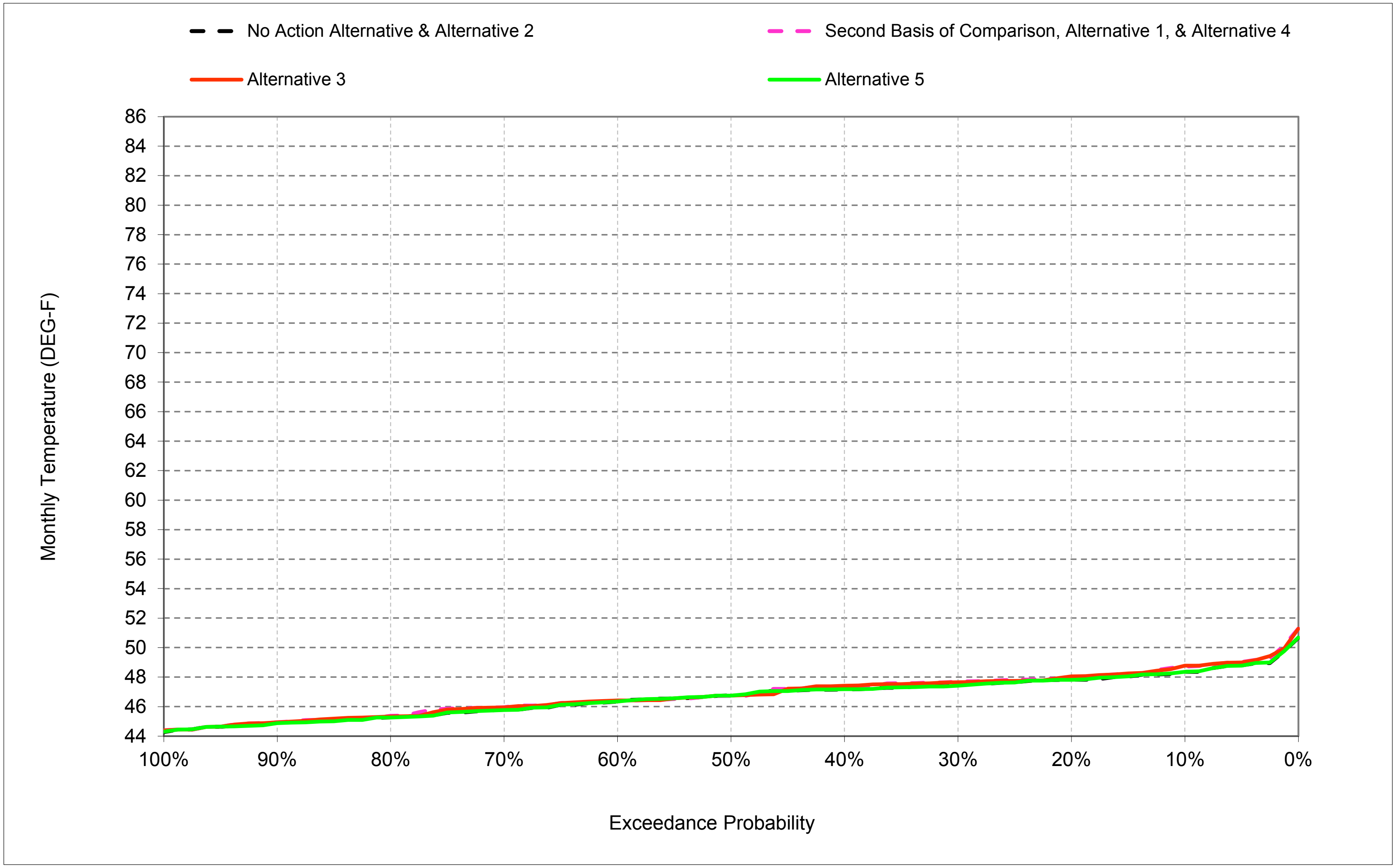
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-3. American River at Watt Avenue, December



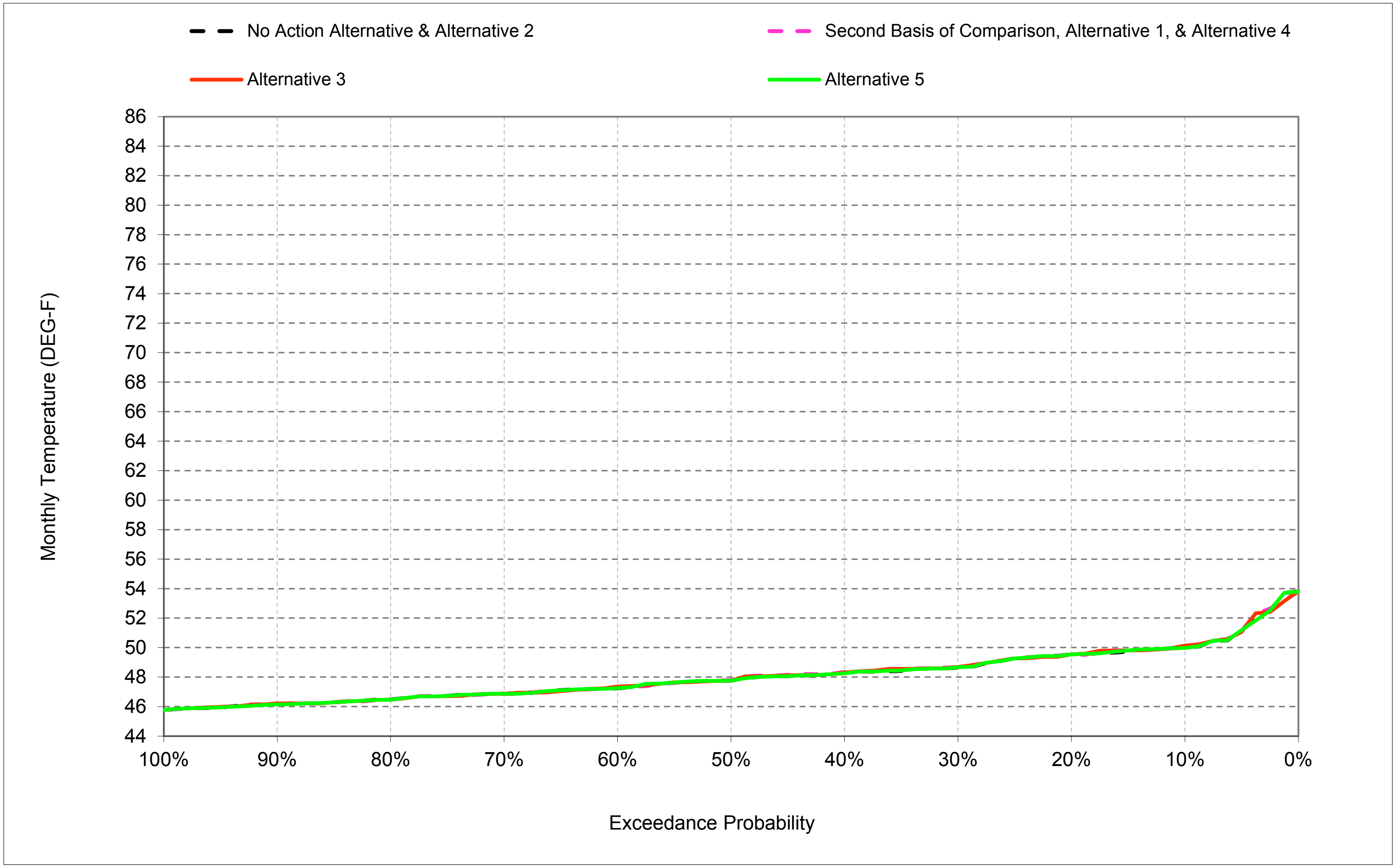
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-4. American River at Watt Avenue, January



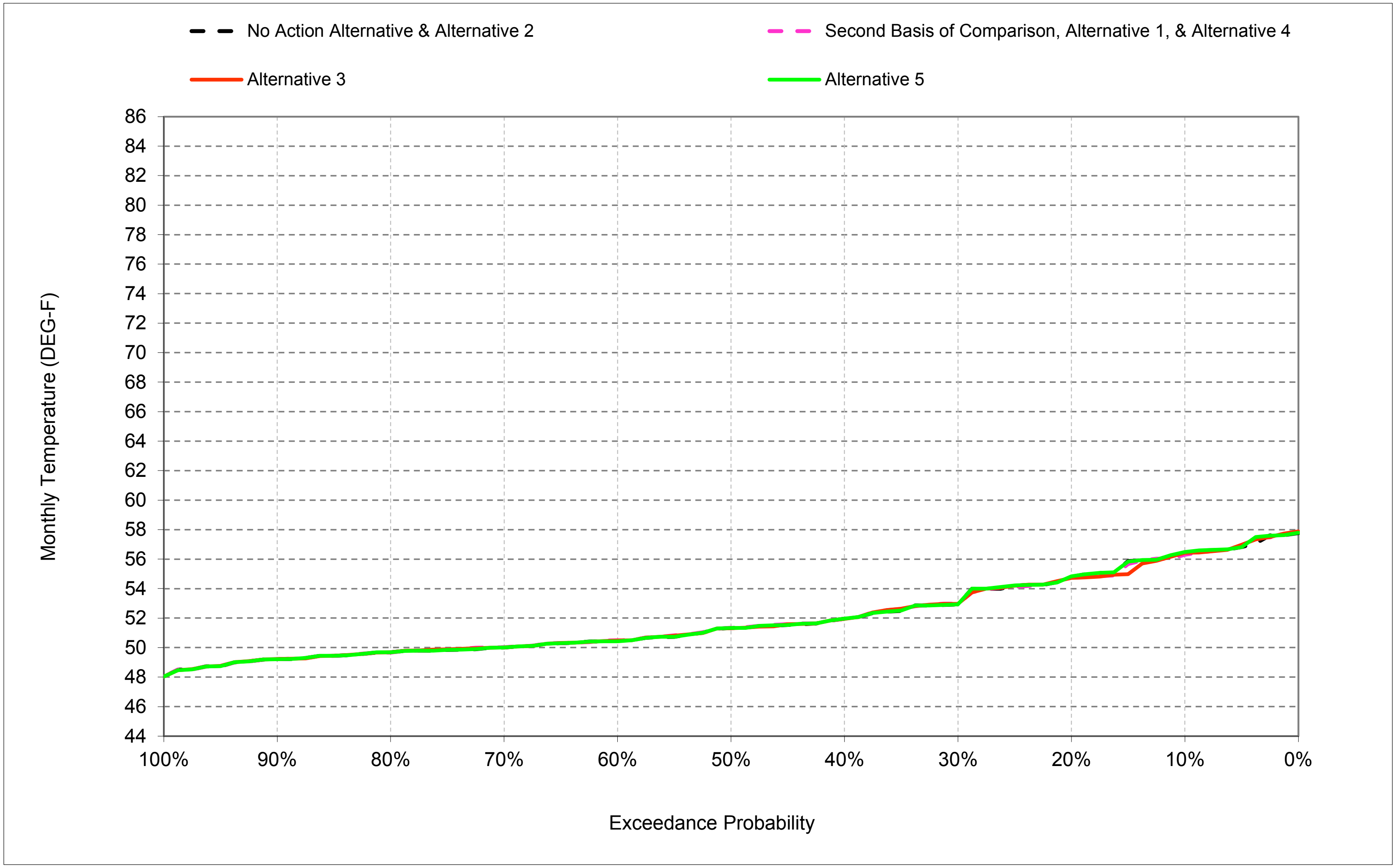
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-5. American River at Watt Avenue, February



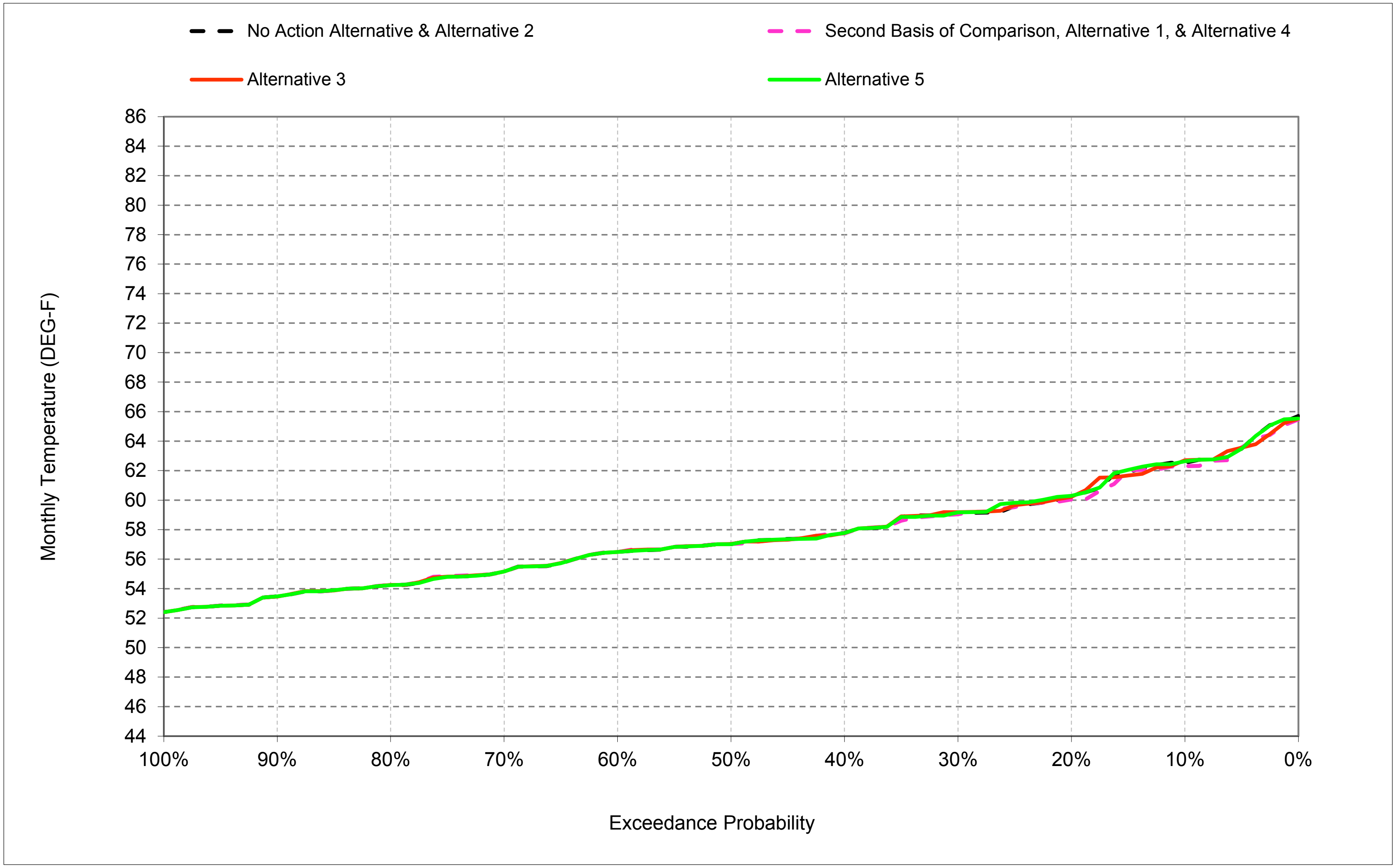
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-6. American River at Watt Avenue, March



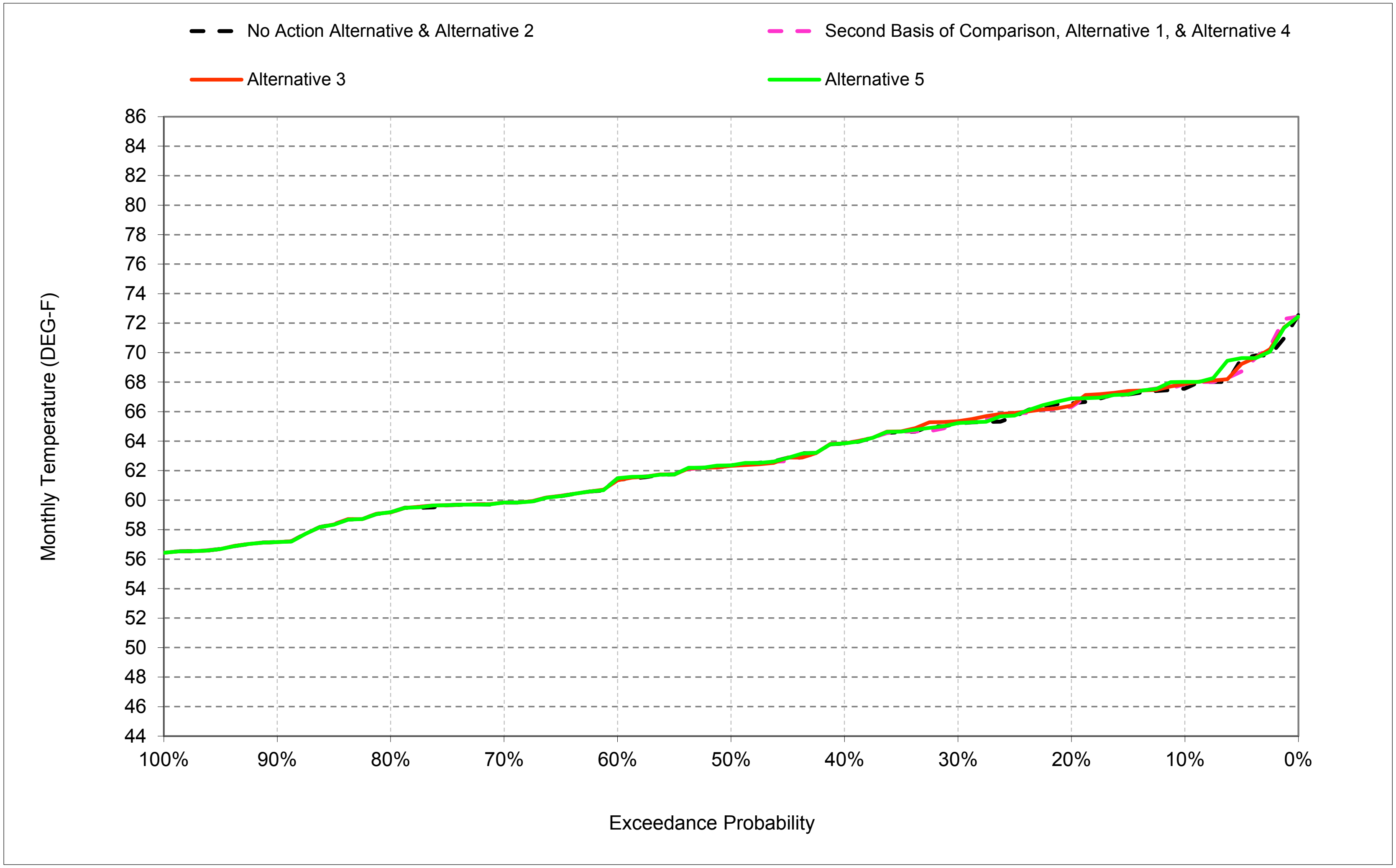
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-7. American River at Watt Avenue, April



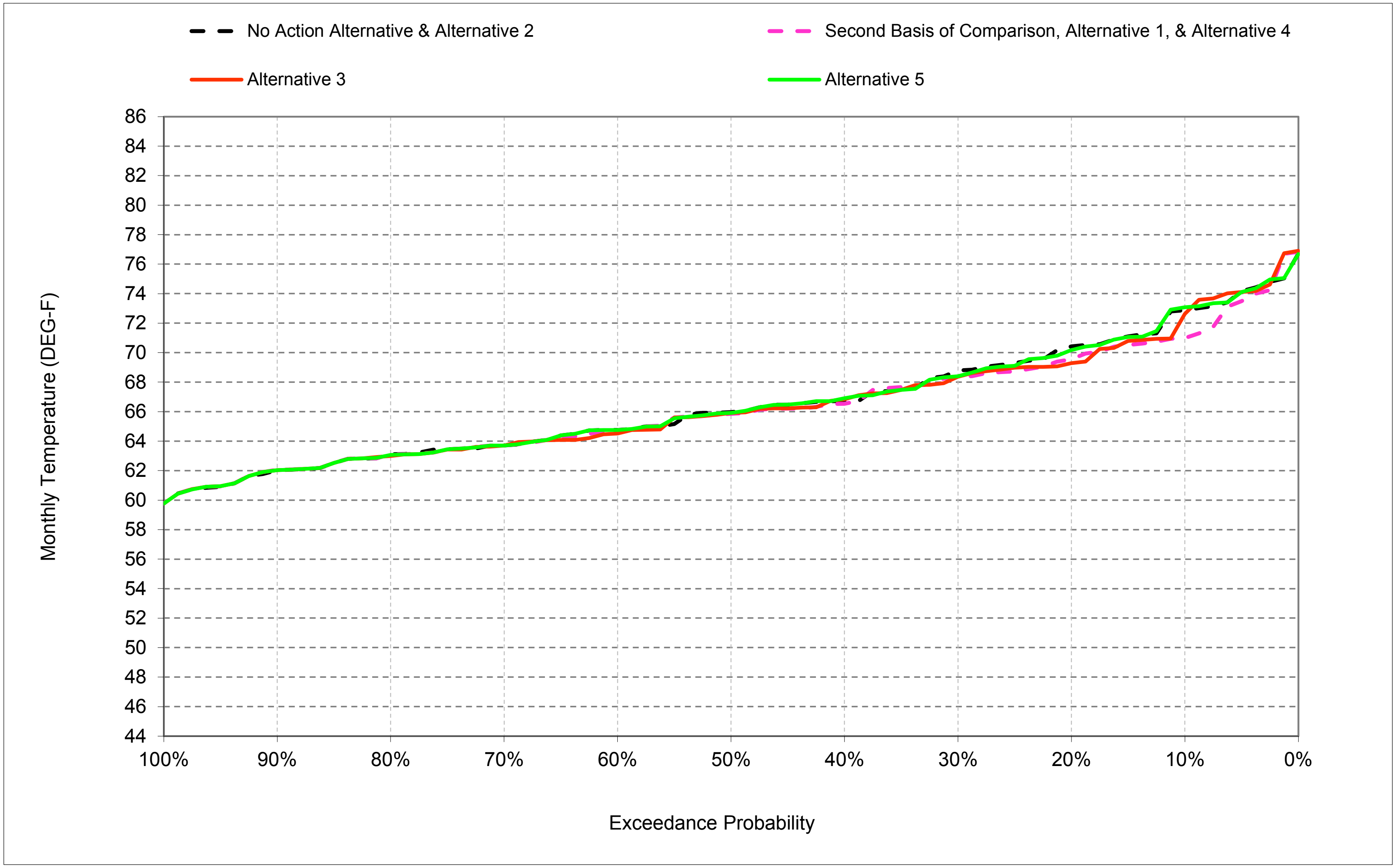
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-8. American River at Watt Avenue, May



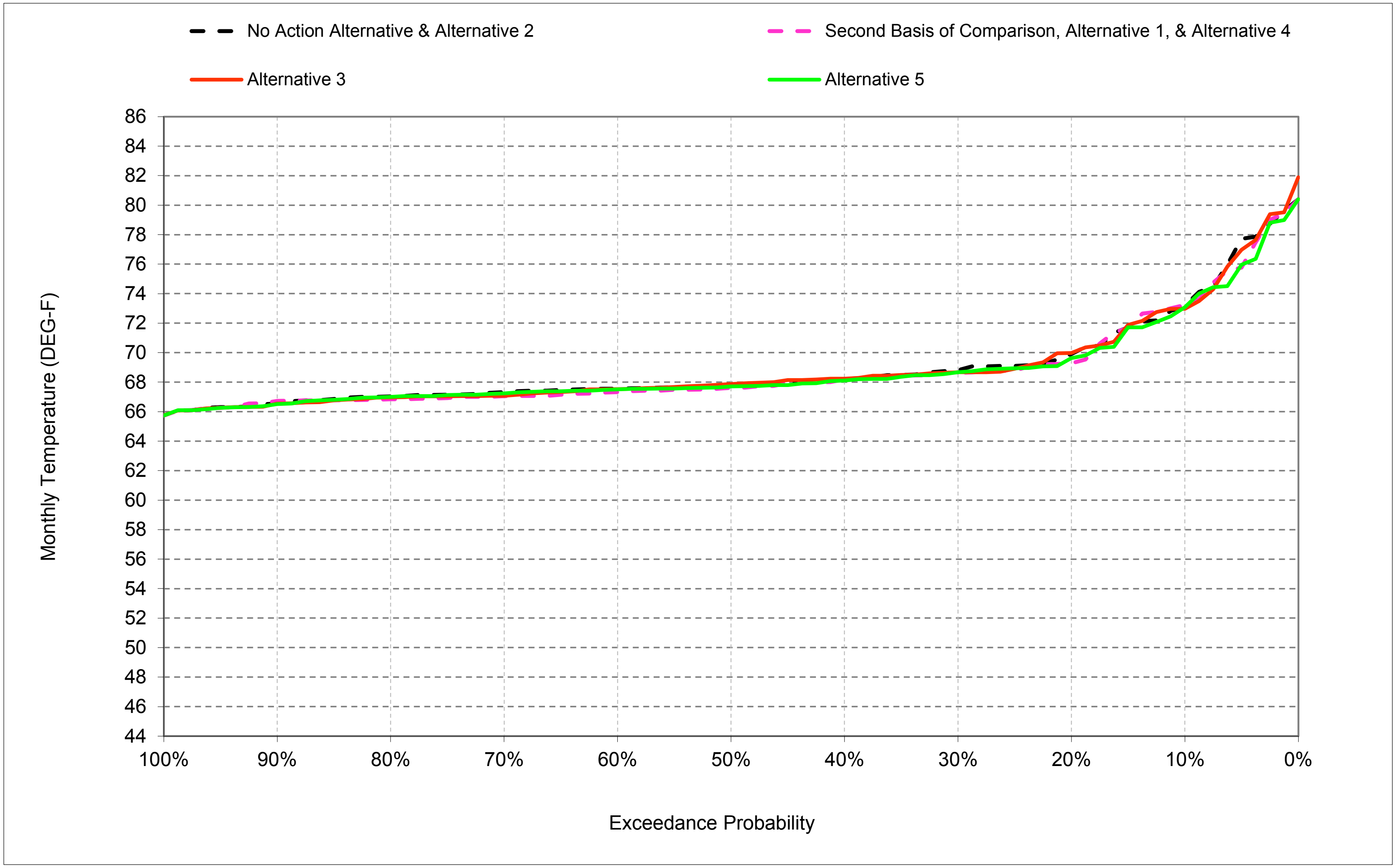
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-9. American River at Watt Avenue, June



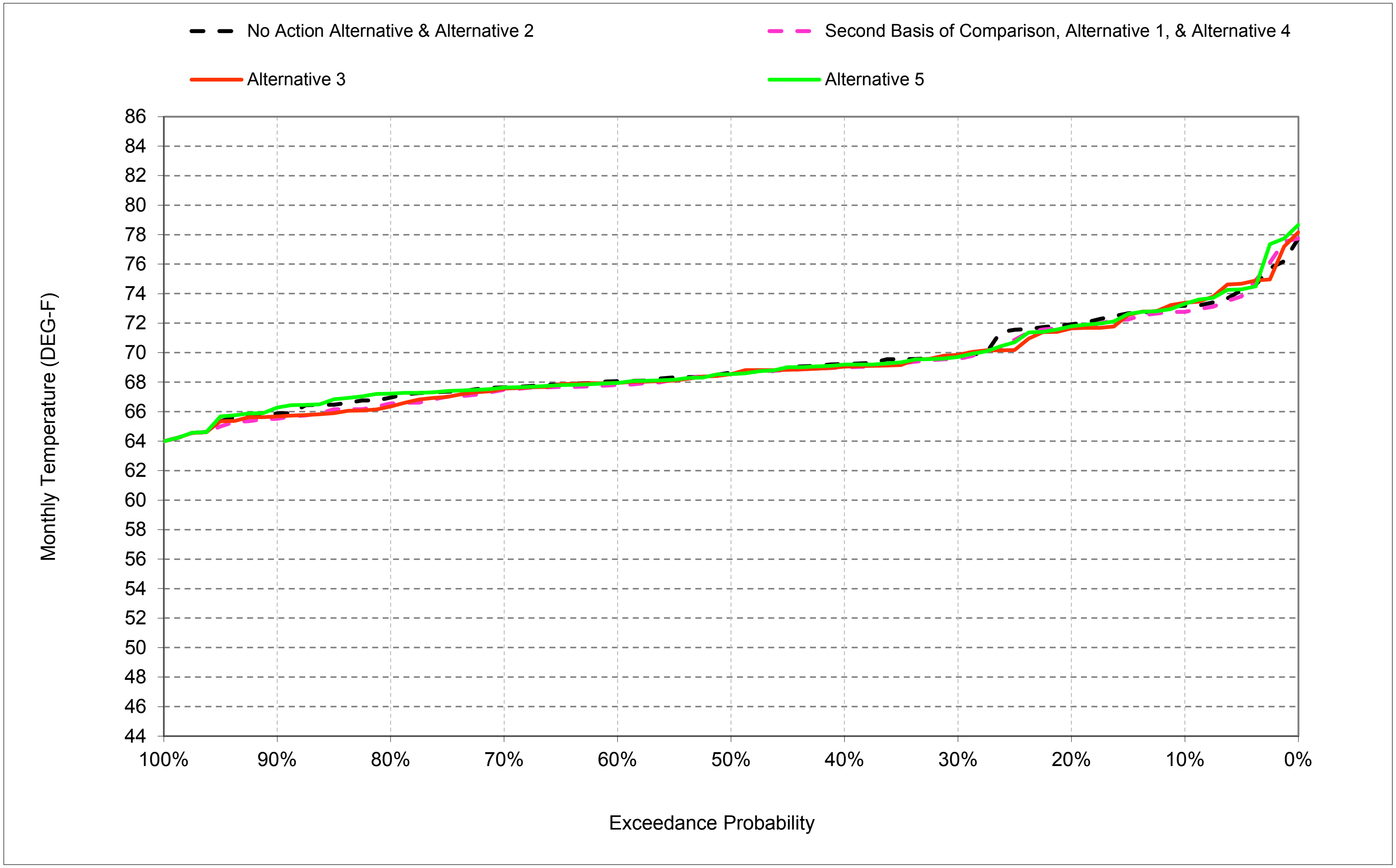
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-10. American River at Watt Avenue, July



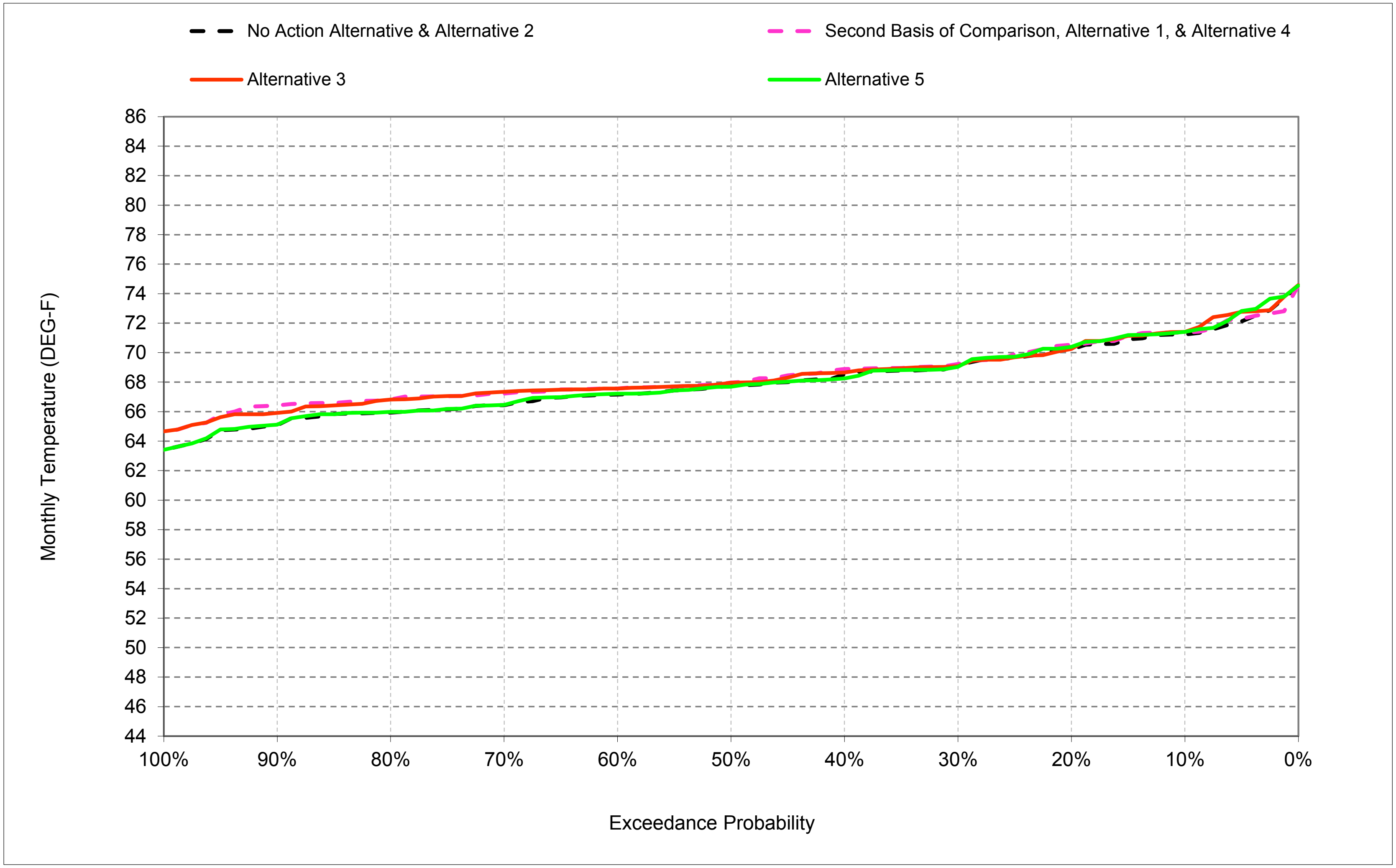
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-11. American River at Watt Avenue, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-12. American River at Watt Avenue, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-1. American River at Watt Avenue, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.2	0.0	0.2	0.4	0.1	-0.1	-0.2	0.3	-1.9	0.1	-0.4	0.1
0.2	-0.2	-0.1	0.0	0.1	0.0	-0.1	-0.2	-0.3	-0.9	-0.6	-0.2	0.3
0.3	0.0	0.0	0.3	0.3	0.0	0.1	-0.1	0.0	-0.3	-0.2	-0.2	0.1
0.4	0.1	0.0	-0.1	0.2	0.0	0.0	0.0	0.0	-0.2	-0.1	-0.2	0.4
0.5	0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.1	0.2
0.6	-0.1	0.0	0.2	0.0	0.1	0.0	0.0	0.1	-0.1	-0.2	-0.3	0.4
0.7	0.1	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	-0.3	-0.3	0.8
0.8	-0.1	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.4	0.8
0.9	-0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.2	1.4
Long Term												
Full Simulation Period[b]	0.0	0.0	0.2	0.1	0.0	0.0	-0.1	0.0	-0.2	-0.2	-0.2	0.5
Water Year Types[c]												
Wet (32%)	-0.1	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.5	1.1
Above Normal (16%)	-0.2	-0.3	0.1	0.2	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	0.5
Below Normal (13%)	0.1	0.1	0.3	0.3	0.0	0.0	-0.3	0.1	-1.6	-0.3	-0.6	0.2
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	-0.2	-0.3	0.1	0.0
Critical (15%)	0.1	0.2	0.1	0.1	0.0	0.0	-0.2	-0.2	0.5	0.1	-0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-2. American River at Watt Avenue, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	49	50	56	63	68	72	73	73	71
20%	66	58	52	48	50	55	60	66	69	70	72	70
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	64	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	68	68
60%	64	57	49	46	47	50	56	61	64	68	68	68
70%	63	57	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	66	66	66
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	54	48	46	47	50	55	59	63	67	66	67
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	57	51	47	48	52	59	64	67	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	55	61	66	71	74	73	71

Alternative 3 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.2	0.0	0.1	0.4	0.1	0.0	0.1	0.3	-0.4	-0.2	0.2	0.2
0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-0.2	-1.1	0.1	-0.3	0.0
0.3	0.1	0.0	0.4	0.2	0.0	0.0	0.1	0.2	-0.4	-0.1	0.1	0.0
0.4	0.0	0.0	-0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.2
0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	0.2
0.6	-0.2	-0.1	0.2	0.1	0.1	0.0	0.0	0.0	-0.3	0.0	-0.1	0.4
0.7	0.1	0.1	0.3	0.2	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	0.9
0.8	-0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.6	0.8
0.9	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	-0.1	0.8
Long Term												
Full Simulation Period[b]	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	-0.1	0.0	-0.2	0.4
Water Year Types[c]												
Wet (32%)	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	0.1	-0.4	1.0
Above Normal (16%)	-0.1	-0.2	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	0.3	0.6
Below Normal (13%)	0.1	0.3	0.4	0.3	0.1	0.0	-0.1	0.1	-0.5	-0.1	-0.6	0.1
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.2	-0.1	0.0	-0.1	-0.1
Critical (15%)	0.0	0.1	0.1	0.1	0.0	-0.1	0.0	-0.2	0.3	0.0	0.1	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-3. American River at Watt Avenue, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	68	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	67
70%	63	56	48	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	66	66	65
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	72

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.2	-0.1	0.1	0.2
0.2	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.3	-0.3	-0.3	-0.2	0.2
0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.1	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.2
0.5	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0
0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
0.8	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
0.9	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.2	0.1
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.0	0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0
Above Normal (16%)	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	-0.1	0.1	0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	-0.2	0.0	0.0
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	-0.3	-0.5	-0.1	0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-4. American River at Watt Avenue, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	69	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	68	68	67
70%	63	56	49	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	67	66	65
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	71

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.2	0.0	-0.2	-0.4	-0.1	0.1	0.2	-0.3	1.9	-0.1	0.4	-0.1
0.2	0.2	0.1	0.0	-0.1	0.0	0.1	0.2	0.3	0.9	0.6	0.2	-0.3
0.3	0.0	0.0	-0.3	-0.3	0.0	-0.1	0.1	0.0	0.3	0.2	0.2	-0.1
0.4	-0.1	0.0	0.1	-0.2	0.0	0.0	0.0	0.0	0.2	0.1	0.2	-0.4
0.5	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	-0.2
0.6	0.1	0.0	-0.2	0.0	-0.1	0.0	0.0	-0.1	0.1	0.2	0.3	-0.4
0.7	-0.1	0.0	-0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.3	-0.8
0.8	0.1	0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	-0.8
0.9	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	-1.4
Long Term												
Full Simulation Period[b]	0.0	0.0	-0.2	-0.1	0.0	0.0	0.1	0.0	0.2	0.2	0.2	-0.5
Water Year Types[c]												
Wet (32%)	0.1	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5	-1.1
Above Normal (16%)	0.2	0.3	-0.1	-0.2	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	-0.5
Below Normal (13%)	-0.1	-0.1	-0.3	-0.3	0.0	0.0	0.3	-0.1	1.6	0.3	0.6	-0.2
Dry (24%)	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.2	0.3	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.1	-0.1	0.0	0.0	0.2	0.2	-0.5	-0.1	0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-5. American River at Watt Avenue, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	49	50	56	63	68	72	73	73	71
20%	66	58	52	48	50	55	60	66	69	70	72	70
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	64	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	68	68
60%	64	57	49	46	47	50	56	61	64	68	68	68
70%	63	57	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	66	66	66
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	54	48	46	47	50	55	59	63	67	66	67
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	57	51	47	48	52	59	64	67	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	55	61	66	71	74	73	71

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	0.0	-0.1	0.0	0.0	0.1	0.4	0.0	1.5	-0.2	0.6	0.0
0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.1	-0.3	0.7	-0.1	-0.3
0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.2	-0.1	0.0	0.3	-0.1
0.4	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	-0.2
0.5	-0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
0.6	0.0	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	0.2	0.2	0.0
0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.1
0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.2	0.0
0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.1	-0.5
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.1	-0.1
Above Normal (16%)	0.2	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	0.1
Below Normal (13%)	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.1	1.0	0.1	0.0	-0.1
Dry (24%)	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-0.2	-0.1
Critical (15%)	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.1	0.0	-0.2	-0.1	0.2	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-6. American River at Watt Avenue, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	49	50	56	62	68	71	73	73	71
20%	66	58	52	48	49	55	60	66	70	69	72	71
30%	65	58	51	48	49	53	59	65	68	69	70	69
40%	65	57	50	47	48	52	58	64	67	68	69	69
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	68
70%	63	56	49	46	47	50	55	60	64	67	67	67
80%	63	56	48	45	46	50	54	59	63	67	66	67
90%	61	56	47	45	46	49	53	57	62	67	65	66
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	66	67
Above Normal (16%)	64	57	50	47	47	50	56	62	66	67	68	68
Below Normal (13%)	63	56	51	47	48	52	59	64	66	68	69	69
Dry (24%)	65	57	50	47	49	53	59	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	66	71	74	72	71

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	53	48	50	56	63	68	73	73	73	71
20%	66	58	52	48	50	55	60	67	70	70	72	70
30%	65	58	51	47	49	53	59	65	68	69	70	69
40%	64	57	51	47	48	52	58	64	67	68	69	68
50%	64	57	50	47	48	51	57	62	66	68	69	68
60%	64	57	49	46	47	50	56	61	65	67	68	67
70%	63	56	48	46	47	50	55	60	64	67	68	66
80%	63	56	48	45	46	50	54	59	63	67	67	66
90%	61	56	47	45	46	49	53	57	62	66	66	65
Long Term												
Full Simulation Period[b]	64	57	50	47	48	52	57	63	66	69	69	68
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	50	55	59	63	67	67	66
Above Normal (16%)	65	57	50	47	47	50	56	62	66	67	68	67
Below Normal (13%)	63	56	50	47	48	52	59	64	68	68	70	69
Dry (24%)	64	57	50	47	49	53	58	64	68	69	70	69
Critical (15%)	66	58	50	47	51	56	61	67	70	74	72	72

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.2	0.0	-0.2	-0.4	-0.1	0.2	0.3	0.2	2.1	-0.2	0.5	0.0
0.2	0.3	0.0	0.1	-0.1	0.0	0.1	0.3	0.6	0.6	0.3	0.0	-0.1
0.3	0.1	-0.1	-0.3	-0.3	0.0	-0.1	0.1	0.0	0.0	0.0	0.1	-0.2
0.4	-0.2	0.0	0.1	-0.2	-0.1	0.0	0.0	0.0	0.3	0.0	0.2	-0.6
0.5	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	-0.2
0.6	-0.1	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.2	0.1	-0.4
0.7	-0.1	0.0	-0.3	-0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.2	-0.8
0.8	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	-0.8
0.9	0.4	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.2	0.4	-1.3
Long Term												
Full Simulation Period[b]	0.0	0.0	-0.2	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	0.3	-0.4
Water Year Types[c]												
Wet (32%)	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.6	-1.1
Above Normal (16%)	0.2	0.1	-0.1	-0.2	0.0	0.0	0.0	0.0	0.2	0.2	-0.1	-0.5
Below Normal (13%)	-0.1	-0.1	-0.4	-0.3	-0.1	0.0	0.3	0.0	1.6	0.2	0.7	-0.1
Dry (24%)	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.3	0.1	-0.1	0.0
Critical (15%)	-0.1	-0.2	-0.2	-0.1	0.0	0.1	0.3	0.2	-0.7	-0.6	0.1	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

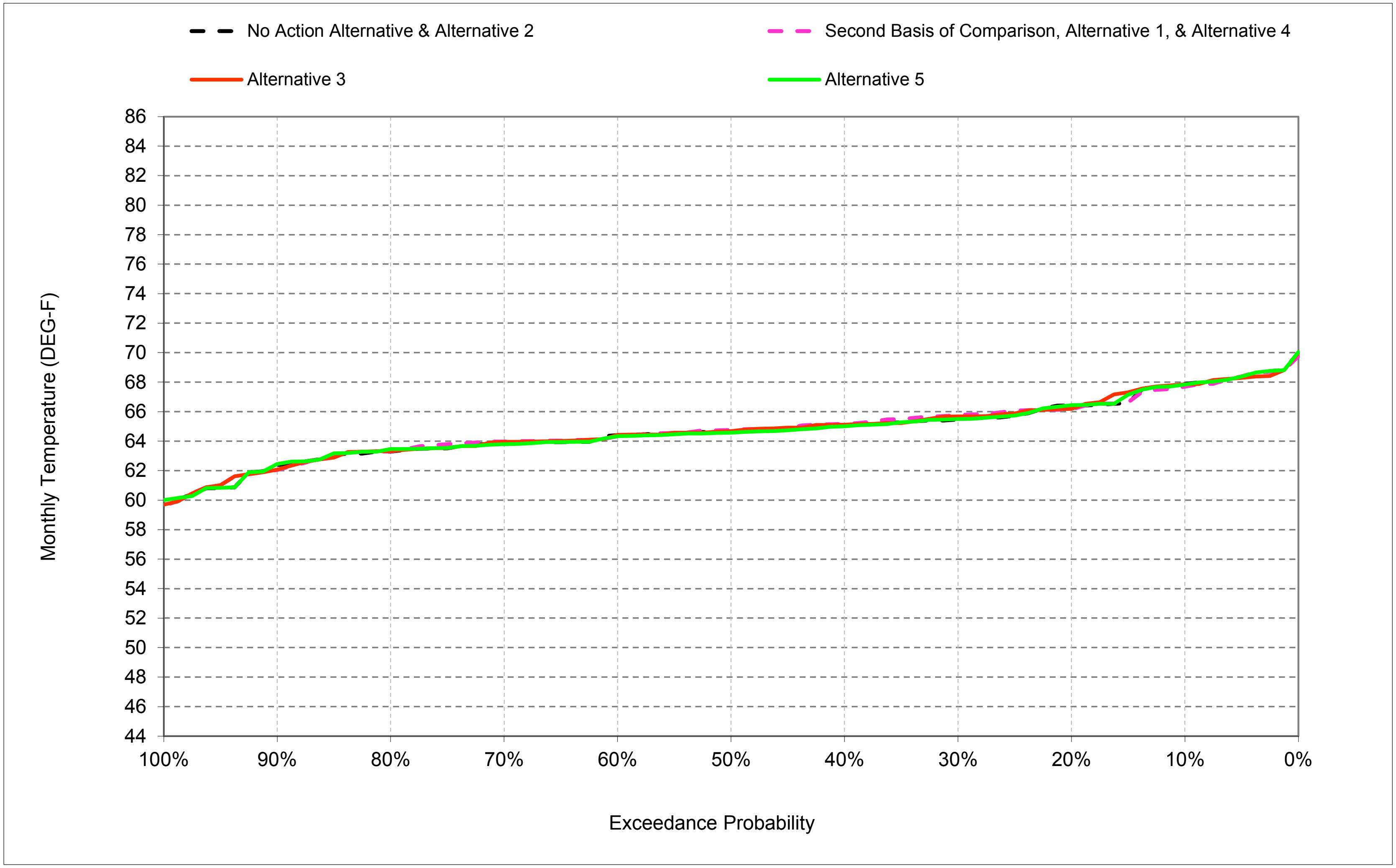
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

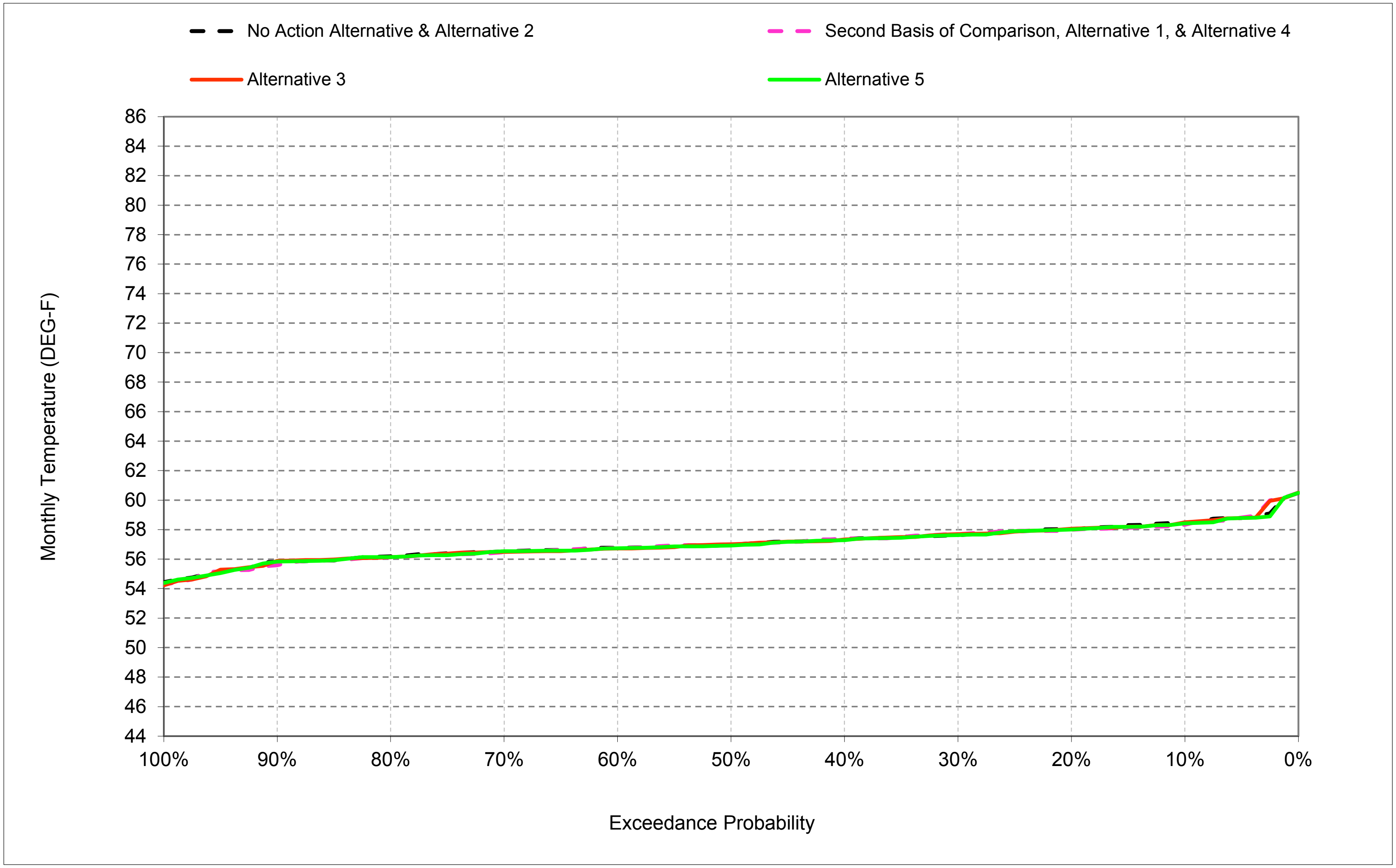
B.14. American River at Mouth Temperature

Figure B-14-1. American River at the Mouth, October



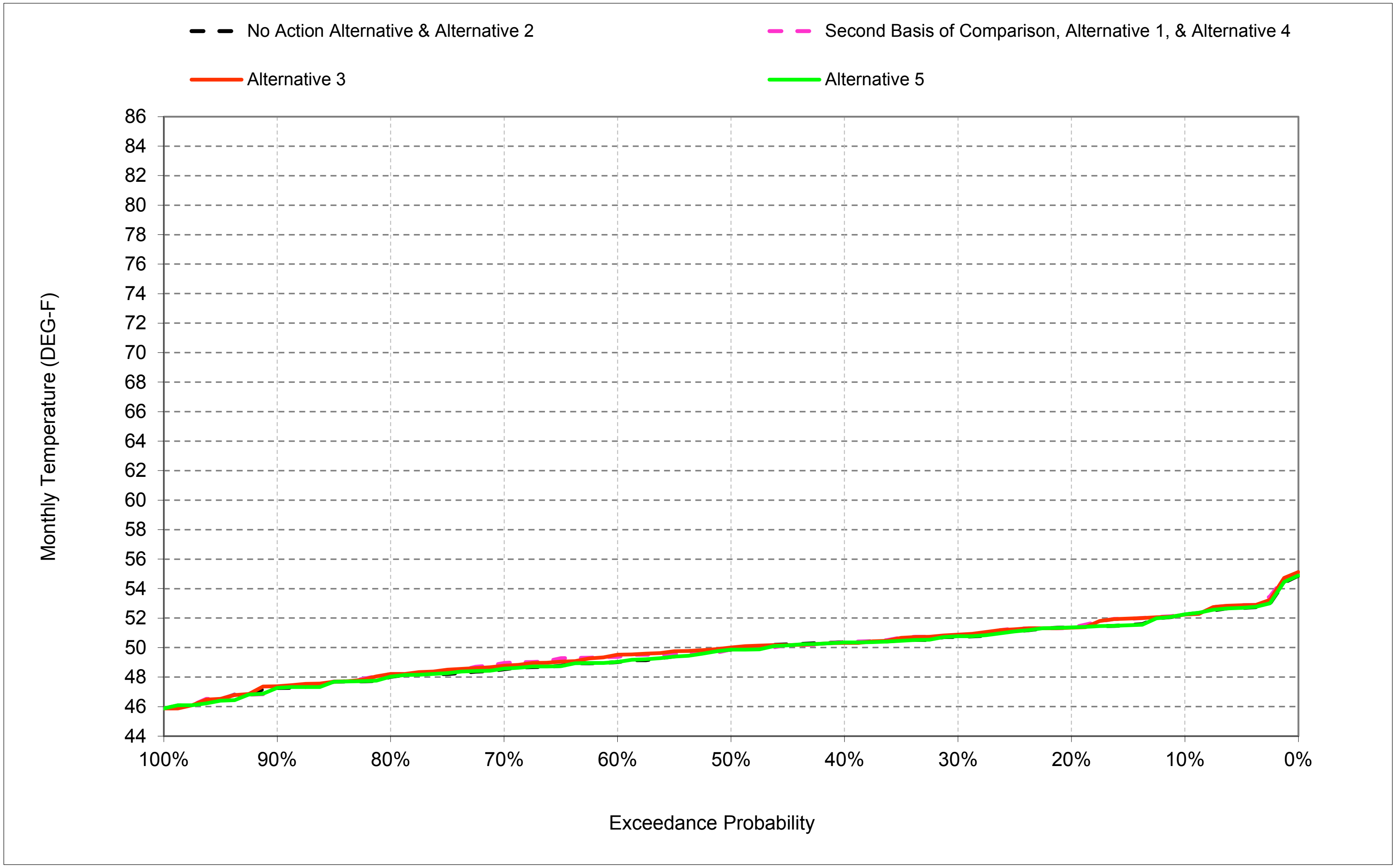
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-2. American River at the Mouth, November



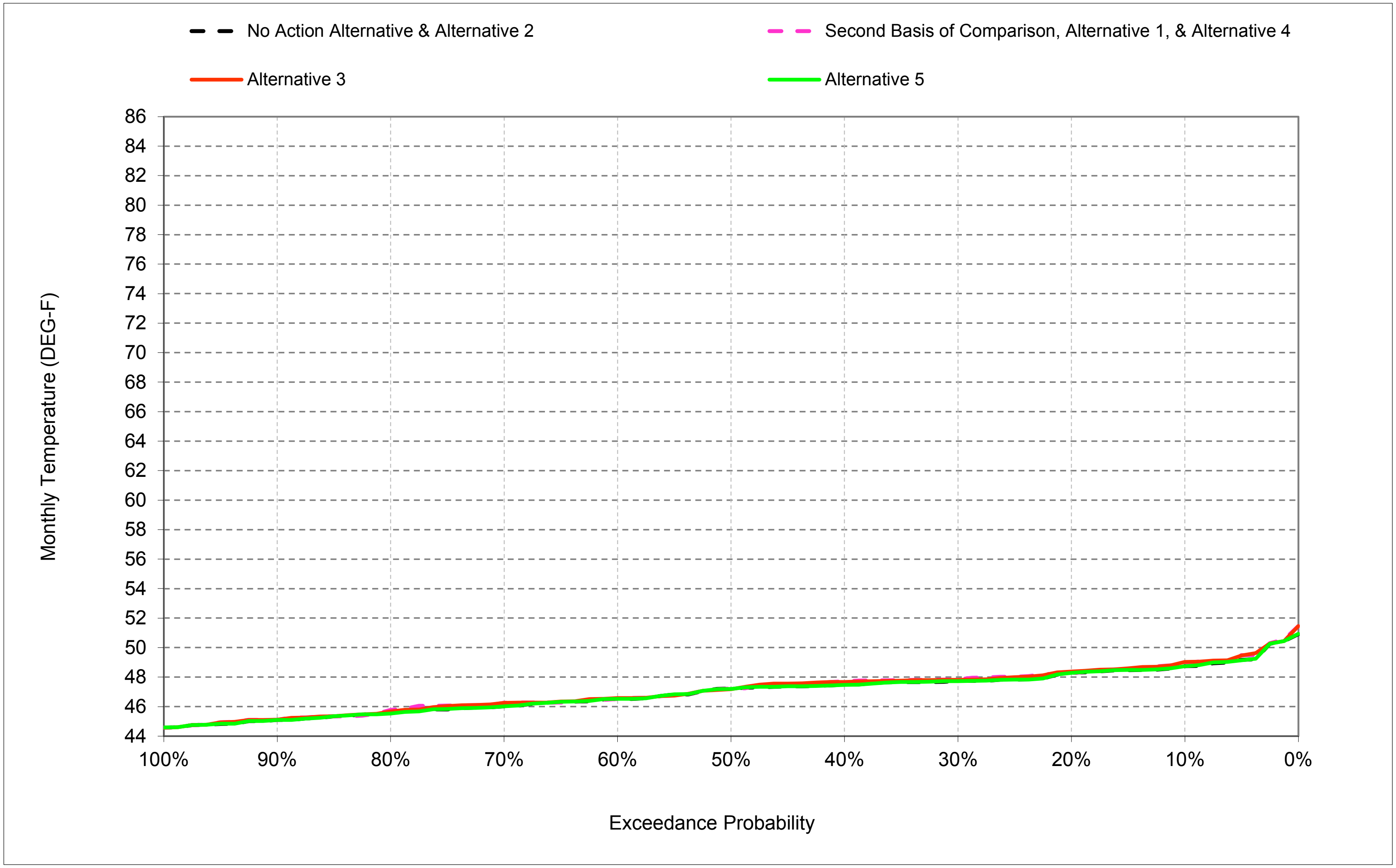
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-3. American River at the Mouth, December



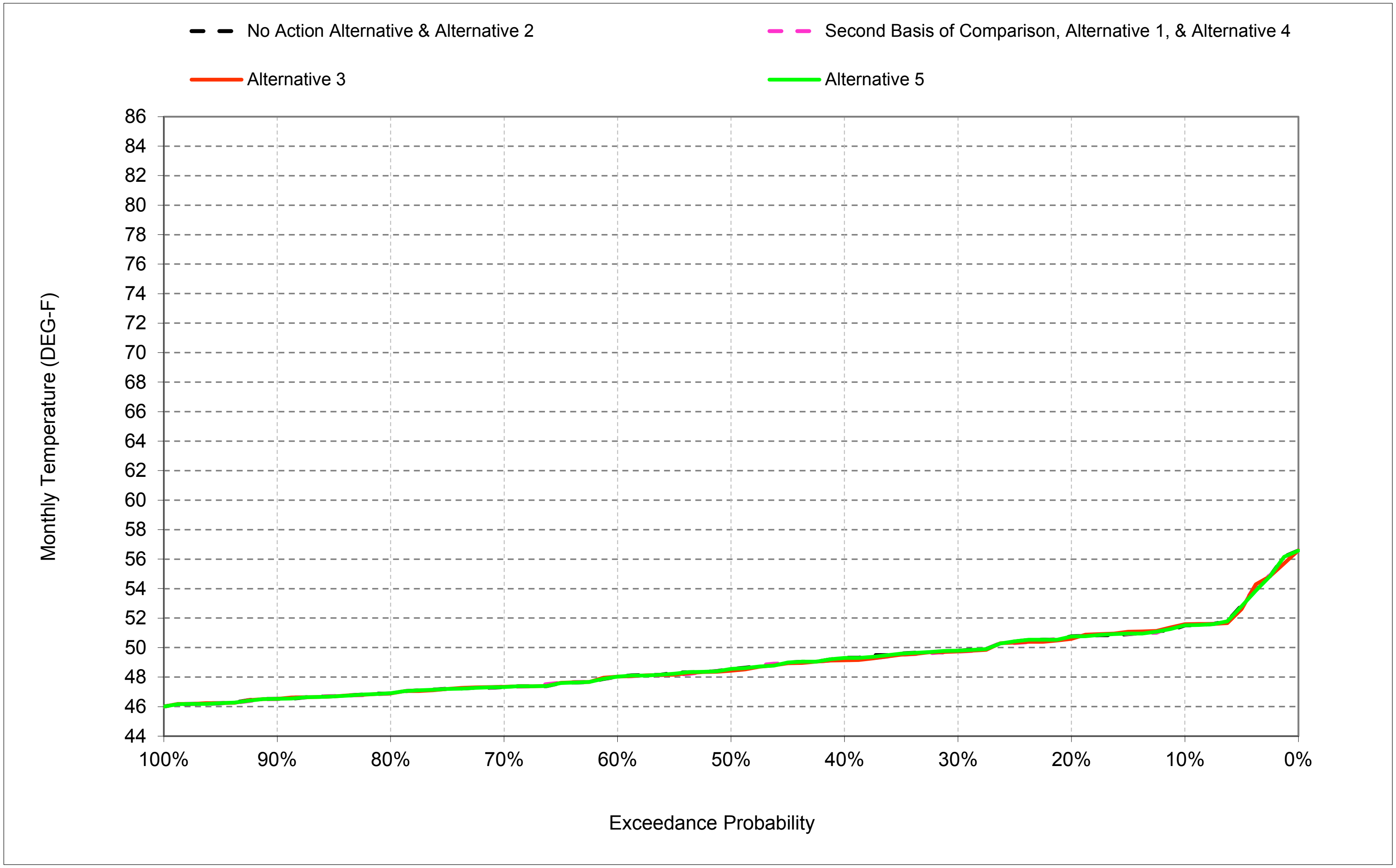
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-4. American River at the Mouth, January



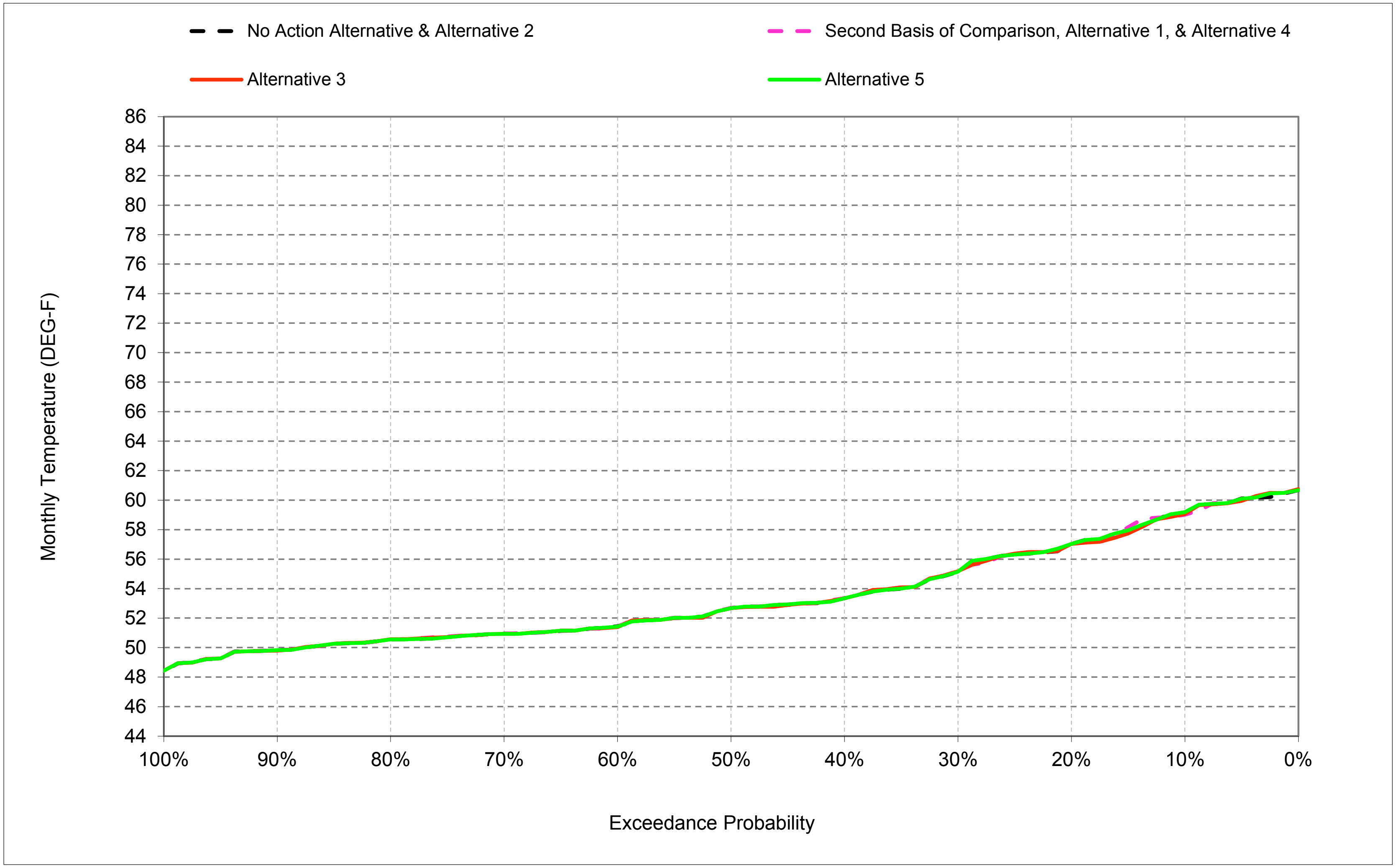
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-5. American River at the Mouth, February



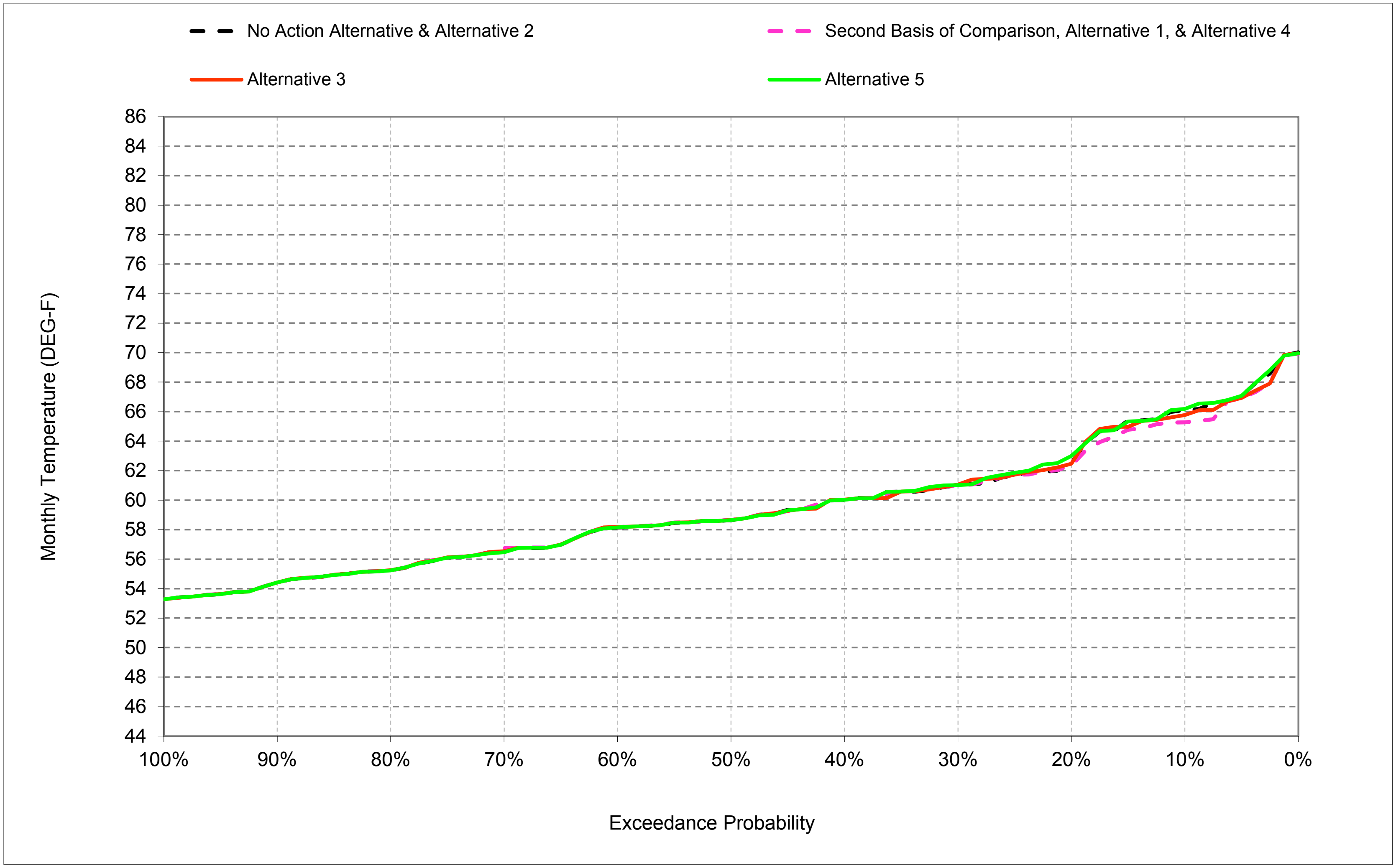
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-6. American River at the Mouth, March



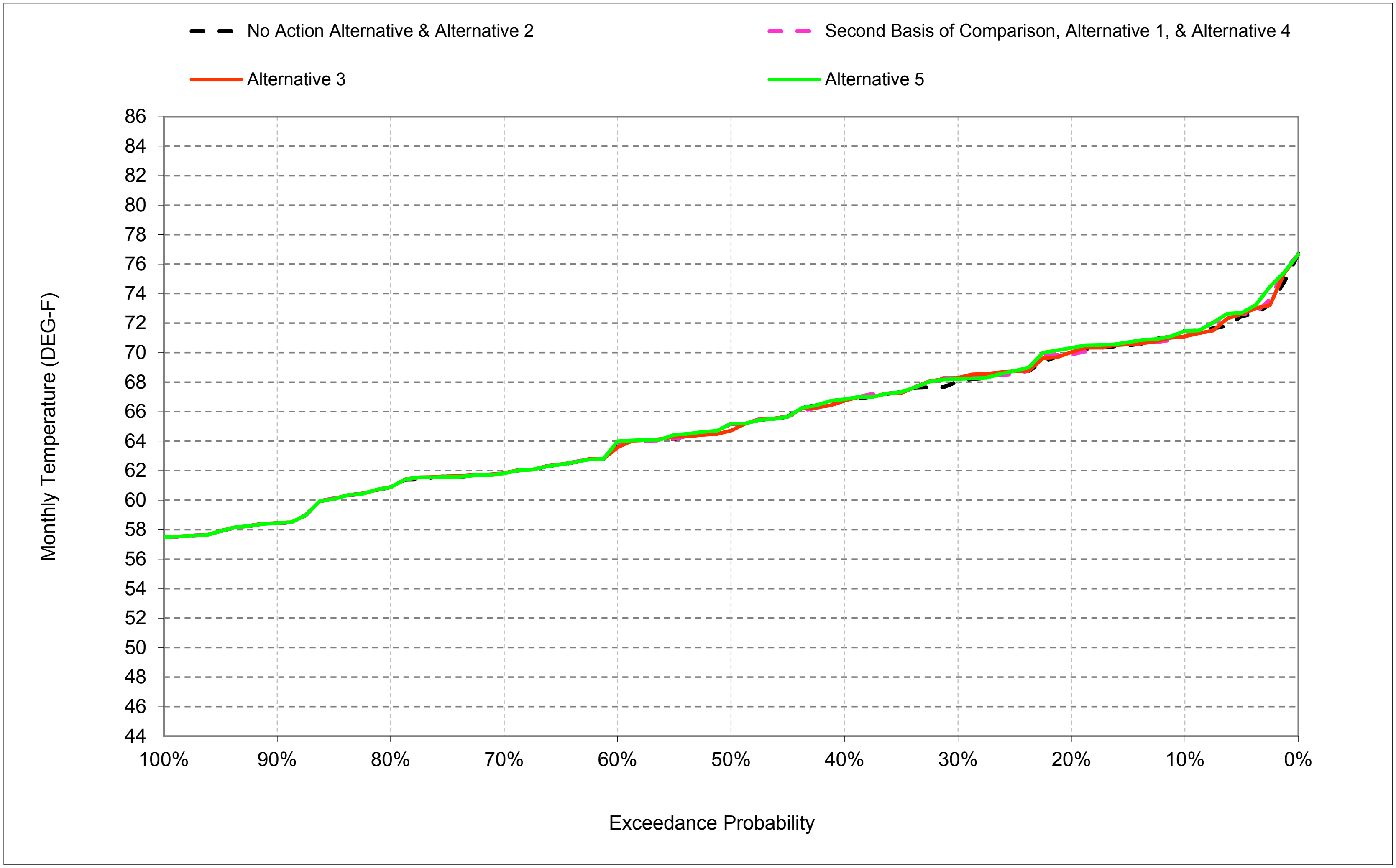
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-7. American River at the Mouth, April



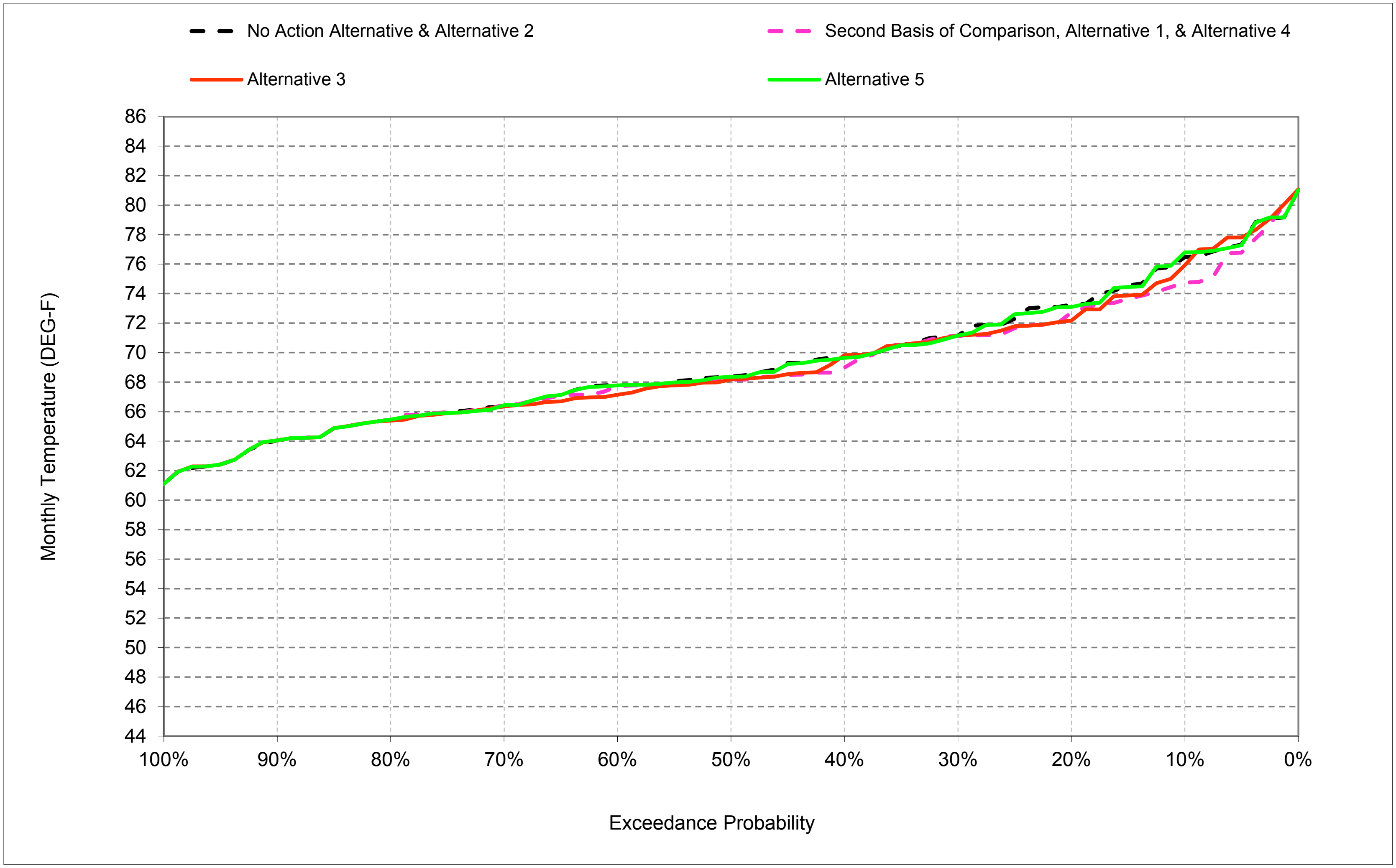
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-8. American River at the Mouth, May



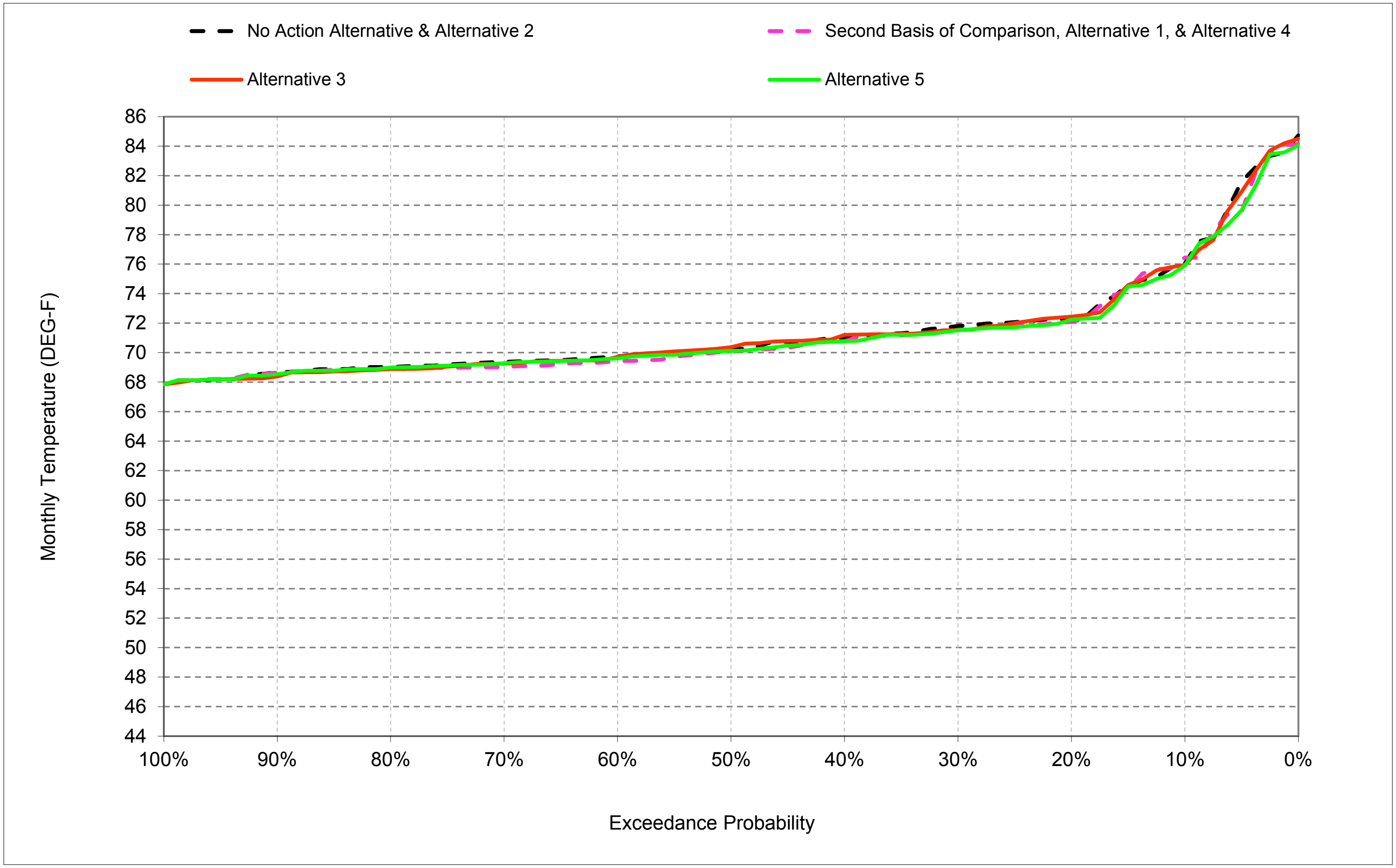
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-9. American River at the Mouth, June



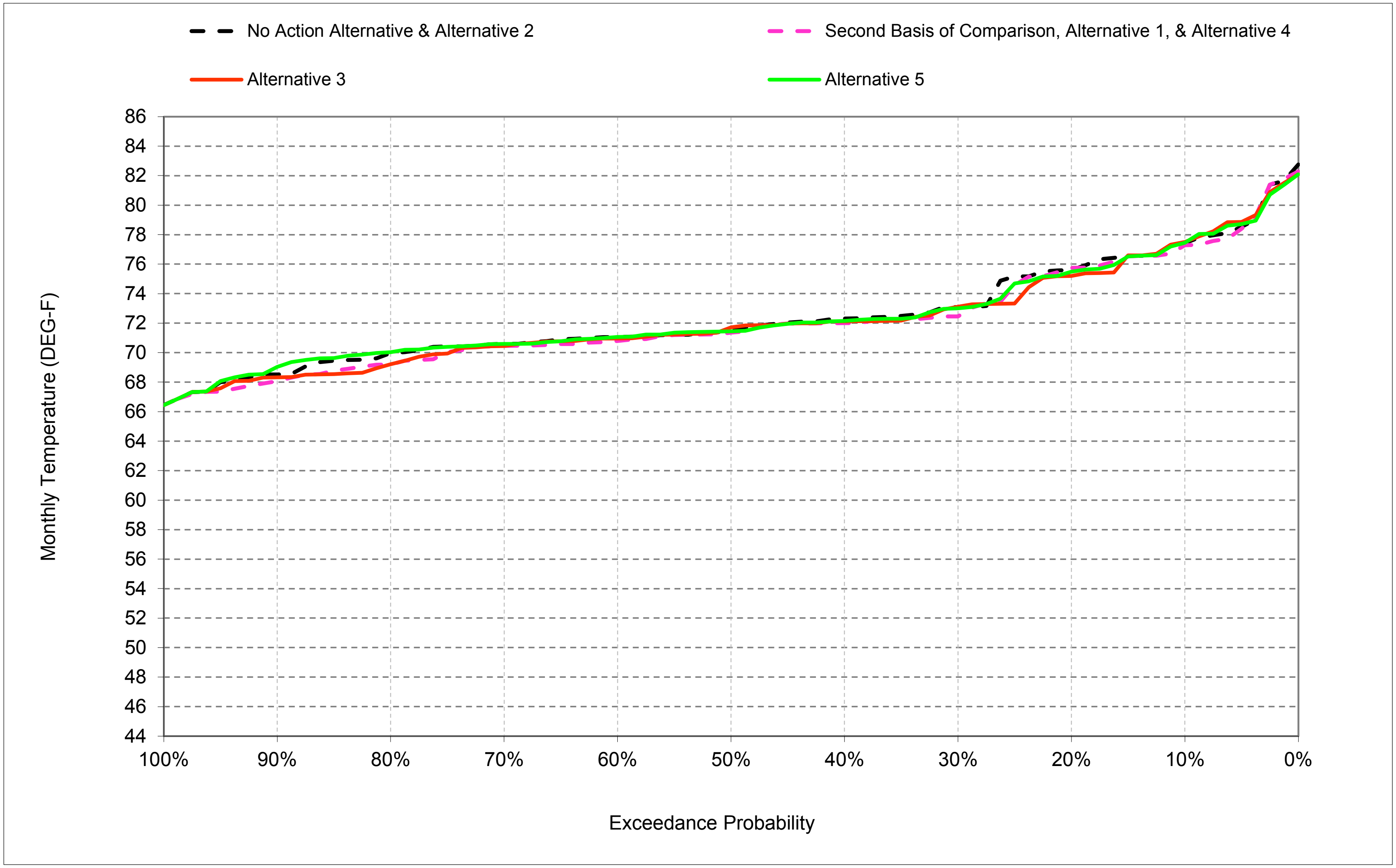
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-10. American River at the Mouth, July



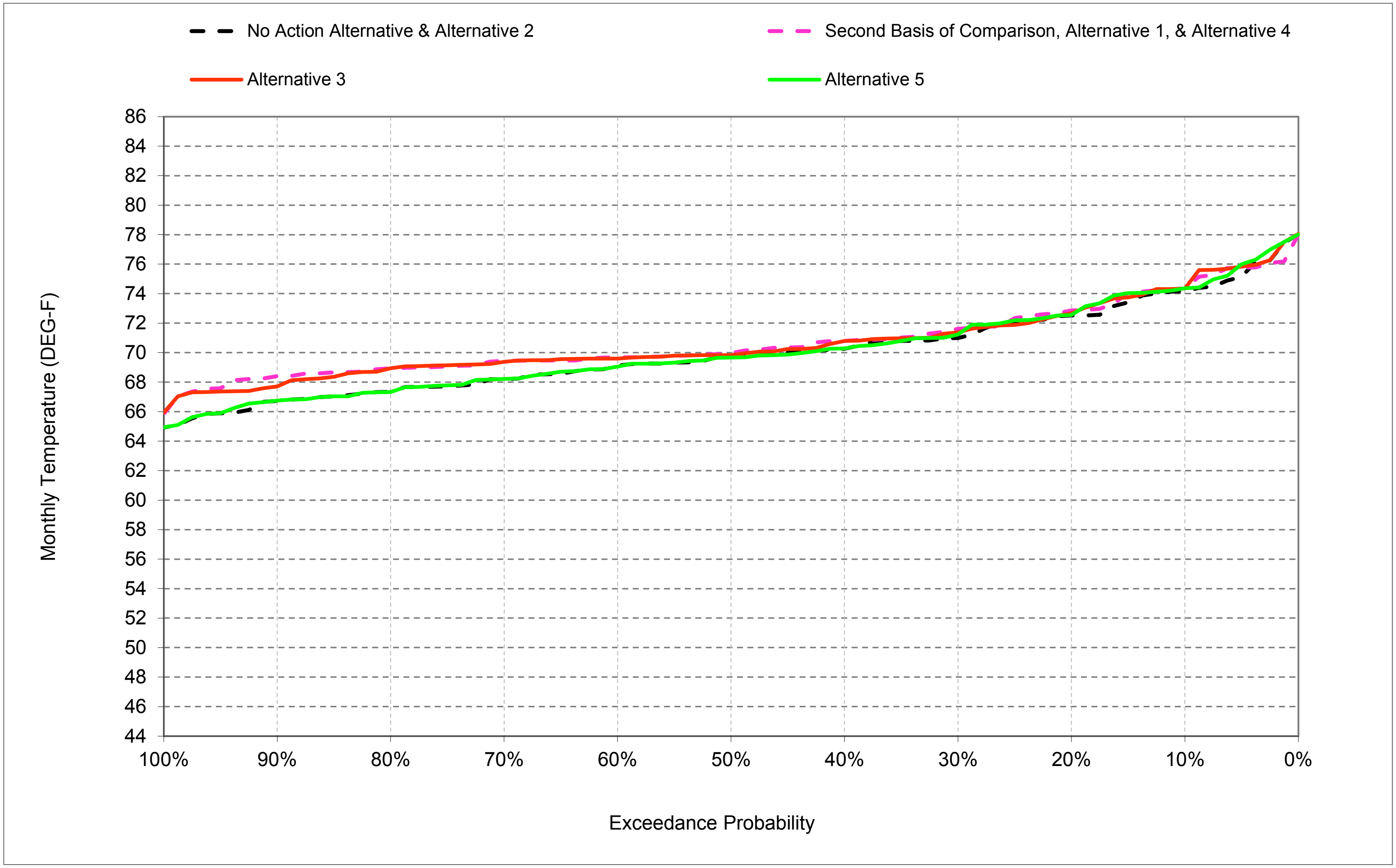
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-11. American River at the Mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-12. American River at the Mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-1. American River at the Mouth, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.2	-0.2	0.0	0.2	0.0	-0.1	-0.8	-0.4	-1.7	0.4	-0.2	0.2
0.2	-0.3	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	-0.7	-0.2	0.1	0.3
0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.0	-0.3	-0.6	0.6
0.4	0.1	0.0	0.0	0.2	-0.1	0.0	0.0	-0.2	-0.8	-0.3	-0.3	0.5
0.5	0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	-0.2	-0.2	-0.1	0.2
0.6	-0.1	0.0	0.4	0.0	0.0	-0.1	0.1	0.1	-0.3	-0.3	-0.3	0.7
0.7	0.1	0.0	0.4	0.2	0.0	0.0	0.1	0.0	0.0	-0.3	-0.1	1.2
0.8	0.0	-0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.5	1.6
0.9	-0.3	-0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.6	1.6
Long Term												
Full Simulation Period[b]	0.1	0.0	0.1	0.1	0.0	0.0	-0.1	0.0	-0.3	-0.2	-0.3	0.7
Water Year Types[c]												
Wet (32%)	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.6	1.7
Above Normal (16%)	-0.1	-0.2	0.1	0.2	-0.1	0.0	0.0	0.0	-0.5	-0.2	0.1	0.8
Below Normal (13%)	0.2	0.1	0.3	0.2	-0.1	0.0	-0.3	0.1	-2.0	-0.4	-0.5	0.1
Dry (24%)	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	-0.2	-0.4	0.1	0.0
Critical (15%)	0.0	0.2	0.1	0.1	0.0	0.0	-0.4	-0.1	0.6	0.1	-0.3	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-2. American River at the Mouth, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	59	52	49	52	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	72	72	75	73
30%	66	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	48	49	53	60	67	70	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	72	70
60%	64	57	50	47	48	51	58	63	67	70	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	68	68	68
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	65	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	57	50	48	49	54	61	67	70	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	71	72	73	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	0.0	0.0	0.3	0.1	-0.1	-0.3	-0.3	-0.6	-0.1	0.1	0.2
0.2	-0.2	0.0	0.0	0.1	-0.2	0.0	0.0	0.0	-1.1	0.1	-0.4	0.1
0.3	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.3	0.0	-0.2	0.0	0.4
0.4	0.0	0.0	-0.1	0.2	-0.1	0.0	0.0	-0.2	-0.1	0.1	-0.2	0.5
0.5	0.0	0.0	0.1	-0.1	-0.1	0.0	0.0	-0.3	-0.3	0.1	0.1	0.2
0.6	0.0	-0.1	0.5	0.0	0.0	-0.1	0.1	0.0	-0.7	-0.1	-0.1	0.6
0.7	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	1.1
0.8	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.7	1.4
0.9	-0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	-0.3	-0.2	0.9
Long Term												
Full Simulation Period[b]	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	-0.3	-0.1	-0.2	0.7
Water Year Types[c]												
Wet (32%)	0.0	-0.1	0.2	0.1	0.0	0.0	0.0	0.0	-0.2	0.1	-0.5	1.6
Above Normal (16%)	0.0	-0.1	0.0	0.1	-0.1	0.0	0.0	0.0	-0.6	-0.3	0.3	0.9
Below Normal (13%)	0.2	0.2	0.3	0.3	0.0	0.0	-0.1	-0.1	-0.7	-0.2	-0.8	-0.1
Dry (24%)	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	-0.2	0.0	-0.2	-0.1
Critical (15%)	0.0	0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.4	-0.1	0.1	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-3. American River at the Mouth, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	51	59	66	71	77	76	77	74
20%	66	58	51	48	51	57	63	70	73	72	75	73
30%	65	58	51	48	50	55	61	68	71	71	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	56	62	66	69	71	68
80%	63	56	48	45	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	68	69	67
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	70
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	74	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	65	70	73	77	76	74

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.3	-0.2	0.0	0.2
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	-0.1	-0.1	-0.2	0.0
0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.1	-0.3	-0.1	0.2
0.4	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.2	0.0
0.5	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
0.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0
0.7	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.0	0.0
0.8	0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.3	0.0
0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.1	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.0	0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.2	0.0
Above Normal (16%)	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Below Normal (13%)	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	-0.1	0.1	0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	-0.3	-0.1	0.0
Critical (15%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	0.1	-0.5	-0.4	-0.5	0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-4. American River at the Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	51	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	65	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	57	62	66	69	71	68
80%	63	56	48	46	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	69	69	67
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	72	72	70
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	73	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	73	78	76	74

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.2	0.2	0.0	-0.2	0.0	0.1	0.8	0.4	1.7	-0.4	0.2	-0.2
0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.7	0.2	-0.1	-0.3
0.3	-0.3	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.4	0.0	0.3	0.6	-0.6
0.4	-0.1	0.0	0.0	-0.2	0.1	0.0	0.0	0.2	0.8	0.3	0.3	-0.5
0.5	-0.1	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.1	-0.2
0.6	0.1	0.0	-0.4	0.0	0.0	0.1	-0.1	-0.1	0.3	0.3	0.3	-0.7
0.7	-0.1	0.0	-0.4	-0.2	0.0	0.0	-0.1	0.0	0.0	0.3	0.1	-1.2
0.8	0.0	0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	-1.6
0.9	0.3	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.6	-1.6
Long Term												
Full Simulation Period[b]	-0.1	0.0	-0.1	-0.1	0.0	0.0	0.1	0.0	0.3	0.2	0.3	-0.7
Water Year Types[c]												
Wet (32%)	0.0	0.1	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.6	-1.7
Above Normal (16%)	0.1	0.2	-0.1	-0.2	0.1	0.0	0.0	0.0	0.5	0.2	-0.1	-0.8
Below Normal (13%)	-0.2	-0.1	-0.3	-0.2	0.1	0.0	0.3	-0.1	2.0	0.4	0.5	-0.1
Dry (24%)	-0.2	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.2	0.4	-0.1	0.0
Critical (15%)	0.0	-0.2	-0.1	-0.1	0.0	0.0	0.4	0.1	-0.6	-0.1	0.3	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-5. American River at the Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	68	59	52	49	52	59	66	71	76	76	77	74
20%	66	58	51	48	51	57	62	70	72	72	75	73
30%	66	58	51	48	50	55	61	68	71	72	73	71
40%	65	57	50	48	49	53	60	67	70	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	72	70
60%	64	57	50	47	48	51	58	63	67	70	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	68	68	68
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	65	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	57	50	48	49	54	61	67	70	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	71	72	73	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.5	0.0	1.1	-0.4	0.3	0.0
0.2	0.0	0.1	0.0	0.1	-0.1	0.0	0.1	0.1	-0.4	0.4	-0.5	-0.2
0.3	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	-0.2
0.4	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.1	-0.1
0.5	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.3	-0.1	0.3	0.2	-0.1
0.6	0.1	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	-0.5	0.2	0.2	-0.1
0.7	0.0	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	0.2	0.0	-0.1
0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.1
0.9	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3	0.4	-0.7
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.2	0.2	-0.1
Above Normal (16%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	0.1
Below Normal (13%)	0.0	0.1	0.0	0.0	0.0	0.0	0.2	-0.2	1.3	0.2	-0.2	-0.3
Dry (24%)	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	-0.3	-0.1
Critical (15%)	0.0	-0.1	-0.1	0.0	0.0	-0.1	0.2	0.0	-0.2	-0.2	0.5	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-6. American River at the Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	52	59	65	71	75	76	77	74
20%	66	58	51	48	51	57	62	70	73	72	76	73
30%	66	58	51	48	50	55	61	68	71	72	72	72
40%	65	57	50	48	49	53	60	67	69	71	72	71
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	46	48	51	58	63	67	69	71	70
70%	64	56	49	46	47	51	57	62	66	69	70	69
80%	63	56	48	46	47	50	55	61	65	69	69	69
90%	62	56	47	45	47	50	54	58	64	69	68	68
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	71
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	69	69
Above Normal (16%)	65	57	50	47	48	51	58	65	68	69	71	70
Below Normal (13%)	64	56	50	48	49	54	61	67	69	70	73	71
Dry (24%)	65	57	50	48	50	55	61	67	70	72	74	72
Critical (15%)	66	58	50	48	52	58	64	69	74	78	76	74

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	68	58	52	49	51	59	66	71	77	76	77	74
20%	66	58	51	48	51	57	63	70	73	72	75	73
30%	65	58	51	48	50	55	61	68	71	71	73	71
40%	65	57	50	47	49	53	60	67	70	71	72	70
50%	65	57	50	47	48	53	59	65	68	70	71	70
60%	64	57	49	47	48	51	58	63	68	70	71	69
70%	64	57	49	46	47	51	56	62	66	69	71	68
80%	63	56	48	45	47	50	55	61	65	69	70	67
90%	62	56	47	45	47	50	54	58	64	68	69	67
Long Term												
Full Simulation Period[b]	65	57	50	47	49	53	59	65	69	71	72	70
Water Year Types[c]												
Wet (32%)	61	55	47	46	47	51	56	61	66	70	70	67
Above Normal (16%)	65	57	50	47	48	51	58	65	69	69	71	69
Below Normal (13%)	64	56	50	47	49	54	61	67	71	70	74	71
Dry (24%)	65	57	50	47	50	55	61	67	71	72	74	72
Critical (15%)	66	58	50	48	52	58	65	70	73	77	76	74

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.1	0.1	0.0	-0.2	0.0	0.2	0.9	0.4	2.0	-0.5	0.2	0.0
0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.6	0.4	0.5	0.1	-0.2	-0.3
0.3	-0.3	-0.1	-0.1	-0.1	0.1	0.0	0.0	-0.1	0.0	0.0	0.5	-0.4
0.4	-0.1	-0.1	0.0	-0.2	0.1	0.0	0.0	0.2	0.7	0.0	0.1	-0.5
0.5	-0.2	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	-0.3
0.6	0.0	0.0	-0.3	0.0	0.0	0.0	-0.1	0.0	0.2	0.2	0.3	-0.7
0.7	-0.2	0.1	-0.4	-0.2	0.0	0.0	-0.1	0.0	-0.1	0.2	0.1	-1.2
0.8	0.2	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.8	-1.6
0.9	0.4	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.7	-1.6
Long Term												
Full Simulation Period[b]	-0.1	0.0	-0.2	-0.1	0.0	0.0	0.1	0.1	0.3	0.0	0.2	-0.6
Water Year Types[c]												
Wet (32%)	0.0	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.8	-1.7
Above Normal (16%)	0.1	0.0	-0.1	-0.2	0.1	0.0	0.0	0.0	0.5	0.2	-0.1	-0.8
Below Normal (13%)	-0.2	0.0	-0.4	-0.3	0.0	0.0	0.4	0.0	2.1	0.3	0.6	0.0
Dry (24%)	-0.2	0.0	0.0	-0.1	0.0	0.0	0.0	0.2	0.3	0.1	-0.2	0.0
Critical (15%)	0.0	-0.2	-0.1	-0.1	0.0	0.0	0.6	0.2	-1.1	-0.5	-0.2	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

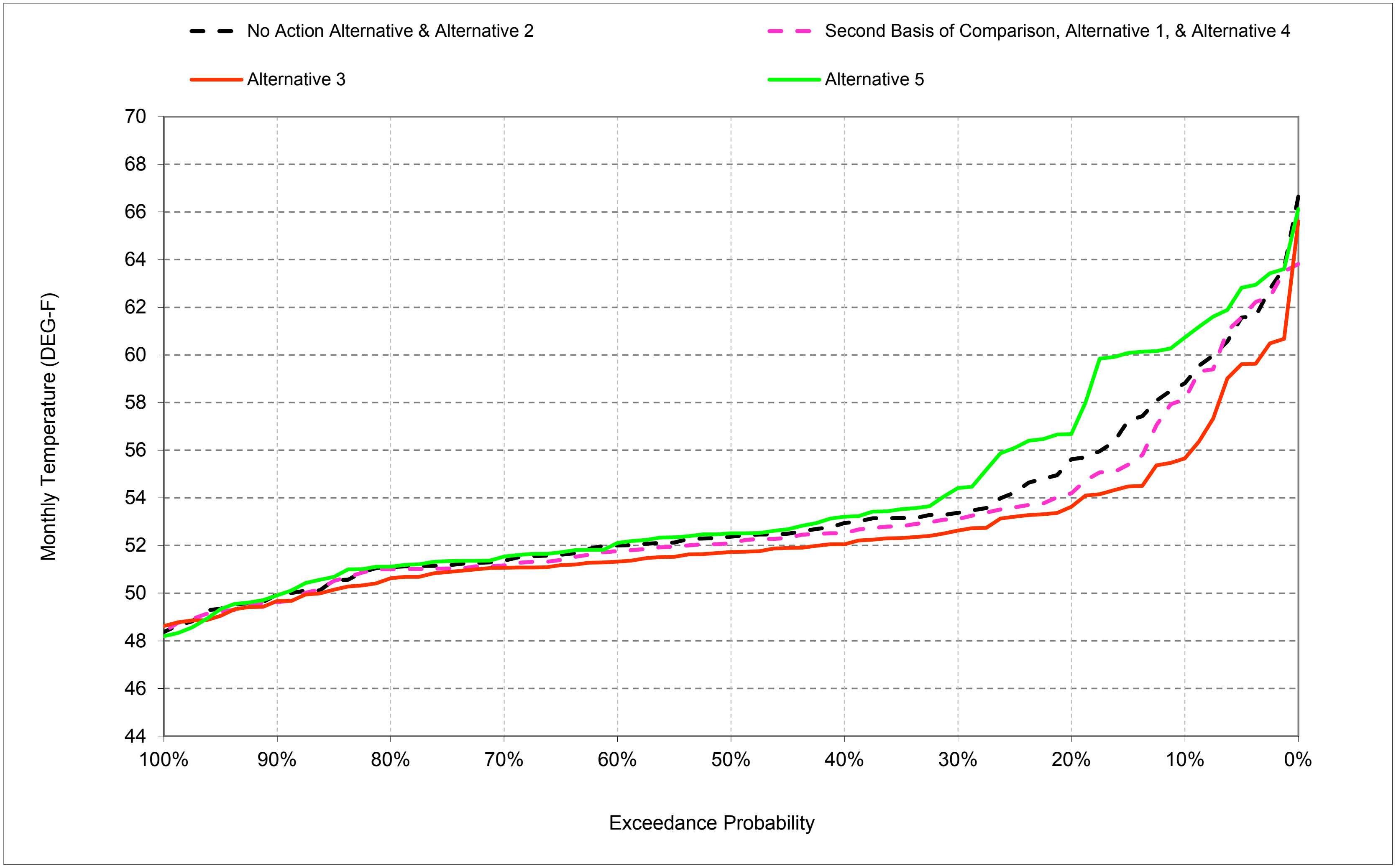
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

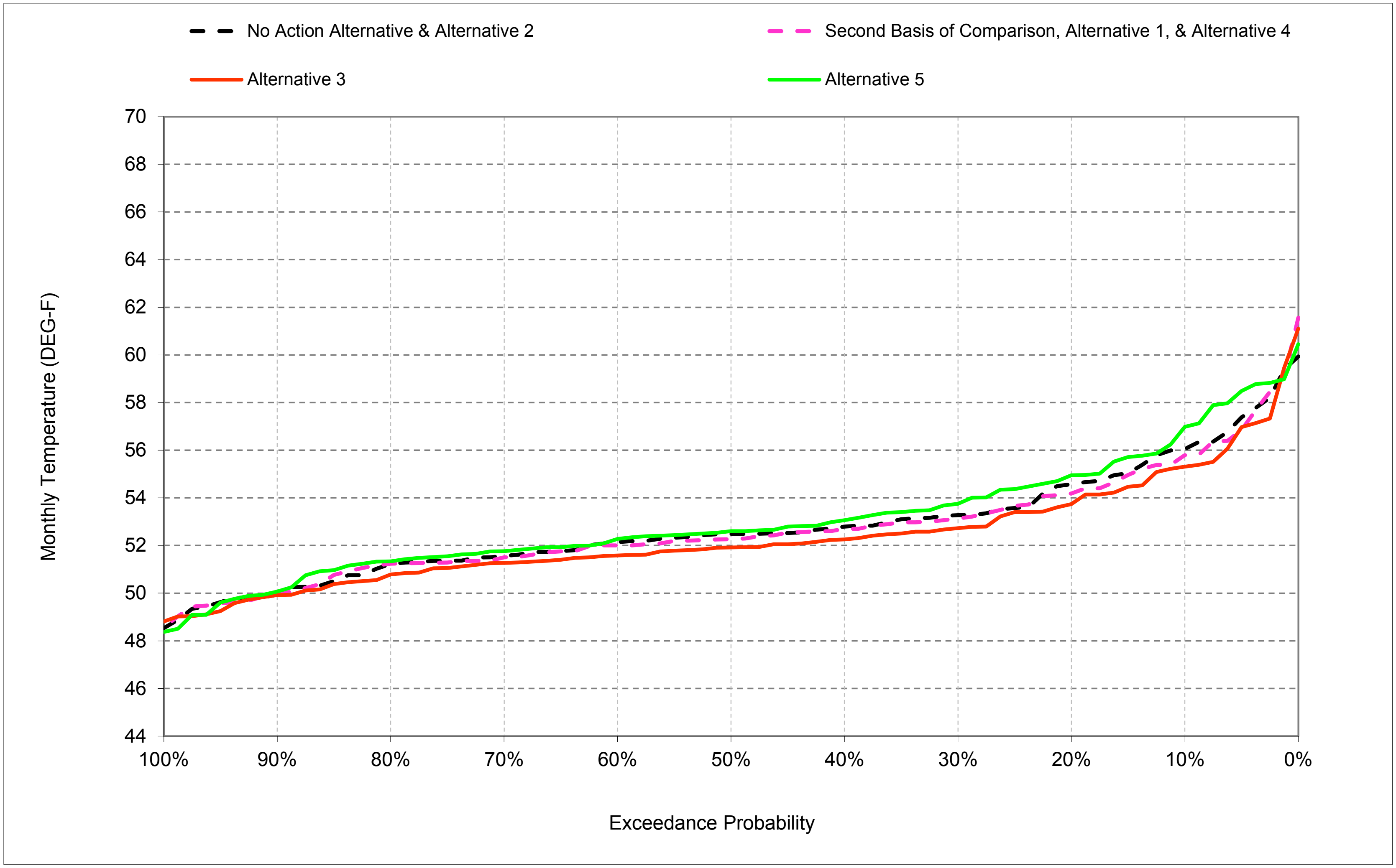
B.15. Stanislaus River below New Melones Temperature

Figure B-15-1. Stanislaus River below New Melones Reservoir, October



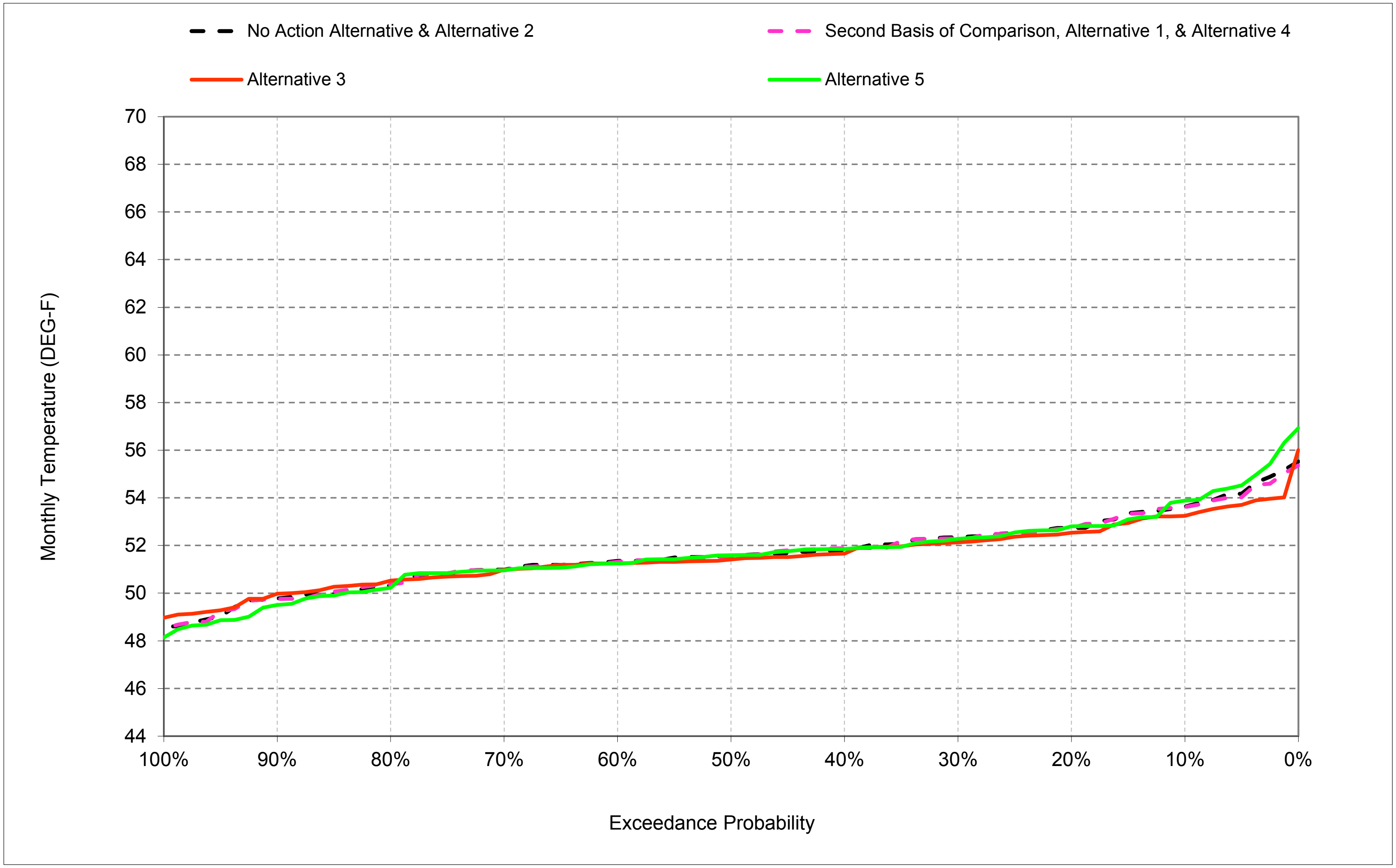
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-2. Stanislaus River below New Melones Reservoir, November



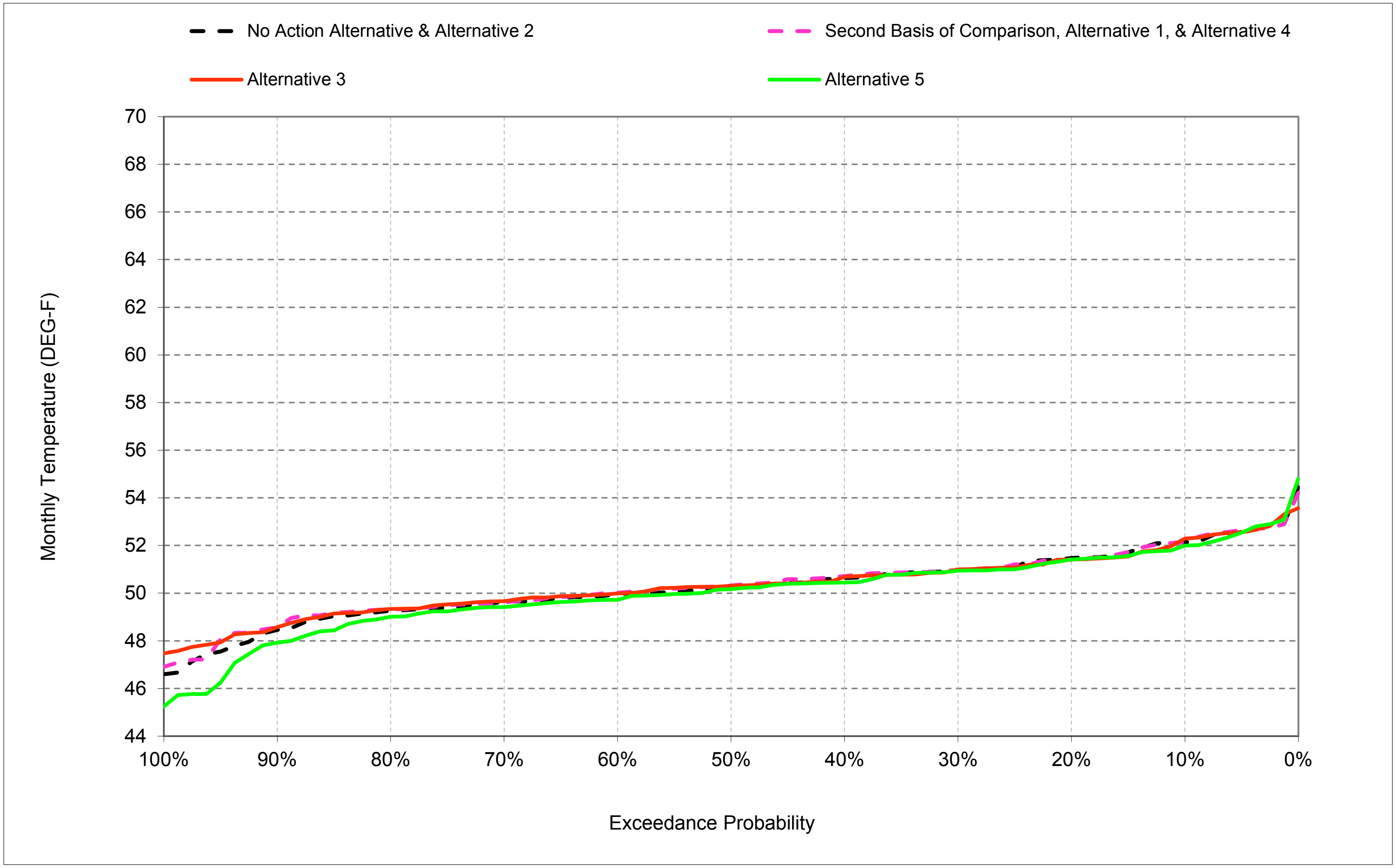
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-3. Stanislaus River below New Melones Reservoir, December



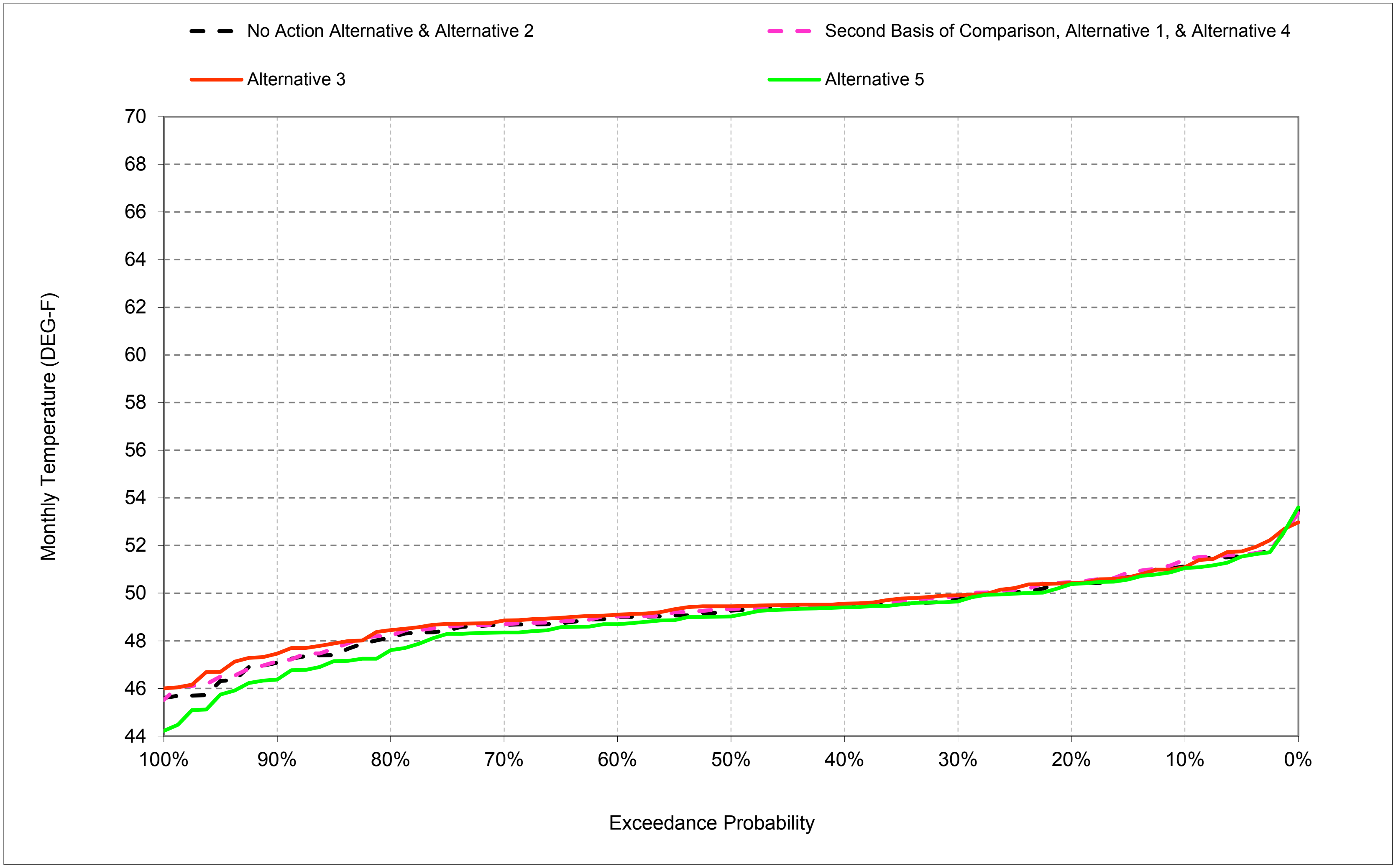
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-4. Stanislaus River below New Melones Reservoir, January



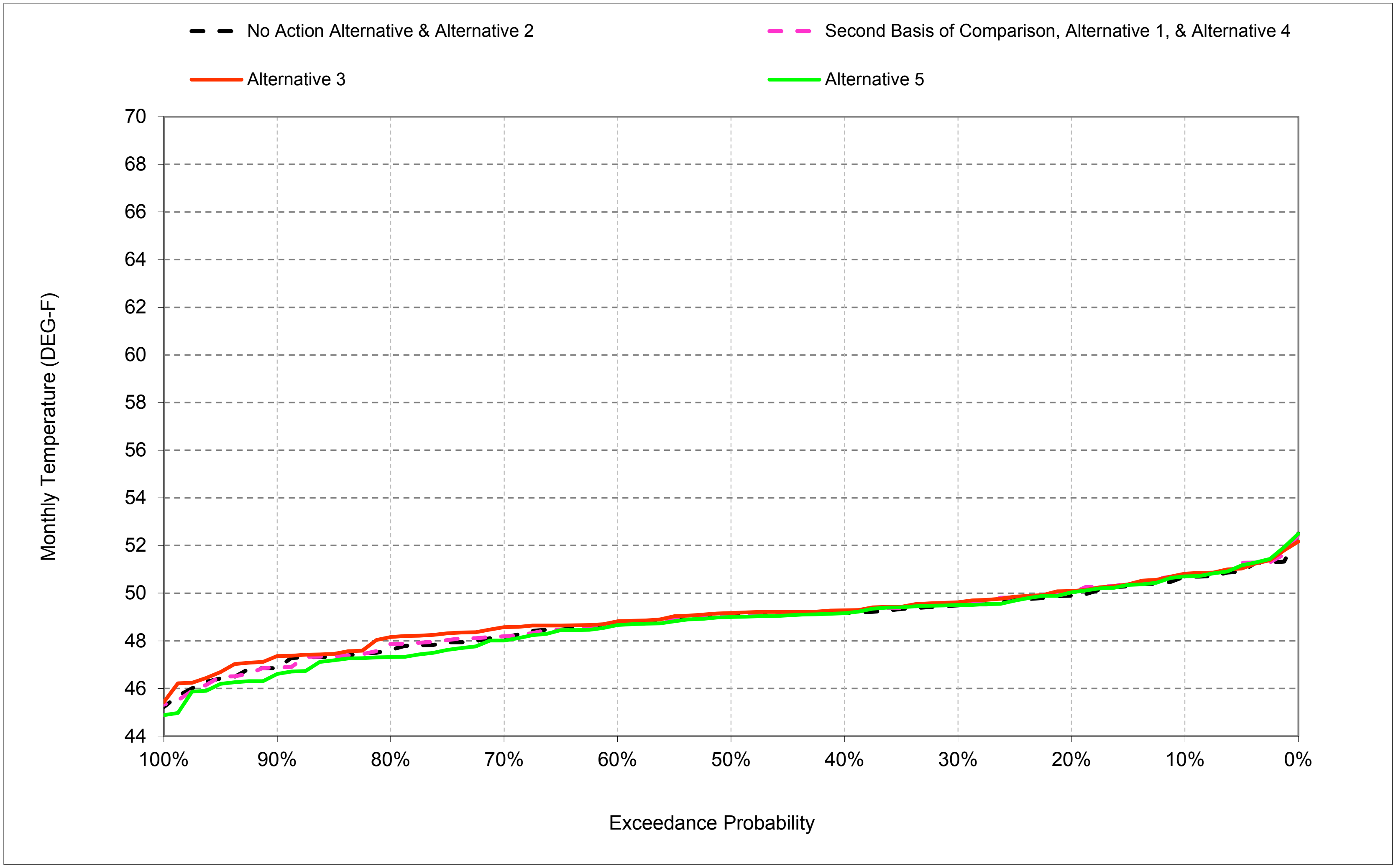
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-5. Stanislaus River below New Melones Reservoir, February



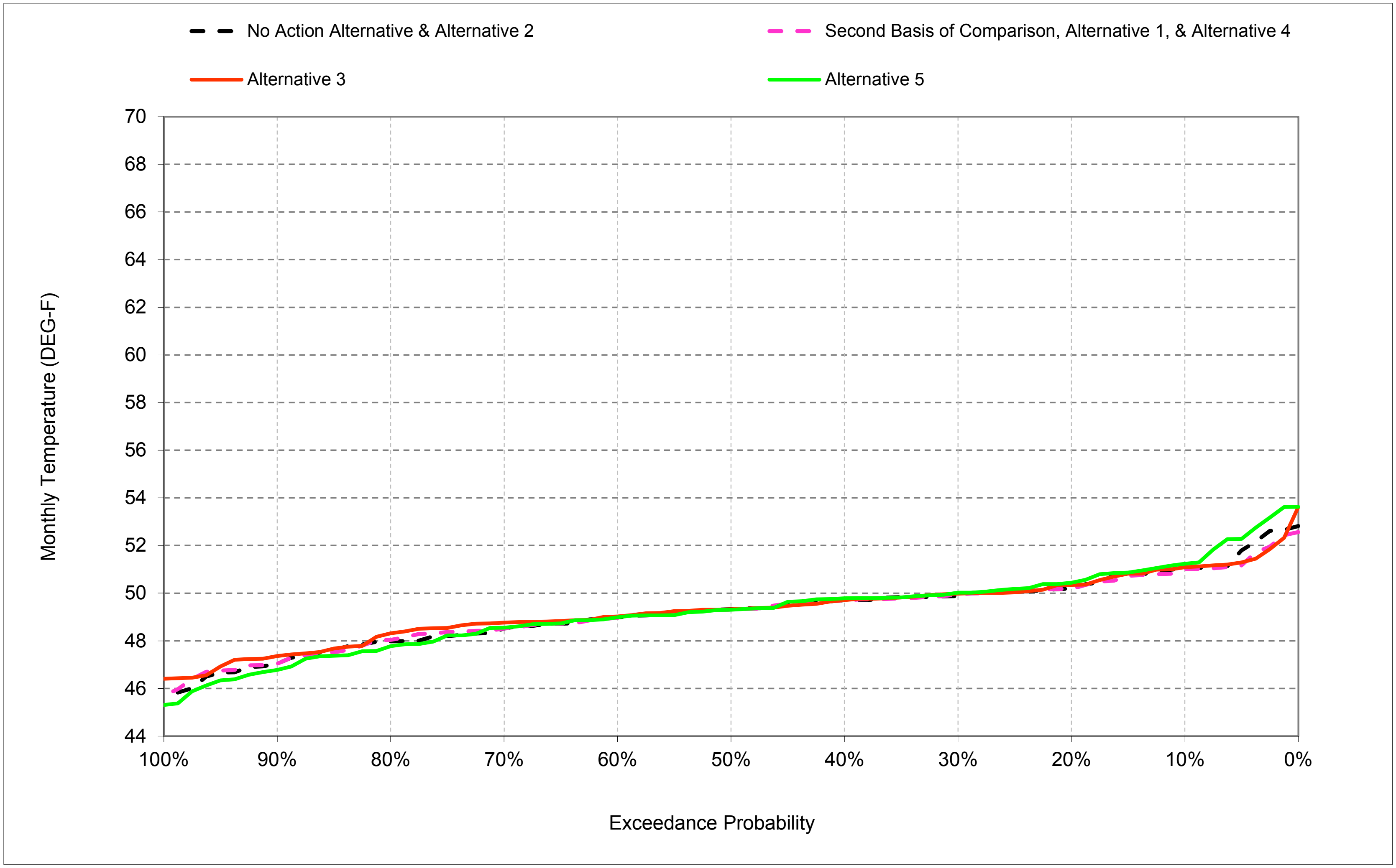
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-6. Stanislaus River below New Melones Reservoir, March



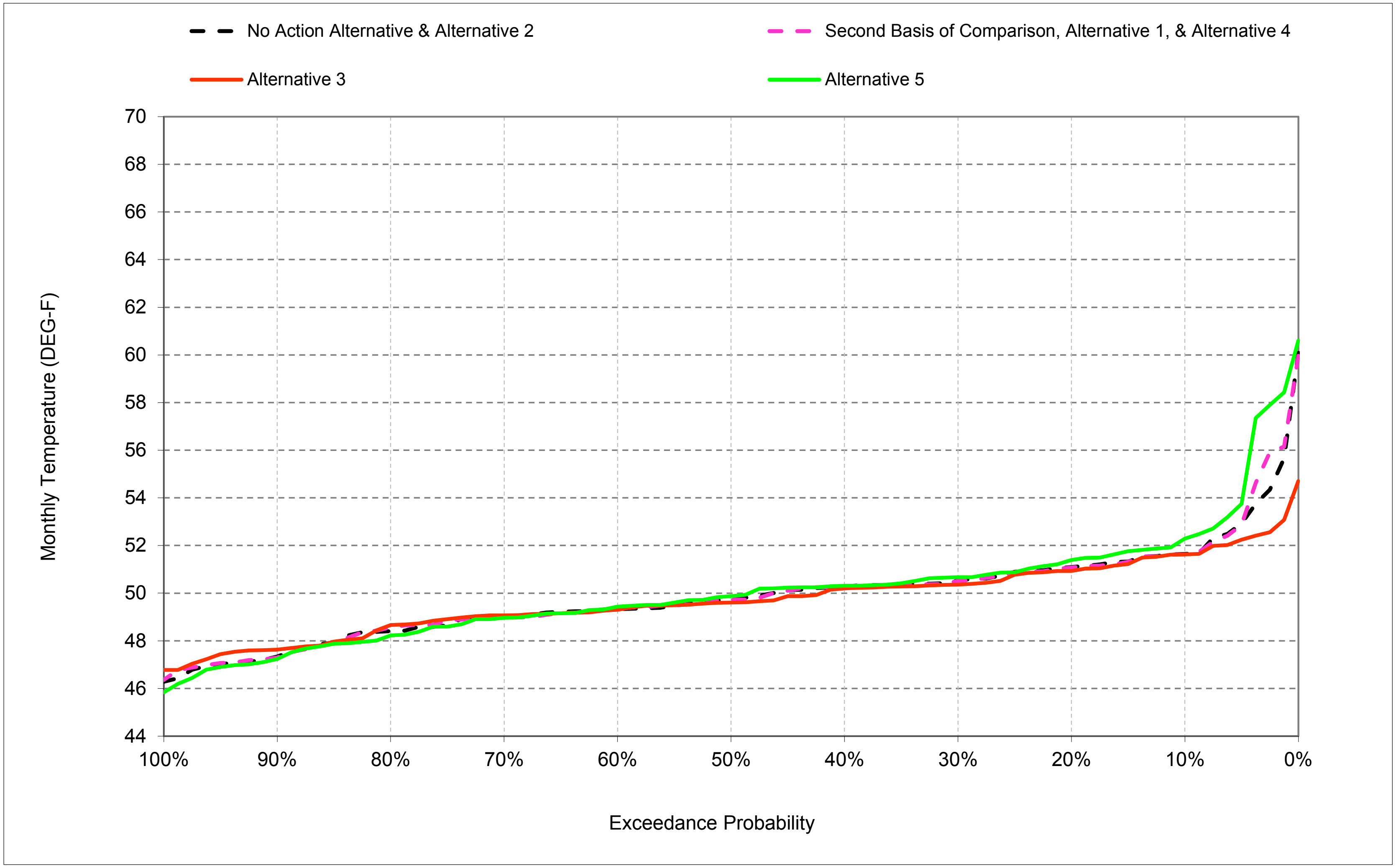
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-7. Stanislaus River below New Melones Reservoir, April



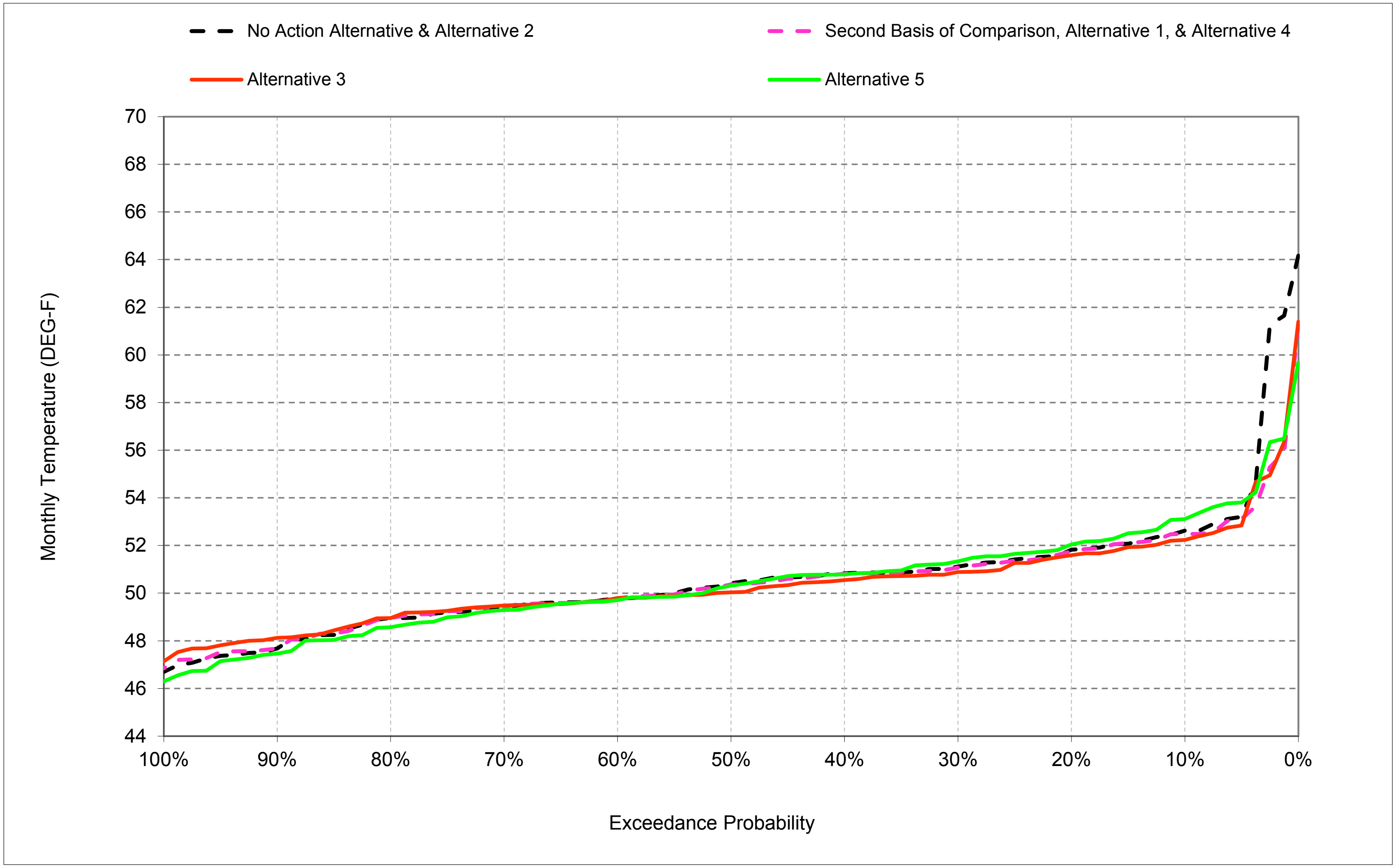
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-8. Stanislaus River below New Melones Reservoir, May



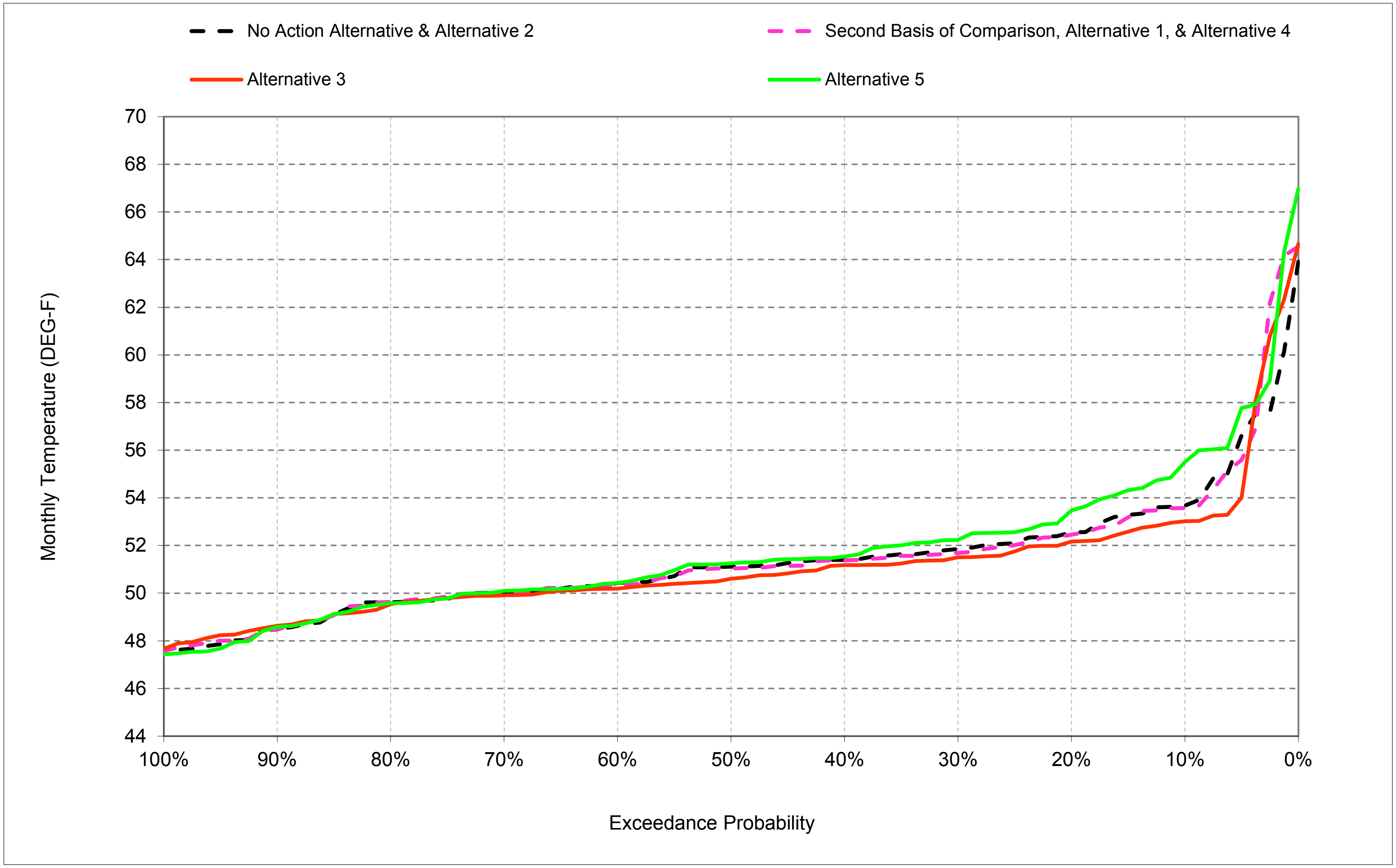
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-9. Stanislaus River below New Melones Reservoir, June



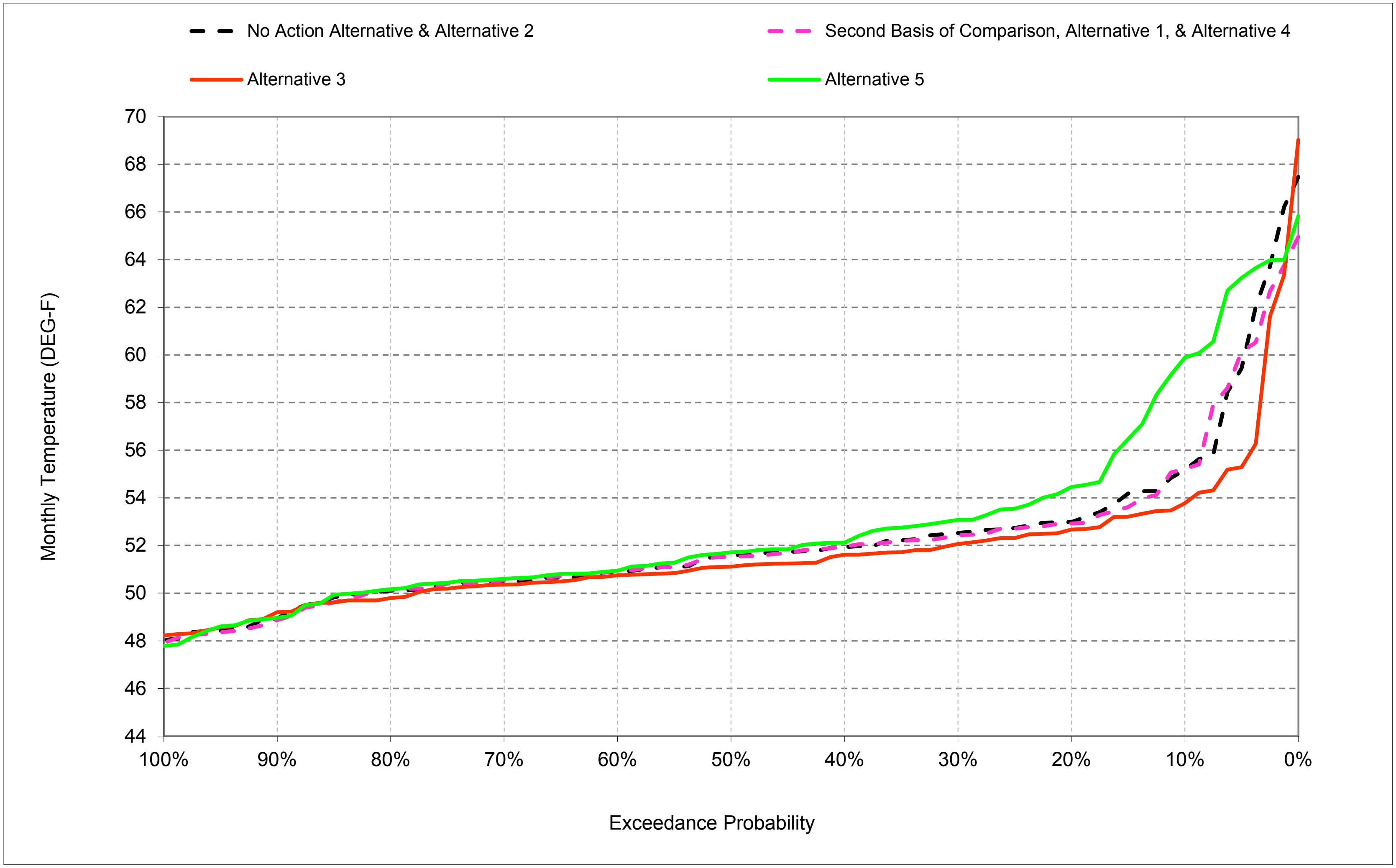
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-10. Stanislaus River below New Melones Reservoir, July



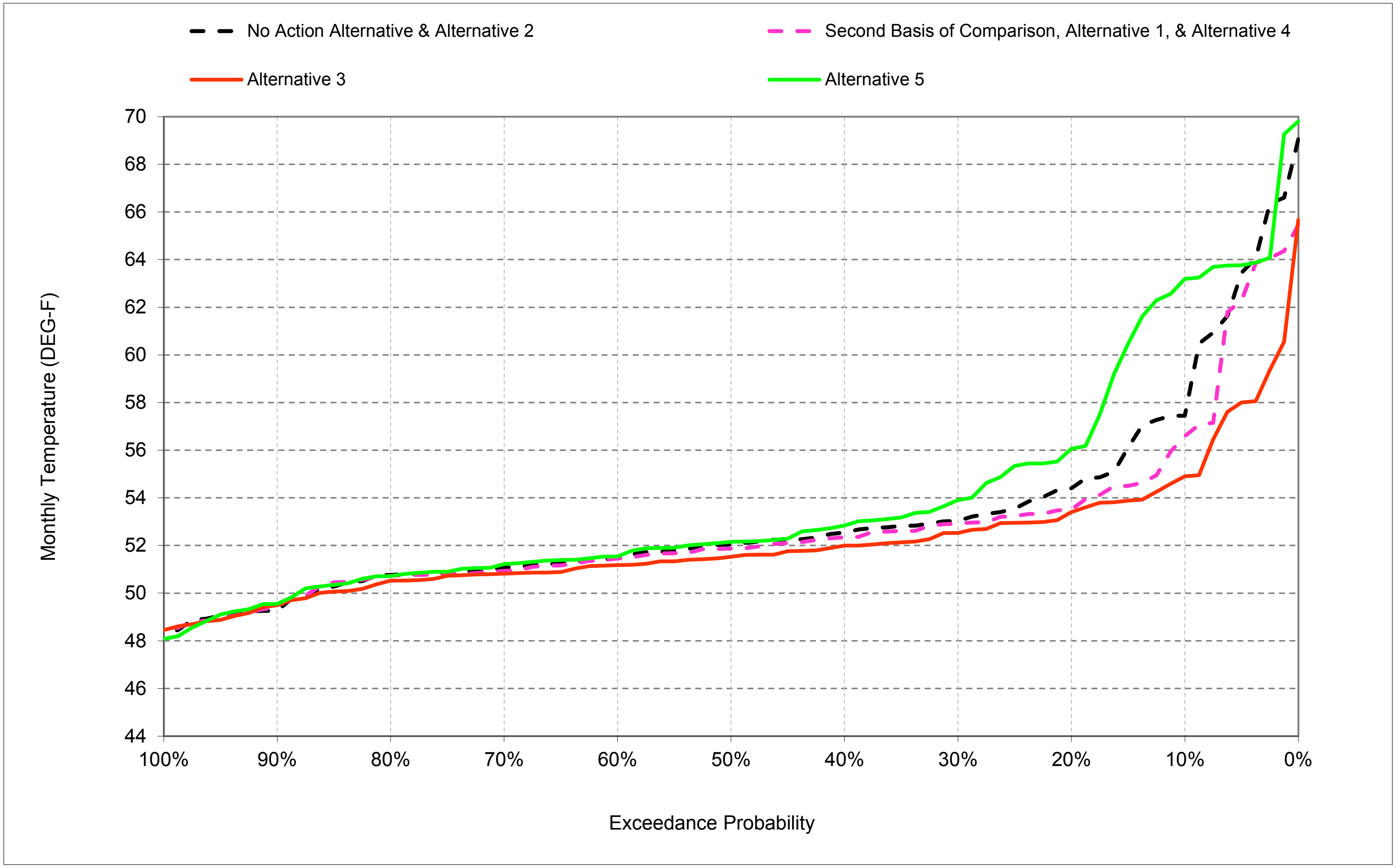
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-11. Stanislaus River below New Melones Reservoir, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-12. Stanislaus River below New Melones Reservoir, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-1. Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

Alternative 1

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

Alternative 1 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.7	-0.3	0.0	0.0	0.3	0.1	0.0	0.0	-0.1	-0.1	0.1	-0.9
0.2	-1.4	-0.4	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1	-0.9
0.3	-0.3	-0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	-0.2	-0.1	-0.1
0.4	-0.4	-0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2
0.5	-0.3	-0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.2
0.6	-0.2	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	-0.2	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	-0.1
0.8	-0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1	-0.1
0.9	-0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-0.2	0.1
Long Term												
Full Simulation Period[b]	-0.3	-0.1	0.0	0.1	0.1	0.0	0.0	0.0	-0.2	0.1	-0.1	-0.4
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	0.0	0.1	0.1	-0.1	0.1	0.0	0.1	0.0	0.0	0.0
Above Normal (16%)	-0.4	-0.3	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	-0.1
Below Normal (13%)	-0.6	-0.4	-0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	0.0	0.1	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3
Critical (15%)	-0.1	1.0	0.3	0.3	0.3	0.2	-0.3	0.2	-1.4	0.6	-0.1	-2.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-2. Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	55	53	52	51	51	51	52	52	53	54	55
20%	54	54	53	51	50	50	50	51	52	52	53	53
30%	53	53	52	51	50	50	50	50	51	51	52	53
40%	52	52	52	51	50	49	50	50	51	51	52	52
50%	52	52	51	50	49	49	49	50	50	51	51	51
60%	51	52	51	50	49	49	49	49	50	50	51	51
70%	51	51	51	50	49	49	49	49	49	50	50	51
80%	51	51	51	49	48	48	48	48	49	49	50	50
90%	50	50	50	48	47	47	47	48	48	49	49	49
Long Term												
Full Simulation Period[b]	52	52	52	50	49	49	49	50	50	51	52	52
Water Year Types[c]												
Wet (32%)	49	50	49	49	48	48	48	49	49	49	50	50
Above Normal (16%)	52	52	51	50	49	49	49	49	50	50	51	51
Below Normal (13%)	52	51	51	50	49	49	49	50	50	51	51	52
Dry (24%)	52	52	52	51	50	50	50	50	51	51	52	53
Critical (15%)	56	55	53	51	50	50	51	52	54	56	56	57

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-3.2	-0.7	-0.4	0.1	0.0	0.1	0.1	0.0	-0.4	-0.7	-1.4	-2.6
0.2	-2.0	-0.8	-0.2	0.0	0.0	0.2	0.2	-0.2	-0.2	-0.4	-0.3	-1.1
0.3	-0.8	-0.5	-0.2	0.0	0.2	0.1	0.1	-0.1	-0.2	-0.4	-0.5	-0.5
0.4	-0.9	-0.5	-0.2	0.0	0.1	0.1	0.0	-0.1	-0.3	-0.2	-0.3	-0.6
0.5	-0.7	-0.6	-0.1	0.1	0.2	0.1	0.0	-0.1	-0.3	-0.6	-0.5	-0.5
0.6	-0.7	-0.6	-0.1	0.1	0.1	0.1	0.1	0.0	0.0	-0.2	-0.2	-0.3
0.7	-0.3	-0.3	0.0	0.1	0.1	0.4	0.4	0.1	0.1	-0.1	-0.1	-0.2
0.8	-0.5	-0.4	0.2	0.1	0.3	0.5	0.2	0.1	0.0	-0.3	-0.3	-0.3
0.9	-0.3	0.0	0.2	0.1	0.4	0.3	0.3	0.4	0.5	0.1	0.0	0.2
Long Term												
Full Simulation Period[b]	-0.9	-0.4	-0.1	0.1	0.2	0.2	0.1	-0.1	-0.2	-0.2	-0.5	-1.0
Water Year Types[c]												
Wet (32%)	-0.6	-0.5	-0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.0	-0.1	-0.1
Above Normal (16%)	-1.0	-0.8	-0.3	0.0	0.2	0.2	0.2	0.1	0.0	-0.2	-0.4	-0.5
Below Normal (13%)	-1.3	-1.0	-0.5	-0.1	0.1	0.2	0.1	0.0	-0.2	-0.3	-0.5	-0.6
Dry (24%)	-0.7	-0.5	-0.2	-0.1	0.0	0.1	0.1	-0.1	-0.3	-0.5	-0.8	-1.2
Critical (15%)	-1.6	0.7	0.5	0.8	0.8	0.5	-0.2	-1.2	-1.1	-0.1	-1.1	-3.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-3. Stanislaus River below New Melones Reservoir, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	57	54	52	51	51	51	52	53	55	60	63
20%	57	55	53	51	50	50	50	51	52	53	54	56
30%	54	54	52	51	50	49	50	51	51	52	53	54
40%	53	53	52	50	49	49	50	50	51	52	52	53
50%	53	53	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	52
70%	52	52	51	49	48	48	49	49	49	50	51	51
80%	51	51	50	49	47	47	48	48	49	50	50	51
90%	50	50	50	48	46	46	47	47	47	48	49	50
Long Term												
Full Simulation Period[b]	54	53	52	50	49	49	49	50	50	52	53	54
Water Year Types[c]												
Wet (32%)	51	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	54	53	52	50	49	48	48	49	50	50	51	52
Below Normal (13%)	53	52	51	50	49	49	49	50	51	52	53	53
Dry (24%)	54	53	52	51	50	49	50	51	51	53	54	56
Critical (15%)	58	55	52	50	49	50	52	54	53	56	58	61

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	1.9	0.9	0.3	-0.2	-0.1	0.0	0.2	0.6	0.5	1.8	4.7	5.7
0.2	1.1	0.4	0.1	-0.1	0.0	0.1	0.2	0.3	0.2	0.8	1.4	1.6
0.3	1.0	0.5	-0.1	0.0	-0.1	0.0	0.1	0.2	0.2	0.4	0.5	0.8
0.4	0.3	0.3	0.0	-0.2	0.0	0.0	0.1	0.0	-0.1	0.1	0.2	0.3
0.5	0.1	0.1	0.0	0.0	-0.2	0.0	0.0	0.1	-0.1	0.1	0.1	0.1
0.6	0.1	0.1	-0.1	-0.2	-0.2	-0.1	0.0	0.0	-0.1	0.0	0.0	0.1
0.7	0.2	0.2	0.0	-0.2	-0.3	-0.1	0.2	0.0	-0.1	0.0	0.1	0.1
0.8	0.0	0.1	-0.1	-0.3	-0.7	-0.2	-0.3	-0.3	-0.4	-0.1	0.1	0.0
0.9	0.0	0.1	-0.3	-0.5	-0.6	-0.5	-0.2	-0.1	-0.1	0.0	0.0	0.3
Long Term												
Full Simulation Period[b]	0.6	0.3	0.0	-0.2	-0.3	-0.1	0.0	0.2	-0.2	0.4	0.7	0.7
Water Year Types[c]												
Wet (32%)	0.7	0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	0.0	0.1	0.1
Above Normal (16%)	0.5	0.4	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.2	0.3
Below Normal (13%)	0.3	-0.2	-0.3	-0.4	-0.3	-0.2	0.0	0.2	0.3	0.5	0.7	0.9
Dry (24%)	0.7	0.6	0.3	-0.1	-0.1	-0.1	0.0	0.1	0.3	0.8	1.6	1.9
Critical (15%)	0.5	0.6	-0.1	-0.7	-0.7	0.2	0.8	1.1	-2.1	0.7	0.8	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-4. Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	56	54	52	51	51	51	52	53	54	55	57
20%	56	55	53	51	50	50	50	51	52	53	53	54
30%	53	53	52	51	50	49	50	51	51	52	53	53
40%	53	53	52	51	49	49	50	50	51	51	52	53
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	51	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	53	52	52	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	54	52	50	50	50	51	53	55	56	57	60

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.7	0.3	0.0	0.0	-0.3	-0.1	0.0	0.0	0.1	0.1	-0.1	0.9
0.2	1.4	0.4	0.0	0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.9
0.3	0.3	0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.2	0.1	0.1
0.4	0.4	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2
0.5	0.3	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.2
0.6	0.2	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.7	0.2	0.1	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1
0.8	0.1	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	0.0	0.0	-0.1	0.1
0.9	0.3	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.2	-0.1
Long Term												
Full Simulation Period[b]	0.3	0.1	0.0	-0.1	-0.1	0.0	0.0	0.0	0.2	-0.1	0.1	0.4
Water Year Types[c]												
Wet (32%)	0.3	0.2	0.0	-0.1	-0.1	0.1	-0.1	0.0	-0.1	0.0	0.0	0.0
Above Normal (16%)	0.4	0.3	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.1
Below Normal (13%)	0.6	0.4	0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.2	0.3
Dry (24%)	0.3	0.3	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.3
Critical (15%)	0.1	-1.0	-0.3	-0.3	-0.3	-0.2	0.3	-0.2	1.4	-0.6	0.1	2.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-5. Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	56	55	53	52	51	51	51	52	52	53	54	55
20%	54	54	53	51	50	50	50	51	52	52	53	53
30%	53	53	52	51	50	50	50	50	51	51	52	53
40%	52	52	52	51	50	49	50	50	51	51	52	52
50%	52	52	51	50	49	49	49	50	50	51	51	51
60%	51	52	51	50	49	49	49	49	50	50	51	51
70%	51	51	51	50	49	49	49	49	49	50	50	51
80%	51	51	51	49	48	48	48	48	49	49	50	50
90%	50	50	50	48	47	47	47	48	48	49	49	49
Long Term												
Full Simulation Period[b]	52	52	52	50	49	49	49	50	50	51	52	52
Water Year Types[c]												
Wet (32%)	49	50	49	49	48	48	48	49	49	49	50	50
Above Normal (16%)	52	52	51	50	49	49	49	49	50	50	51	51
Below Normal (13%)	52	51	51	50	49	49	49	50	50	51	51	52
Dry (24%)	52	52	52	51	50	50	50	50	51	51	52	53
Critical (15%)	56	55	53	51	50	50	51	52	54	56	56	57

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-2.5	-0.5	-0.4	0.1	-0.3	0.1	0.1	0.0	-0.3	-0.6	-1.5	-1.6
0.2	-0.6	-0.4	-0.2	0.0	0.0	0.1	0.2	-0.1	-0.1	-0.3	-0.3	-0.2
0.3	-0.5	-0.4	-0.2	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.2	-0.4	-0.4
0.4	-0.5	-0.4	-0.2	-0.1	0.0	0.1	0.0	-0.1	-0.3	-0.2	-0.3	-0.4
0.5	-0.4	-0.3	-0.1	0.0	0.1	0.1	0.0	-0.1	-0.3	-0.5	-0.4	-0.4
0.6	-0.4	-0.4	-0.1	0.0	0.0	0.1	0.1	0.0	0.0	-0.1	-0.2	-0.2
0.7	-0.1	-0.2	0.0	0.1	0.1	0.3	0.3	0.1	0.0	-0.1	-0.1	-0.1
0.8	-0.4	-0.4	0.2	0.0	0.2	0.4	0.2	0.0	0.1	-0.3	-0.4	-0.3
0.9	0.1	0.0	0.2	-0.1	0.4	0.3	0.3	0.4	0.4	0.1	0.3	0.1
Long Term												
Full Simulation Period[b]	-0.6	-0.3	-0.1	0.0	0.1	0.1	0.1	-0.2	0.0	-0.3	-0.4	-0.6
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1
Above Normal (16%)	-0.6	-0.5	-0.2	0.0	0.1	0.2	0.2	0.1	0.0	-0.2	-0.3	-0.4
Below Normal (13%)	-0.7	-0.6	-0.3	-0.2	0.0	0.1	0.1	0.0	-0.1	-0.2	-0.3	-0.4
Dry (24%)	-0.3	-0.3	-0.1	-0.2	0.0	0.0	0.1	-0.1	-0.2	-0.4	-0.6	-0.9
Critical (15%)	-1.5	-0.3	0.2	0.5	0.5	0.3	0.0	-1.4	0.3	-0.7	-1.0	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-6. Stanislaus River below New Melones Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58	56	54	52	51	51	51	52	52	54	55	57
20%	54	54	53	51	50	50	50	51	52	52	53	54
30%	53	53	52	51	50	50	50	50	51	52	52	53
40%	53	53	52	51	49	49	50	50	51	51	52	52
50%	52	52	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	51
70%	51	52	51	50	49	48	48	49	49	50	50	51
80%	51	51	50	49	48	48	48	48	49	50	50	51
90%	50	50	50	48	47	47	47	47	48	48	49	49
Long Term												
Full Simulation Period[b]	53	53	52	50	49	49	49	50	50	51	52	53
Water Year Types[c]												
Wet (32%)	50	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	53	53	52	50	49	48	49	49	50	50	51	52
Below Normal (13%)	52	52	51	51	49	49	49	50	50	51	52	52
Dry (24%)	53	53	52	51	50	50	50	50	51	52	53	54
Critical (15%)	57	55	53	51	50	50	51	53	53	56	57	58

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	57	54	52	51	51	51	52	53	55	60	63
20%	57	55	53	51	50	50	50	51	52	53	54	56
30%	54	54	52	51	50	49	50	51	51	52	53	54
40%	53	53	52	50	49	49	50	50	51	52	52	53
50%	53	53	52	50	49	49	49	50	50	51	52	52
60%	52	52	51	50	49	49	49	49	50	50	51	52
70%	52	52	51	49	48	48	49	49	49	50	51	51
80%	51	51	50	49	47	47	48	48	49	50	50	51
90%	50	50	50	48	46	46	47	47	47	48	49	50
Long Term												
Full Simulation Period[b]	54	53	52	50	49	49	49	50	50	52	53	54
Water Year Types[c]												
Wet (32%)	51	50	49	49	48	48	48	48	49	49	50	50
Above Normal (16%)	54	53	52	50	49	48	48	49	50	50	51	52
Below Normal (13%)	53	52	51	50	49	49	49	50	51	52	53	53
Dry (24%)	54	53	52	51	50	49	50	51	51	53	54	56
Critical (15%)	58	55	52	50	49	50	52	54	53	56	58	61

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	2.6	1.2	0.3	-0.2	-0.3	0.0	0.2	0.6	0.6	1.9	4.6	6.6
0.2	2.5	0.8	0.1	0.0	-0.1	0.0	0.3	0.3	0.3	0.9	1.5	2.4
0.3	1.3	0.6	0.0	0.0	-0.2	0.0	0.1	0.2	0.3	0.6	0.6	0.9
0.4	0.7	0.4	0.0	-0.2	-0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.5
0.5	0.4	0.3	0.1	-0.1	-0.3	-0.1	0.0	0.1	0.0	0.2	0.2	0.3
0.6	0.3	0.3	-0.1	-0.3	-0.3	-0.1	0.0	0.1	-0.1	0.1	0.0	0.1
0.7	0.4	0.3	0.0	-0.2	-0.3	-0.2	0.1	0.0	-0.1	0.0	0.1	0.2
0.8	0.1	0.1	-0.1	-0.4	-0.9	-0.3	-0.4	-0.4	-0.3	-0.1	0.0	0.0
0.9	0.3	0.1	-0.3	-0.7	-0.6	-0.5	-0.3	-0.1	-0.2	0.0	0.2	0.2
Long Term												
Full Simulation Period[b]	1.0	0.4	0.0	-0.3	-0.4	-0.1	0.0	0.2	0.0	0.3	0.8	1.2
Water Year Types[c]												
Wet (32%)	1.0	0.4	-0.1	-0.3	-0.3	-0.2	-0.3	-0.2	-0.1	0.0	0.1	0.1
Above Normal (16%)	0.9	0.7	0.2	0.0	-0.1	-0.2	-0.1	0.0	0.1	0.2	0.3	0.4
Below Normal (13%)	0.9	0.2	-0.2	-0.5	-0.3	-0.3	0.0	0.2	0.4	0.7	0.9	1.2
Dry (24%)	1.0	0.8	0.4	-0.1	-0.2	-0.1	0.0	0.1	0.4	0.9	1.8	2.3
Critical (15%)	0.6	-0.4	-0.5	-0.9	-1.0	0.0	1.1	1.0	-0.7	0.1	0.9	2.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

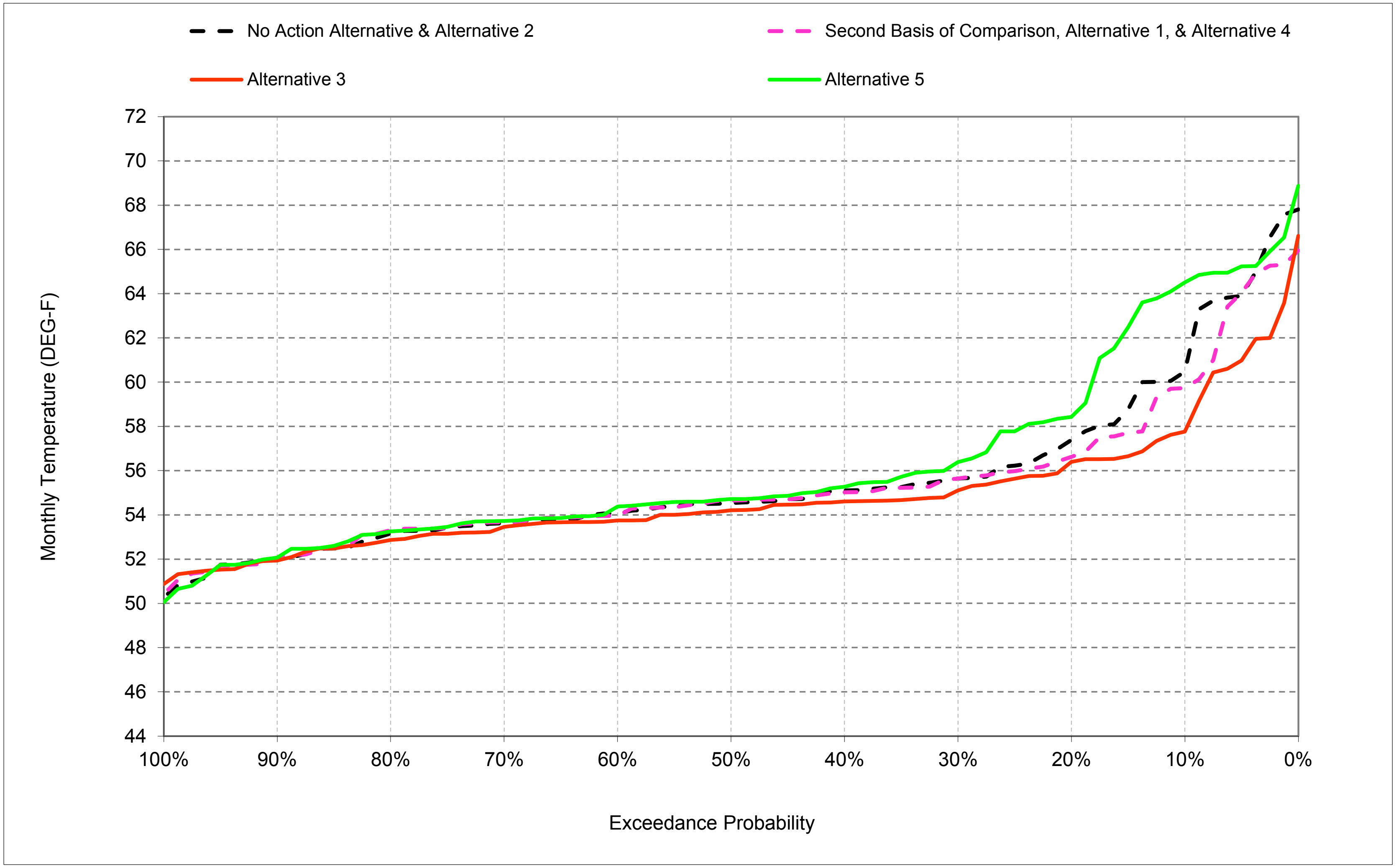
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

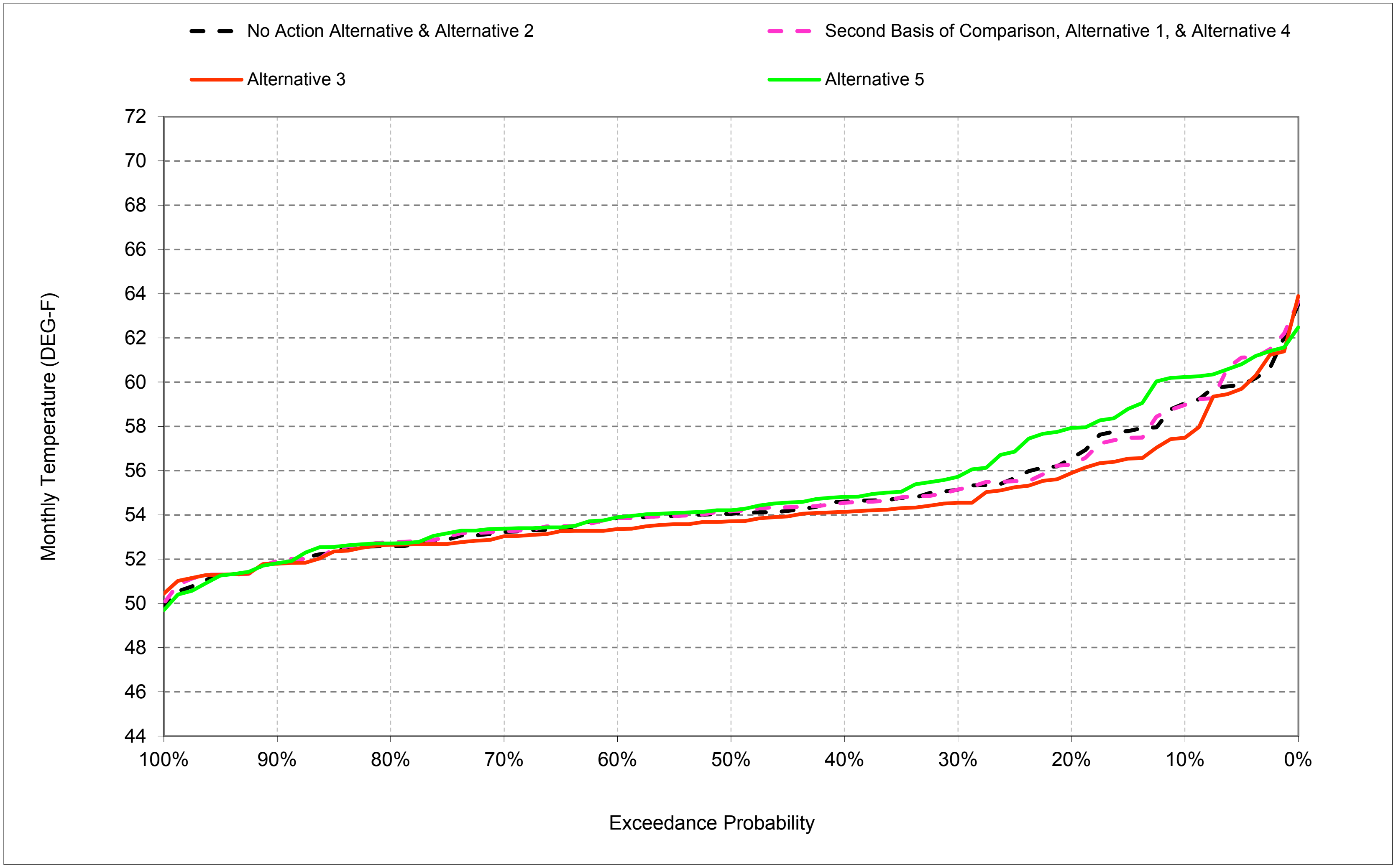
B.16. Stanislaus River below Tulloch Temperature

Figure B-16-1. Stanislaus River below Tulloch Reservoir, October



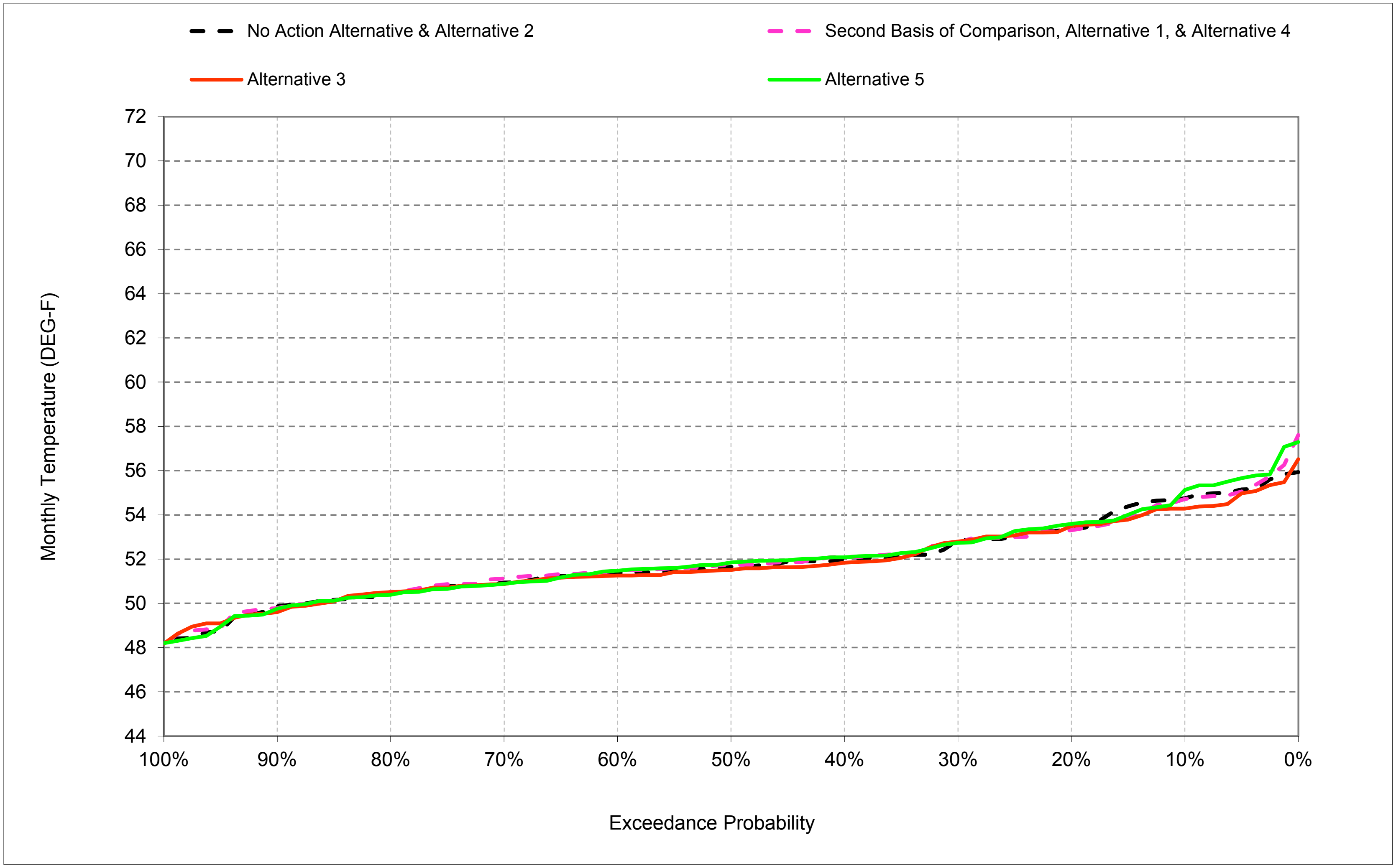
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-2. Stanislaus River below Tulloch Reservoir, November



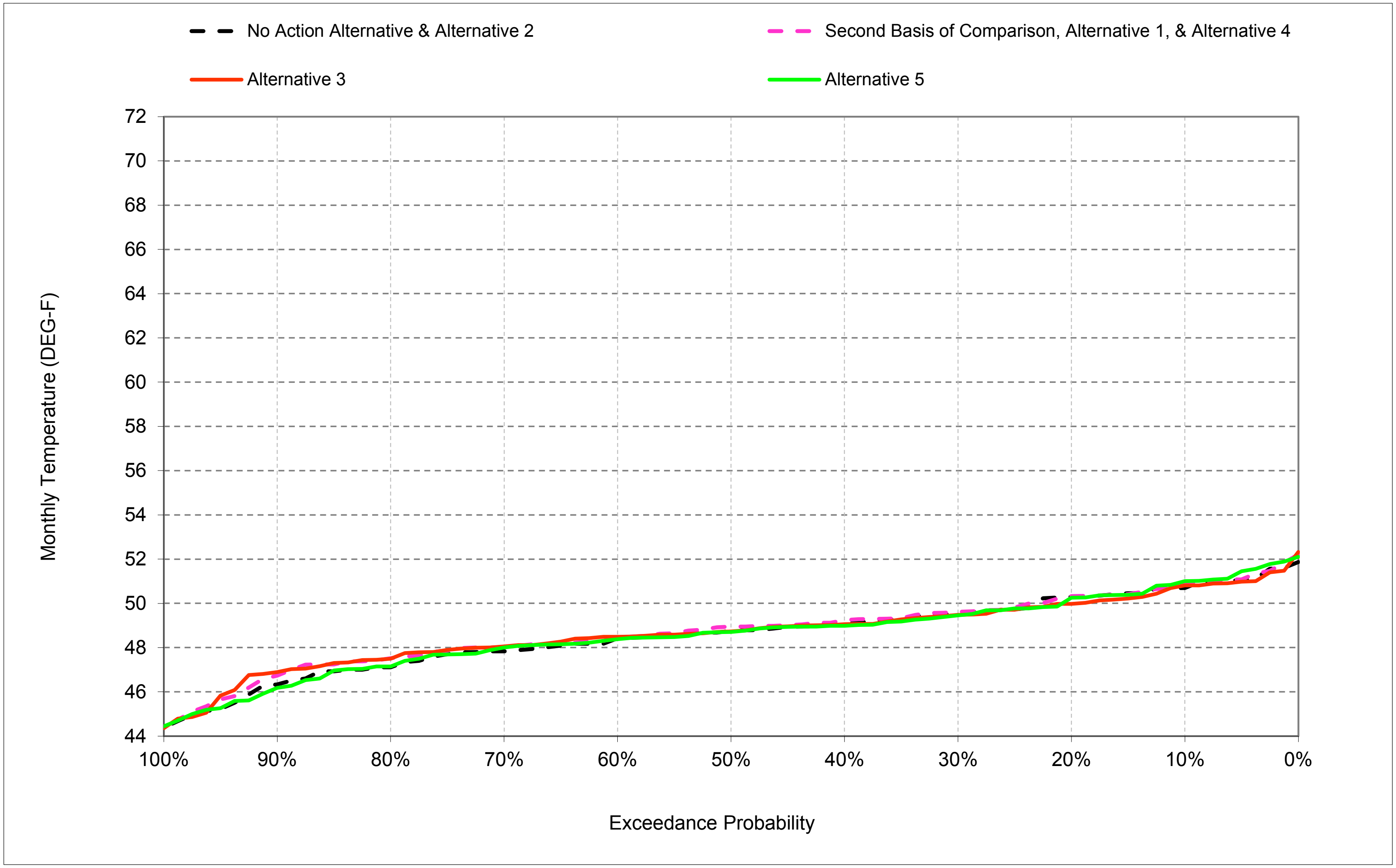
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-3. Stanislaus River below Tulloch Reservoir, December



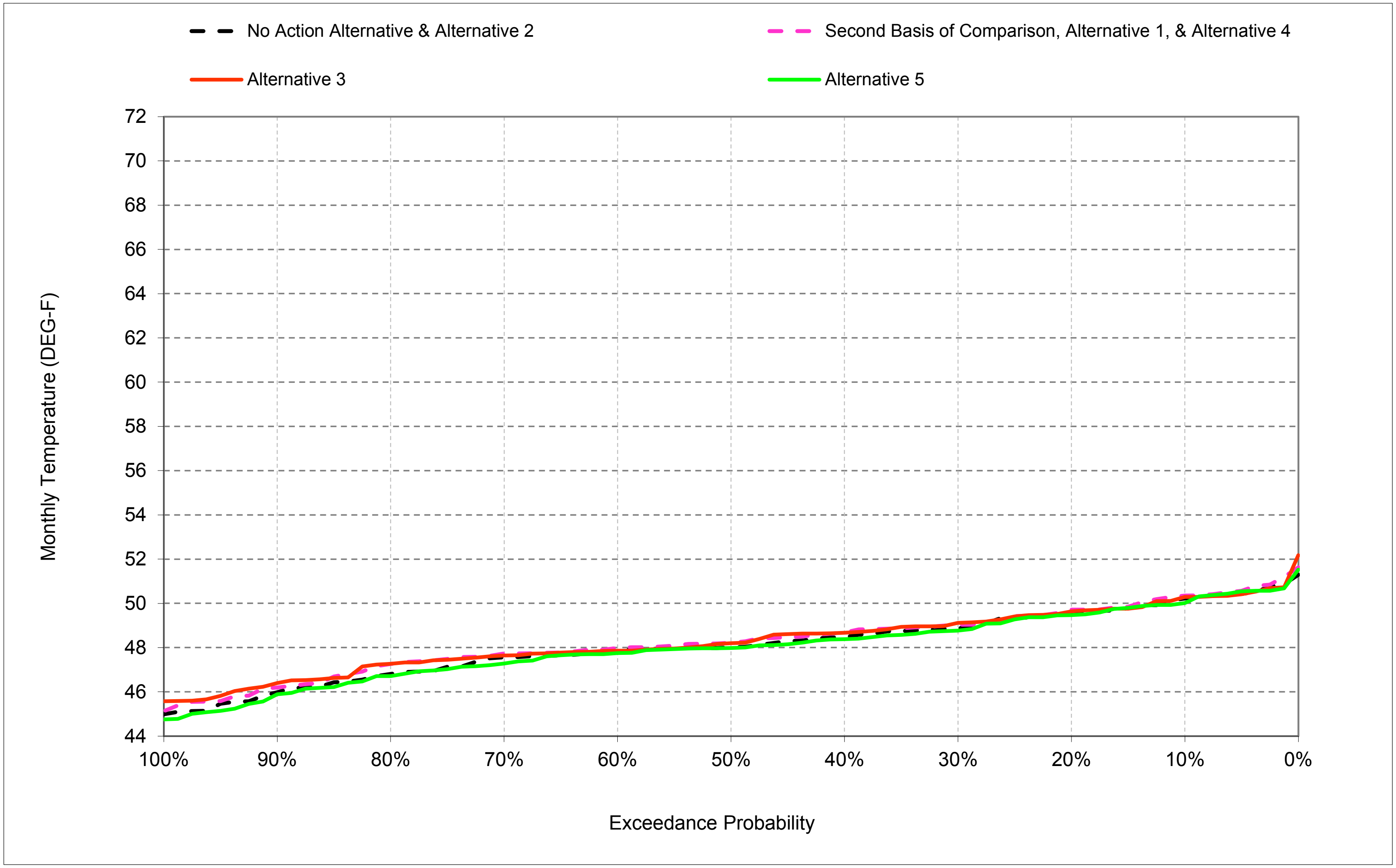
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-4. Stanislaus River below Tulloch Reservoir, January



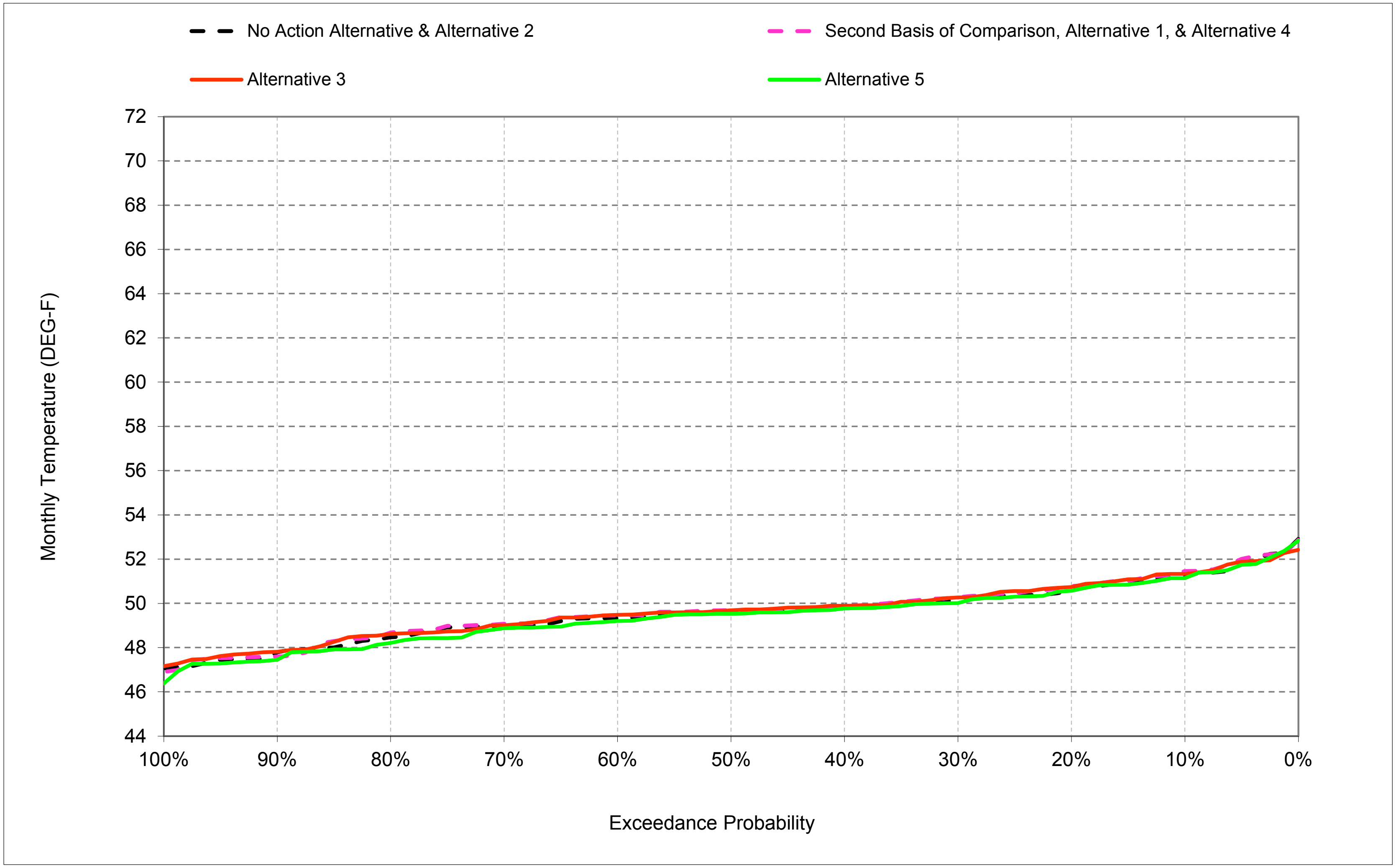
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-5. Stanislaus River below Tulloch Reservoir, February



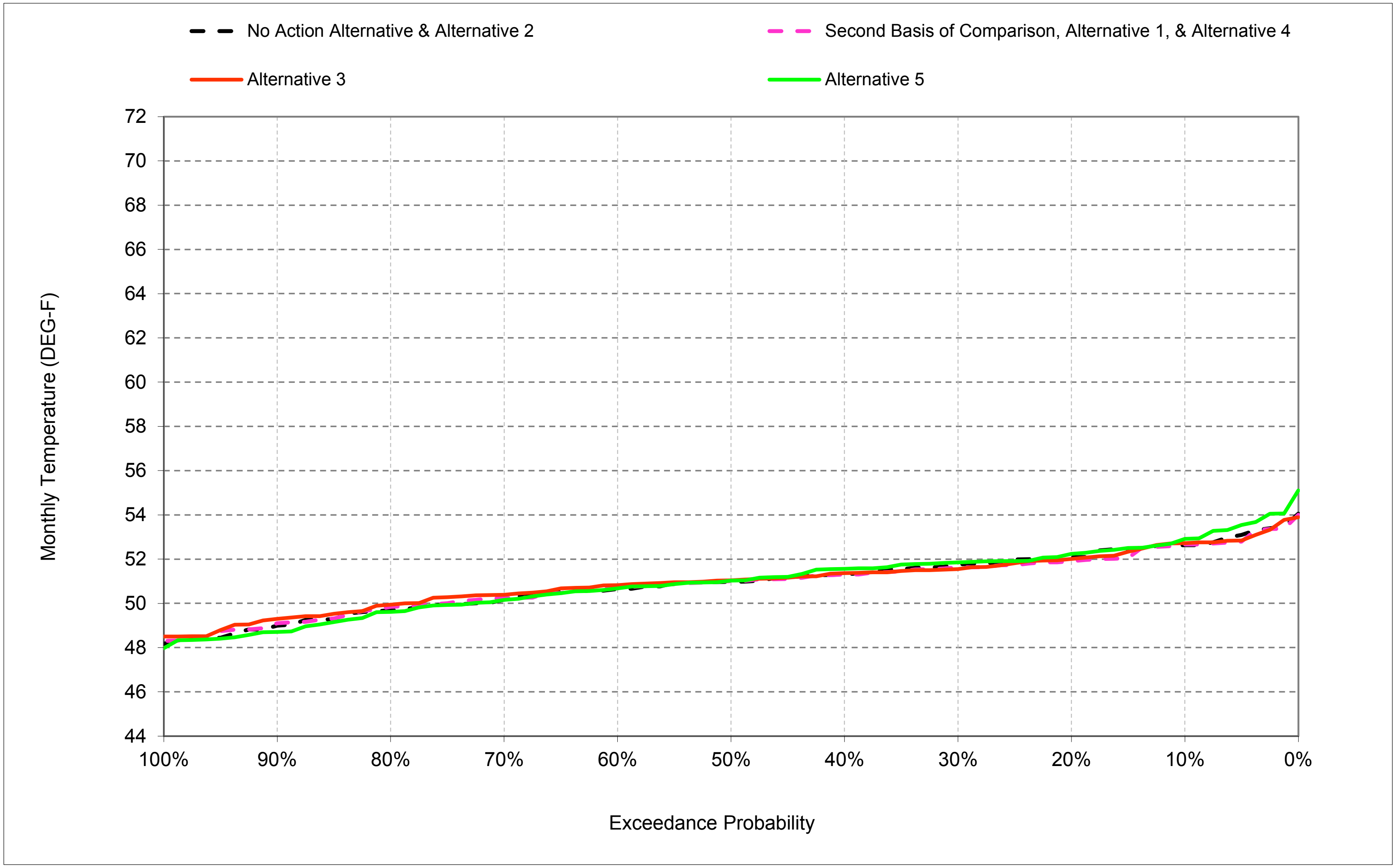
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-6. Stanislaus River below Tulloch Reservoir, March



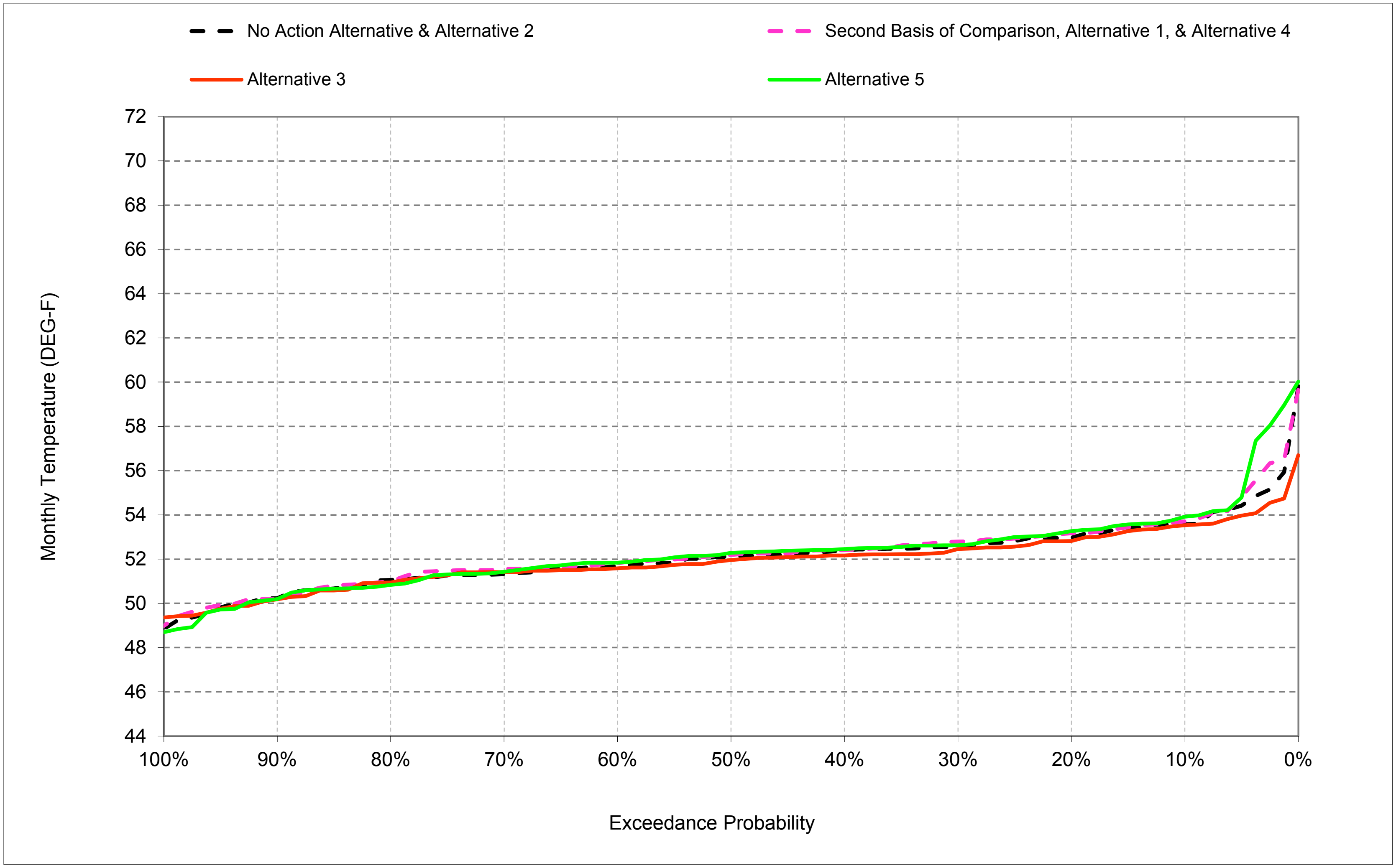
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-7. Stanislaus River below Tulloch Reservoir, April



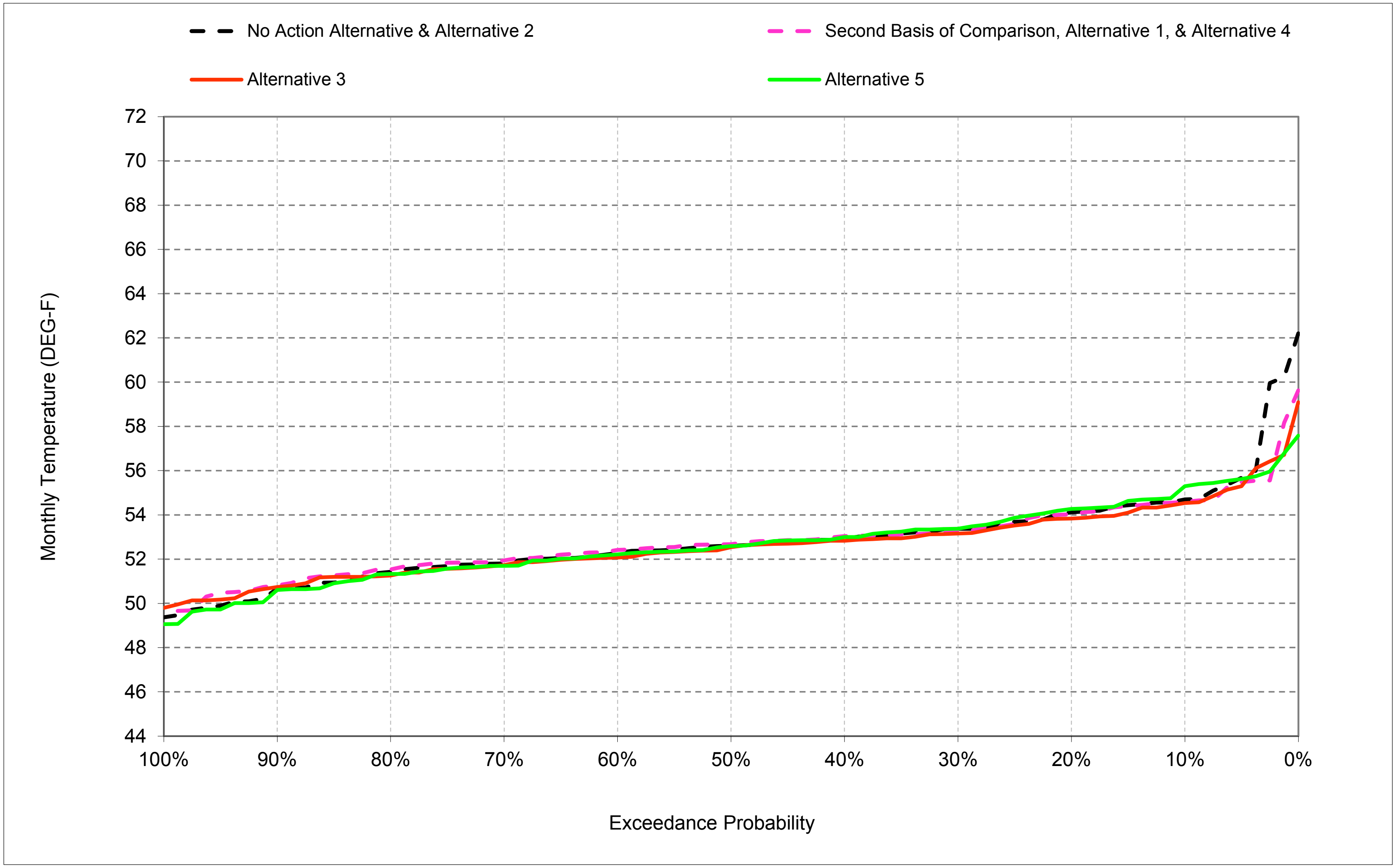
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-8. Stanislaus River below Tulloch Reservoir, May



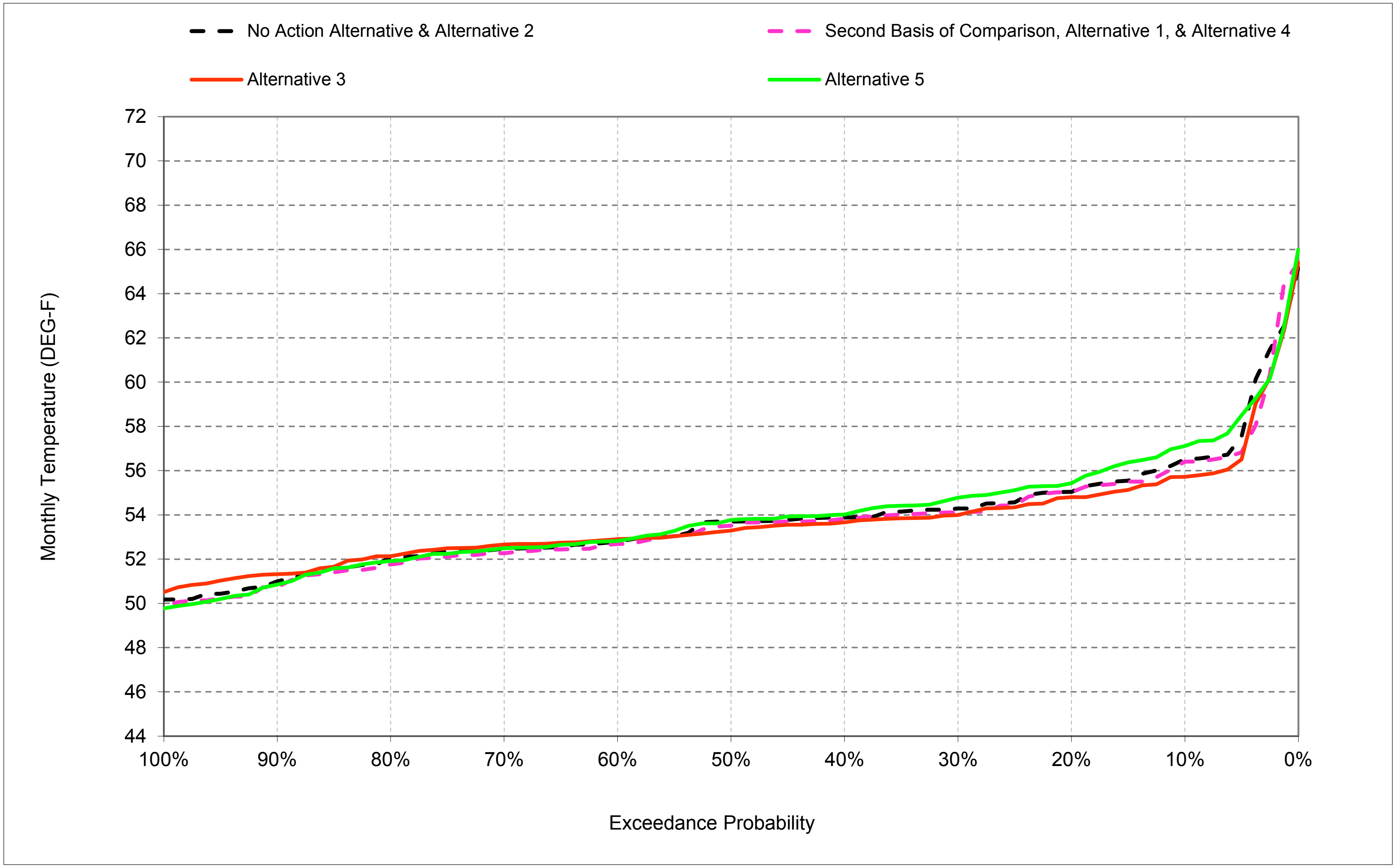
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-9. Stanislaus River below Tulloch Reservoir, June



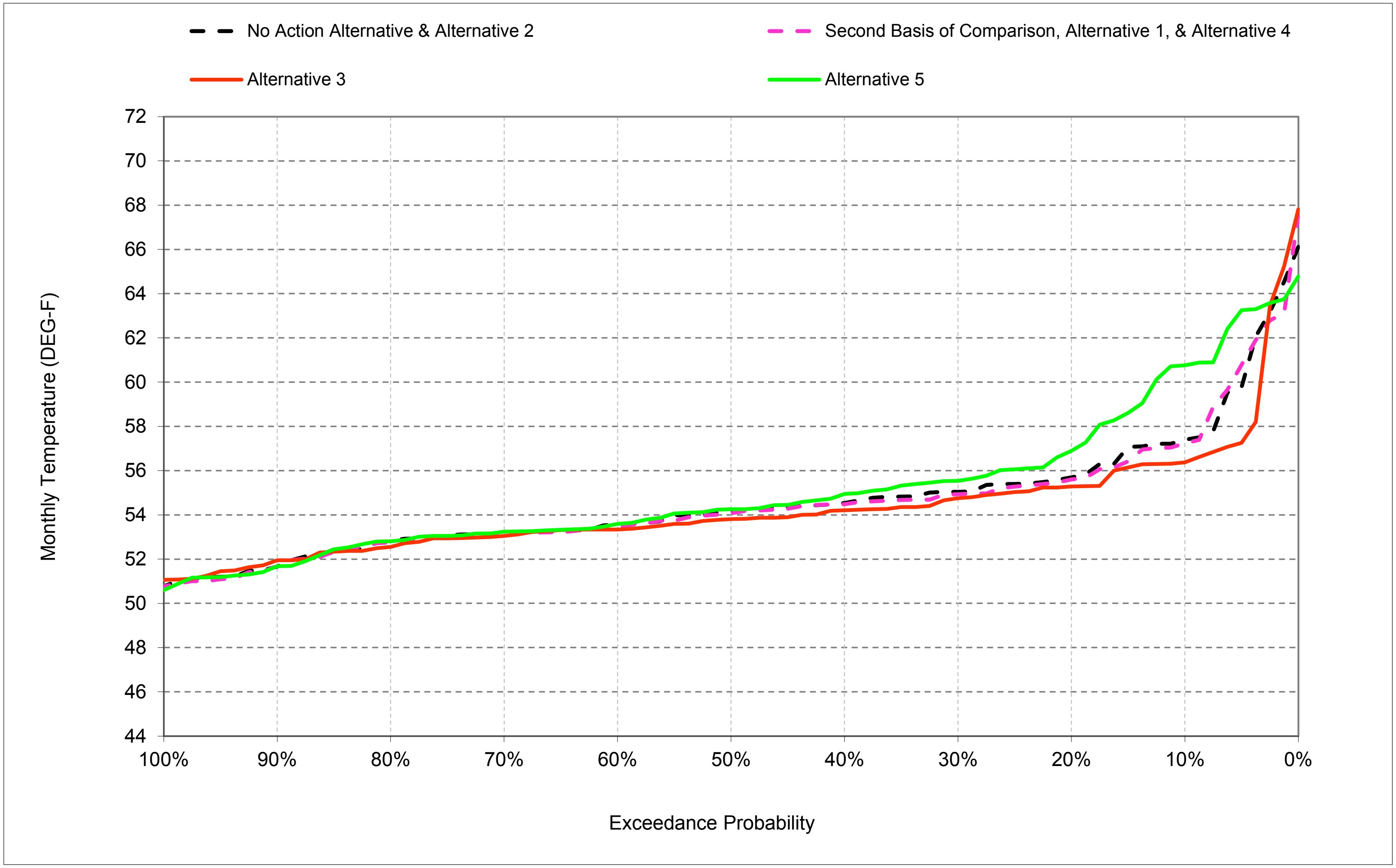
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-10. Stanislaus River below Tulloch Reservoir, July



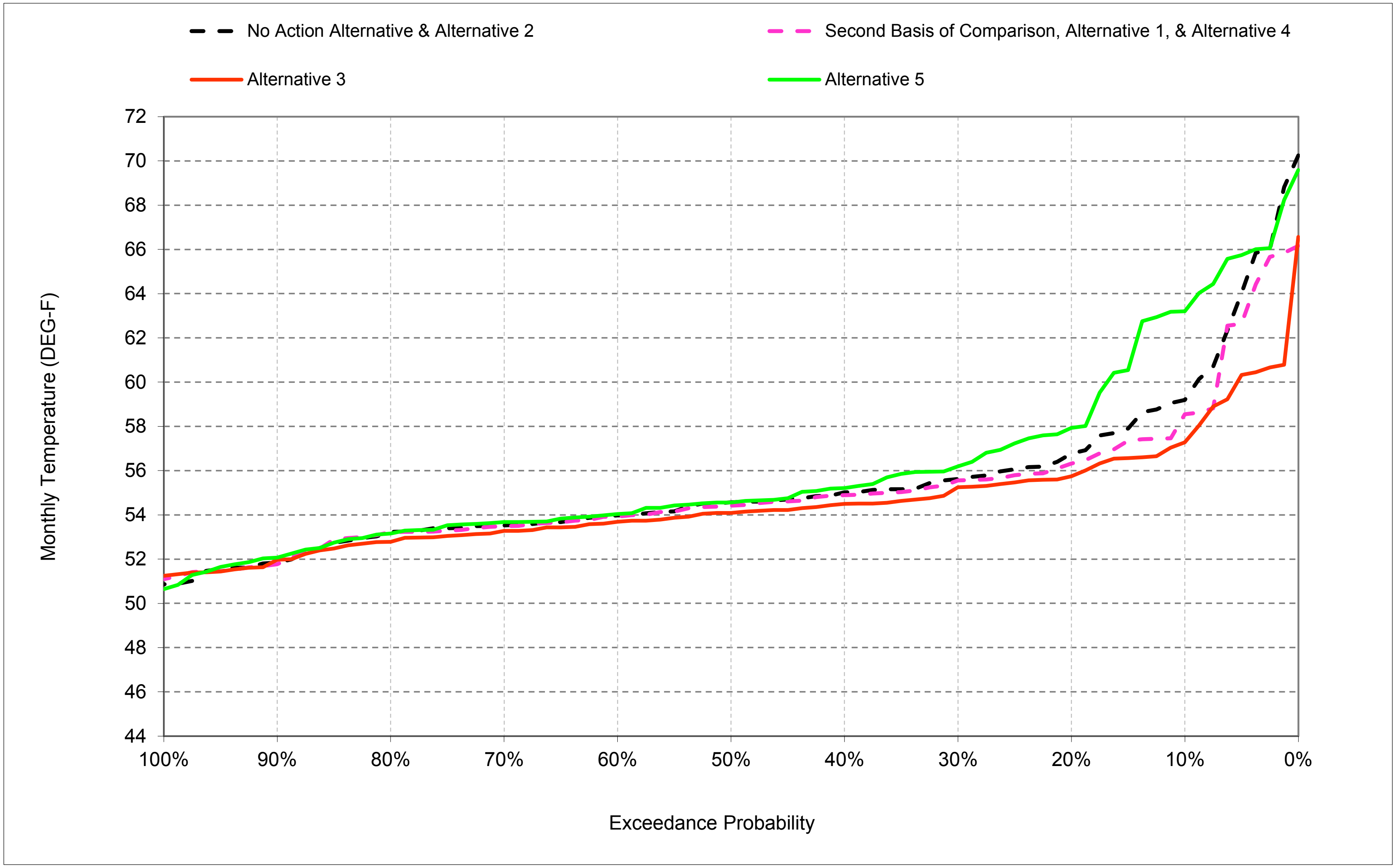
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-11. Stanislaus River below Tulloch Reservoir, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-16-12. Stanislaus River below Tulloch Reservoir, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-1. Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period[b]	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.7	-0.1	0.0	0.2	0.1	0.2	0.0	0.1	-0.1	-0.1	-0.2	-0.7
0.2	-0.8	-0.3	0.0	0.0	0.2	0.2	-0.2	0.2	-0.1	0.0	-0.1	-0.4
0.3	0.0	0.0	-0.1	0.0	0.2	0.1	-0.1	0.2	-0.1	-0.2	-0.1	-0.1
0.4	-0.1	-0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.1	-0.1	0.0	-0.1
0.5	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.1	-0.2	-0.1	-0.2
0.6	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.1	-0.1	0.0
0.7	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.2	0.1	-0.2	0.0	0.0
0.8	0.2	0.2	0.1	0.3	0.5	0.1	0.1	-0.1	0.1	-0.2	0.0	0.0
0.9	0.1	0.1	-0.1	0.3	0.3	0.1	0.1	0.0	0.5	0.0	0.0	-0.1
Long Term												
Full Simulation Period[b]	-0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.0	-0.2	-0.1	-0.3
Water Year Types[c]												
Wet (32%)	-0.1	-0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.4	-0.2	0.0	0.0
Above Normal (16%)	-0.2	0.1	0.1	0.1	0.2	0.1	-0.1	0.2	0.0	-0.1	-0.1	-0.1
Below Normal (13%)	-0.2	-0.2	-0.1	0.1	0.2	0.1	-0.3	0.3	-0.1	-0.2	-0.2	-0.2
Dry (24%)	-0.2	0.0	0.1	0.2	0.2	0.1	0.0	0.1	-0.1	-0.1	-0.2	-0.3
Critical (15%)	-0.6	0.7	0.3	0.2	0.2	0.2	-0.1	0.2	-0.9	-0.2	0.2	-1.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-2. Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	58	57	54	51	50	51	53	54	55	56	56	57
20%	56	56	53	50	50	51	52	53	54	55	55	56
30%	55	55	53	49	49	50	52	52	53	54	55	55
40%	55	54	52	49	49	50	51	52	53	54	54	54
50%	54	54	52	49	48	50	51	52	52	53	54	54
60%	54	53	51	48	48	49	51	52	52	53	53	54
70%	53	53	51	48	48	49	50	51	52	53	53	53
80%	53	53	51	47	47	49	50	51	51	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	52	52
Long Term												
Full Simulation Period[b]	55	54	52	49	48	50	51	52	53	54	54	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	55	54	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	54	53	51	49	48	50	51	52	52	53	54	54
Dry (24%)	55	54	52	49	48	50	52	52	53	54	55	55
Critical (15%)	58	57	54	50	49	51	52	54	55	57	59	59

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-2.7	-1.6	-0.5	0.1	0.1	0.1	0.1	-0.1	-0.2	-0.8	-1.0	-1.9
0.2	-1.0	-0.7	0.2	-0.3	0.1	0.2	-0.1	-0.1	-0.3	-0.2	-0.4	-1.0
0.3	-0.5	-0.6	0.0	-0.1	0.2	0.1	-0.2	-0.1	-0.2	-0.3	-0.3	-0.5
0.4	-0.5	-0.5	-0.2	0.0	0.2	0.1	0.1	-0.2	-0.1	-0.2	-0.3	-0.5
0.5	-0.3	-0.3	-0.1	0.0	0.2	0.1	0.1	-0.2	-0.1	-0.4	-0.4	-0.5
0.6	-0.3	-0.5	-0.1	0.2	0.0	0.1	0.2	-0.1	-0.2	0.1	-0.2	-0.3
0.7	-0.2	-0.2	-0.1	0.2	0.1	0.1	0.3	0.1	-0.1	0.2	-0.1	-0.3
0.8	-0.3	0.1	0.1	0.3	0.5	0.2	0.2	-0.1	-0.2	0.3	-0.3	-0.3
0.9	-0.1	0.0	-0.3	0.5	0.4	0.3	0.4	-0.1	0.4	0.5	0.2	-0.1
Long Term												
Full Simulation Period[b]	-0.8	-0.3	-0.1	0.1	0.2	0.1	0.1	-0.2	-0.2	-0.1	-0.3	-0.8
Water Year Types[c]												
Wet (32%)	-0.4	-0.3	-0.1	0.1	0.4	0.1	0.2	-0.1	0.1	0.3	0.0	-0.2
Above Normal (16%)	-0.8	-0.4	0.0	0.1	0.2	0.1	0.1	0.0	-0.1	0.1	-0.2	-0.4
Below Normal (13%)	-1.0	-0.7	-0.3	0.0	0.1	0.1	-0.2	-0.1	0.0	-0.2	-0.4	-0.5
Dry (24%)	-0.5	-0.4	-0.1	0.0	-0.1	0.0	0.1	-0.1	-0.2	-0.3	-0.6	-0.9
Critical (15%)	-1.9	-0.1	0.1	0.2	0.2	0.3	0.0	-0.8	-1.2	-0.7	-0.6	-2.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-3. Stanislaus River below Tulloch Reservoir, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	60	55	51	50	51	53	54	55	57	61	63
20%	58	58	54	50	49	51	52	53	54	55	57	58
30%	56	56	53	49	49	50	52	53	53	55	56	56
40%	55	55	52	49	48	50	52	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	47	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	47	49	50	50	51	51	52
Long Term												
Full Simulation Period[b]	56	55	52	49	48	49	51	52	53	54	55	56
Water Year Types[c]												
Wet (32%)	53	52	49	48	47	49	50	51	51	52	53	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	54	54
Below Normal (13%)	56	54	52	49	48	49	51	52	53	54	55	56
Dry (24%)	56	55	52	49	48	50	51	53	54	55	56	58
Critical (15%)	60	58	54	50	49	50	53	55	55	58	60	62

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	4.0	1.2	0.4	0.3	-0.2	-0.1	0.3	0.3	0.6	0.6	3.4	4.0
0.2	1.1	1.4	0.3	-0.1	0.0	0.0	0.1	0.3	0.2	0.4	1.2	1.2
0.3	0.8	0.6	-0.1	-0.1	-0.1	-0.2	0.1	0.1	0.0	0.5	0.5	0.5
0.4	0.2	0.2	0.1	-0.1	-0.1	-0.1	0.3	0.1	0.1	0.1	0.3	0.2
0.5	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
0.6	0.3	0.0	0.1	0.1	-0.1	-0.2	0.0	0.2	0.0	0.1	0.0	0.0
0.7	0.1	0.1	-0.1	0.1	-0.3	-0.1	0.0	0.1	-0.1	0.0	0.0	0.1
0.8	0.1	0.1	-0.1	0.0	0.0	-0.2	-0.1	-0.3	-0.1	0.0	0.0	0.1
0.9	0.1	0.0	-0.1	-0.3	-0.2	-0.1	-0.1	-0.1	-0.2	0.0	-0.1	0.2
Long Term												
Full Simulation Period[b]	0.6	0.4	0.1	0.0	-0.1	-0.1	0.0	0.2	-0.2	0.1	0.5	0.7
Water Year Types[c]												
Wet (32%)	0.7	0.3	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.2
Above Normal (16%)	0.4	0.4	0.2	0.1	0.0	-0.1	-0.1	0.2	-0.1	0.1	0.2	0.3
Below Normal (13%)	0.7	0.0	0.1	-0.1	-0.1	-0.1	0.0	0.2	0.2	0.4	0.6	0.8
Dry (24%)	0.7	0.5	0.2	0.1	0.0	-0.1	0.0	0.1	0.2	0.5	1.1	1.7
Critical (15%)	0.5	0.7	-0.2	-0.3	-0.3	-0.2	0.6	0.8	-1.1	-0.2	0.8	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-4. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period[b]	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	59
20%	57	57	53	50	49	51	52	53	54	55	56	57
30%	56	55	53	50	49	50	52	53	53	54	55	56
40%	55	55	52	49	48	50	51	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	48	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	48	49	50	50	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	54	54	55
Dry (24%)	55	55	52	49	48	50	51	52	53	54	55	56
Critical (15%)	60	57	54	50	49	51	52	54	56	58	59	62

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.7	0.1	0.0	-0.2	-0.1	-0.2	0.0	-0.1	0.1	0.1	0.2	0.7
0.2	0.8	0.3	0.0	0.0	-0.2	-0.2	0.2	-0.2	0.1	0.0	0.1	0.4
0.3	0.0	0.0	0.1	0.0	-0.2	-0.1	0.1	-0.2	0.1	0.2	0.1	0.1
0.4	0.1	0.1	-0.1	-0.1	-0.2	0.0	0.0	0.0	-0.1	0.1	0.0	0.1
0.5	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	-0.1	0.2	0.1	0.2
0.6	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.0
0.7	0.0	0.0	-0.2	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	0.2	0.0	0.0
0.8	-0.2	-0.2	-0.1	-0.3	-0.5	-0.1	-0.1	0.1	-0.1	0.2	0.0	0.0
0.9	-0.1	-0.1	0.1	-0.3	-0.3	-0.1	-0.1	0.0	-0.5	0.0	0.0	0.1
Long Term												
Full Simulation Period[b]	0.2	-0.1	-0.1	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.2	0.1	0.3
Water Year Types[c]												
Wet (32%)	0.1	0.1	0.0	-0.1	-0.2	0.0	-0.1	0.0	-0.4	0.2	0.0	0.0
Above Normal (16%)	0.2	-0.1	-0.1	-0.1	-0.2	-0.1	0.1	-0.2	0.0	0.1	0.1	0.1
Below Normal (13%)	0.2	0.2	0.1	-0.1	-0.2	-0.1	0.3	-0.3	0.1	0.2	0.2	0.2
Dry (24%)	0.2	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.1	0.1	0.1	0.2	0.3
Critical (15%)	0.6	-0.7	-0.3	-0.2	-0.2	-0.2	0.1	-0.2	0.9	0.2	-0.2	1.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-5. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period[b]	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	58	57	54	51	50	51	53	54	55	56	56	57
20%	56	56	53	50	50	51	52	53	54	55	55	56
30%	55	55	53	49	49	50	52	52	53	54	55	55
40%	55	54	52	49	49	50	51	52	53	54	54	54
50%	54	54	52	49	48	50	51	52	52	53	54	54
60%	54	53	51	48	48	49	51	52	52	53	53	54
70%	53	53	51	48	48	49	50	51	52	53	53	53
80%	53	53	51	47	47	49	50	51	51	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	52	52
Long Term												
Full Simulation Period[b]	55	54	52	49	48	50	51	52	53	54	54	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	49	50	51	51	52	52	53
Above Normal (16%)	55	54	52	49	48	49	51	51	52	53	53	54
Below Normal (13%)	54	53	51	49	48	50	51	52	52	53	54	54
Dry (24%)	55	54	52	49	48	50	52	52	53	54	55	55
Critical (15%)	58	57	54	50	49	51	52	54	55	57	59	59

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-2.0	-1.5	-0.4	-0.1	-0.1	-0.1	0.1	-0.2	-0.1	-0.7	-0.8	-1.2
0.2	-0.2	-0.4	0.2	-0.3	-0.1	0.0	0.1	-0.3	-0.2	-0.2	-0.3	-0.6
0.3	-0.5	-0.6	0.1	-0.1	0.1	0.0	-0.1	-0.4	-0.1	-0.1	-0.2	-0.4
0.4	-0.4	-0.4	-0.3	-0.2	0.0	0.0	0.1	-0.2	-0.2	-0.2	-0.3	-0.4
0.5	-0.4	-0.4	-0.2	-0.2	0.0	0.0	0.0	-0.3	-0.2	-0.2	-0.3	-0.3
0.6	-0.2	-0.5	-0.2	0.1	-0.1	0.0	0.1	-0.2	-0.3	0.2	-0.1	-0.3
0.7	-0.2	-0.2	-0.3	0.0	0.0	0.0	0.2	-0.1	-0.2	0.4	-0.1	-0.3
0.8	-0.4	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	-0.3	0.5	-0.2	-0.3
0.9	-0.1	-0.1	-0.2	0.2	0.1	0.2	0.3	-0.1	-0.1	0.6	0.3	0.0
Long Term												
Full Simulation Period[b]	-0.5	-0.4	-0.1	-0.1	0.0	0.0	0.1	-0.3	-0.2	0.1	-0.3	-0.5
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.3	0.0	0.1	-0.2	-0.3	0.5	0.0	-0.2
Above Normal (16%)	-0.5	-0.4	-0.2	0.0	0.0	0.0	0.2	-0.2	-0.1	0.1	-0.1	-0.3
Below Normal (13%)	-0.7	-0.5	-0.2	-0.1	-0.1	-0.1	0.1	-0.3	0.0	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	-0.1	-0.3	-0.1	0.1	-0.2	-0.1	-0.2	-0.5	-0.7
Critical (15%)	-1.3	-0.8	-0.2	-0.1	-0.1	0.1	0.1	-0.9	-0.2	-0.5	-0.8	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-16-6. Stanislaus River below Tulloch Reservoir, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	50	51	53	54	55	56	57	58
20%	57	56	53	50	50	51	52	53	54	55	56	56
30%	56	55	53	50	49	50	52	53	53	54	55	55
40%	55	55	52	49	49	50	51	52	53	54	54	55
50%	55	54	52	49	48	50	51	52	53	53	54	54
60%	54	54	51	48	48	49	51	52	52	53	53	54
70%	54	53	51	48	48	49	50	52	52	52	53	53
80%	53	53	51	47	47	49	50	51	52	52	53	53
90%	52	52	50	47	46	48	49	50	51	51	51	52
Long Term												
Full Simulation Period[b]	55	55	52	49	48	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	49	50	51	52	52	52	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	53	54
Below Normal (13%)	55	54	51	49	48	50	51	52	52	53	54	55
Dry (24%)	55	55	52	49	49	50	51	53	53	54	55	56
Critical (15%)	59	58	54	50	49	51	52	54	55	58	59	60

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	60	55	51	50	51	53	54	55	57	61	63
20%	58	58	54	50	49	51	52	53	54	55	57	58
30%	56	56	53	49	49	50	52	53	53	55	56	56
40%	55	55	52	49	48	50	52	52	53	54	55	55
50%	55	54	52	49	48	50	51	52	53	54	54	55
60%	54	54	51	48	48	49	51	52	52	53	54	54
70%	54	53	51	48	47	49	50	51	52	52	53	54
80%	53	53	50	47	47	48	50	51	51	52	53	53
90%	52	52	50	46	46	47	49	50	50	51	51	52
Long Term												
Full Simulation Period[b]	56	55	52	49	48	49	51	52	53	54	55	56
Water Year Types[c]												
Wet (32%)	53	52	49	48	47	49	50	51	51	52	53	53
Above Normal (16%)	56	55	52	49	48	49	51	52	52	53	54	54
Below Normal (13%)	56	54	52	49	48	49	51	52	53	54	55	56
Dry (24%)	56	55	52	49	48	50	51	53	54	55	56	58
Critical (15%)	60	58	54	50	49	50	53	55	55	58	60	62

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	4.8	1.3	0.4	0.1	-0.3	-0.3	0.2	0.2	0.7	0.7	3.5	4.8
0.2	1.8	1.7	0.3	-0.1	-0.2	-0.2	0.3	0.1	0.2	0.4	1.3	1.6
0.3	0.8	0.6	0.0	-0.2	-0.3	-0.2	0.2	-0.2	0.1	0.6	0.6	0.6
0.4	0.3	0.3	0.0	-0.2	-0.3	-0.1	0.3	0.0	-0.1	0.2	0.4	0.3
0.5	0.1	0.1	0.1	-0.2	-0.2	-0.2	0.0	0.0	-0.1	0.2	0.2	0.2
0.6	0.4	0.0	0.0	0.0	-0.2	-0.3	0.0	0.0	-0.2	0.2	0.1	0.1
0.7	0.1	0.1	-0.2	-0.1	-0.4	-0.2	-0.1	-0.1	-0.2	0.2	0.1	0.2
0.8	-0.1	-0.1	-0.1	-0.3	-0.5	-0.4	-0.1	-0.2	-0.2	0.2	0.1	0.0
0.9	0.0	-0.1	0.0	-0.7	-0.6	-0.2	-0.2	-0.1	-0.6	0.0	0.0	0.3
Long Term												
Full Simulation Period[b]	0.9	0.3	0.0	-0.1	-0.3	-0.2	0.1	0.0	-0.1	0.3	0.6	1.0
Water Year Types[c]												
Wet (32%)	0.9	0.4	0.1	-0.1	-0.2	-0.1	-0.2	-0.1	-0.5	0.2	0.1	0.1
Above Normal (16%)	0.7	0.4	0.1	-0.1	-0.2	-0.2	0.0	0.0	-0.1	0.2	0.3	0.4
Below Normal (13%)	0.9	0.2	0.1	-0.2	-0.3	-0.2	0.2	-0.1	0.3	0.6	0.8	1.0
Dry (24%)	0.8	0.5	0.2	-0.1	-0.2	-0.2	0.0	0.0	0.2	0.6	1.3	1.9
Critical (15%)	1.1	0.0	-0.5	-0.5	-0.6	-0.4	0.7	0.7	-0.2	0.0	0.6	1.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

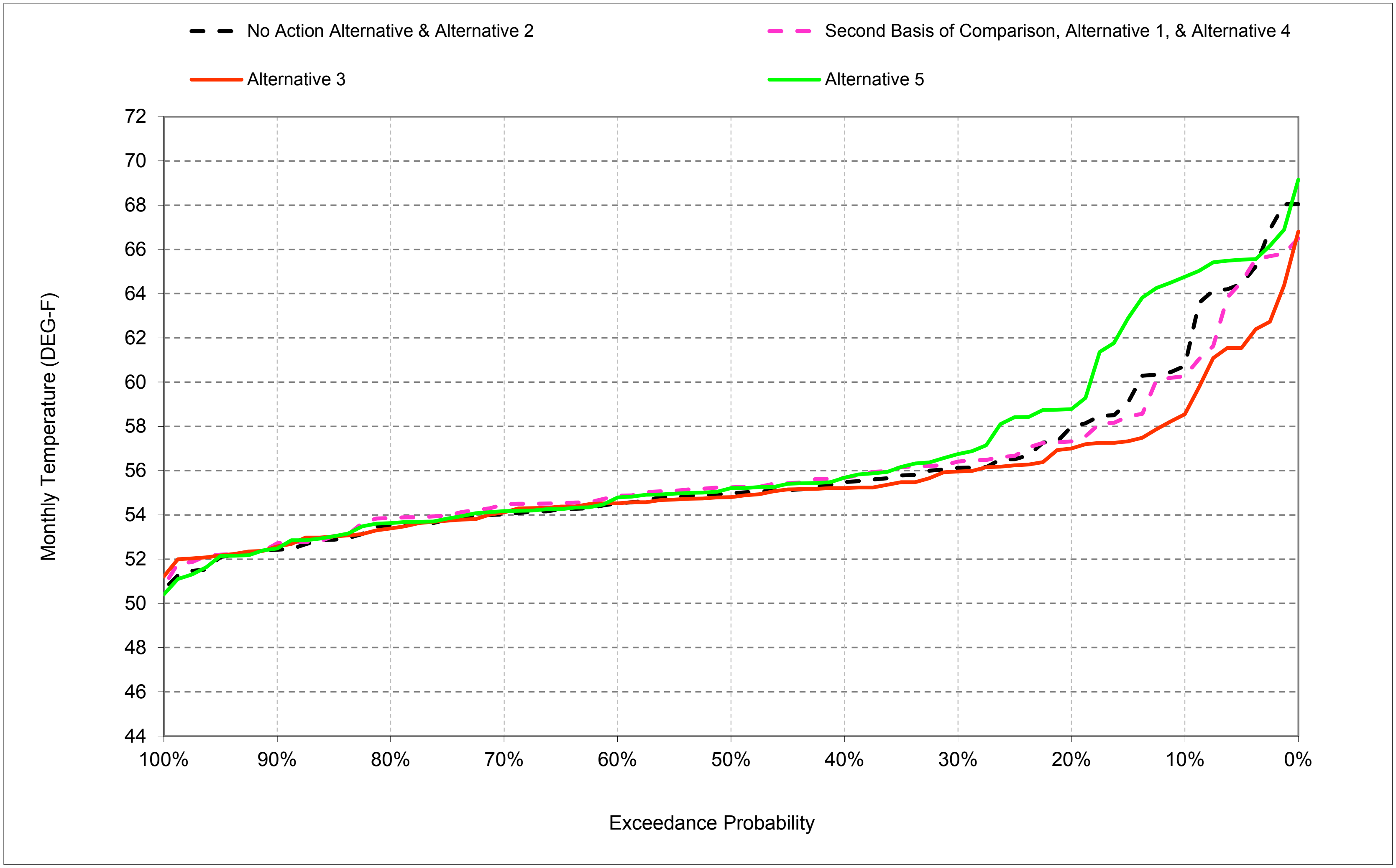
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

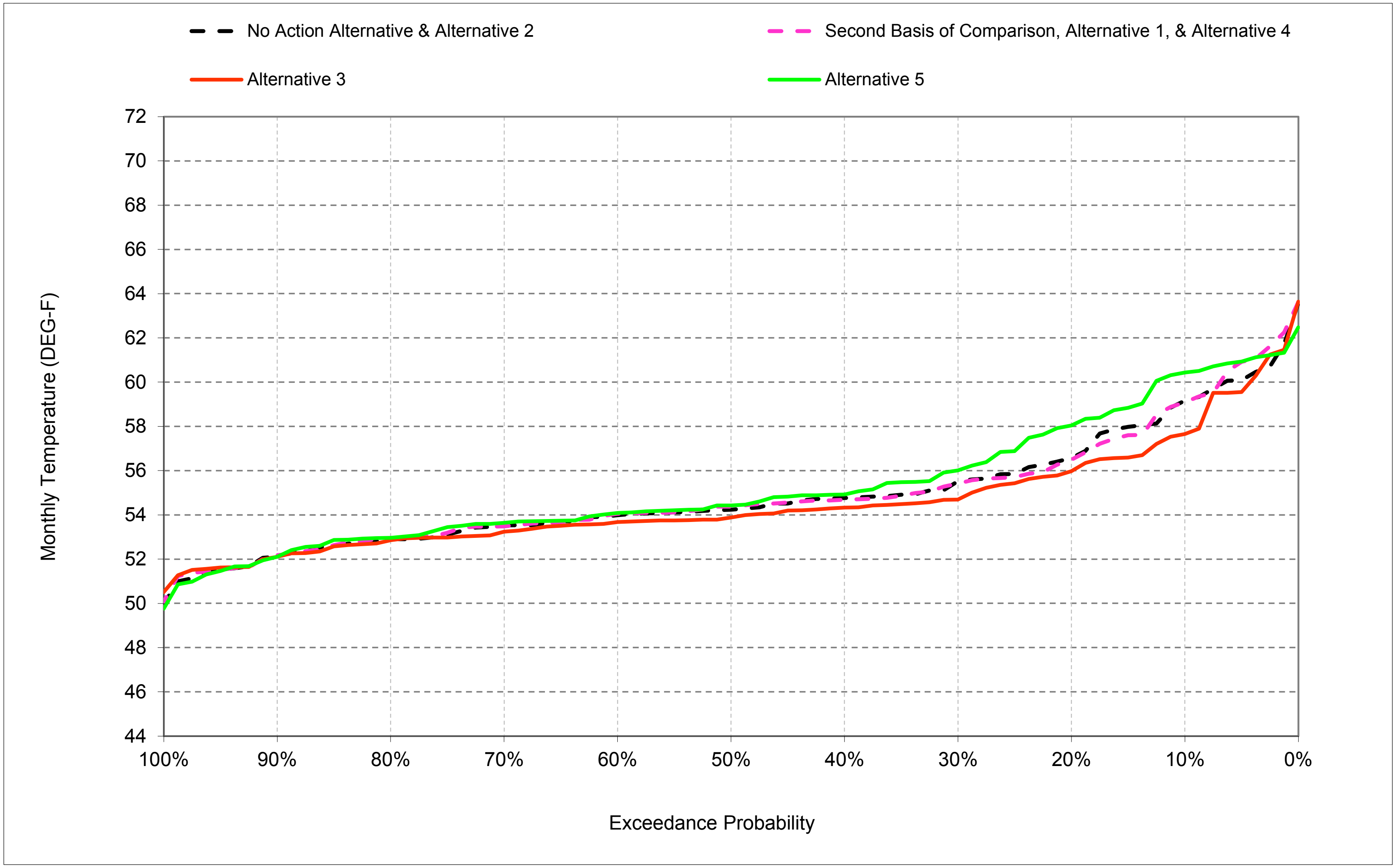
B.17. Stanislaus River below Goodwin Temperature

Figure B-17-1. Stanislaus River below Goodwin Dam, October



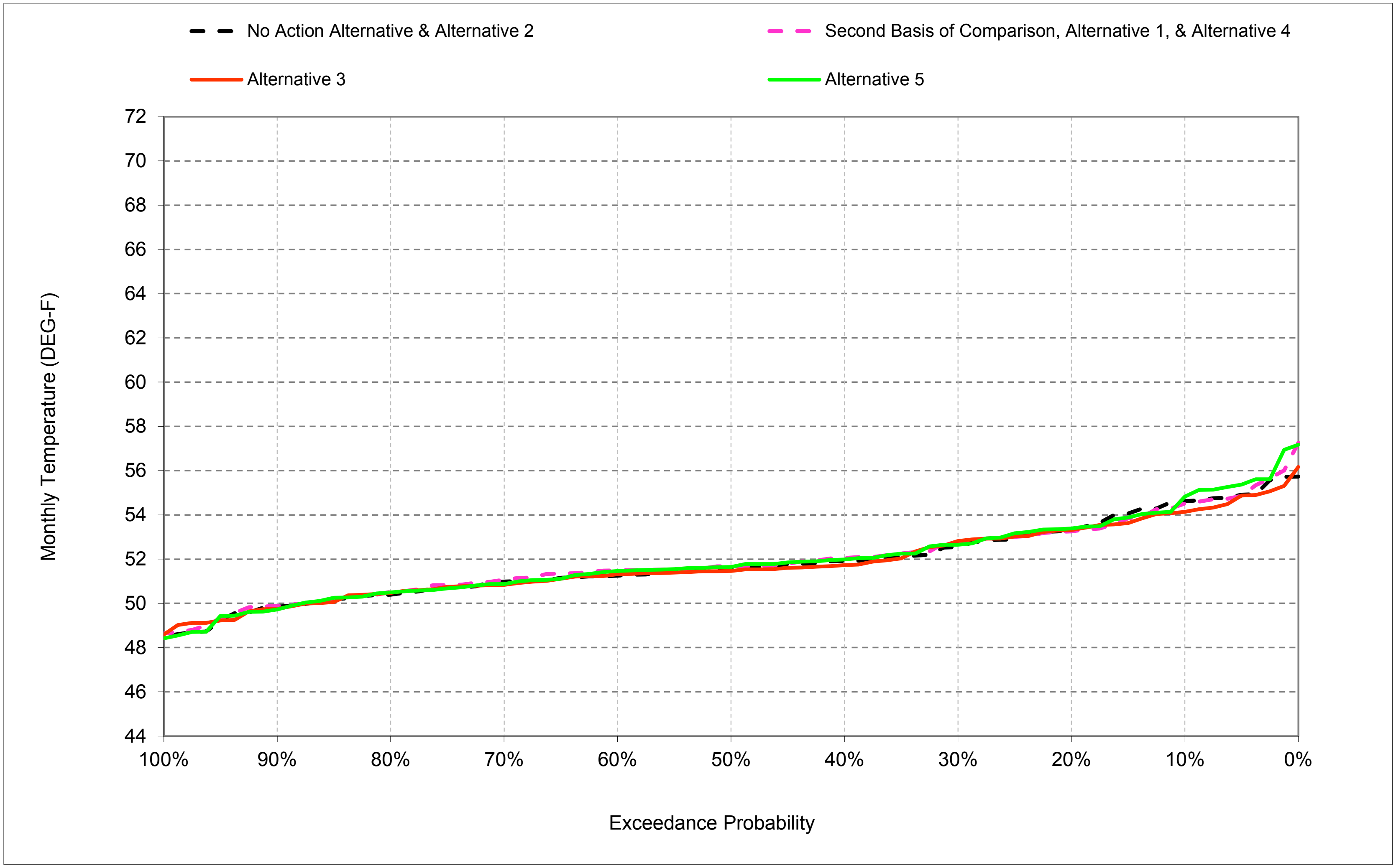
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-2. Stanislaus River below Goodwin Dam, November



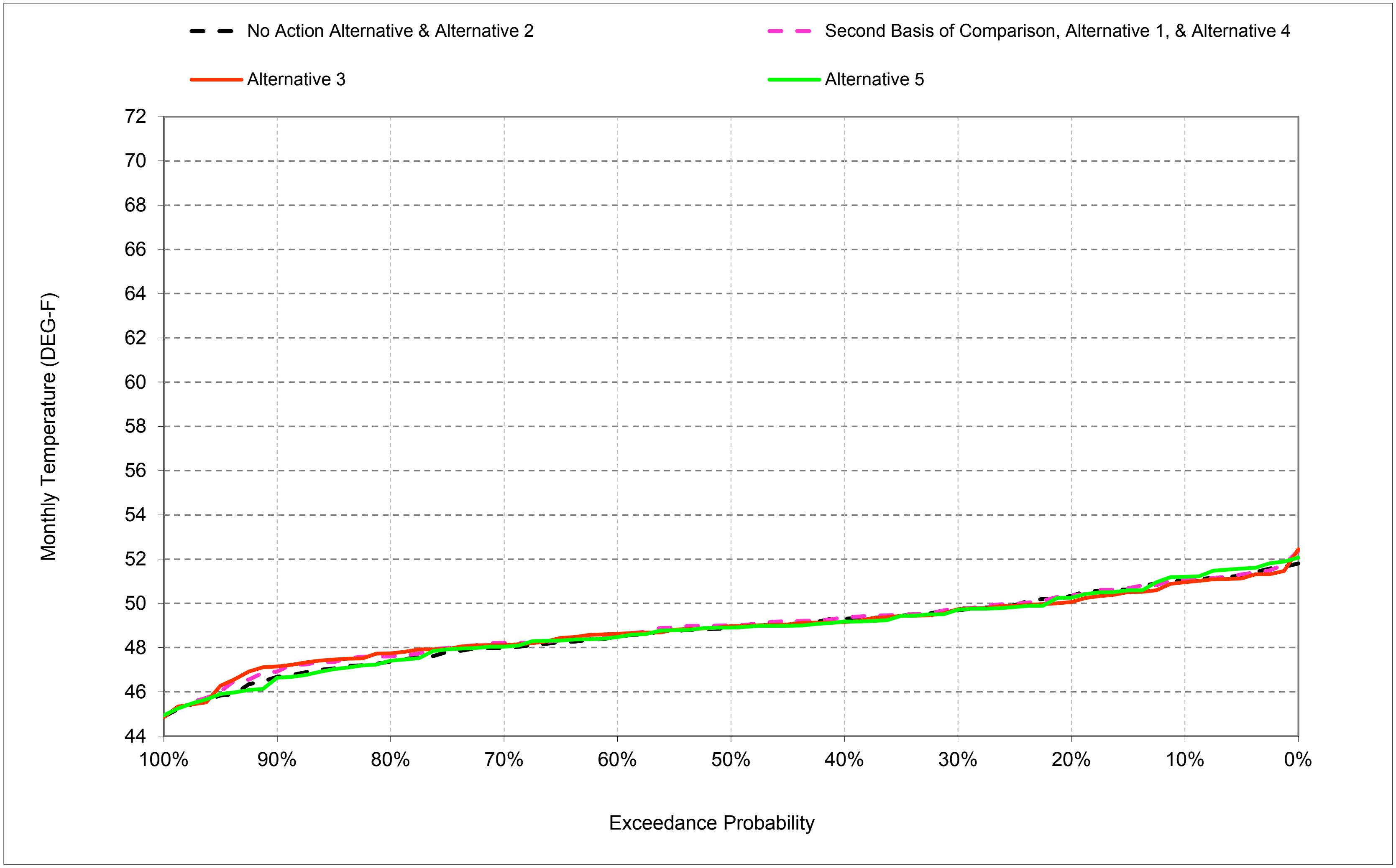
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-3. Stanislaus River below Goodwin Dam, December



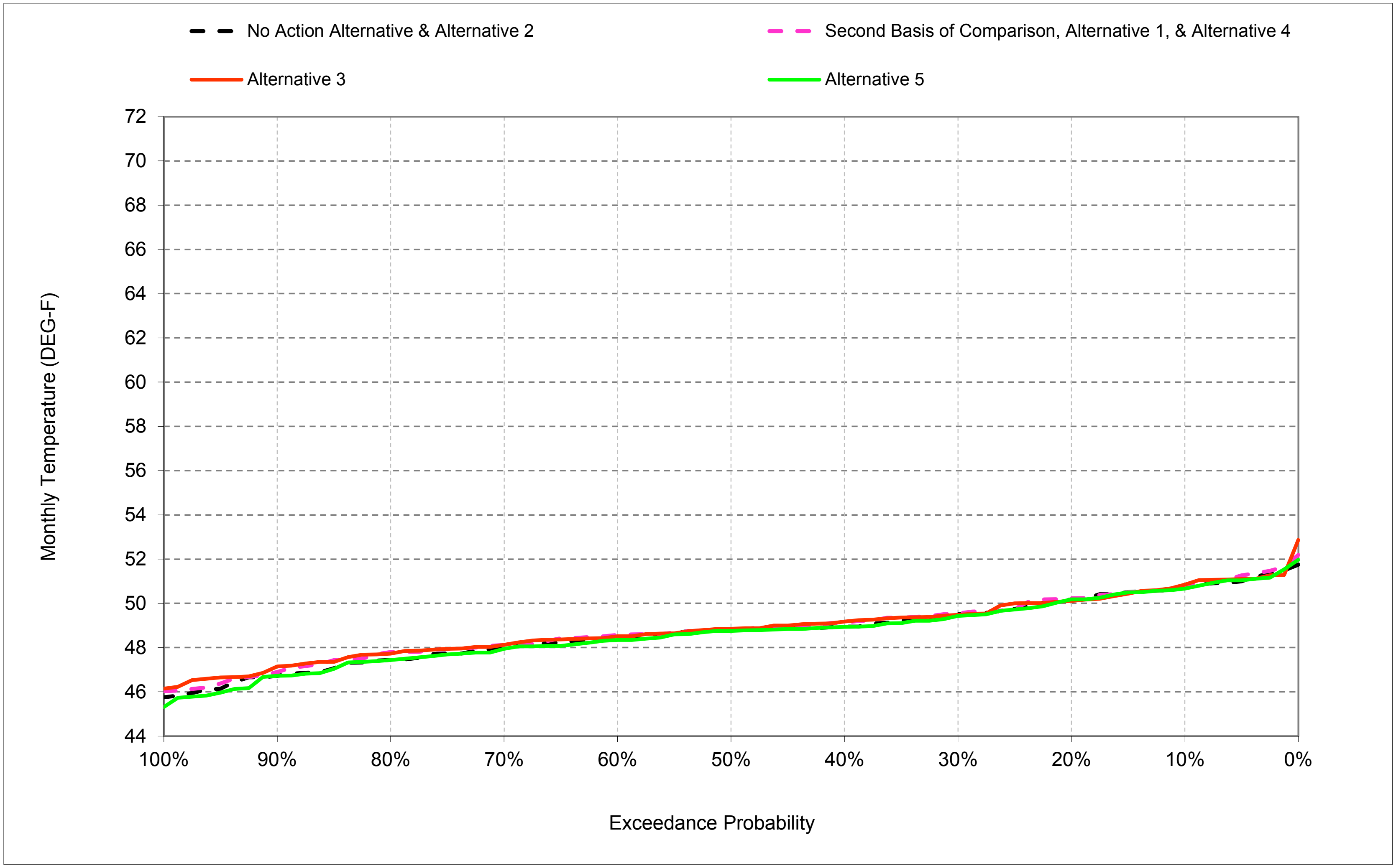
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-4. Stanislaus River below Goodwin Dam, January



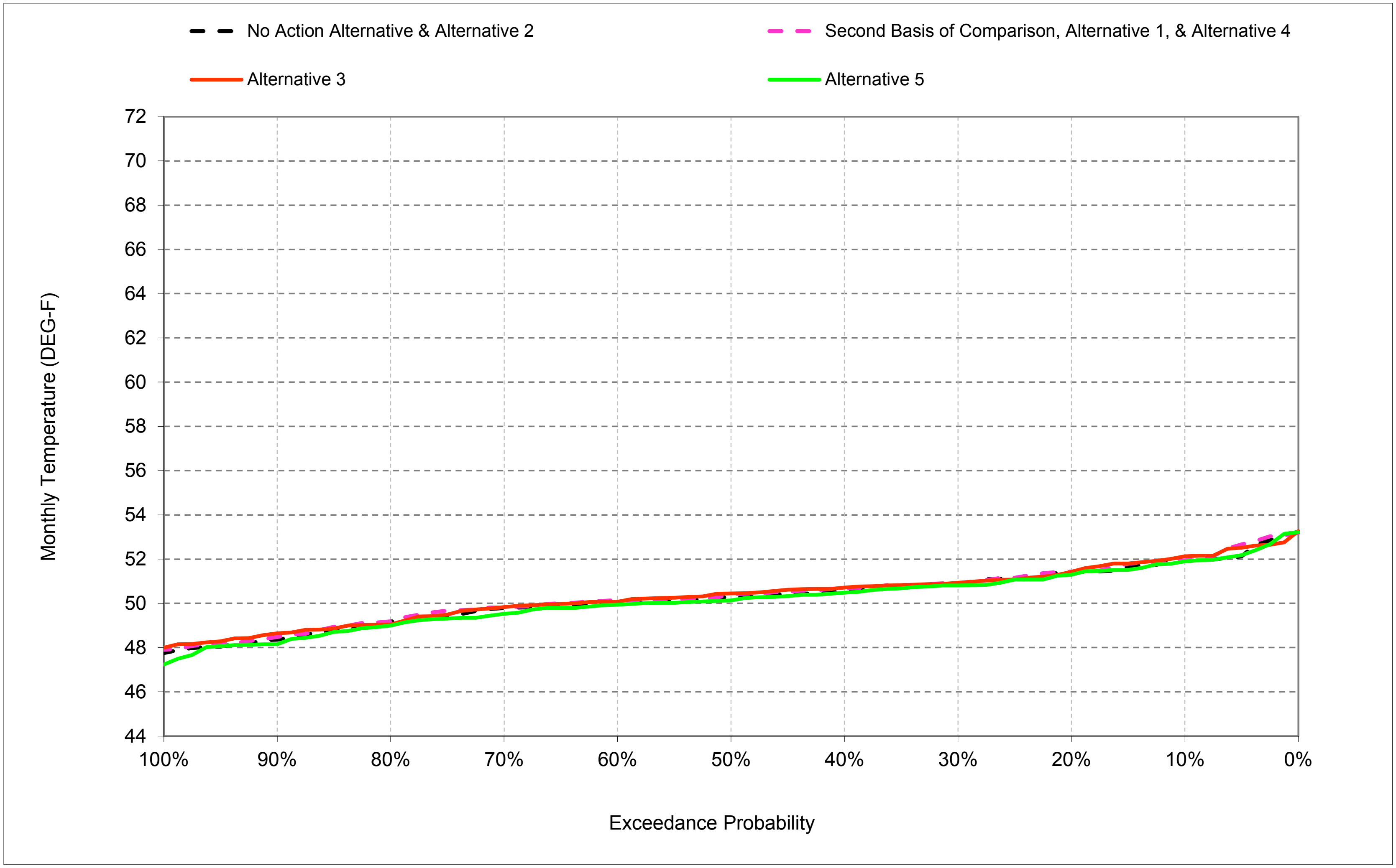
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-5. Stanislaus River below Goodwin Dam, February



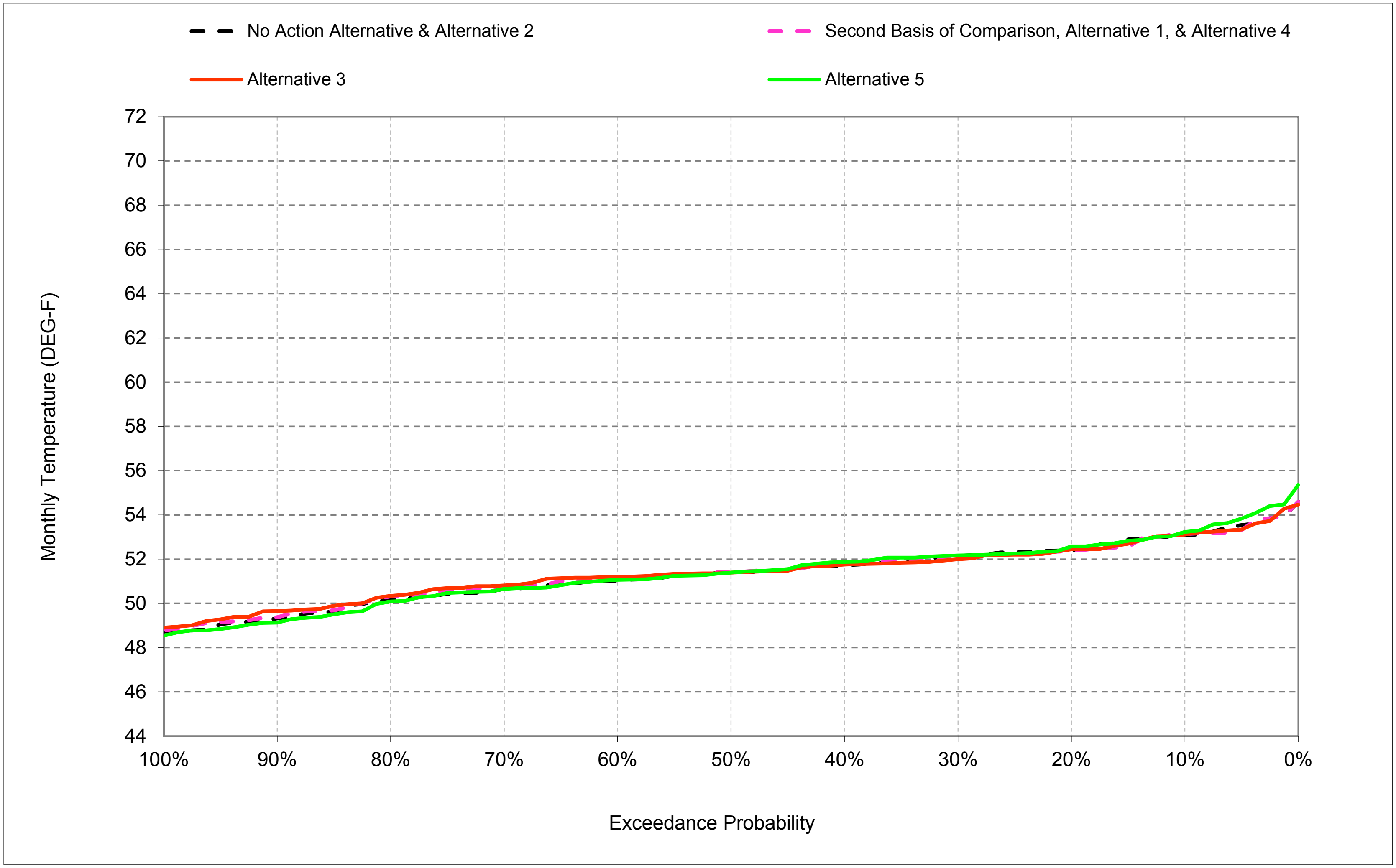
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-6. Stanislaus River below Goodwin Dam, March



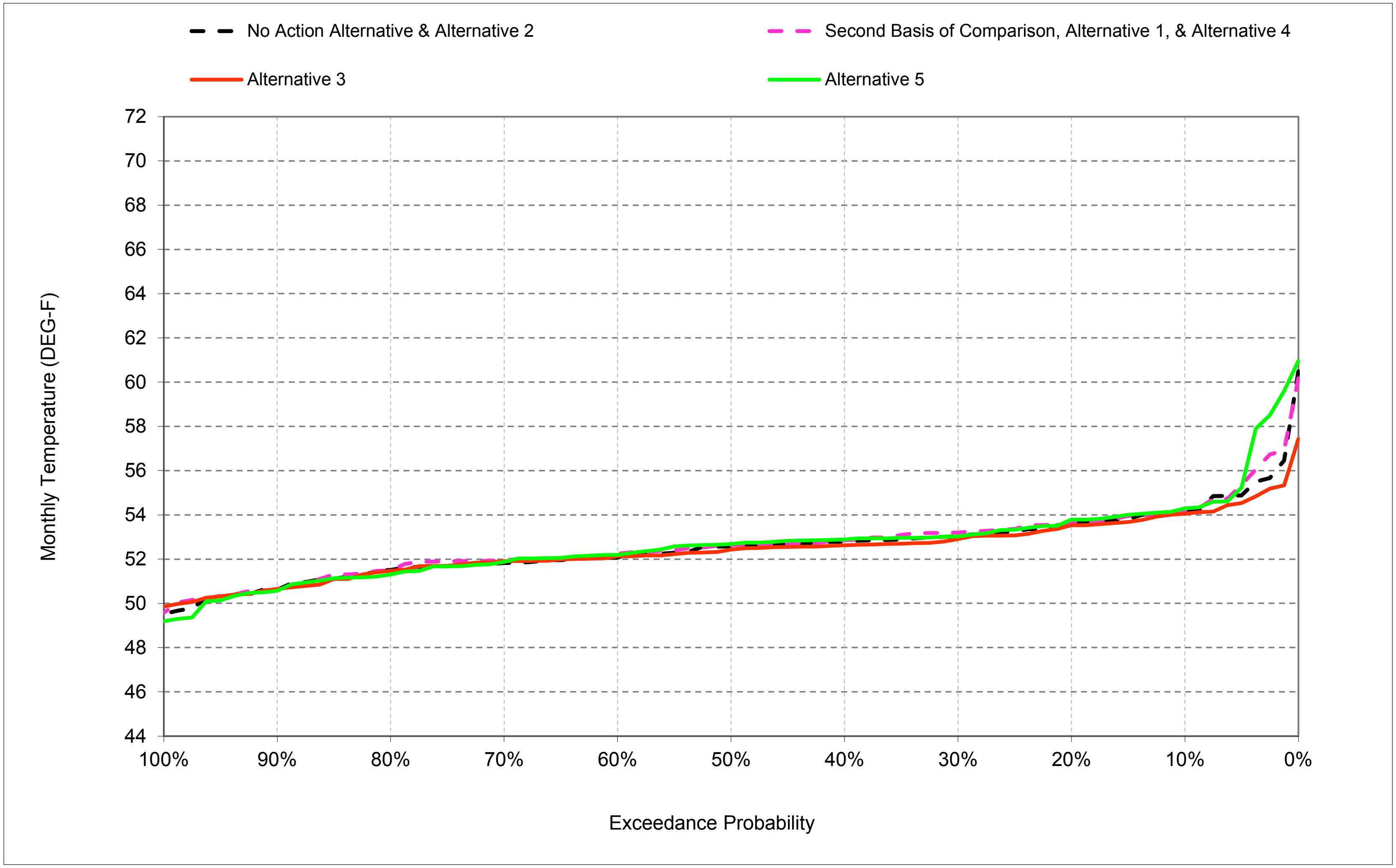
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-7. Stanislaus River below Goodwin Dam, April



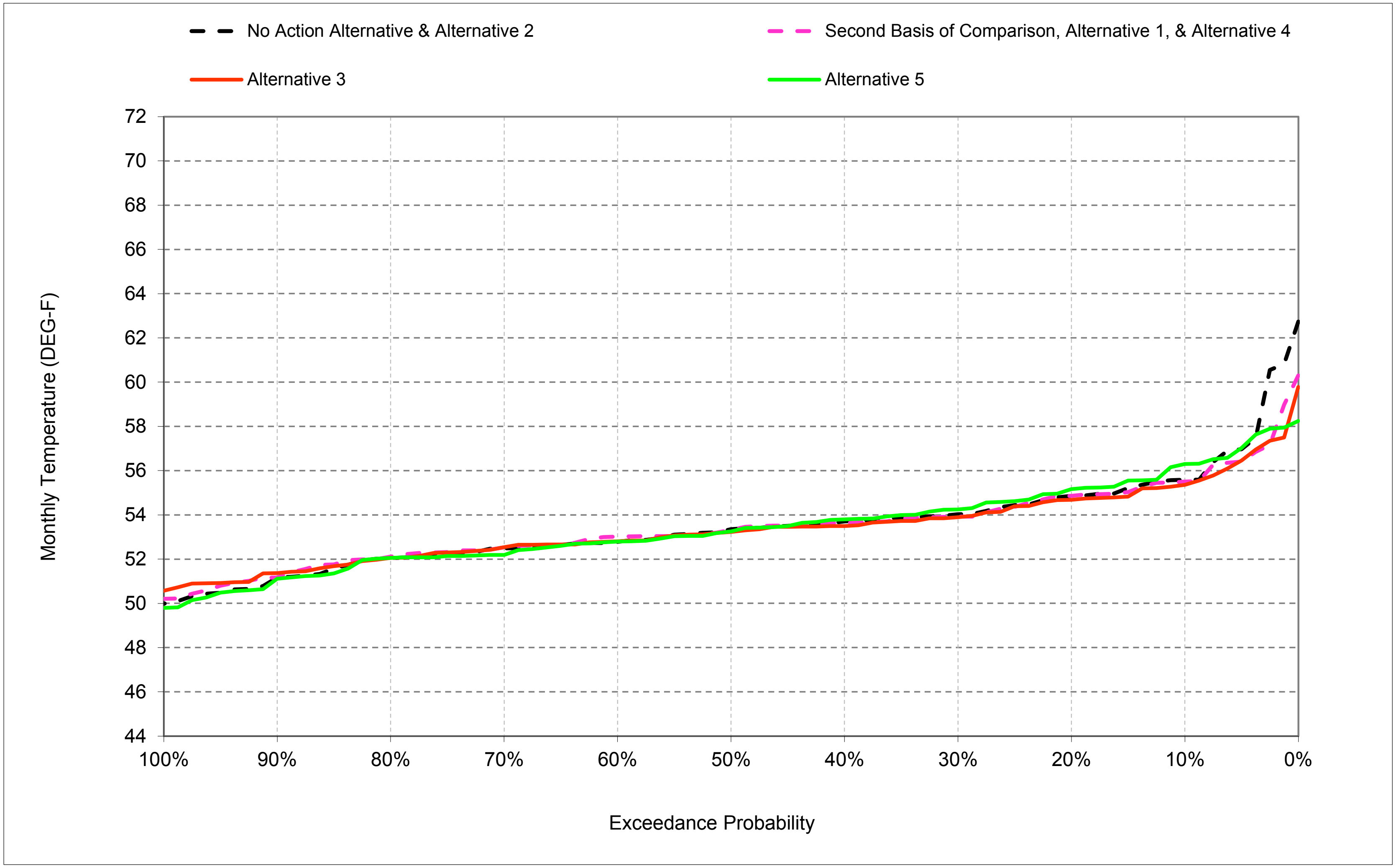
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-8. Stanislaus River below Goodwin Dam, May



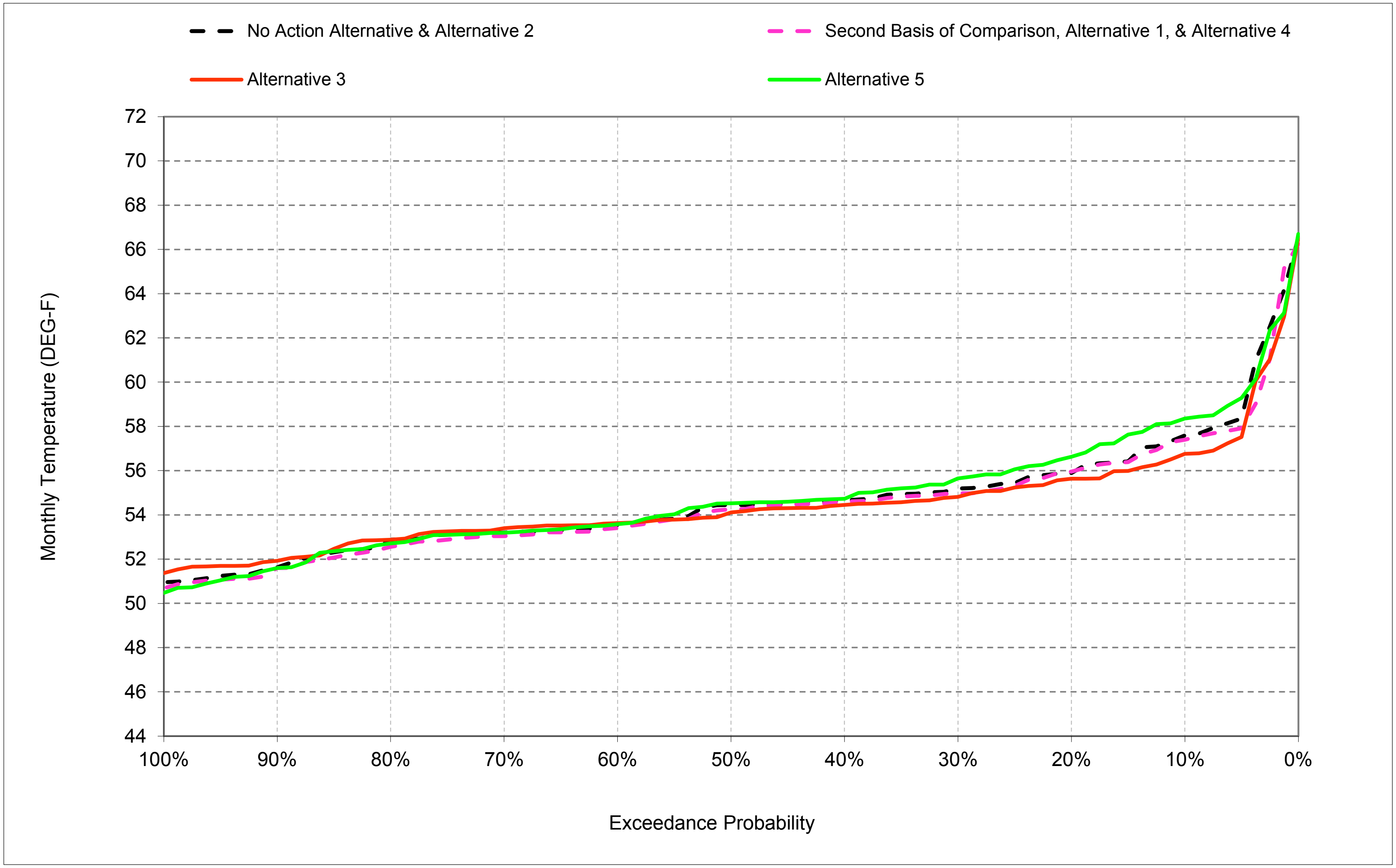
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-9. Stanislaus River below Goodwin Dam, June



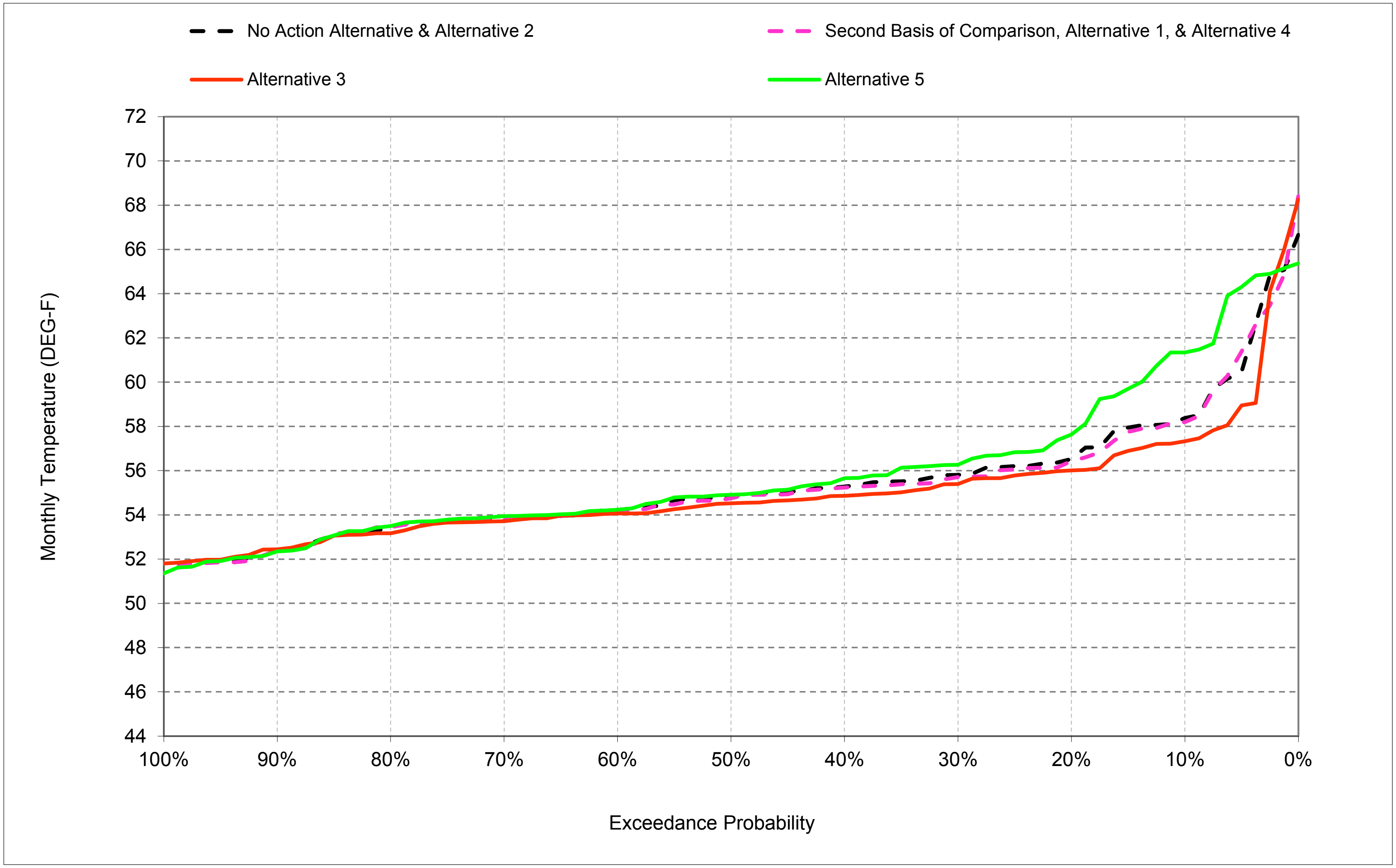
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-10. Stanislaus River below Goodwin Dam, July



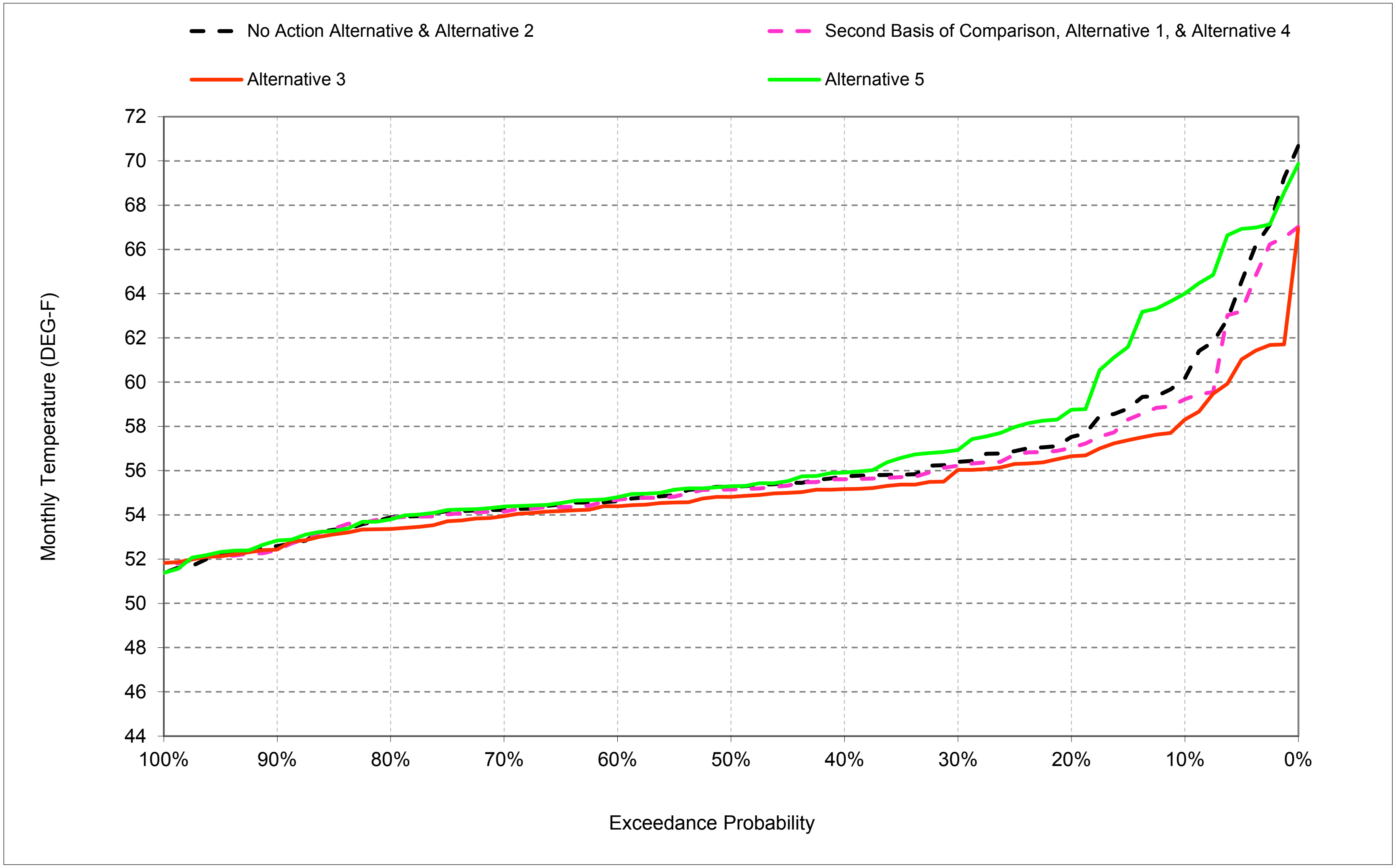
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-11. Stanislaus River below Goodwin Dam, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-17-12. Stanislaus River below Goodwin Dam, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-1. Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	**-0.5**	**-0.1**	**-0.1**	**0.0**	**0.0**	0.0	0.0	0.1	**-0.1**	**-0.2**	**-0.2**	**-0.9**
0.2	**-0.7**	**-0.1**	**0.0**	0.0	0.1	0.0	**0.0**	**0.0**	0.0	0.1	**-0.1**	**-0.4**
0.3	0.3	**-0.1**	0.2	0.1	0.1	0.1	**-0.1**	0.2	**-0.1**	**-0.2**	**-0.1**	**-0.2**
0.4	0.2	**-0.1**	0.1	0.0	0.2	0.1	0.0	0.1	**0.0**	**-0.1**	**0.0**	**-0.1**
0.5	0.3	0.1	0.1	0.1	0.0	0.1	0.0	0.0	**0.0**	**-0.2**	**-0.1**	**-0.1**
0.6	0.3	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.3	**-0.1**	**-0.1**	0.0
0.7	0.5	**0.0**	0.1	0.2	0.1	0.1	0.1	0.1	**0.0**	**-0.1**	**-0.1**	**-0.1**
0.8	0.3	0.0	0.1	0.3	0.3	0.1	0.1	**0.0**	**0.0**	**-0.2**	0.1	0.0
0.9	0.3	0.1	0.0	0.4	0.1	0.0	0.1	**0.0**	0.3	**-0.3**	0.0	**-0.3**
Long Term												
Full Simulation Period[b]	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	**-0.1**	**-0.2**	**-0.1**	**-0.3**
Water Year Types[c]												
Wet (32%)	0.1	**-0.1**	**0.0**	0.1	0.1	0.1	0.1	0.1	0.3	**-0.2**	**0.0**	0.0
Above Normal (16%)	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.2	**0.0**	**-0.1**	**-0.1**	**-0.1**
Below Normal (13%)	0.0	**-0.2**	**0.0**	0.1	0.1	0.1	**-0.2**	0.2	**-0.1**	**-0.2**	**-0.2**	**-0.2**
Dry (24%)	0.1	**-0.1**	0.1	0.1	0.1	0.1	0.1	0.1	**-0.1**	**-0.1**	**-0.1**	**-0.3**
Critical (15%)	**-0.4**	0.7	0.4	0.2	0.2	0.2	**0.0**	0.1	**-0.8**	**-0.3**	0.1	**-1.3**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-2. Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	58	54	51	51	52	53	54	55	57	57	58
20%	57	56	53	50	50	51	52	53	55	56	56	57
30%	56	55	53	50	49	51	52	53	54	55	55	56
40%	55	54	52	49	49	51	52	53	53	54	55	55
50%	55	54	51	49	49	50	51	52	53	54	55	55
60%	55	54	51	49	48	50	51	52	53	54	54	54
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	53	53	50	48	48	49	50	51	52	53	53	53
90%	53	52	50	47	47	49	50	51	51	52	52	52
Long Term												
Full Simulation Period[b]	55	55	52	49	49	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	50	50	51	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	54	54	54
Below Normal (13%)	55	54	51	49	49	50	51	52	53	54	55	55
Dry (24%)	55	54	52	49	49	51	52	53	54	55	55	56
Critical (15%)	59	57	54	50	50	52	53	54	56	58	60	60

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-2.2	-1.5	-0.5	-0.1	0.0	0.2	0.0	-0.1	-0.2	-0.8	-1.0	-1.9
0.2	-1.0	-0.6	0.0	-0.3	-0.1	0.0	0.0	-0.1	-0.2	-0.3	-0.5	-0.8
0.3	-0.2	-0.8	0.3	0.0	0.0	0.1	-0.1	-0.2	-0.1	-0.3	-0.4	-0.5
0.4	-0.3	-0.4	-0.2	-0.2	0.2	0.1	0.0	-0.2	-0.2	-0.2	-0.4	-0.6
0.5	-0.2	-0.4	-0.1	0.1	0.0	0.2	0.0	-0.2	-0.1	-0.4	-0.3	-0.5
0.6	0.0	-0.3	0.1	0.2	0.1	0.1	0.2	0.0	0.0	0.1	-0.2	-0.2
0.7	0.1	-0.3	-0.2	0.1	0.1	0.0	0.2	0.1	0.0	0.1	-0.2	-0.3
0.8	-0.1	0.0	0.1	0.4	0.3	0.0	0.2	-0.1	0.0	0.3	-0.1	-0.4
0.9	0.2	0.0	-0.1	0.6	0.2	0.2	0.4	0.0	0.5	0.4	0.3	-0.2
Long Term												
Full Simulation Period[b]	-0.5	-0.4	-0.1	0.1	0.2	0.1	0.1	-0.1	-0.1	-0.2	-0.4	-0.8
Water Year Types[c]												
Wet (32%)	-0.2	-0.3	-0.1	0.1	0.4	0.2	0.2	-0.1	0.2	0.2	0.0	-0.2
Above Normal (16%)	-0.4	-0.4	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	-0.2	-0.4
Below Normal (13%)	-0.7	-0.7	-0.3	0.0	0.0	0.1	-0.1	-0.1	0.0	-0.2	-0.4	-0.5
Dry (24%)	-0.2	-0.4	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.3	-0.6	-0.9
Critical (15%)	-1.7	-0.1	0.2	0.1	0.2	0.2	0.0	-0.7	-1.2	-0.9	-0.8	-2.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-3. Stanislaus River below Goodwin Dam, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	60	55	51	51	52	53	54	56	58	61	64
20%	59	58	53	50	50	51	53	54	55	57	58	59
30%	57	56	53	50	49	51	52	53	54	56	56	57
40%	56	55	52	49	49	50	52	53	54	55	56	56
50%	55	54	52	49	49	50	51	53	53	55	55	55
60%	55	54	51	48	48	50	51	52	53	54	54	55
70%	54	54	51	48	48	49	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	51	52	53
Long Term												
Full Simulation Period[b]	57	55	52	49	49	50	51	53	53	55	56	57
Water Year Types[c]												
Wet (32%)	53	52	49	48	48	49	50	51	52	52	53	54
Above Normal (16%)	57	55	52	49	49	50	51	52	53	54	54	55
Below Normal (13%)	56	54	51	49	49	50	52	53	53	55	56	56
Dry (24%)	56	55	52	49	49	51	52	53	54	56	57	58
Critical (15%)	61	58	53	50	50	51	53	56	57	59	61	63

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	4.0	1.3	0.2	0.1	-0.2	0.0	0.1	0.2	0.7	0.8	3.0	3.9
0.2	0.8	1.5	0.1	-0.1	0.0	-0.1	0.1	0.1	0.3	0.7	1.1	1.2
0.3	0.6	0.5	0.1	0.0	-0.1	0.0	0.0	0.0	0.2	0.4	0.5	0.6
0.4	0.2	0.2	0.1	-0.2	0.0	-0.1	0.2	0.1	0.1	0.1	0.3	0.2
0.5	0.2	0.2	0.1	0.0	-0.1	-0.1	0.0	0.1	-0.1	0.1	0.1	0.0
0.6	0.3	0.1	0.2	0.0	0.0	-0.1	0.0	0.1	0.0	0.1	0.0	0.1
0.7	0.2	0.1	-0.1	0.1	-0.1	-0.3	0.0	0.0	-0.3	0.0	0.0	0.1
0.8	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.1	0.0
0.9	0.1	0.0	-0.1	-0.3	0.0	-0.2	-0.1	-0.1	-0.1	0.0	0.0	0.1
Long Term												
Full Simulation Period[b]	0.6	0.4	0.1	0.0	-0.1	-0.1	0.0	0.1	-0.1	0.2	0.5	0.6
Water Year Types[c]												
Wet (32%)	0.7	0.3	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.2
Above Normal (16%)	0.4	0.4	0.2	0.1	0.0	-0.1	-0.1	0.1	-0.1	0.1	0.2	0.3
Below Normal (13%)	0.7	0.0	0.1	0.0	-0.1	-0.1	0.0	0.1	0.2	0.4	0.6	0.8
Dry (24%)	0.7	0.5	0.2	0.1	0.0	-0.1	0.0	0.0	0.2	0.5	1.1	1.6
Critical (15%)	0.5	0.7	-0.1	-0.2	-0.3	-0.2	0.5	0.8	-0.7	0.0	0.9	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-4. Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	59	55	51	51	52	53	54	56	58	58	60
20%	58	57	53	50	50	51	52	54	55	56	56	57
30%	56	56	53	50	49	51	52	53	54	55	56	56
40%	55	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	48	48	50	51	52	53	53	54	55
70%	54	54	51	48	48	50	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	52	52	53
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	55	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	52	52	53	54	55	56
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	51	53	55	57	59	60	63

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.5	0.1	0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.2	0.2	0.9
0.2	0.7	0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.4
0.3	-0.3	0.1	-0.2	-0.1	-0.1	-0.1	0.1	-0.2	0.1	0.2	0.1	0.2
0.4	-0.2	0.1	-0.1	0.0	-0.2	-0.1	0.0	-0.1	0.0	0.1	0.0	0.1
0.5	-0.3	-0.1	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0	0.2	0.1	0.1
0.6	-0.3	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1	-0.3	0.1	0.1	0.0
0.7	-0.5	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.1
0.8	-0.3	0.0	-0.1	-0.3	-0.3	-0.1	-0.1	0.0	0.0	0.2	-0.1	0.0
0.9	-0.3	-0.1	0.0	-0.4	-0.1	0.0	-0.1	0.0	-0.3	0.3	0.0	0.3
Long Term												
Full Simulation Period[b]	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.1	0.2	0.1	0.3
Water Year Types[c]												
Wet (32%)	-0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.3	0.2	0.0	0.0
Above Normal (16%)	-0.1	0.0	-0.1	-0.1	-0.1	-0.1	0.0	-0.2	0.0	0.1	0.1	0.1
Below Normal (13%)	0.0	0.2	0.0	-0.1	-0.1	-0.1	0.2	-0.2	0.1	0.2	0.2	0.2
Dry (24%)	-0.1	0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	0.1	0.1	0.3
Critical (15%)	0.4	-0.7	-0.4	-0.2	-0.2	-0.2	0.0	-0.1	0.8	0.3	-0.1	1.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-5. Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	58	54	51	51	52	53	54	55	57	57	58
20%	57	56	53	50	50	51	52	53	55	56	56	57
30%	56	55	53	50	49	51	52	53	54	55	55	56
40%	55	54	52	49	49	51	52	53	53	54	55	55
50%	55	54	51	49	49	50	51	52	53	54	55	55
60%	55	54	51	49	48	50	51	52	53	54	54	54
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	53	53	50	48	48	49	50	51	52	53	53	53
90%	53	52	50	47	47	49	50	51	51	52	52	52
Long Term												
Full Simulation Period[b]	55	55	52	49	49	50	51	52	53	54	55	55
Water Year Types[c]												
Wet (32%)	52	51	49	48	48	50	50	51	52	53	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	54	54	54
Below Normal (13%)	55	54	51	49	49	50	51	52	53	54	55	55
Dry (24%)	55	54	52	49	49	51	52	53	54	55	55	56
Critical (15%)	59	57	54	50	50	52	53	54	56	58	60	60

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-1.7	-1.4	-0.4	-0.1	0.0	0.2	0.0	-0.2	-0.2	-0.7	-0.9	-0.9
0.2	-0.3	-0.5	0.1	-0.3	-0.1	0.0	0.1	-0.1	-0.2	-0.3	-0.4	-0.4
0.3	-0.4	-0.7	0.1	-0.1	-0.1	0.0	0.0	-0.3	0.0	-0.2	-0.3	-0.3
0.4	-0.5	-0.4	-0.3	-0.2	0.0	0.0	0.0	-0.2	-0.1	-0.1	-0.4	-0.4
0.5	-0.4	-0.5	-0.2	-0.1	0.0	0.1	0.0	-0.2	-0.1	-0.2	-0.2	-0.3
0.6	-0.3	-0.4	-0.2	0.1	-0.1	-0.1	0.0	-0.1	-0.2	0.2	0.0	-0.2
0.7	-0.4	-0.2	-0.2	-0.1	0.0	0.0	0.1	-0.1	0.0	0.3	-0.1	-0.3
0.8	-0.5	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.4	-0.3	-0.4
0.9	-0.1	-0.1	-0.1	0.3	0.1	0.2	0.3	0.0	0.2	0.6	0.2	0.1
Long Term												
Full Simulation Period[b]	-0.5	-0.4	-0.1	-0.1	0.0	0.0	0.0	-0.3	-0.1	0.0	-0.3	-0.5
Water Year Types[c]												
Wet (32%)	-0.3	-0.2	-0.1	0.0	0.2	0.1	0.1	-0.1	-0.1	0.5	0.0	-0.2
Above Normal (16%)	-0.5	-0.4	-0.2	0.0	0.0	0.0	0.1	-0.1	0.1	0.2	-0.1	-0.3
Below Normal (13%)	-0.7	-0.5	-0.2	-0.1	-0.1	0.0	0.0	-0.3	0.1	-0.1	-0.2	-0.3
Dry (24%)	-0.3	-0.3	-0.1	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.2	-0.5	-0.7
Critical (15%)	-1.3	-0.8	-0.2	-0.1	0.0	0.1	0.0	-0.8	-0.4	-0.6	-0.9	-1.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-17-6. Stanislaus River below Goodwin Dam, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	51	52	53	54	56	57	58	59
20%	57	56	53	50	50	51	52	54	55	56	56	57
30%	56	55	53	50	50	51	52	53	54	55	56	56
40%	56	55	52	49	49	51	52	53	54	55	55	56
50%	55	54	52	49	49	50	51	53	53	54	55	55
60%	55	54	51	49	49	50	51	52	53	53	54	55
70%	54	53	51	48	48	50	51	52	52	53	54	54
80%	54	53	51	48	48	49	50	51	52	52	53	54
90%	53	52	50	47	47	48	49	51	51	51	52	52
Long Term												
Full Simulation Period[b]	56	55	52	49	49	50	51	53	53	54	55	56
Water Year Types[c]												
Wet (32%)	52	52	49	48	48	49	50	52	52	52	53	53
Above Normal (16%)	56	55	52	49	49	50	51	52	53	53	54	55
Below Normal (13%)	55	54	51	49	49	50	51	53	53	54	55	55
Dry (24%)	56	55	52	49	49	51	52	53	54	55	56	57
Critical (15%)	60	58	54	50	50	52	53	55	56	59	60	61

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	60	55	51	51	52	53	54	56	58	61	64
20%	59	58	53	50	50	51	53	54	55	57	58	59
30%	57	56	53	50	49	51	52	53	54	56	56	57
40%	56	55	52	49	49	50	52	53	54	55	56	56
50%	55	54	52	49	49	50	51	53	53	55	55	55
60%	55	54	51	48	48	50	51	52	53	54	54	55
70%	54	54	51	48	48	49	51	52	52	53	54	54
80%	54	53	50	47	47	49	50	51	52	53	53	54
90%	52	52	50	46	47	48	49	51	51	51	52	53
Long Term												
Full Simulation Period[b]	57	55	52	49	49	50	51	53	53	55	56	57
Water Year Types[c]												
Wet (32%)	53	52	49	48	48	49	50	51	52	52	53	54
Above Normal (16%)	57	55	52	49	49	50	51	52	53	54	54	55
Below Normal (13%)	56	54	51	49	49	50	52	53	53	55	56	56
Dry (24%)	56	55	52	49	49	51	52	53	54	56	57	58
Critical (15%)	61	58	53	50	50	51	53	56	57	59	61	63

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	4.5	1.4	0.3	0.1	-0.2	-0.1	0.1	0.1	0.8	1.0	3.2	4.8
0.2	1.4	1.6	0.1	-0.1	-0.1	-0.1	0.2	0.1	0.3	0.6	1.2	1.7
0.3	0.3	0.6	-0.1	-0.1	-0.1	-0.1	0.2	-0.2	0.3	0.6	0.6	0.7
0.4	0.0	0.2	-0.1	-0.2	-0.2	-0.2	0.1	0.0	0.2	0.1	0.4	0.3
0.5	0.0	0.1	0.0	-0.1	-0.1	-0.2	0.0	0.0	0.0	0.3	0.2	0.1
0.6	-0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.1	0.0	-0.2	0.2	0.1	0.1
0.7	-0.3	0.2	-0.2	-0.2	-0.3	-0.3	-0.1	-0.1	-0.3	0.1	0.1	0.2
0.8	-0.2	0.0	0.0	-0.3	-0.3	-0.2	-0.2	-0.2	0.0	0.2	0.0	-0.1
0.9	-0.2	-0.1	-0.2	-0.7	-0.1	-0.2	-0.2	-0.1	-0.5	0.2	0.0	0.4
Long Term												
Full Simulation Period[b]	0.6	0.4	0.0	-0.1	-0.2	-0.2	0.0	0.0	0.0	0.4	0.6	1.0
Water Year Types[c]												
Wet (32%)	0.6	0.4	0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.4	0.2	0.1	0.2
Above Normal (16%)	0.3	0.4	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	0.3	0.4
Below Normal (13%)	0.7	0.2	0.1	-0.1	-0.2	-0.2	0.1	-0.1	0.3	0.5	0.8	1.0
Dry (24%)	0.5	0.5	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.2	0.6	1.2	1.9
Critical (15%)	0.8	0.0	-0.5	-0.4	-0.5	-0.4	0.5	0.7	0.1	0.3	0.8	1.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

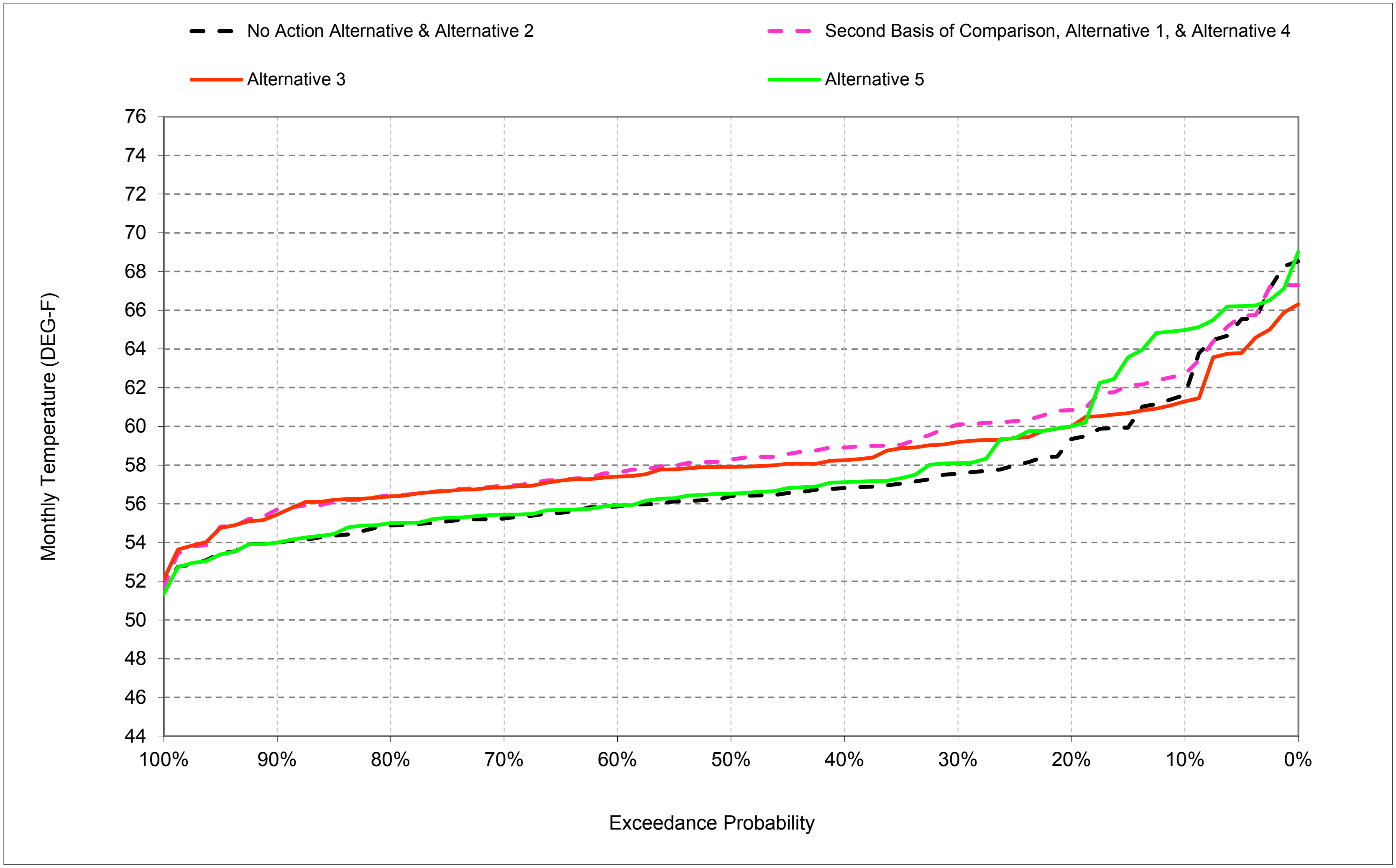
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

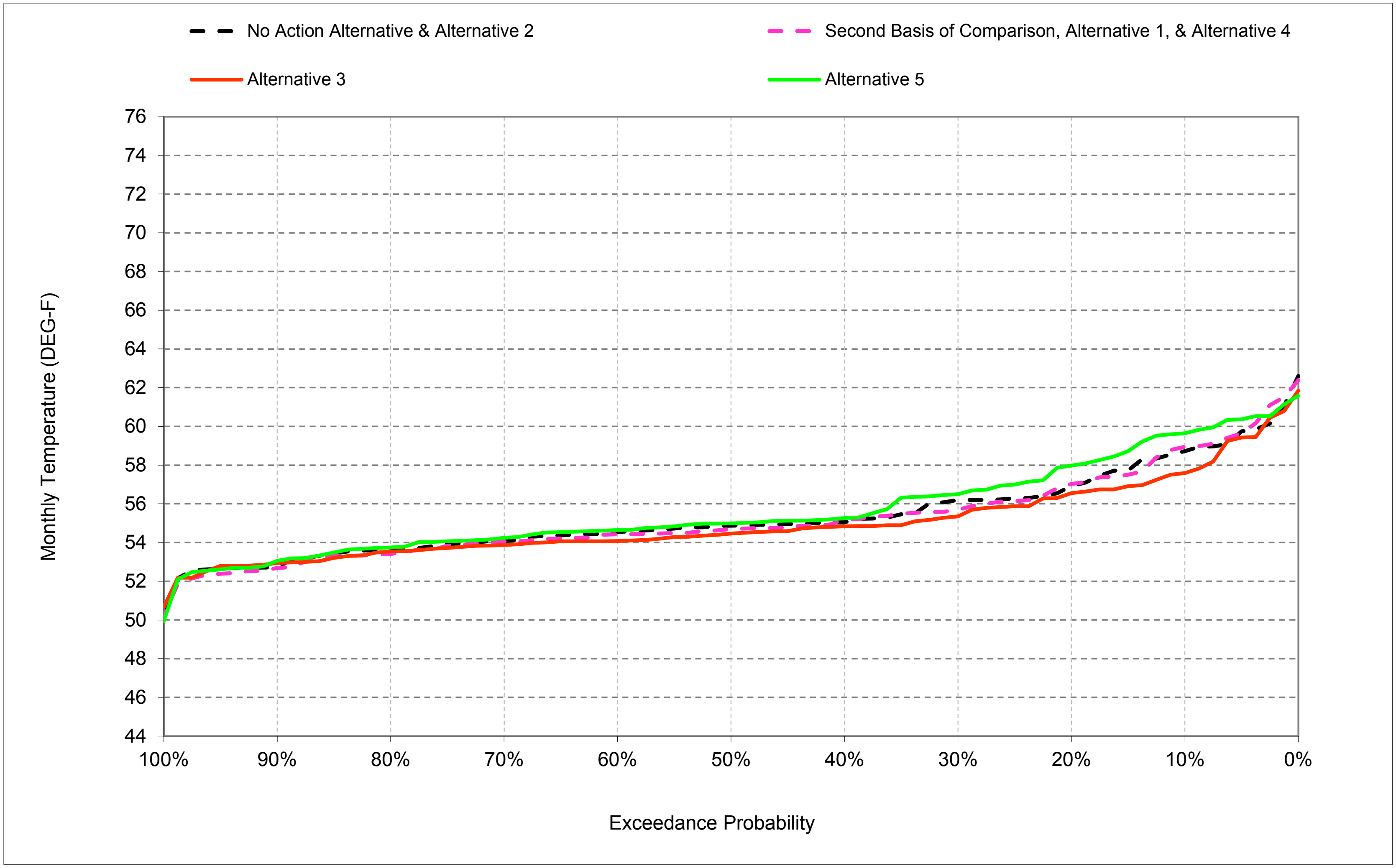
B.18. Stanislaus River at Orange Blossom Bridge Temperature

Figure B-18-1. Stanislaus River at Orange Blossom Bridge, October



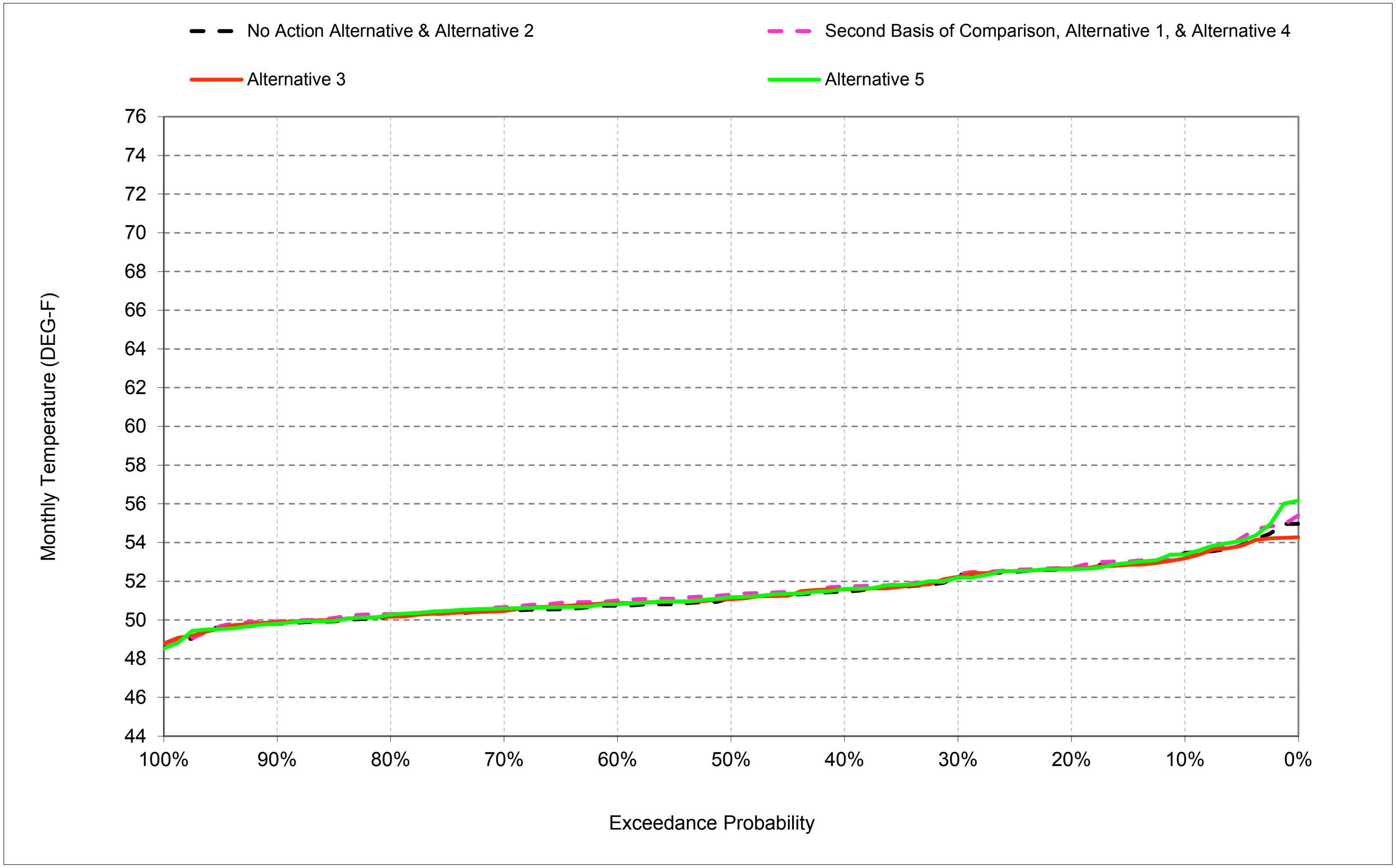
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-2. Stanislaus River at Orange Blossom Bridge, November



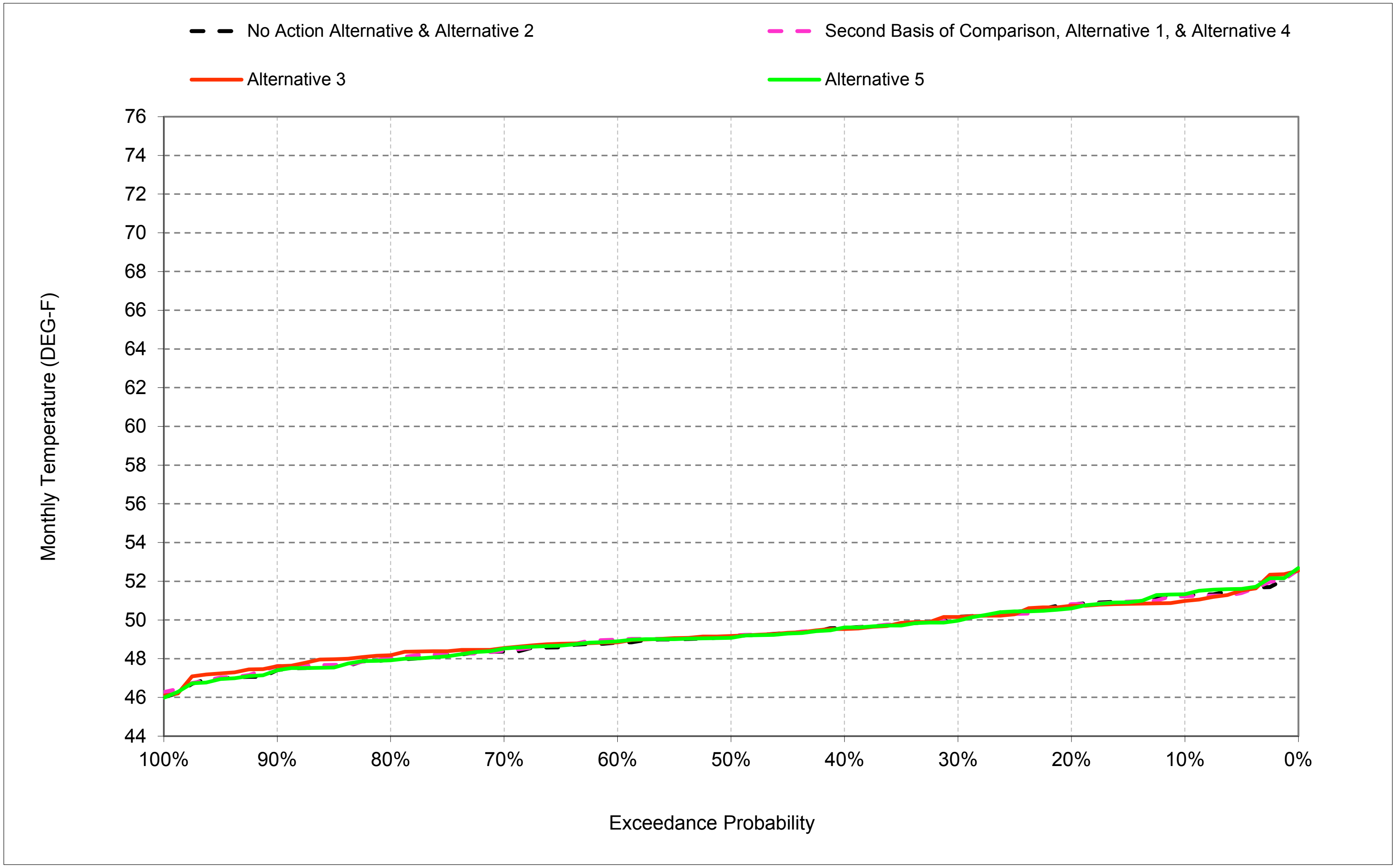
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-3. Stanislaus River at Orange Blossom Bridge, December



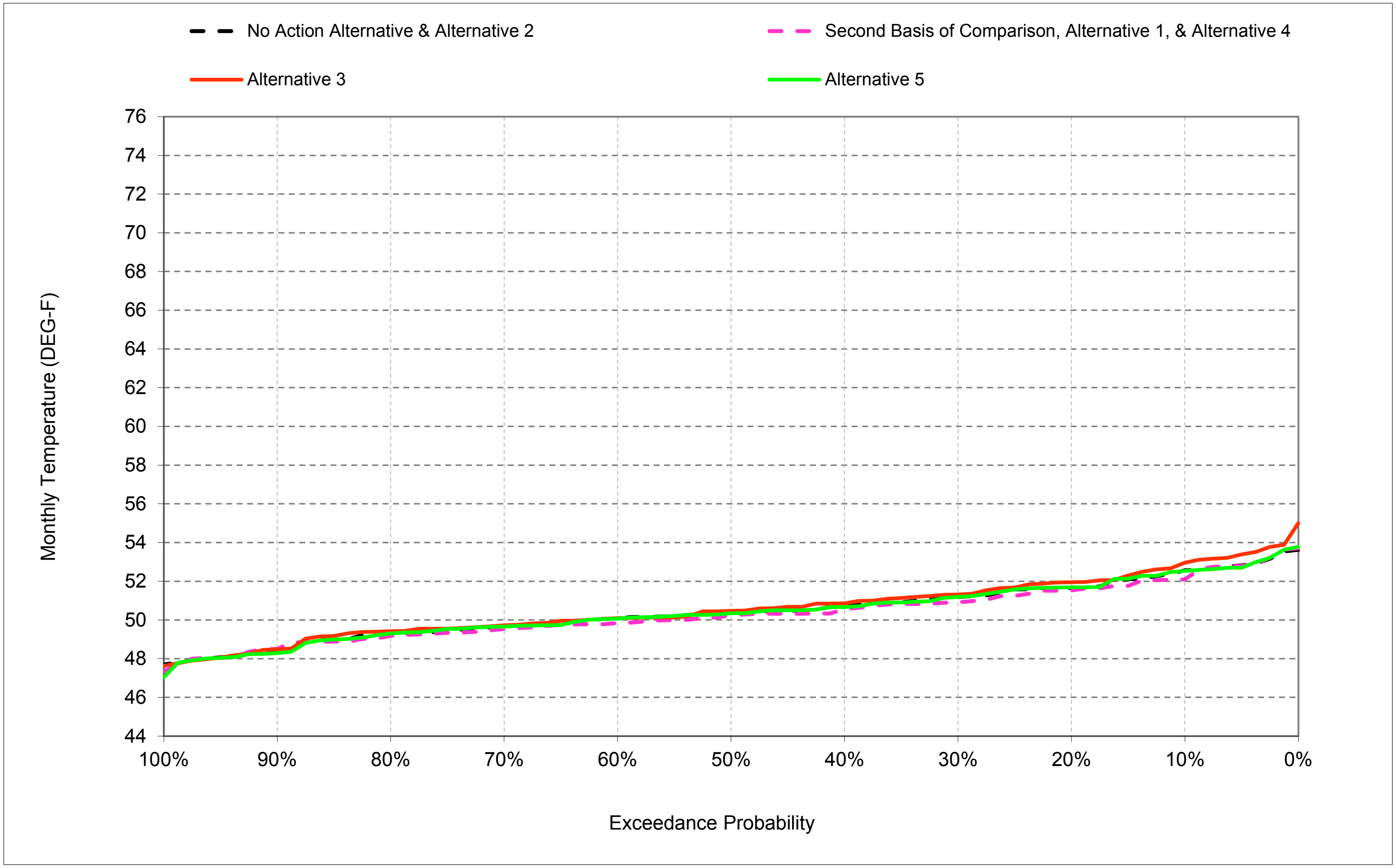
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-4. Stanislaus River at Orange Blossom Bridge, January



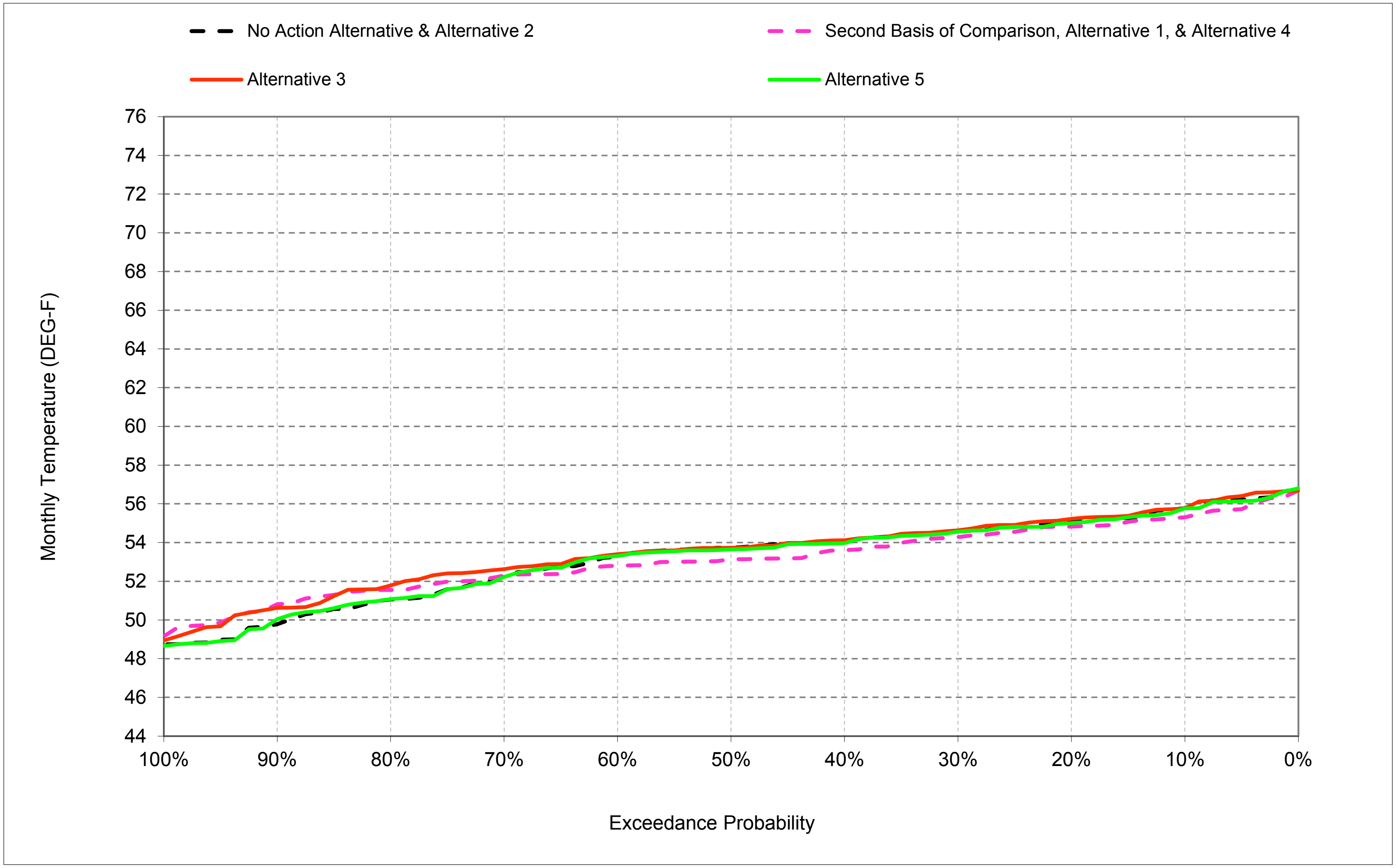
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-5. Stanislaus River at Orange Blossom Bridge, February



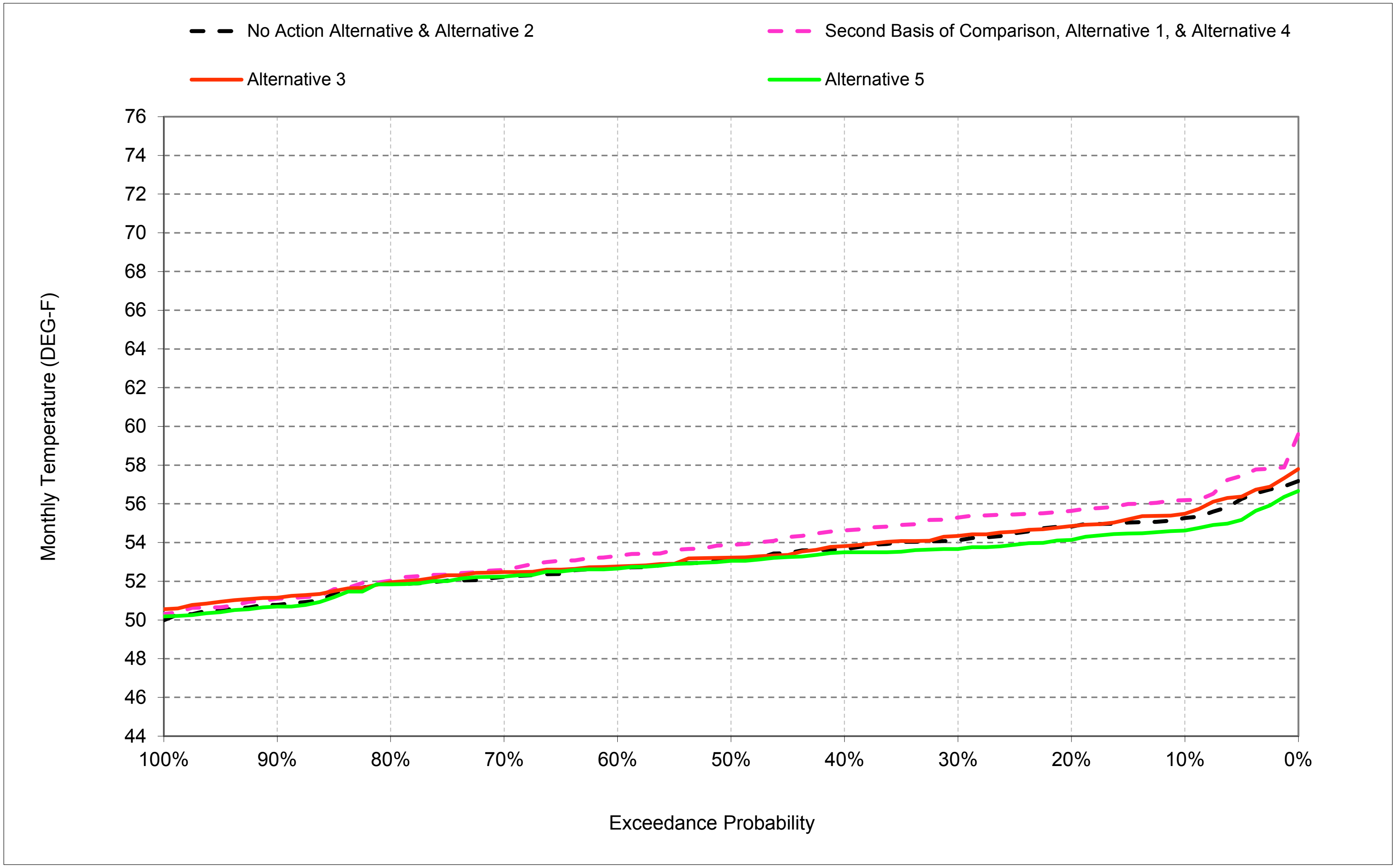
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-6. Stanislaus River at Orange Blossom Bridge, March



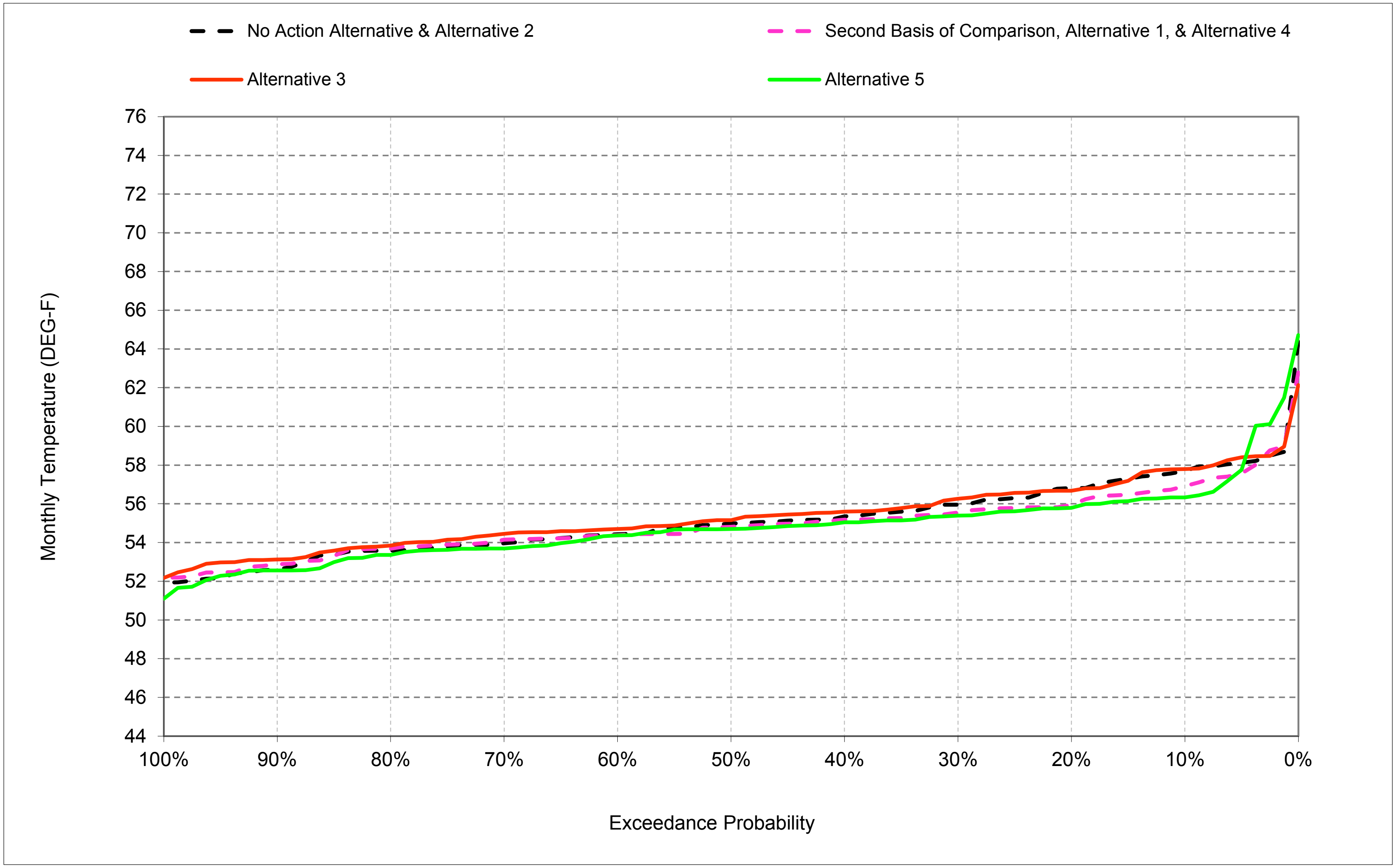
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-7. Stanislaus River at Orange Blossom Bridge, April



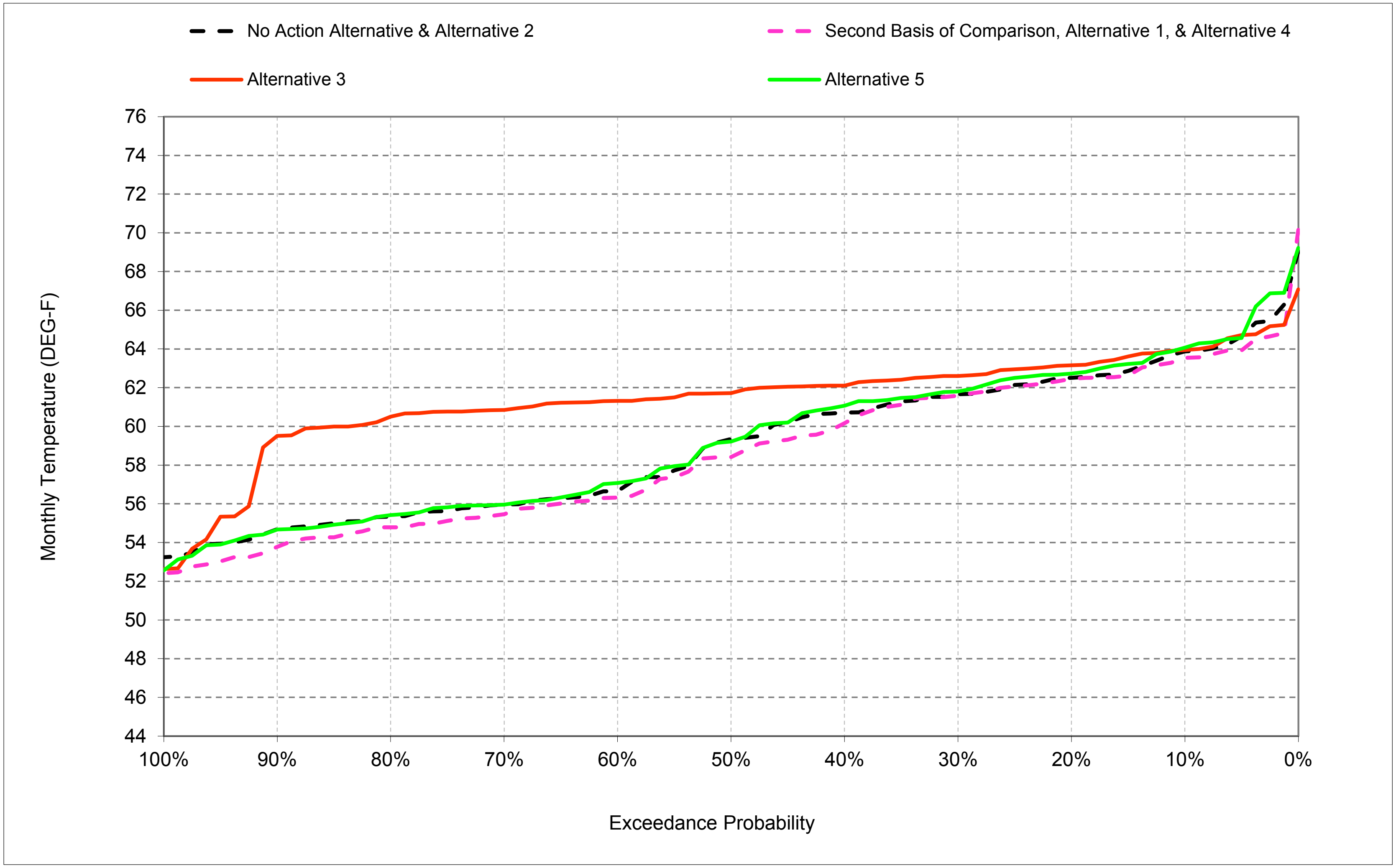
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-8. Stanislaus River at Orange Blossom Bridge, May



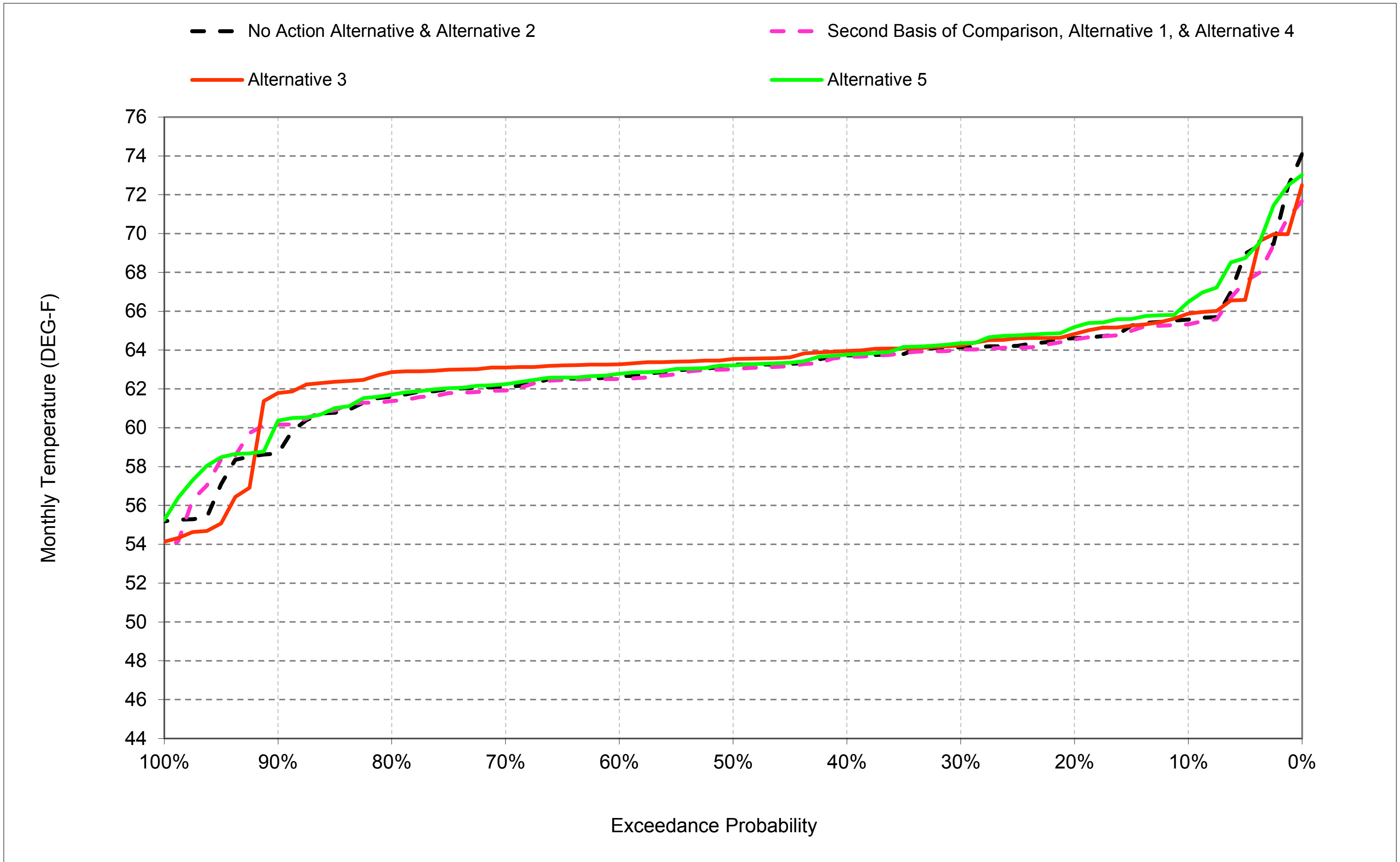
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-9. Stanislaus River at Orange Blossom Bridge, June



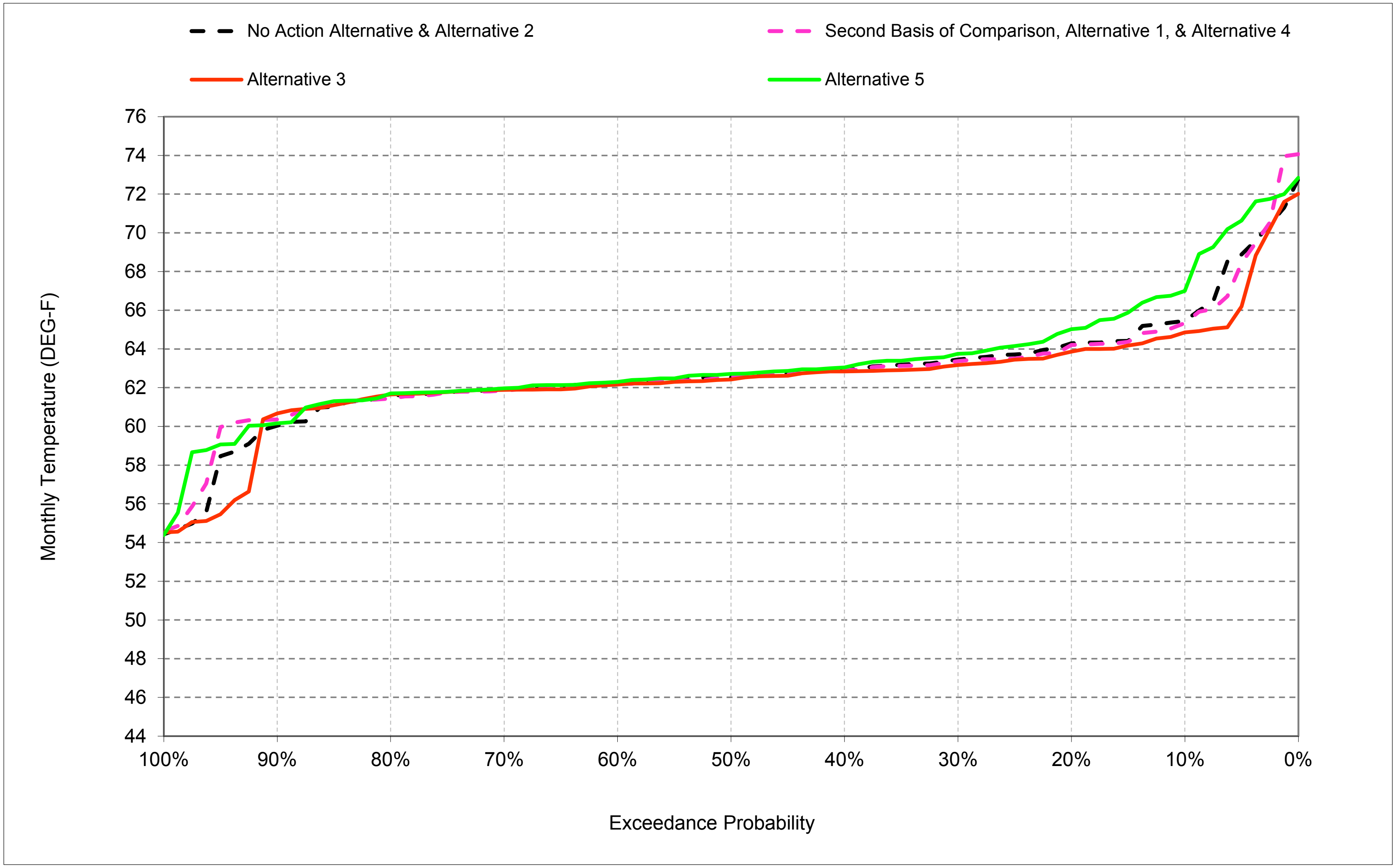
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-10. Stanislaus River at Orange Blossom Bridge, July



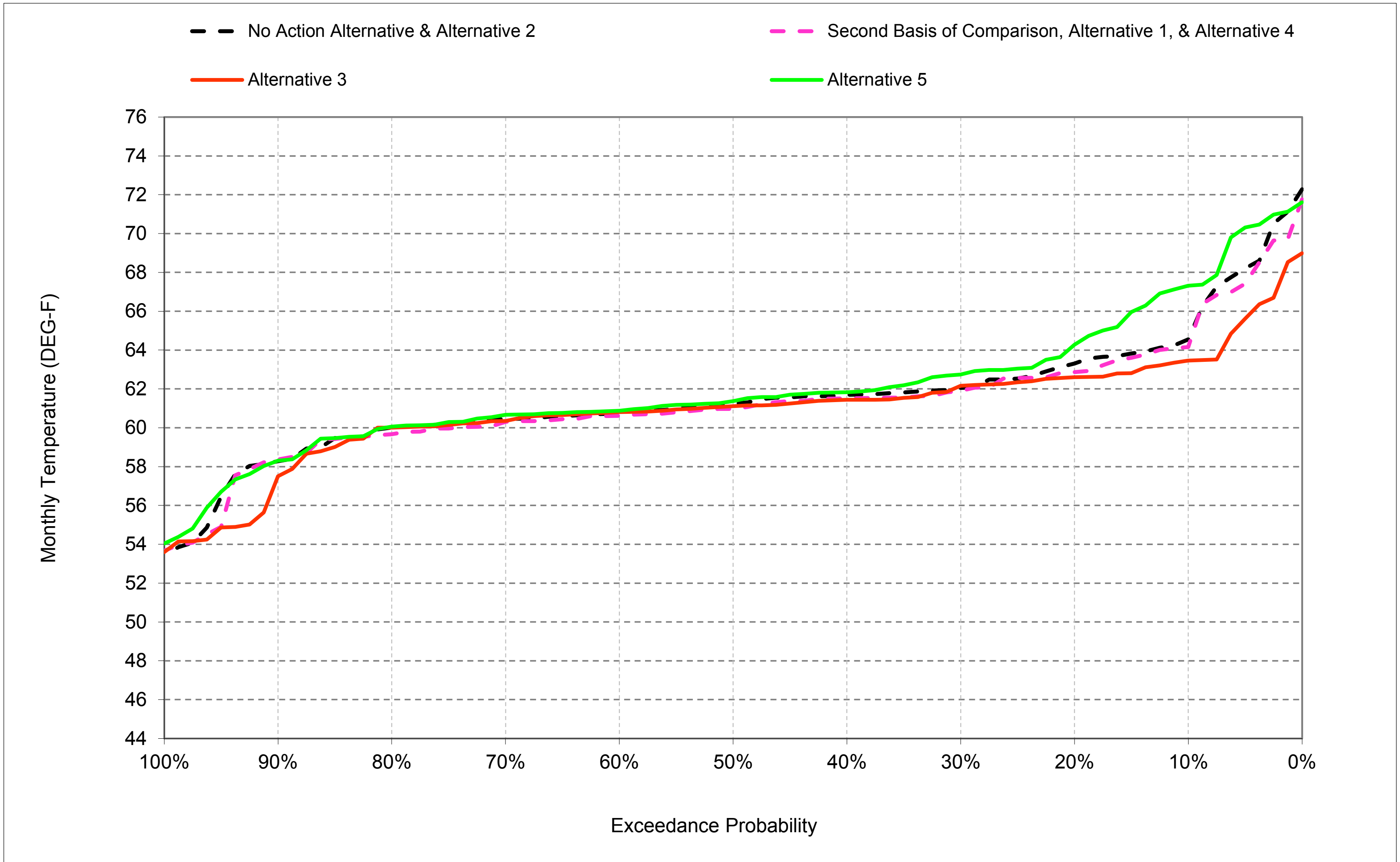
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-11. Stanislaus River at Orange Blossom Bridge, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-18-12. Stanislaus River at Orange Blossom Bridge, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-1. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period[b]	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

Alternative 1

	Monthly Temperature (DEG-F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period[b]	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

Alternative 1 minus No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
0.1	1.1	0.2	-0.1	0.0	-0.4	-0.5	0.9	-0.8	-0.3	-0.2	-0.1	-0.4
0.2	1.5	0.1	0.0	0.0	-0.1	-0.2	0.8	-0.9	-0.1	-0.1	-0.1	-0.4
0.3	2.5	-0.5	0.1	-0.1	-0.3	-0.3	1.2	-0.4	-0.1	-0.1	-0.1	-0.1
0.4	2.1	0.2	0.3	-0.1	-0.2	-0.4	1.0	-0.1	-0.7	-0.1	0.0	-0.2
0.5	1.9	-0.2	0.2	0.0	-0.1	-0.6	0.8	-0.2	-0.9	-0.2	0.0	-0.2
0.6	1.7	-0.1	0.3	0.2	-0.3	-0.4	0.6	0.0	-0.3	-0.1	0.0	-0.1
0.7	1.7	0.0	0.2	0.0	-0.1	0.1	0.4	0.1	-0.5	-0.2	0.0	-0.3
0.8	1.6	-0.2	0.1	0.1	-0.2	0.6	0.1	0.1	-0.5	-0.2	-0.1	-0.3
0.9	1.7	0.0	0.1	0.3	0.1	0.8	0.2	0.2	-1.0	1.5	0.5	0.1
Long Term												
Full Simulation Period[b]	1.6	-0.1	0.2	0.0	-0.1	-0.1	0.7	-0.2	-0.4	-0.1	0.1	-0.2
Water Year Types[c]												
Wet (32%)	1.4	-0.2	0.0	0.0	-0.1	0.5	0.2	0.1	-0.7	0.2	0.3	-0.1
Above Normal (16%)	1.8	-0.2	0.2	0.0	-0.2	-0.3	0.6	-0.2	-0.3	-0.1	-0.1	-0.2
Below Normal (13%)	1.4	-0.3	0.1	0.0	-0.3	-0.6	0.8	0.0	-0.6	-0.2	-0.1	-0.3
Dry (24%)	1.9	-0.1	0.2	0.1	-0.1	-0.5	1.2	-0.5	-0.1	-0.1	-0.1	-0.2
Critical (15%)	1.2	0.5	0.4	0.2	0.1	0.1	1.0	-0.7	-0.4	-0.7	0.1	-0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-2. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period[b]	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	58	53	51	53	56	55	58	64	66	65	63
20%	60	57	53	51	52	55	55	57	63	65	64	63
30%	59	55	52	50	51	55	54	56	63	64	63	62
40%	58	55	52	50	51	54	54	56	62	64	63	61
50%	58	54	51	49	50	54	53	55	62	63	62	61
60%	57	54	51	49	50	53	53	55	61	63	62	61
70%	57	54	50	48	50	53	52	54	61	63	62	60
80%	56	54	50	48	49	52	52	54	60	63	62	60
90%	55	53	50	47	48	51	51	53	59	61	60	56
Long Term												
Full Simulation Period[b]	58	55	51	49	51	53	53	55	61	63	62	61
Water Year Types[c]												
Wet (32%)	55	52	49	49	50	52	52	54	59	61	60	58
Above Normal (16%)	59	55	52	50	51	53	53	55	62	63	62	61
Below Normal (13%)	57	54	51	49	50	54	53	55	62	64	63	61
Dry (24%)	58	55	51	49	51	55	54	56	62	64	63	62
Critical (15%)	61	58	53	50	52	55	56	58	64	67	67	65

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.3	-1.1	-0.3	-0.3	0.4	0.0	0.2	0.1	0.1	0.3	-0.6	-1.1
0.2	0.6	-0.4	0.0	-0.1	0.3	0.2	0.0	-0.1	0.6	0.2	-0.4	-0.7
0.3	1.6	-0.8	-0.1	0.1	0.1	0.0	0.2	0.3	1.0	0.1	-0.3	0.0
0.4	1.4	-0.2	0.1	0.0	0.2	0.1	0.2	0.3	1.4	0.2	-0.1	-0.2
0.5	1.5	-0.4	-0.1	0.0	0.1	0.0	0.2	0.2	2.4	0.3	-0.1	-0.1
0.6	1.6	-0.5	0.1	0.0	0.0	0.1	0.1	0.3	4.7	0.7	-0.1	0.0
0.7	1.6	-0.2	0.0	0.1	0.1	0.5	0.3	0.5	4.9	1.0	0.0	-0.1
0.8	1.5	-0.1	0.0	0.3	0.2	0.6	0.0	0.2	5.0	1.2	0.1	0.1
0.9	1.4	0.2	0.1	0.4	0.1	0.8	0.4	0.5	4.5	2.8	0.6	-2.3
Long Term												
Full Simulation Period[b]	1.1	-0.4	0.0	0.1	0.2	0.3	0.2	0.2	2.3	0.4	-0.3	-0.6
Water Year Types[c]												
Wet (32%)	1.1	-0.3	0.0	0.1	0.1	0.8	0.2	0.4	3.6	0.6	-0.2	-0.4
Above Normal (16%)	1.4	-0.4	0.0	0.2	0.0	-0.2	0.2	0.3	3.7	1.0	0.0	-0.1
Below Normal (13%)	0.9	-0.6	-0.2	0.0	-0.2	0.2	0.1	0.4	2.3	0.2	-0.2	-0.3
Dry (24%)	1.5	-0.3	0.1	0.0	0.3	0.1	0.2	0.3	1.1	0.2	-0.4	-0.6
Critical (15%)	-0.1	-0.2	0.2	0.1	0.6	0.3	0.1	-0.3	0.3	-0.4	-1.0	-2.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-3. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period[b]	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	60	53	51	53	56	55	56	64	66	67	67
20%	60	58	53	51	52	55	54	56	63	65	65	64
30%	58	56	52	50	51	55	54	55	62	64	64	63
40%	57	55	52	50	51	54	53	55	61	64	63	62
50%	57	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	51	48	50	52	52	54	56	62	62	61
80%	55	54	50	48	49	51	52	53	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period[b]	58	56	51	49	50	53	53	55	59	63	63	62
Water Year Types[c]												
Wet (32%)	54	53	49	49	49	51	51	53	55	60	61	59
Above Normal (16%)	58	56	52	50	51	54	53	54	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	60	64	63	62
Dry (24%)	58	56	51	49	51	55	54	55	62	64	64	63
Critical (15%)	62	58	53	50	52	55	55	58	64	68	68	67

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	3.4	0.9	-0.1	0.1	0.0	0.0	-0.6	-1.4	0.2	0.8	1.5	2.8
0.2	0.7	1.0	0.0	-0.2	0.0	-0.1	-0.7	-1.0	0.2	0.5	0.7	0.9
0.3	0.5	0.3	-0.1	-0.2	0.0	0.0	-0.4	-0.6	0.2	0.2	0.3	0.7
0.4	0.3	0.2	0.1	0.0	0.0	-0.1	-0.2	-0.3	0.3	0.0	0.1	0.2
0.5	0.1	0.1	0.0	0.0	0.0	-0.1	0.0	-0.3	-0.1	0.0	0.1	0.1
0.6	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-0.1	0.4	0.1	0.0	0.1
0.7	0.2	0.2	0.1	0.1	0.0	-0.1	0.1	-0.2	0.0	0.1	0.1	0.1
0.8	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.2	0.0	0.1	0.0	0.0
0.9	0.0	0.3	0.0	0.1	-0.1	0.0	-0.1	0.0	0.0	0.3	0.2	-0.1
Long Term												
Full Simulation Period[b]	0.6	0.3	0.1	0.0	0.0	0.0	-0.3	-0.3	0.2	0.3	0.5	0.5
Water Year Types[c]												
Wet (32%)	0.6	0.3	0.1	0.0	-0.1	0.0	0.0	-0.2	0.0	0.5	0.5	0.2
Above Normal (16%)	0.4	0.3	0.1	0.1	0.0	0.0	-0.2	-0.4	-0.1	0.1	0.1	0.2
Below Normal (13%)	0.7	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	0.5	0.3	0.4	0.5
Dry (24%)	0.6	0.4	0.2	0.1	0.0	0.0	-0.5	-0.6	0.2	0.3	0.7	1.1
Critical (15%)	0.4	0.6	0.0	-0.2	-0.1	-0.1	-0.6	-0.2	0.5	0.5	0.9	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-4. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period[b]	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	59	53	51	53	56	55	58	64	66	65	65
20%	59	57	53	51	52	55	55	57	63	65	64	63
30%	58	56	52	50	51	55	54	56	62	64	63	62
40%	57	55	51	50	51	54	54	55	61	64	63	62
50%	56	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	50	48	50	52	52	54	56	62	62	60
80%	55	54	50	48	49	51	52	54	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period[b]	57	55	51	49	50	53	53	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	54	52	49	49	49	51	52	53	55	60	60	59
Above Normal (16%)	57	56	52	50	51	54	53	55	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	59	63	63	61
Dry (24%)	57	55	51	49	51	55	54	56	61	64	63	62
Critical (15%)	61	58	53	50	52	55	55	58	64	67	68	67

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-1.1	-0.2	0.1	0.0	0.4	0.5	-0.9	0.8	0.3	0.2	0.1	0.4
0.2	-1.5	-0.1	0.0	0.0	0.1	0.2	-0.8	0.9	0.1	0.1	0.1	0.4
0.3	-2.5	0.5	-0.1	0.1	0.3	0.3	-1.2	0.4	0.1	0.1	0.1	0.1
0.4	-2.1	-0.2	-0.3	0.1	0.2	0.4	-1.0	0.1	0.7	0.1	0.0	0.2
0.5	-1.9	0.2	-0.2	0.0	0.1	0.6	-0.8	0.2	0.9	0.2	0.0	0.2
0.6	-1.7	0.1	-0.3	-0.2	0.3	0.4	-0.6	0.0	0.3	0.1	0.0	0.1
0.7	-1.7	0.0	-0.2	0.0	0.1	-0.1	-0.4	-0.1	0.5	0.2	0.0	0.3
0.8	-1.6	0.2	-0.1	-0.1	0.2	-0.6	-0.1	-0.1	0.5	0.2	0.1	0.3
0.9	-1.7	0.0	-0.1	-0.3	-0.1	-0.8	-0.2	-0.2	1.0	-1.5	-0.5	-0.1
Long Term												
Full Simulation Period[b]	-1.6	0.1	-0.2	0.0	0.1	0.1	-0.7	0.2	0.4	0.1	-0.1	0.2
Water Year Types[c]												
Wet (32%)	-1.4	0.2	0.0	0.0	0.1	-0.5	-0.2	-0.1	0.7	-0.2	-0.3	0.1
Above Normal (16%)	-1.8	0.2	-0.2	0.0	0.2	0.3	-0.6	0.2	0.3	0.1	0.1	0.2
Below Normal (13%)	-1.4	0.3	-0.1	0.0	0.3	0.6	-0.8	0.0	0.6	0.2	0.1	0.3
Dry (24%)	-1.9	0.1	-0.2	-0.1	0.1	0.5	-1.2	0.5	0.1	0.1	0.1	0.2
Critical (15%)	-1.2	-0.5	-0.4	-0.2	-0.1	-0.1	-1.0	0.7	0.4	0.7	-0.1	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-5. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period[b]	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	61	58	53	51	53	56	55	58	64	66	65	63
20%	60	57	53	51	52	55	55	57	63	65	64	63
30%	59	55	52	50	51	55	54	56	63	64	63	62
40%	58	55	52	50	51	54	54	56	62	64	63	61
50%	58	54	51	49	50	54	53	55	62	63	62	61
60%	57	54	51	49	50	53	53	55	61	63	62	61
70%	57	54	50	48	50	53	52	54	61	63	62	60
80%	56	54	50	48	49	52	52	54	60	63	62	60
90%	55	53	50	47	48	51	51	53	59	61	60	56
Long Term												
Full Simulation Period[b]	58	55	51	49	51	53	53	55	61	63	62	61
Water Year Types[c]												
Wet (32%)	55	52	49	49	50	52	52	54	59	61	60	58
Above Normal (16%)	59	55	52	50	51	53	53	55	62	63	62	61
Below Normal (13%)	57	54	51	49	50	54	53	55	62	64	63	61
Dry (24%)	58	55	51	49	51	55	54	56	62	64	63	62
Critical (15%)	61	58	53	50	52	55	56	58	64	67	67	65

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-1.4	-1.4	-0.2	-0.3	0.8	0.5	-0.7	0.9	0.4	0.5	-0.5	-0.7
0.2	-0.8	-0.5	0.0	-0.1	0.4	0.4	-0.8	0.8	0.7	0.3	-0.3	-0.3
0.3	-0.9	-0.3	-0.2	0.2	0.4	0.3	-0.9	0.7	1.0	0.2	-0.2	0.2
0.4	-0.7	-0.4	-0.1	0.0	0.4	0.5	-0.8	0.4	2.1	0.3	-0.1	-0.1
0.5	-0.4	-0.2	-0.2	0.0	0.3	0.6	-0.6	0.4	3.3	0.5	-0.1	0.1
0.6	-0.2	-0.3	-0.1	-0.1	0.3	0.6	-0.5	0.3	5.0	0.7	-0.1	0.2
0.7	-0.1	-0.2	-0.2	0.1	0.2	0.4	-0.1	0.4	5.4	1.2	0.1	0.2
0.8	-0.1	0.1	-0.1	0.2	0.3	0.1	-0.1	0.1	5.5	1.4	0.2	0.4
0.9	-0.3	0.3	-0.1	0.1	0.0	0.0	0.1	0.3	5.5	1.3	0.1	-2.4
Long Term												
Full Simulation Period[b]	-0.5	-0.3	-0.1	0.1	0.3	0.4	-0.5	0.4	2.8	0.5	-0.4	-0.4
Water Year Types[c]												
Wet (32%)	-0.3	-0.1	-0.1	0.1	0.3	0.3	0.0	0.2	4.3	0.4	-0.5	-0.3
Above Normal (16%)	-0.4	-0.3	-0.2	0.2	0.2	0.1	-0.4	0.5	4.0	1.1	0.0	0.1
Below Normal (13%)	-0.4	-0.3	-0.2	0.0	0.1	0.7	-0.6	0.4	2.9	0.4	-0.1	0.1
Dry (24%)	-0.4	-0.2	-0.1	0.0	0.4	0.5	-1.0	0.7	1.2	0.3	-0.3	-0.4
Critical (15%)	-1.2	-0.7	-0.3	-0.1	0.5	0.2	-0.9	0.3	0.7	0.2	-1.1	-1.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-18-6. Stanislaus River at Orange Blossom Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	63	59	53	51	52	55	56	57	64	65	65	64
20%	61	57	53	51	52	55	56	56	62	65	64	63
30%	60	56	52	50	51	54	55	56	62	64	63	62
40%	59	55	52	50	50	54	55	55	60	64	63	62
50%	58	55	51	49	50	53	54	55	58	63	63	61
60%	58	54	51	49	50	53	53	54	56	63	62	61
70%	57	54	51	48	49	52	53	54	55	62	62	60
80%	56	53	50	48	49	52	52	54	55	61	61	60
90%	56	53	50	47	48	50	51	53	53	60	60	58
Long Term												
Full Simulation Period[b]	59	55	52	49	50	53	54	55	59	63	63	61
Water Year Types[c]												
Wet (32%)	55	52	49	49	49	51	52	53	54	60	60	58
Above Normal (16%)	59	56	52	50	51	53	53	54	58	62	62	61
Below Normal (13%)	58	54	51	49	50	53	54	55	59	63	63	61
Dry (24%)	59	55	51	49	51	54	55	56	61	64	63	62
Critical (15%)	63	58	53	50	52	55	56	58	63	67	68	66

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	60	53	51	53	56	55	56	64	66	67	67
20%	60	58	53	51	52	55	54	56	63	65	65	64
30%	58	56	52	50	51	55	54	55	62	64	64	63
40%	57	55	52	50	51	54	53	55	61	64	63	62
50%	57	55	51	49	50	54	53	55	59	63	63	61
60%	56	55	51	49	50	53	53	54	57	63	62	61
70%	55	54	51	48	50	52	52	54	56	62	62	61
80%	55	54	50	48	49	51	52	53	55	62	61	60
90%	54	53	50	47	48	50	51	53	54	59	60	58
Long Term												
Full Simulation Period[b]	58	56	51	49	50	53	53	55	59	63	63	62
Water Year Types[c]												
Wet (32%)	54	53	49	49	49	51	51	53	55	60	61	59
Above Normal (16%)	58	56	52	50	51	54	53	54	58	63	62	61
Below Normal (13%)	57	55	51	49	50	54	53	55	60	64	63	62
Dry (24%)	58	56	51	49	51	55	54	55	62	64	64	63
Critical (15%)	62	58	53	50	52	55	55	58	64	68	68	67

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	2.3	0.7	0.0	0.1	0.4	0.4	-1.6	-0.6	0.5	1.1	1.7	3.1
0.2	-0.8	0.9	0.0	-0.2	0.2	0.2	-1.5	-0.1	0.3	0.6	0.8	1.3
0.3	-2.0	0.8	-0.2	0.0	0.3	0.3	-1.6	-0.1	0.2	0.3	0.4	0.8
0.4	-1.8	0.1	-0.1	0.0	0.2	0.4	-1.1	-0.2	1.0	0.1	0.1	0.3
0.5	-1.8	0.3	-0.1	-0.1	0.1	0.5	-0.8	-0.1	0.8	0.2	0.2	0.3
0.6	-1.7	0.2	-0.2	-0.1	0.2	0.5	-0.6	0.0	0.7	0.2	0.1	0.3
0.7	-1.5	0.2	-0.1	0.1	0.2	-0.2	-0.3	-0.4	0.5	0.3	0.1	0.4
0.8	-1.5	0.3	0.0	-0.1	0.2	-0.6	-0.1	-0.3	0.6	0.3	0.1	0.3
0.9	-1.7	0.4	-0.1	-0.2	-0.2	-0.9	-0.3	-0.2	0.9	-1.2	-0.3	-0.2
Long Term												
Full Simulation Period[b]	-1.0	0.4	-0.1	0.0	0.1	0.0	-0.9	-0.1	0.6	0.4	0.5	0.7
Water Year Types[c]												
Wet (32%)	-0.8	0.5	0.1	0.0	0.1	-0.4	-0.2	-0.4	0.8	0.3	0.2	0.3
Above Normal (16%)	-1.4	0.5	0.0	0.1	0.2	0.3	-0.8	-0.2	0.2	0.2	0.2	0.4
Below Normal (13%)	-0.7	0.4	0.0	0.0	0.3	0.5	-0.9	-0.2	1.0	0.4	0.5	0.8
Dry (24%)	-1.3	0.5	0.0	0.0	0.2	0.4	-1.6	-0.1	0.2	0.4	0.8	1.3
Critical (15%)	-0.8	0.1	-0.5	-0.3	-0.2	-0.2	-1.5	0.5	0.9	1.1	0.8	0.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

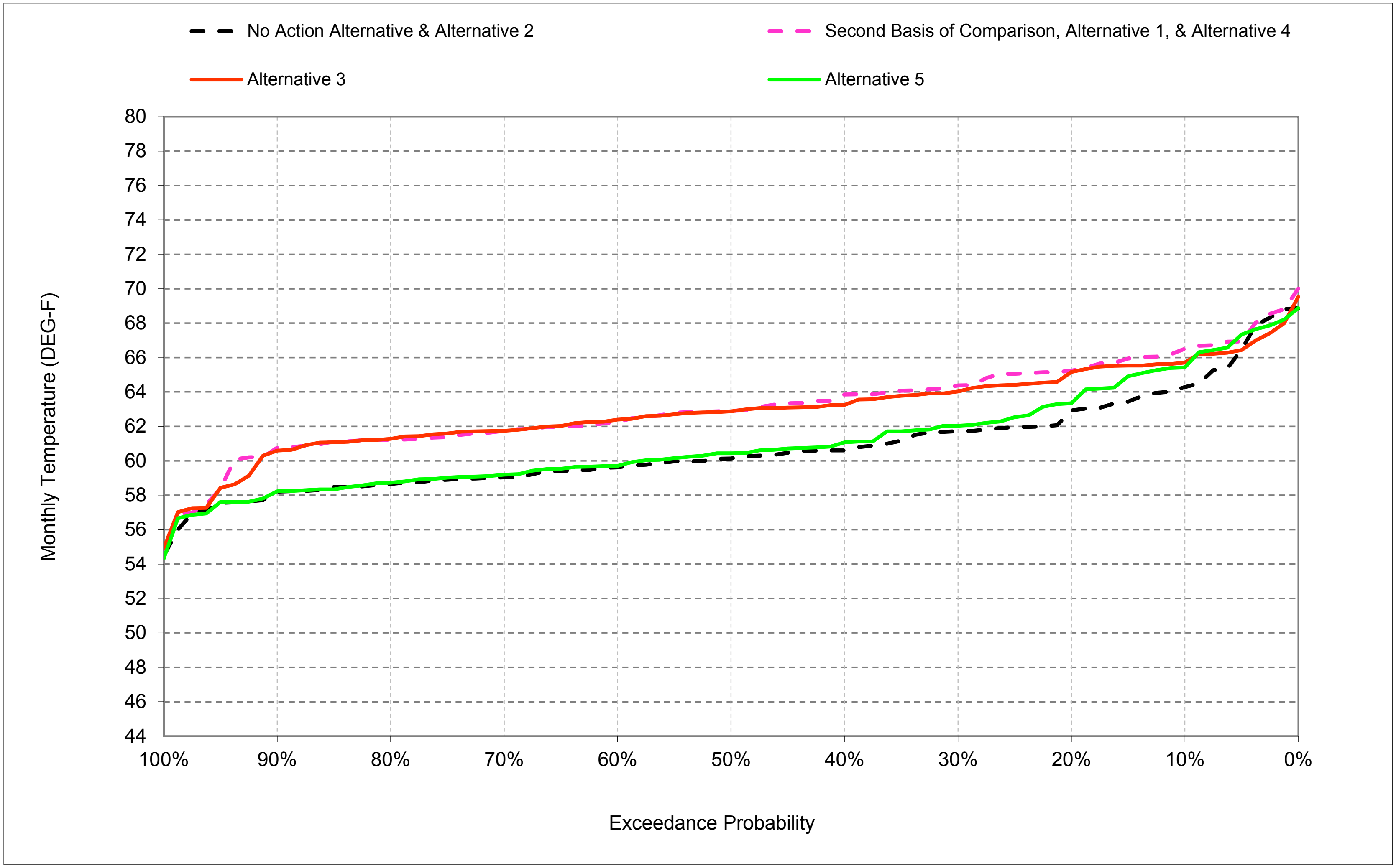
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

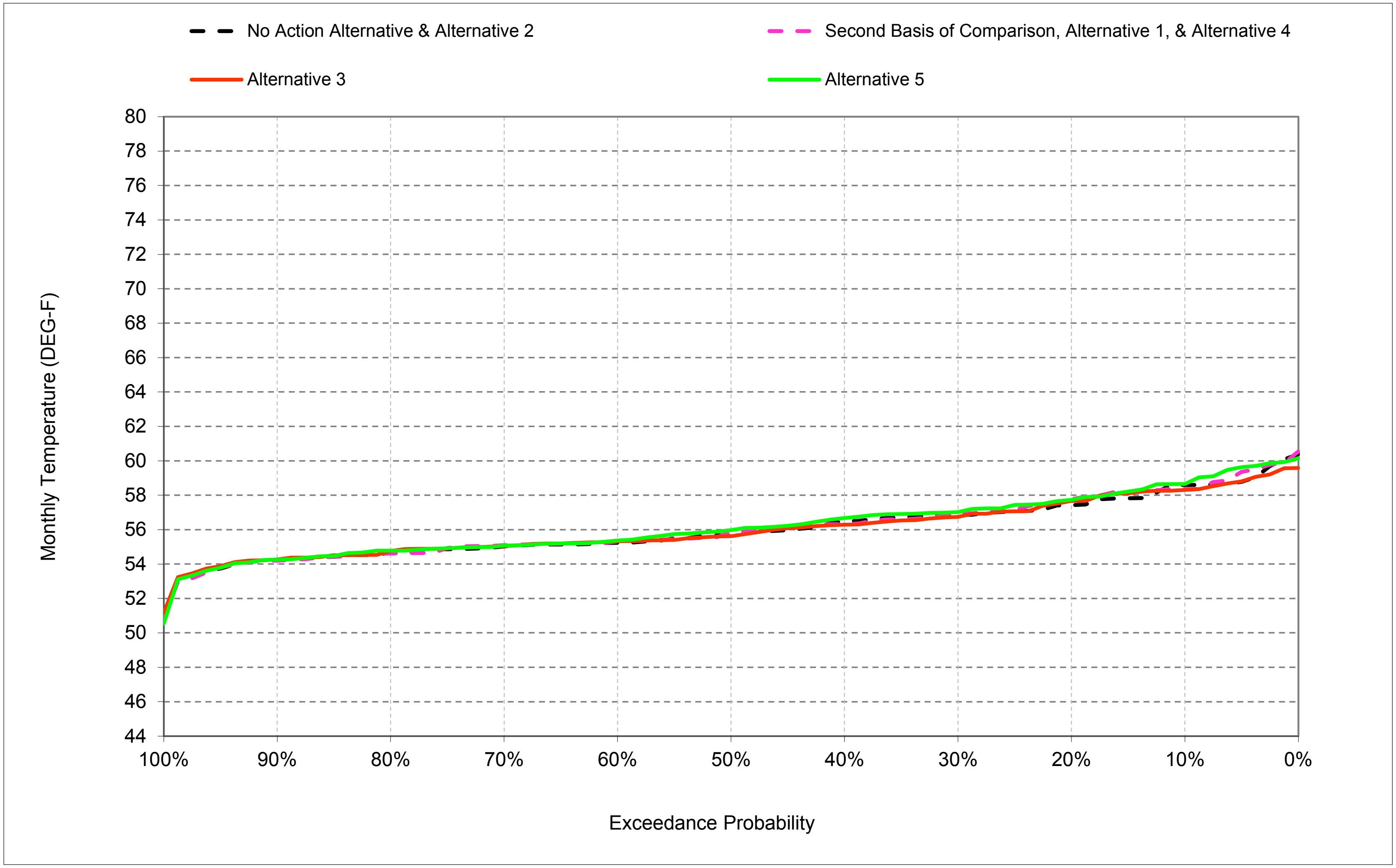
B.19. Stanislaus River at Mouth Temperature

Figure B-19-1. Stanislaus River at Mouth, October



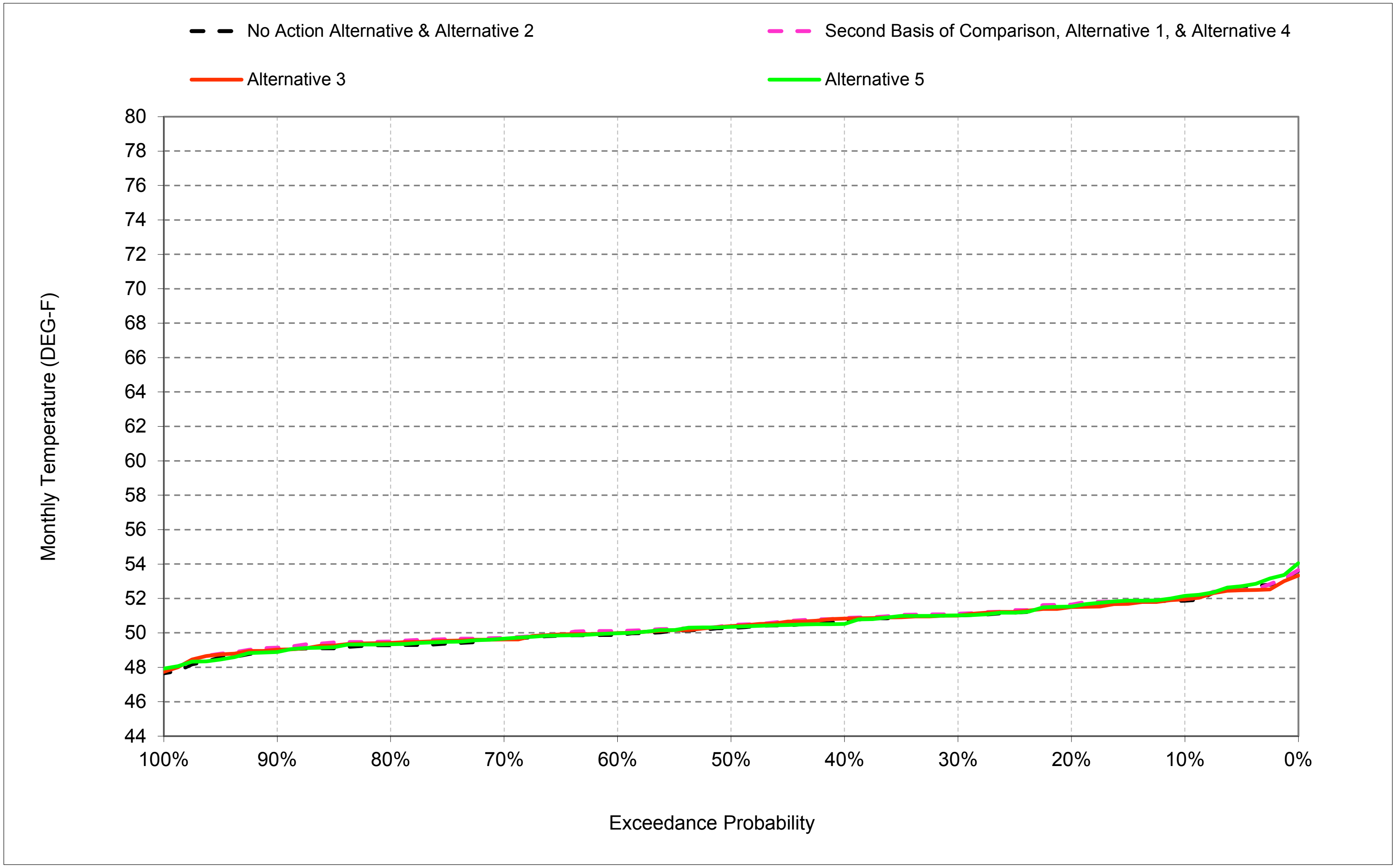
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-2. Stanislaus River at Mouth, November



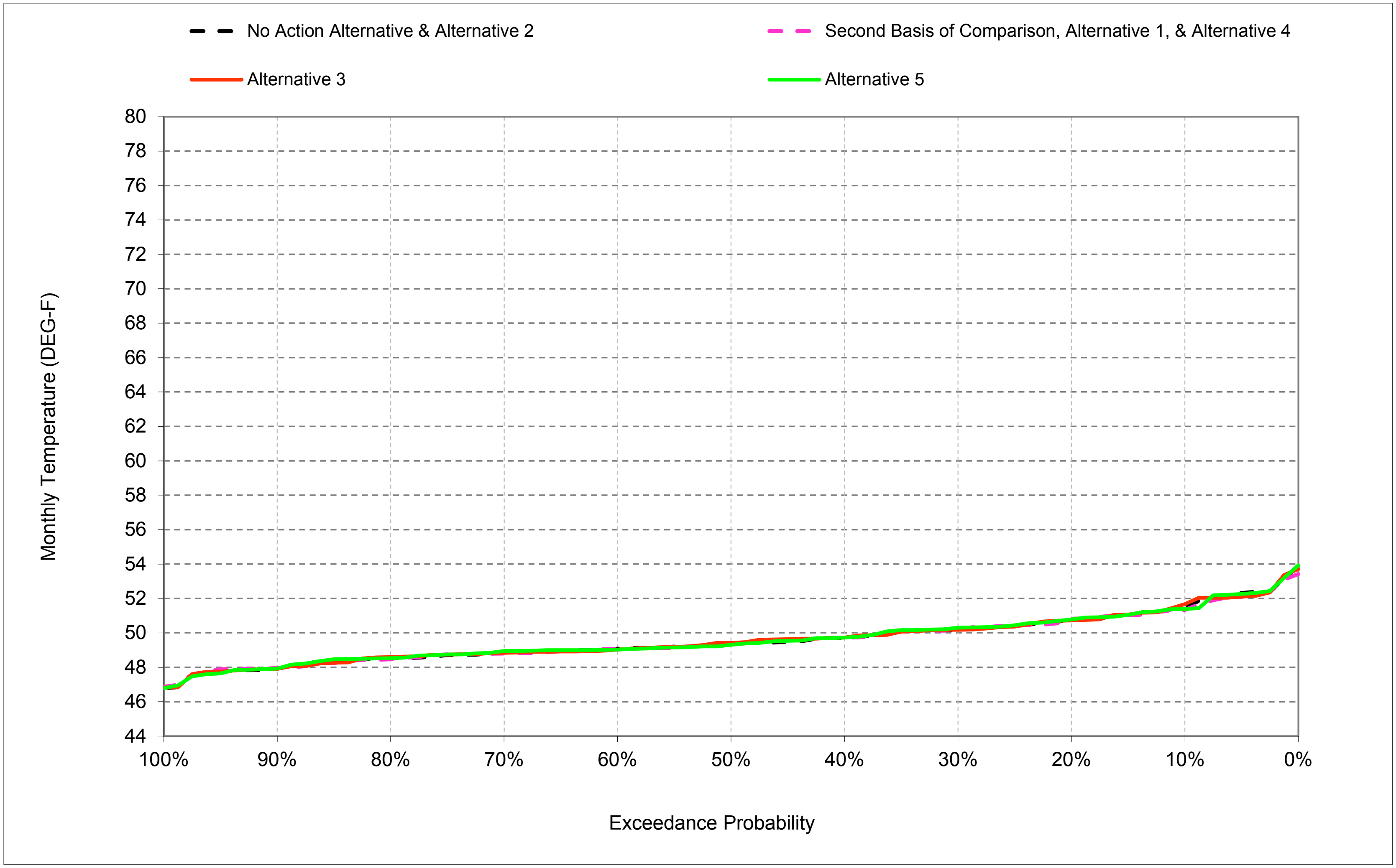
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-3. Stanislaus River at Mouth, December



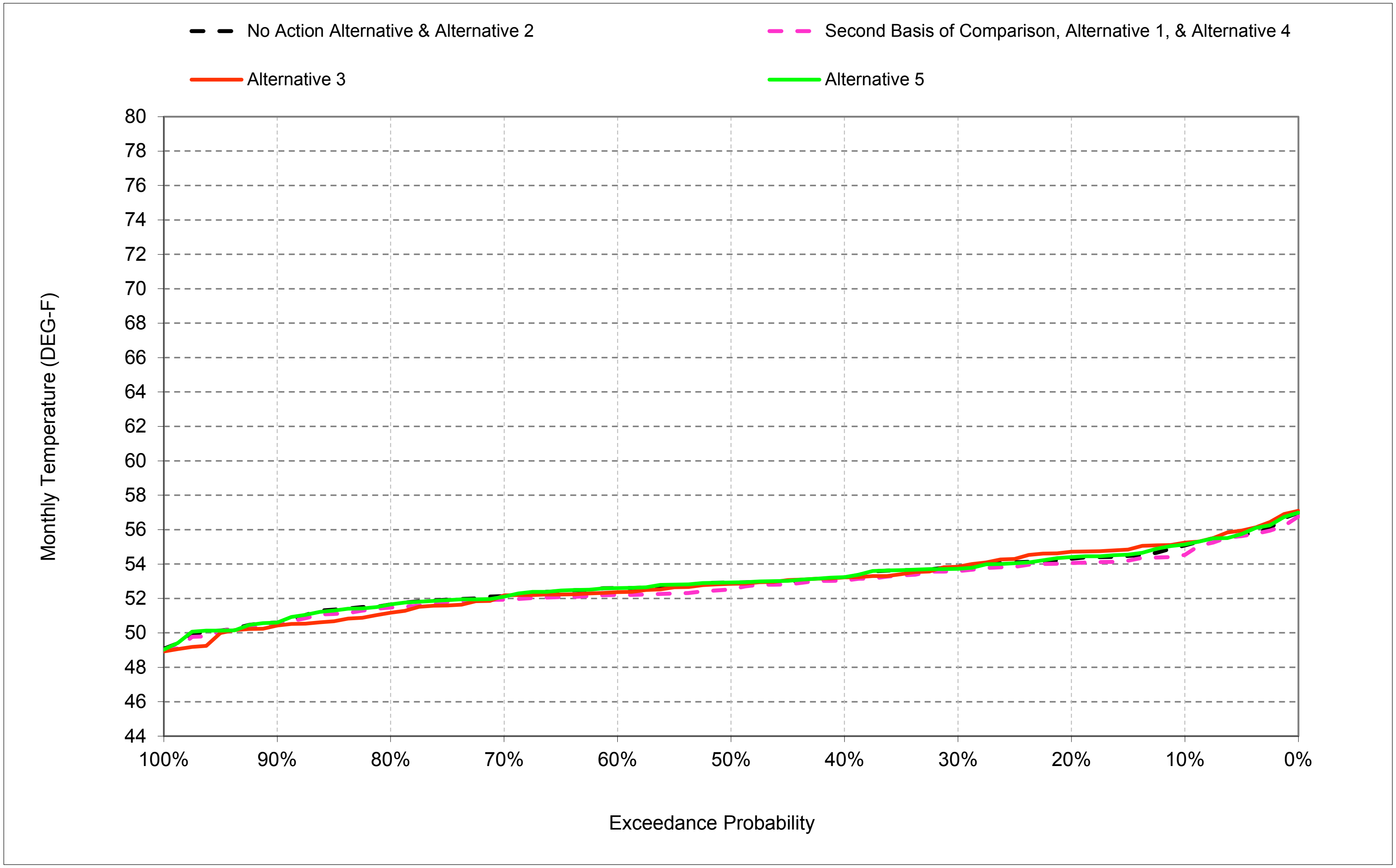
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-4. Stanislaus River at Mouth, January



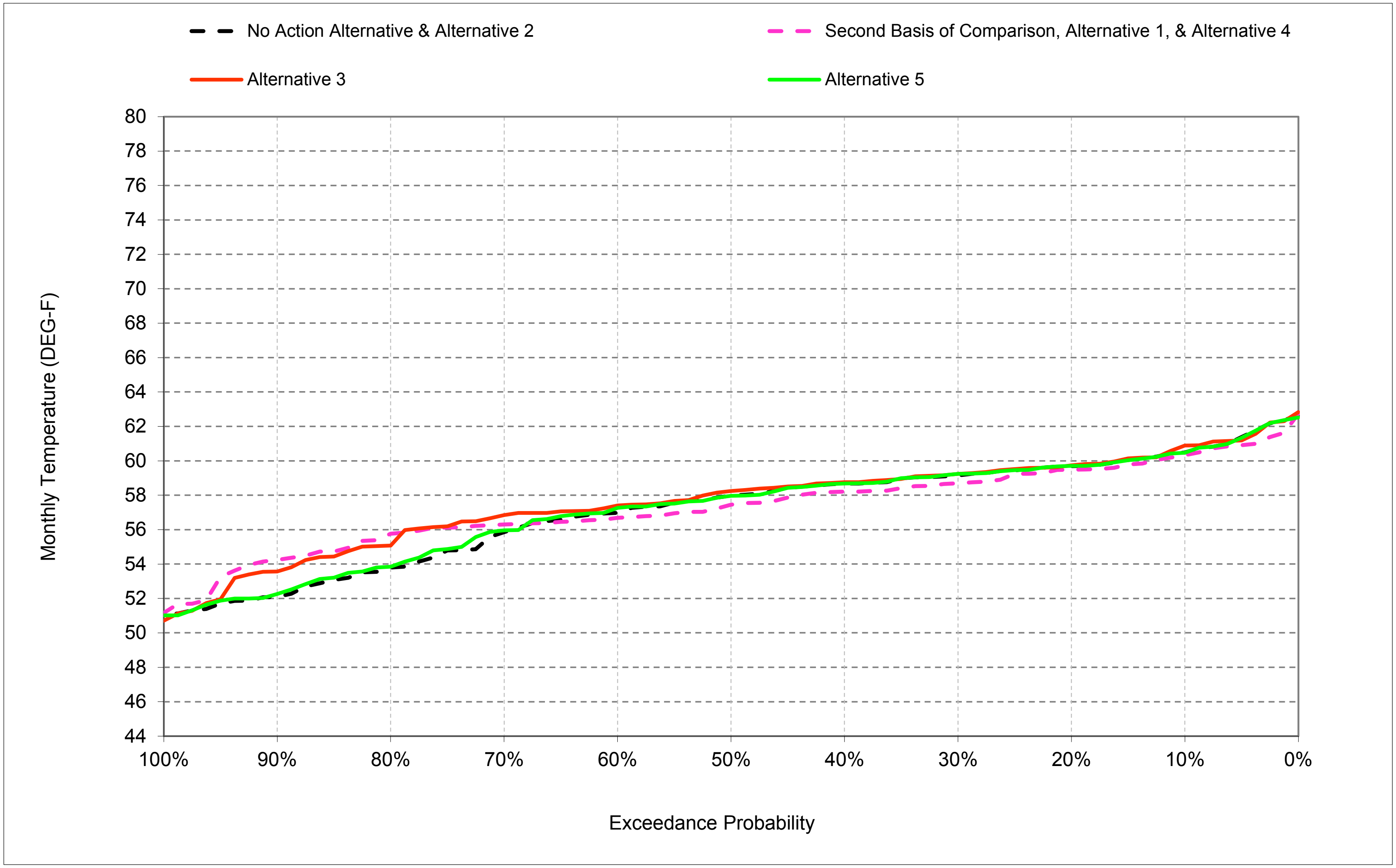
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-5. Stanislaus River at Mouth, February



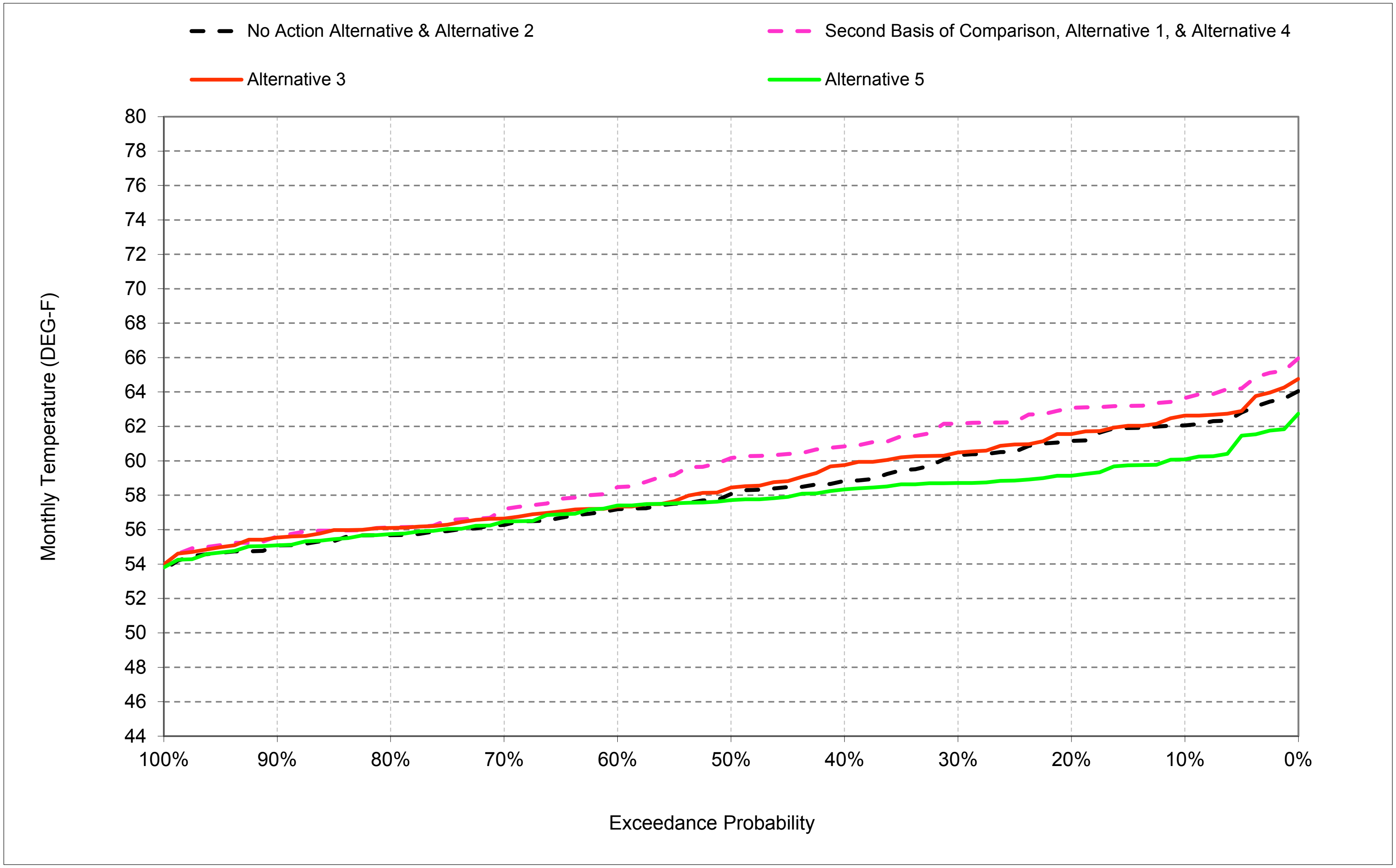
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-6. Stanislaus River at Mouth, March



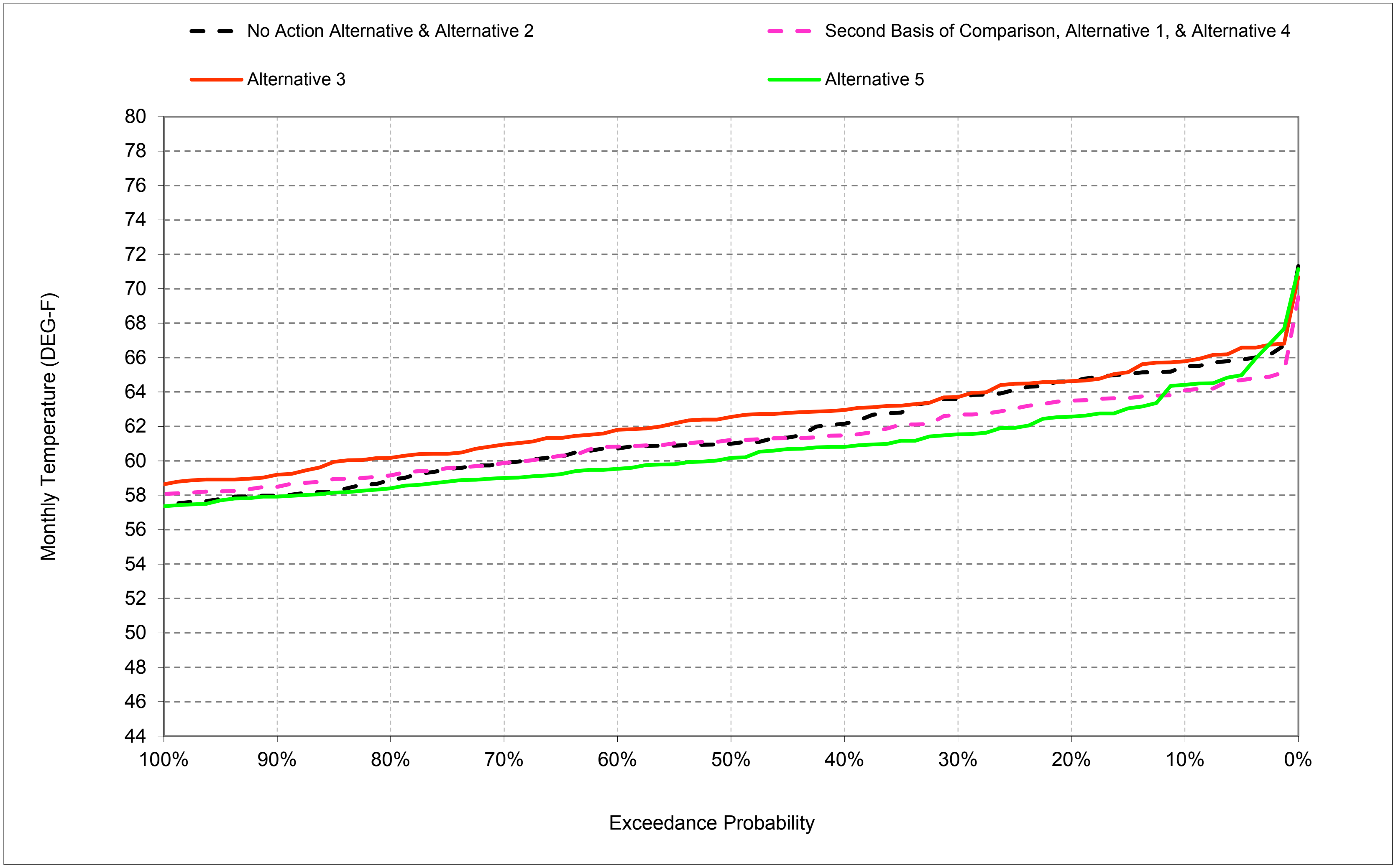
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-7. Stanislaus River at Mouth, April



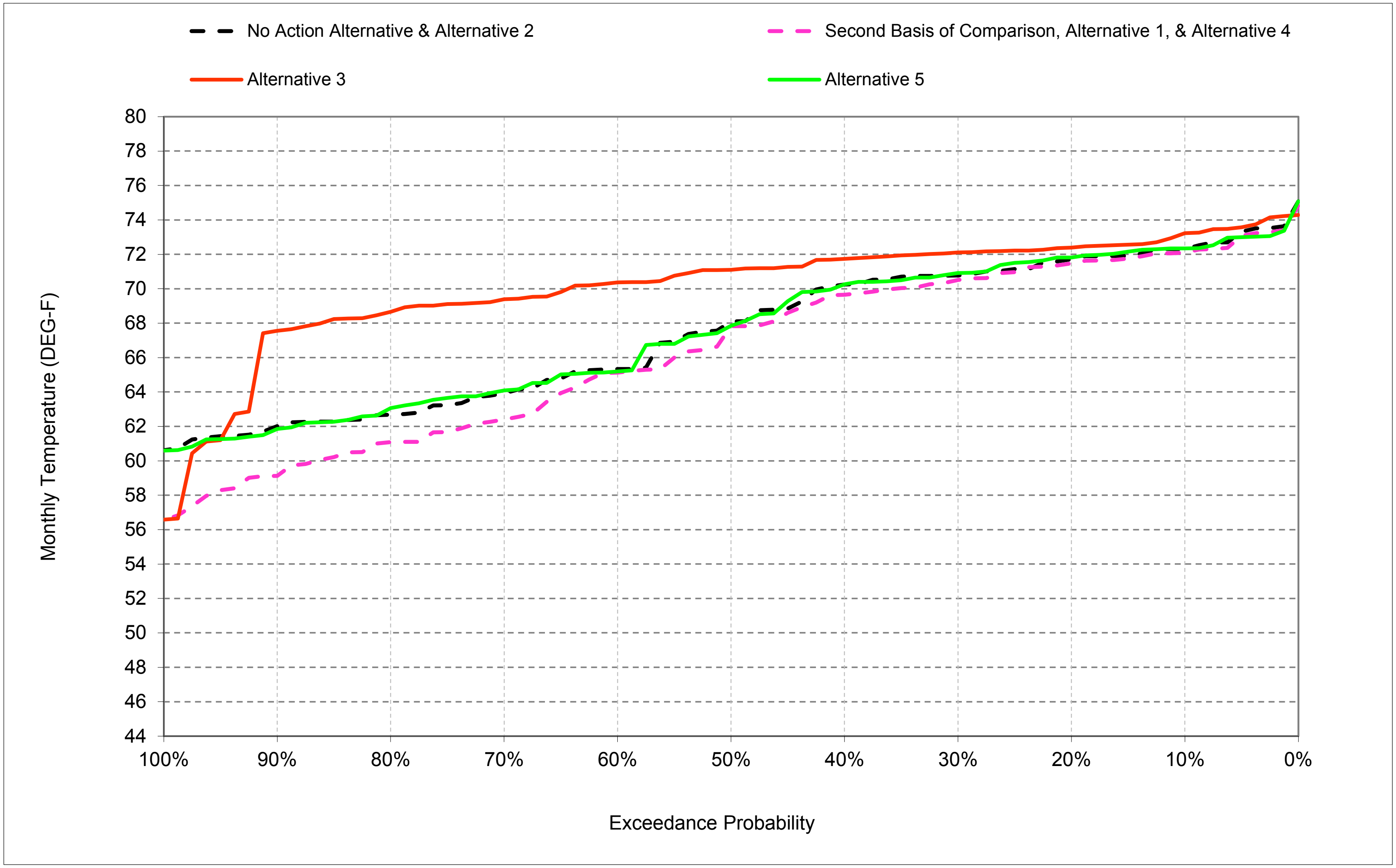
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-8. Stanislaus River at Mouth, May



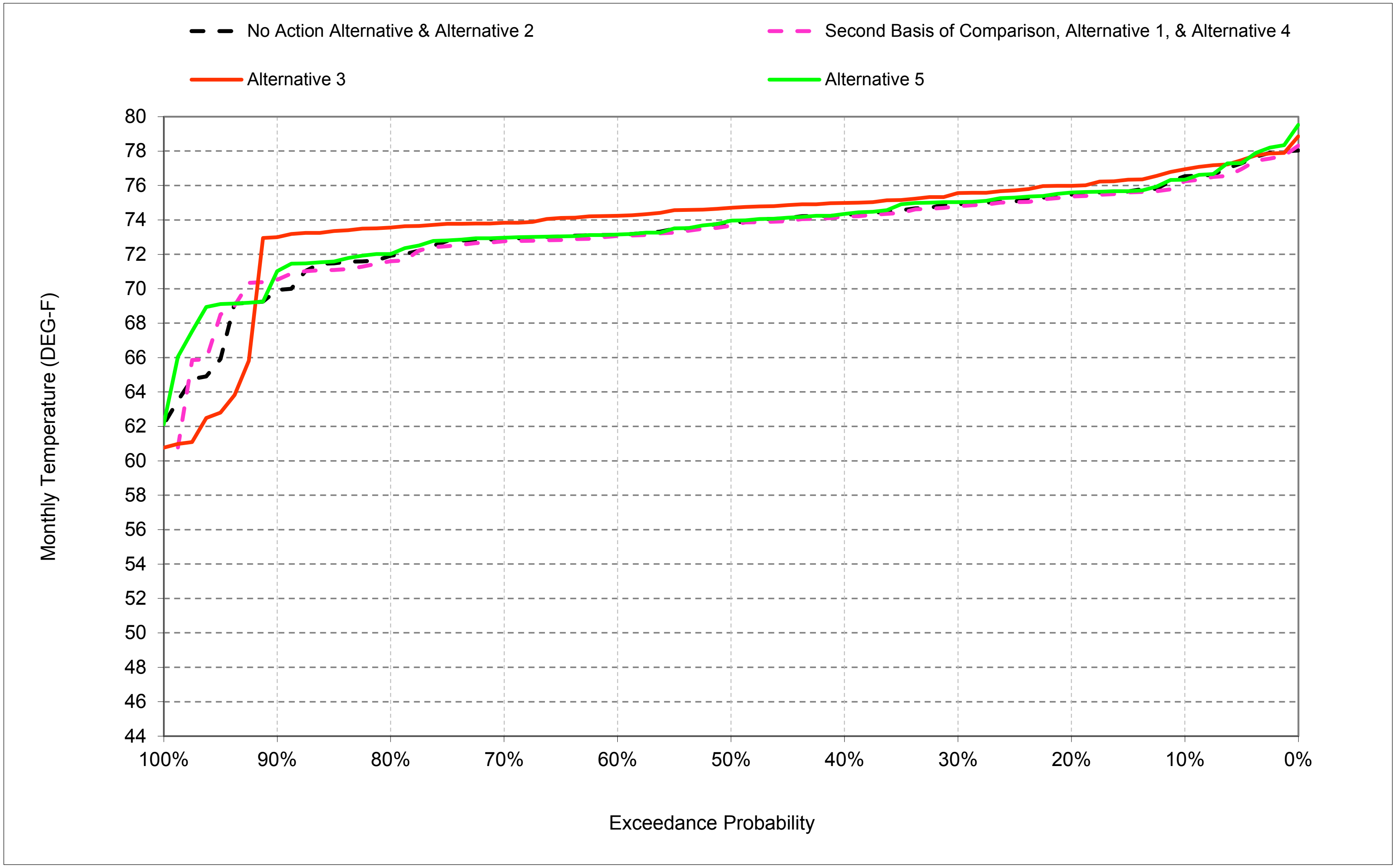
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-9. Stanislaus River at Mouth, June



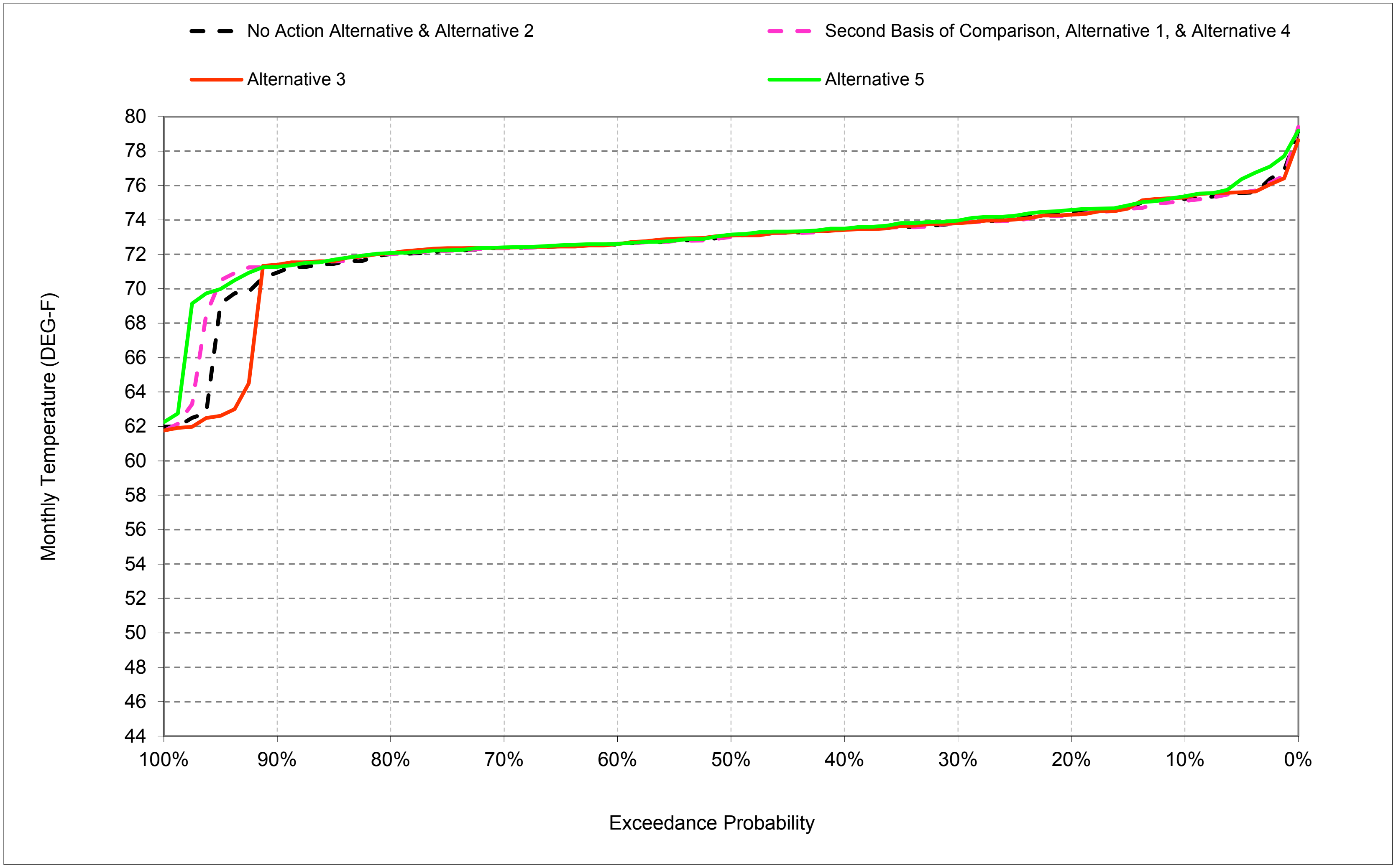
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-10. Stanislaus River at Mouth, July



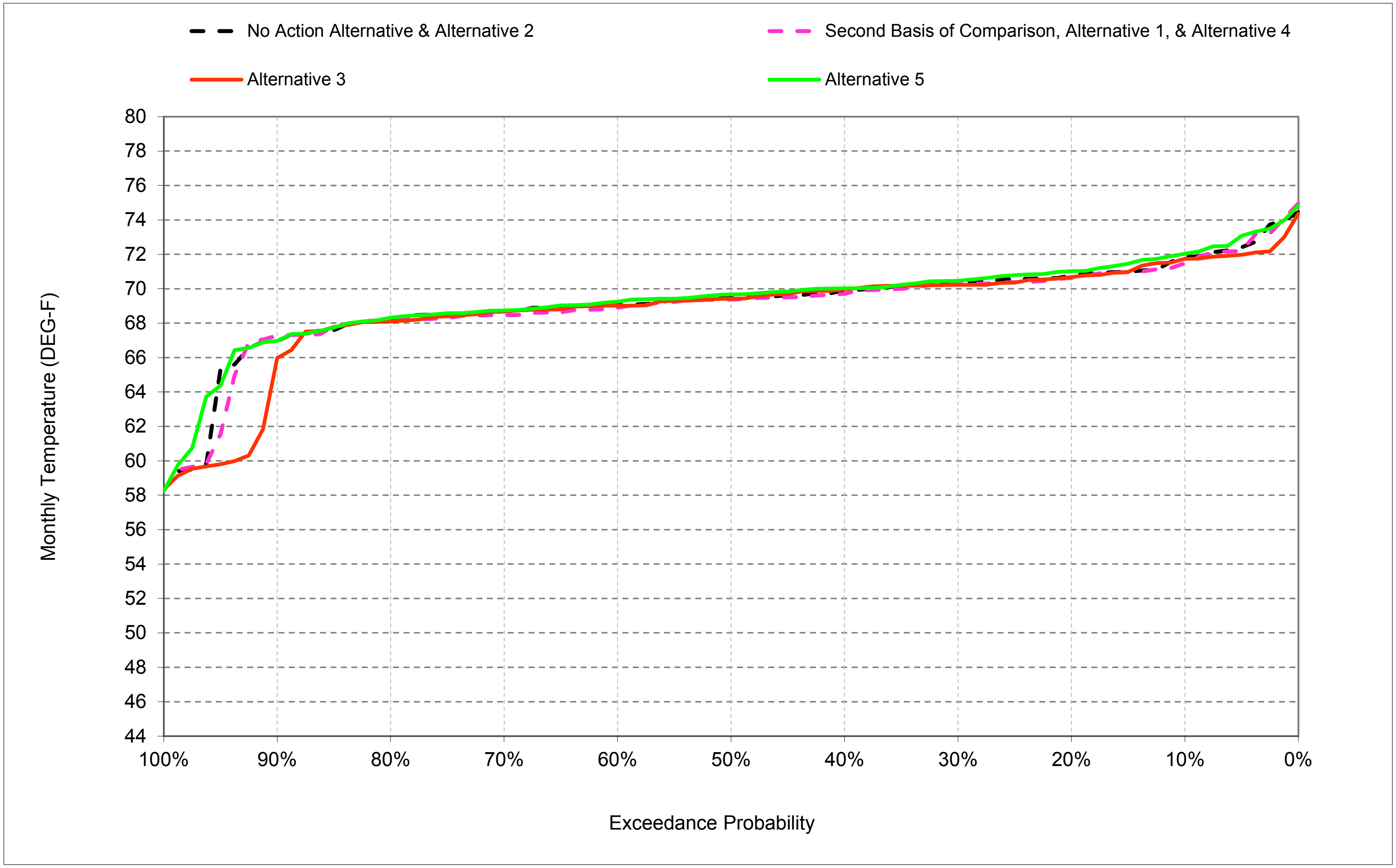
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-11. Stanislaus River at Mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-19-12. Stanislaus River at Mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-1. Stanislaus River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period[b]	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types[c]												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period[b]	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types[c]												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	2.2	-0.2	0.1	-0.1	-0.5	-0.2	1.6	-1.4	-0.2	-0.3	-0.1	-0.4
0.2	2.3	0.3	0.1	0.0	-0.2	-0.2	1.9	-1.1	-0.2	-0.1	-0.1	-0.1
0.3	2.6	0.1	0.1	0.0	-0.2	-0.4	1.9	-0.9	-0.3	-0.1	0.0	-0.2
0.4	3.2	-0.2	0.1	0.0	-0.2	-0.5	2.0	-0.7	-0.6	-0.1	0.0	-0.2
0.5	2.8	0.2	0.2	-0.1	-0.4	-0.6	2.1	0.2	-0.6	-0.2	0.0	-0.1
0.6	2.6	0.1	0.2	0.0	-0.4	-0.3	1.1	0.1	-0.2	-0.1	0.0	-0.2
0.7	2.7	0.1	0.0	0.0	-0.2	0.6	0.6	0.0	-1.5	-0.2	0.0	-0.2
0.8	2.6	0.0	0.2	0.0	-0.1	1.9	0.4	0.4	-1.6	-0.2	0.1	0.0
0.9	2.5	0.0	0.1	0.1	-0.2	2.1	0.5	0.5	-2.6	1.1	0.6	0.2
Long Term												
Full Simulation Period[b]	2.4	0.1	0.1	0.0	-0.2	0.2	1.3	-0.4	-1.0	-0.1	0.1	-0.1
Water Year Types[c]												
Wet (32%)	2.2	-0.1	0.0	-0.1	-0.2	1.1	0.4	0.4	-2.4	0.0	0.5	-0.1
Above Normal (16%)	2.6	0.0	0.1	-0.1	-0.3	0.0	1.3	-0.5	-0.6	-0.1	0.0	-0.1
Below Normal (13%)	2.2	-0.2	0.1	-0.1	-0.4	-0.4	1.9	-0.2	-0.7	-0.2	0.0	-0.2
Dry (24%)	2.7	0.2	0.2	0.0	-0.3	-0.4	2.0	-0.8	-0.2	0.0	0.0	-0.1
Critical (15%)	1.8	0.4	0.3	0.1	0.0	0.0	1.5	-1.2	-0.3	-0.2	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-2. Stanislaus River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period[b]	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types[c]												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	52	52	55	61	63	66	73	77	75	72
20%	65	58	52	51	55	60	62	65	72	76	74	71
30%	64	57	51	50	54	59	60	64	72	75	74	70
40%	63	56	51	50	53	59	60	63	72	75	73	70
50%	63	56	50	49	53	58	58	62	71	75	73	69
60%	62	55	50	49	52	57	57	62	70	74	73	69
70%	62	55	50	49	52	57	57	61	69	74	72	69
80%	61	55	49	49	51	55	56	60	68	74	72	68
90%	61	54	49	48	50	54	55	59	67	73	71	62
Long Term												
Full Simulation Period[b]	63	56	50	50	53	58	59	62	70	74	72	69
Water Year Types[c]												
Wet (32%)	59	53	49	49	51	55	56	60	67	71	70	66
Above Normal (16%)	64	57	51	50	53	58	58	62	71	75	73	69
Below Normal (13%)	62	55	50	49	52	58	59	62	71	75	73	69
Dry (24%)	63	56	50	49	54	59	60	64	72	75	73	70
Critical (15%)	65	58	51	50	55	60	62	66	72	76	75	71

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	1.4	-0.3	0.1	0.2	0.2	0.4	0.6	0.3	0.9	0.4	0.1	-0.1
0.2	2.2	0.2	-0.1	0.0	0.4	0.0	0.4	0.0	0.7	0.5	-0.1	-0.1
0.3	2.3	-0.1	0.0	0.0	0.0	0.1	0.2	0.1	1.3	0.6	0.0	-0.2
0.4	2.6	-0.2	0.1	0.0	0.0	0.1	1.0	0.8	1.5	0.7	-0.1	0.1
0.5	2.7	-0.1	0.1	0.0	-0.1	0.3	0.4	1.5	3.3	0.9	0.1	0.0
0.6	2.8	0.1	0.1	0.0	-0.3	0.3	0.2	1.0	5.0	1.1	0.0	0.0
0.7	2.7	0.0	0.0	0.0	-0.2	1.1	0.4	1.1	5.4	0.9	0.0	0.0
0.8	2.6	0.1	0.1	0.1	-0.5	1.4	0.4	1.5	5.8	1.8	0.1	-0.1
0.9	2.4	0.0	0.0	0.0	-0.3	1.5	0.6	1.1	5.7	3.6	0.7	-4.7
Long Term												
Full Simulation Period[b]	2.2	0.0	0.0	0.0	-0.1	0.5	0.4	0.8	2.6	0.6	-0.2	-0.4
Water Year Types[c]												
Wet (32%)	2.0	0.0	0.0	0.0	-0.3	1.3	0.3	1.2	3.8	0.4	-0.6	-0.8
Above Normal (16%)	2.6	0.0	0.0	0.0	-0.3	-0.2	0.4	0.8	4.2	1.7	0.2	0.1
Below Normal (13%)	2.1	-0.1	0.0	0.0	-0.4	0.3	0.7	1.0	2.1	0.6	0.0	0.0
Dry (24%)	2.6	0.1	0.1	0.0	0.3	0.1	0.4	0.6	1.3	0.4	-0.1	-0.2
Critical (15%)	1.2	0.0	0.1	0.0	0.5	0.3	0.3	0.2	0.9	0.3	-0.2	-0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-3. Stanislaus River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period[b]	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types[c]												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	59	52	51	55	60	60	64	72	76	75	72
20%	63	58	52	51	54	60	59	63	72	76	75	71
30%	62	57	51	50	54	59	59	62	71	75	74	70
40%	61	57	51	50	53	59	58	61	70	74	73	70
50%	60	56	50	49	53	58	58	60	68	74	73	70
60%	60	55	50	49	53	57	57	60	65	73	73	69
70%	59	55	50	49	52	56	56	59	64	73	72	69
80%	59	55	49	49	52	54	56	58	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period[b]	61	56	50	50	53	57	58	61	67	73	73	69
Water Year Types[c]												
Wet (32%)	57	53	49	49	52	54	56	58	63	71	71	67
Above Normal (16%)	61	57	51	50	53	58	58	60	67	73	73	69
Below Normal (13%)	61	55	50	49	53	58	58	60	69	74	73	70
Dry (24%)	61	56	50	49	53	59	59	62	70	75	74	70
Critical (15%)	64	58	51	50	54	60	60	64	72	76	76	72

Alternative 5 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	1.1	0.1	0.3	0.0	0.1	0.0	-2.0	-1.1	0.0	-0.2	0.1	0.2
0.2	0.4	0.3	-0.1	0.0	0.1	0.0	-2.0	-2.0	0.1	0.1	0.2	0.3
0.3	0.3	0.2	0.0	0.1	-0.1	0.1	-1.5	-2.1	0.1	0.1	0.1	0.0
0.4	0.5	0.2	-0.2	0.0	0.1	0.0	-0.5	-1.3	-0.1	0.0	0.0	0.2
0.5	0.3	0.3	0.1	-0.1	0.0	0.0	-0.2	-0.9	-0.2	0.1	0.1	0.2
0.6	0.1	0.1	0.1	0.0	0.0	0.1	0.2	-1.2	-0.2	0.0	0.0	0.2
0.7	0.2	0.0	0.0	0.0	-0.1	0.2	0.1	-0.8	0.2	0.1	0.0	0.1
0.8	0.1	0.1	0.1	0.0	0.0	0.2	0.0	-0.4	0.1	0.3	0.1	0.1
0.9	0.0	0.0	-0.2	0.0	0.0	0.0	0.2	-0.1	-0.2	0.1	0.6	0.0
Long Term												
Full Simulation Period[b]	0.3	0.2	0.1	0.0	0.0	0.1	-0.6	-1.0	0.0	0.3	0.4	0.2
Water Year Types[c]												
Wet (32%)	0.4	0.2	0.1	0.0	0.0	0.2	0.1	-0.5	0.1	0.7	0.8	0.3
Above Normal (16%)	0.3	0.1	0.1	0.0	0.0	0.0	-0.3	-1.2	-0.2	0.0	0.0	0.0
Below Normal (13%)	0.5	0.0	0.0	0.0	0.0	0.0	-0.4	-0.8	0.2	0.1	0.1	0.2
Dry (24%)	0.4	0.2	0.1	0.0	0.1	0.0	-1.1	-1.3	-0.1	0.1	0.2	0.3
Critical (15%)	0.2	0.3	0.0	0.0	0.0	0.0	-2.1	-1.6	0.1	0.3	0.3	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-4. Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period[b]	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types[c]												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

No Action Alternative

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	64	59	52	51	55	60	62	65	72	77	75	72
20%	63	57	52	51	54	60	61	65	72	75	74	71
30%	62	57	51	50	54	59	60	64	71	75	74	70
40%	61	56	51	50	53	59	59	62	70	74	73	70
50%	60	56	50	49	53	58	58	61	68	74	73	69
60%	60	55	50	49	53	57	57	61	65	73	73	69
70%	59	55	50	49	52	56	56	60	64	73	72	69
80%	59	55	49	48	52	54	56	59	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period[b]	61	56	50	50	53	57	58	62	67	73	73	69
Water Year Types[c]												
Wet (32%)	57	53	49	49	52	54	55	59	63	70	70	67
Above Normal (16%)	61	57	51	50	53	58	58	62	67	73	73	69
Below Normal (13%)	60	55	50	49	53	58	59	61	69	74	73	70
Dry (24%)	61	56	50	49	53	59	60	63	70	75	73	70
Critical (15%)	64	58	51	50	54	60	62	66	71	76	75	72

No Action Alternative minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-2.2	0.2	-0.1	0.1	0.5	0.2	-1.6	1.4	0.2	0.3	0.1	0.4
0.2	-2.3	-0.3	-0.1	0.0	0.2	0.2	-1.9	1.1	0.2	0.1	0.1	0.1
0.3	-2.6	-0.1	-0.1	0.0	0.2	0.4	-1.9	0.9	0.3	0.1	0.0	0.2
0.4	-3.2	0.2	-0.1	0.0	0.2	0.5	-2.0	0.7	0.6	0.1	0.0	0.2
0.5	-2.8	-0.2	-0.2	0.1	0.4	0.6	-2.1	-0.2	0.6	0.2	0.0	0.1
0.6	-2.6	-0.1	-0.2	0.0	0.4	0.3	-1.1	-0.1	0.2	0.1	0.0	0.2
0.7	-2.7	-0.1	0.0	0.0	0.2	-0.6	-0.6	0.0	1.5	0.2	0.0	0.2
0.8	-2.6	0.0	-0.2	0.0	0.1	-1.9	-0.4	-0.4	1.6	0.2	-0.1	0.0
0.9	-2.5	0.0	-0.1	-0.1	0.2	-2.1	-0.5	-0.5	2.6	-1.1	-0.6	-0.2
Long Term												
Full Simulation Period[b]	-2.4	-0.1	-0.1	0.0	0.2	-0.2	-1.3	0.4	1.0	0.1	-0.1	0.1
Water Year Types[c]												
Wet (32%)	-2.2	0.1	0.0	0.1	0.2	-1.1	-0.4	-0.4	2.4	0.0	-0.5	0.1
Above Normal (16%)	-2.6	0.0	-0.1	0.1	0.3	0.0	-1.3	0.5	0.6	0.1	0.0	0.1
Below Normal (13%)	-2.2	0.2	-0.1	0.1	0.4	0.4	-1.9	0.2	0.7	0.2	0.0	0.2
Dry (24%)	-2.7	-0.2	-0.2	0.0	0.3	0.4	-2.0	0.8	0.2	0.0	0.0	0.1
Critical (15%)	-1.8	-0.4	-0.3	-0.1	0.0	0.0	-1.5	1.2	0.3	0.2	0.1	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-5. Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period[b]	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types[c]												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	66	58	52	52	55	61	63	66	73	77	75	72
20%	65	58	52	51	55	60	62	65	72	76	74	71
30%	64	57	51	50	54	59	60	64	72	75	74	70
40%	63	56	51	50	53	59	60	63	72	75	73	70
50%	63	56	50	49	53	58	58	62	71	75	73	69
60%	62	55	50	49	52	57	57	62	70	74	73	69
70%	62	55	50	49	52	57	57	61	69	74	72	69
80%	61	55	49	49	51	55	56	60	68	74	72	68
90%	61	54	49	48	50	54	55	59	67	73	71	62
Long Term												
Full Simulation Period[b]	63	56	50	50	53	58	59	62	70	74	72	69
Water Year Types[c]												
Wet (32%)	59	53	49	49	51	55	56	60	67	71	70	66
Above Normal (16%)	64	57	51	50	53	58	58	62	71	75	73	69
Below Normal (13%)	62	55	50	49	52	58	59	62	71	75	73	69
Dry (24%)	63	56	50	49	54	59	60	64	72	75	73	70
Critical (15%)	65	58	51	50	55	60	62	66	72	76	75	71

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.8	-0.1	0.0	0.3	0.7	0.5	-1.0	1.7	1.1	0.7	0.2	0.3
0.2	-0.1	-0.1	-0.1	0.0	0.6	0.2	-1.5	1.1	0.9	0.6	0.0	0.1
0.3	-0.3	-0.2	-0.1	0.0	0.3	0.5	-1.7	1.0	1.6	0.7	0.0	0.0
0.4	-0.6	0.0	0.0	0.0	0.2	0.5	-1.1	1.5	2.1	0.8	0.0	0.3
0.5	0.0	-0.2	-0.1	0.1	0.3	0.9	-1.7	1.3	3.9	1.1	0.1	0.0
0.6	0.1	0.0	-0.1	-0.1	0.1	0.7	-1.0	0.9	5.2	1.2	-0.1	0.2
0.7	0.0	-0.1	-0.1	0.0	0.0	0.4	-0.2	1.1	7.0	1.1	0.0	0.2
0.8	0.1	0.1	-0.1	0.1	-0.4	-0.4	0.0	1.1	7.5	2.0	0.0	-0.1
0.9	-0.2	0.1	-0.1	0.0	-0.1	-0.6	0.1	0.6	8.3	2.6	0.1	-4.8
Long Term												
Full Simulation Period[b]	-0.2	-0.1	-0.1	0.0	0.1	0.3	-0.9	1.2	3.6	0.7	-0.3	-0.2
Water Year Types[c]												
Wet (32%)	-0.2	0.0	0.0	0.1	-0.1	0.2	-0.1	0.8	6.1	0.4	-1.1	-0.6
Above Normal (16%)	0.0	0.0	-0.1	0.1	0.0	-0.1	-0.9	1.2	4.9	1.8	0.2	0.2
Below Normal (13%)	-0.2	0.0	-0.2	0.0	0.0	0.6	-1.2	1.2	2.8	0.7	0.0	0.2
Dry (24%)	-0.2	0.0	0.0	0.0	0.5	0.5	-1.6	1.4	1.5	0.4	0.0	-0.1
Critical (15%)	-0.6	-0.4	-0.2	-0.1	0.5	0.3	-1.2	1.4	1.2	0.5	-0.1	-0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-19-6. Stanislaus River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	67	58	52	51	55	60	64	64	72	76	75	71
20%	65	58	52	51	54	59	63	63	71	75	74	71
30%	64	57	51	50	54	59	62	63	70	75	74	70
40%	64	56	51	50	53	58	61	61	70	74	73	70
50%	63	56	50	49	52	57	60	61	67	74	73	69
60%	62	55	50	49	52	57	58	61	65	73	73	69
70%	62	55	50	49	52	56	57	60	62	73	72	68
80%	61	55	49	48	51	55	56	59	61	71	72	68
90%	61	54	49	48	50	54	55	58	59	70	71	67
Long Term												
Full Simulation Period[b]	63	56	51	50	53	57	60	61	66	73	73	69
Water Year Types[c]												
Wet (32%)	59	53	49	49	52	55	56	59	61	70	71	66
Above Normal (16%)	64	57	51	50	53	58	59	61	66	73	73	69
Below Normal (13%)	62	55	50	49	52	58	60	61	68	74	73	69
Dry (24%)	63	56	50	49	53	58	62	63	70	75	73	70
Critical (15%)	66	58	51	50	54	60	64	64	71	76	75	72

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	59	52	51	55	60	60	64	72	76	75	72
20%	63	58	52	51	54	60	59	63	72	76	75	71
30%	62	57	51	50	54	59	59	62	71	75	74	70
40%	61	57	51	50	53	59	58	61	70	74	73	70
50%	60	56	50	49	53	58	58	60	68	74	73	70
60%	60	55	50	49	53	57	57	60	65	73	73	69
70%	59	55	50	49	52	56	56	59	64	73	72	69
80%	59	55	49	49	52	54	56	58	63	72	72	68
90%	58	54	49	48	51	52	55	58	62	69	71	67
Long Term												
Full Simulation Period[b]	61	56	50	50	53	57	58	61	67	73	73	69
Water Year Types[c]												
Wet (32%)	57	53	49	49	52	54	56	58	63	71	71	67
Above Normal (16%)	61	57	51	50	53	58	58	60	67	73	73	69
Below Normal (13%)	61	55	50	49	53	58	58	60	69	74	73	70
Dry (24%)	61	56	50	49	53	59	59	62	70	75	74	70
Critical (15%)	64	58	51	50	54	60	60	64	72	76	76	72

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-1.1	0.3	0.2	0.1	0.6	0.2	-3.5	0.3	0.3	0.1	0.3	0.6
0.2	-1.9	0.0	-0.1	0.0	0.3	0.2	-3.9	-0.9	0.4	0.2	0.3	0.4
0.3	-2.3	0.1	-0.1	0.1	0.1	0.5	-3.4	-1.1	0.4	0.3	0.1	0.2
0.4	-2.8	0.4	-0.4	0.0	0.2	0.5	-2.5	-0.7	0.5	0.1	0.1	0.3
0.5	-2.5	0.1	-0.1	0.0	0.4	0.6	-2.3	-1.1	0.4	0.3	0.1	0.3
0.6	-2.5	0.1	-0.1	0.0	0.4	0.5	-0.9	-1.3	0.0	0.1	0.0	0.4
0.7	-2.6	0.0	0.0	0.1	0.1	-0.4	-0.5	-0.8	1.7	0.2	0.0	0.3
0.8	-2.5	0.2	-0.2	0.1	0.1	-1.7	-0.4	-0.8	1.7	0.5	0.0	0.0
0.9	-2.5	0.0	-0.2	0.0	0.2	-2.1	-0.3	-0.6	2.4	-1.0	0.0	-0.2
Long Term												
Full Simulation Period[b]	-2.0	0.1	-0.1	0.0	0.3	-0.1	-1.9	-0.6	1.1	0.4	0.2	0.3
Water Year Types[c]												
Wet (32%)	-1.8	0.2	0.0	0.1	0.2	-0.9	-0.3	-0.8	2.5	0.7	0.3	0.4
Above Normal (16%)	-2.3	0.1	-0.1	0.1	0.3	0.0	-1.6	-0.8	0.5	0.1	0.0	0.2
Below Normal (13%)	-1.8	0.2	-0.1	0.1	0.4	0.4	-2.3	-0.6	0.9	0.3	0.1	0.3
Dry (24%)	-2.4	0.1	-0.1	0.0	0.4	0.5	-3.1	-0.5	0.1	0.1	0.2	0.4
Critical (15%)	-1.6	0.0	-0.3	-0.1	0.0	0.0	-3.5	-0.3	0.4	0.5	0.4	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

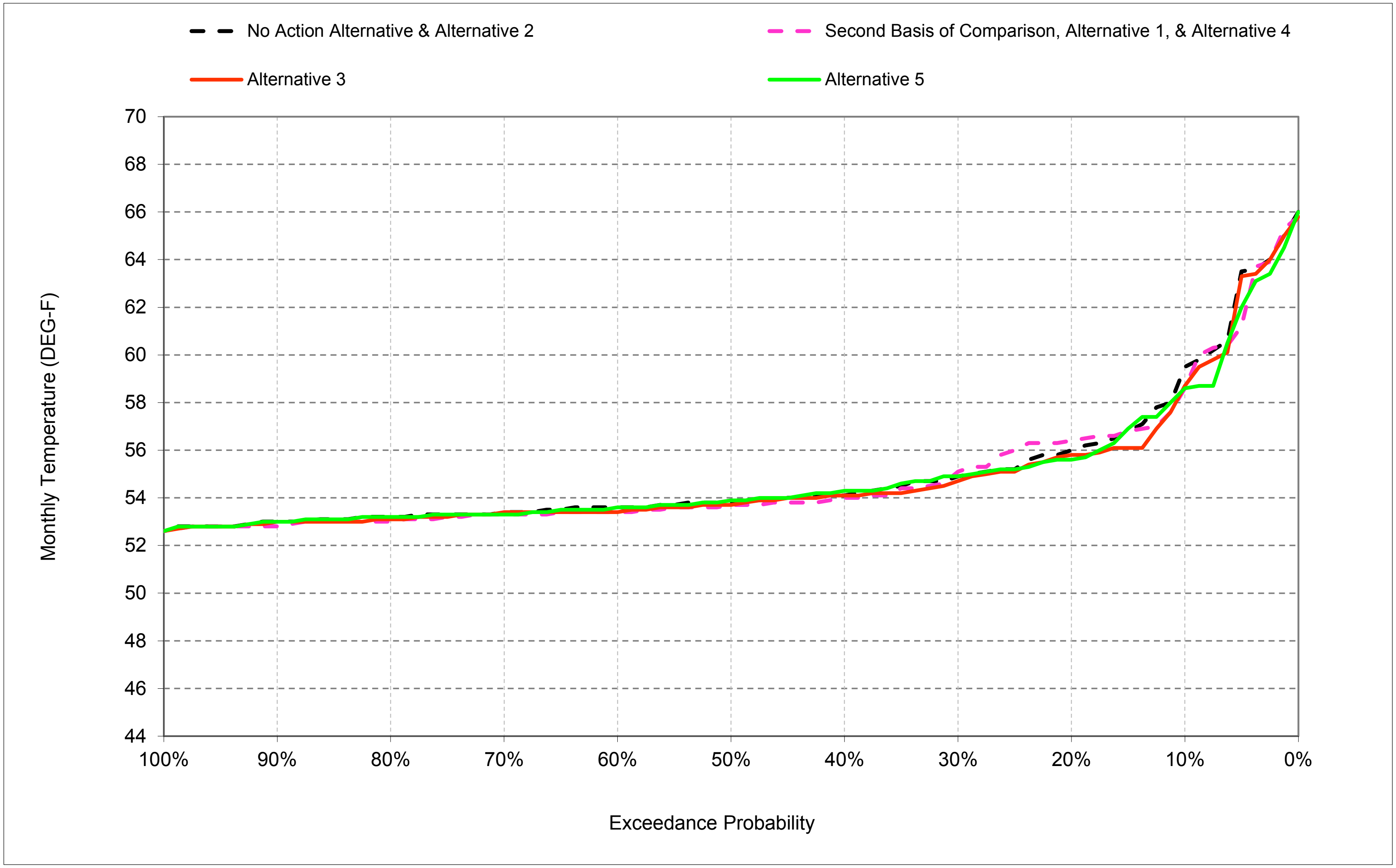
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

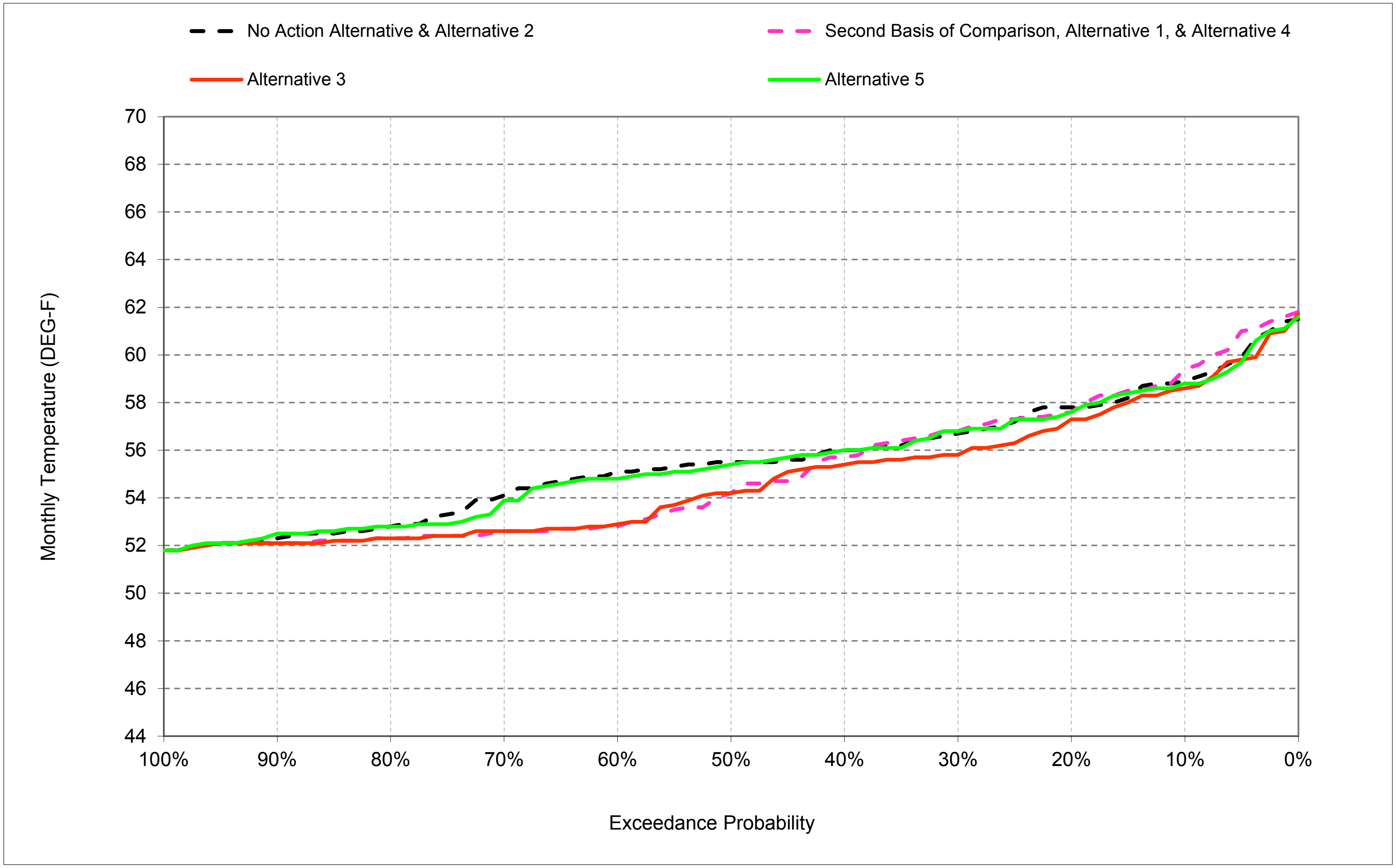
B.20. Feather River Low Flow Channel

Figure B-20-1. Feather River Low Flow Channel, October



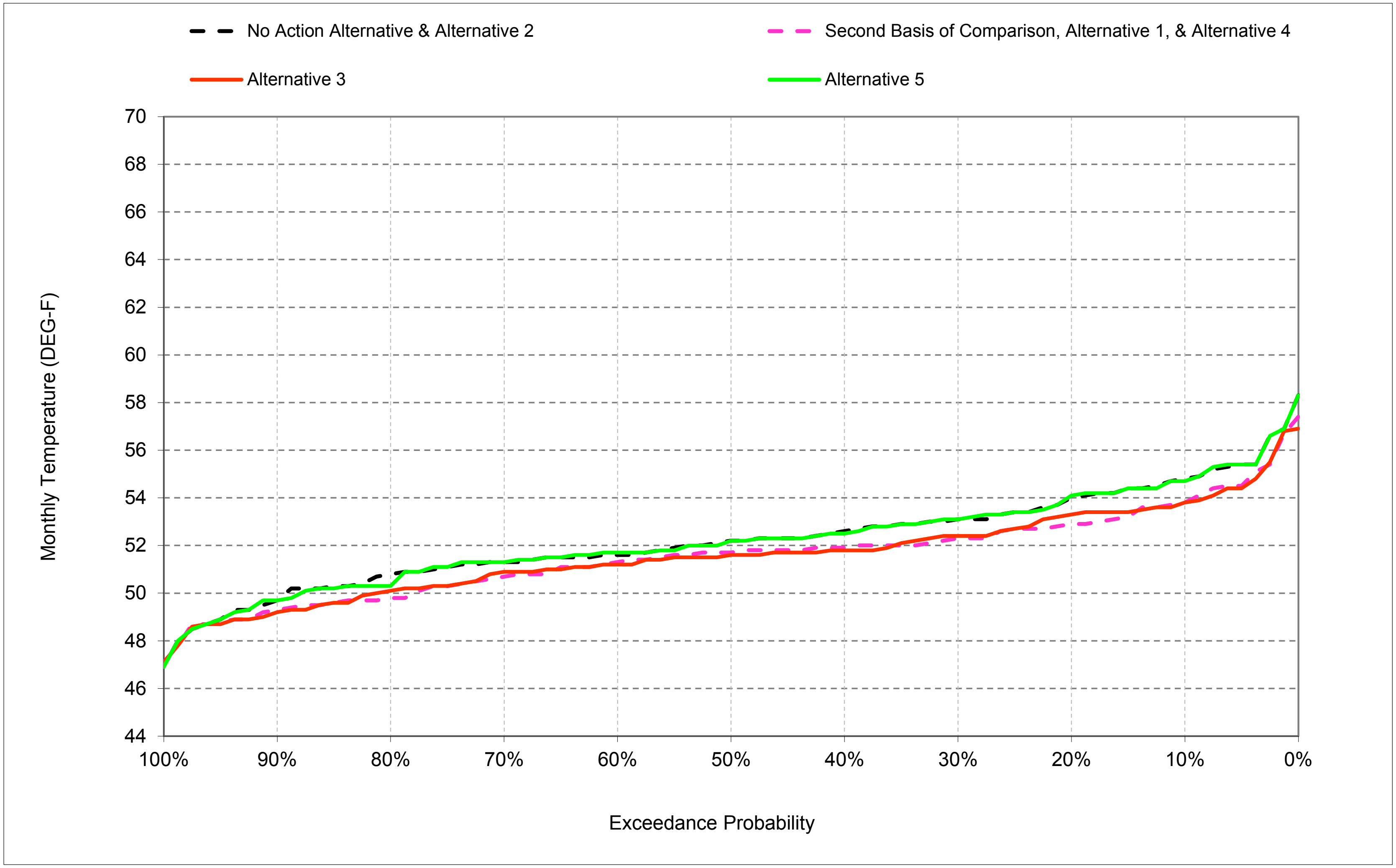
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-2. Feather River Low Flow Channel, November



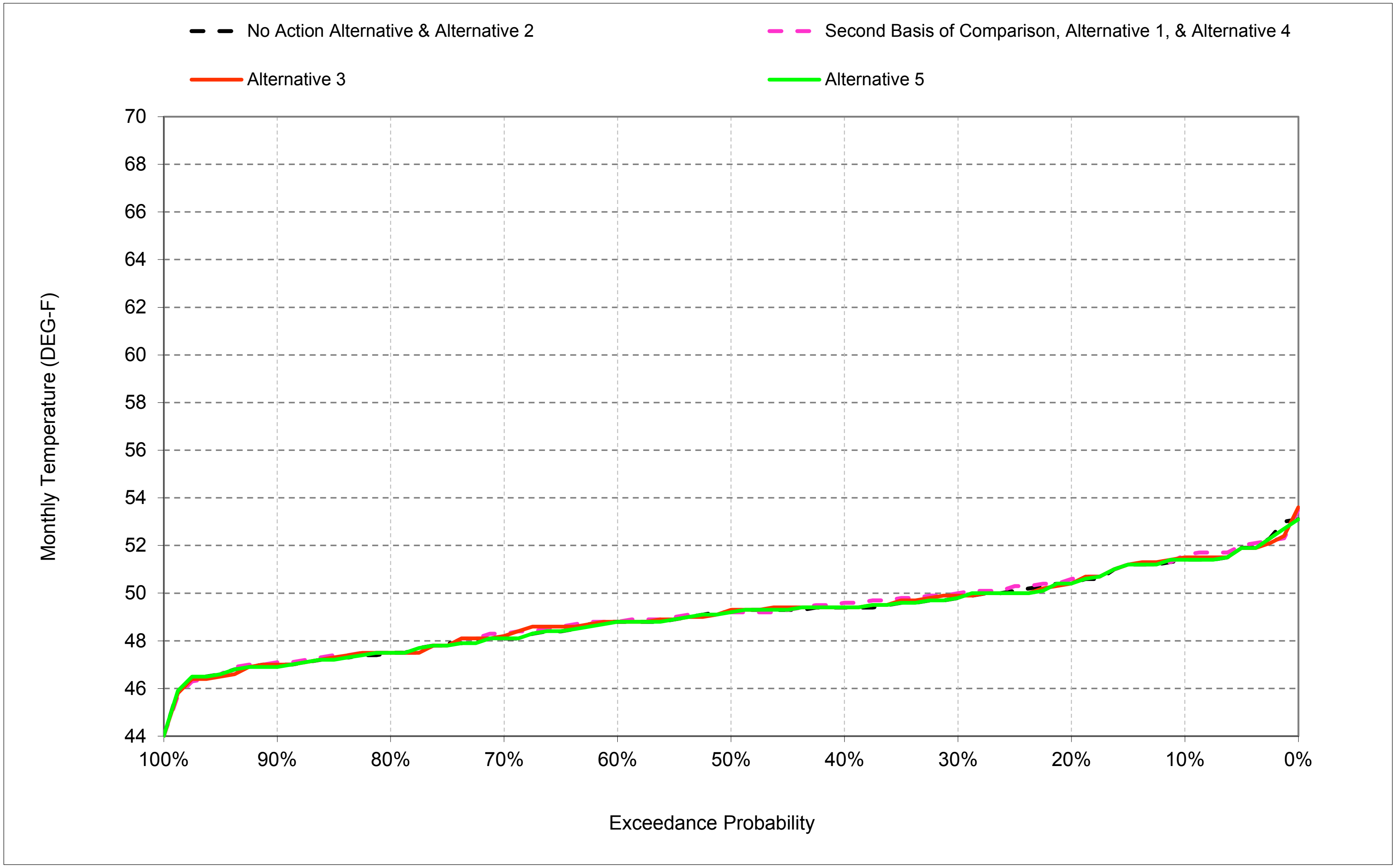
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-3. Feather River Low Flow Channel, December



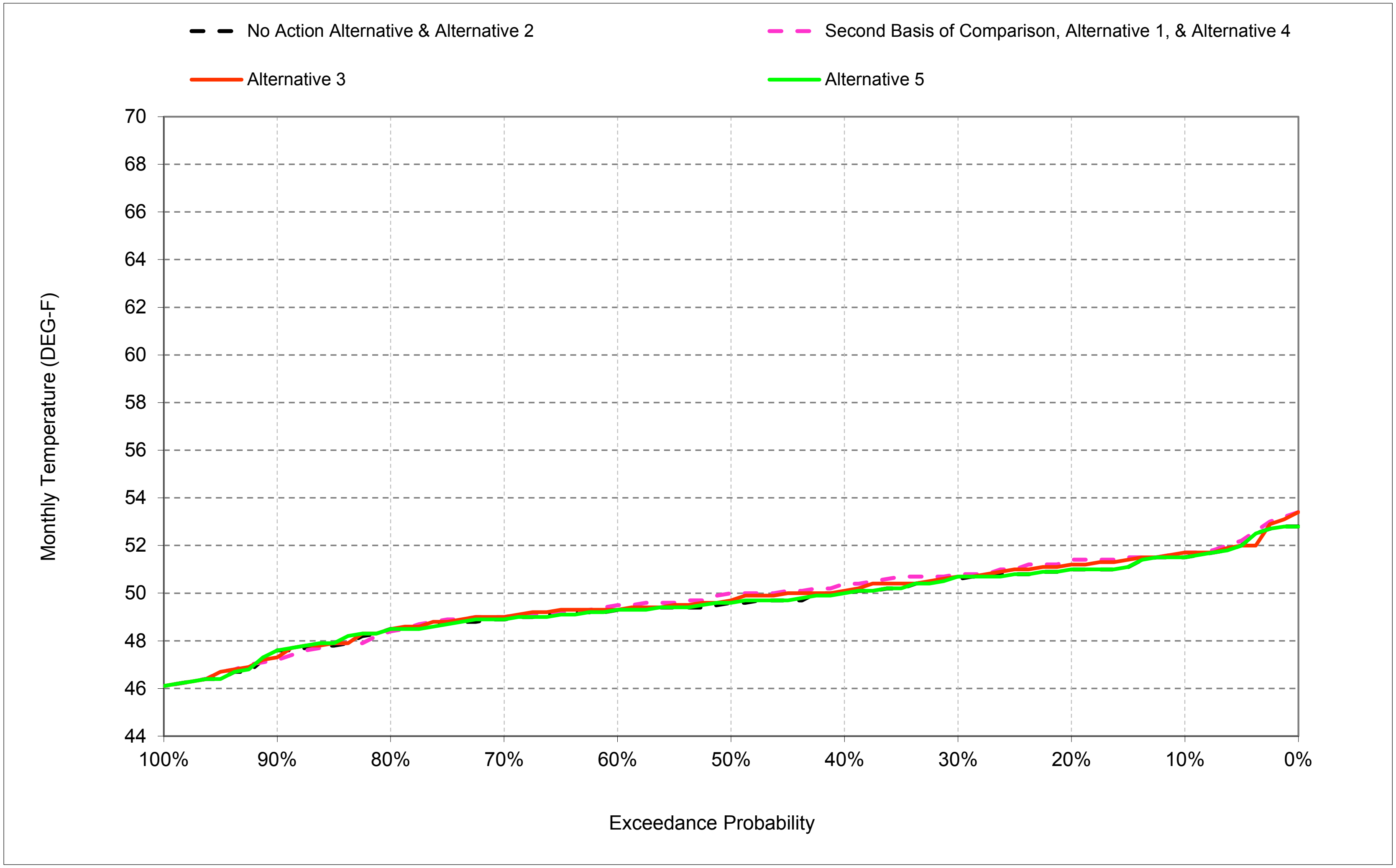
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-4. Feather River Low Flow Channel, January



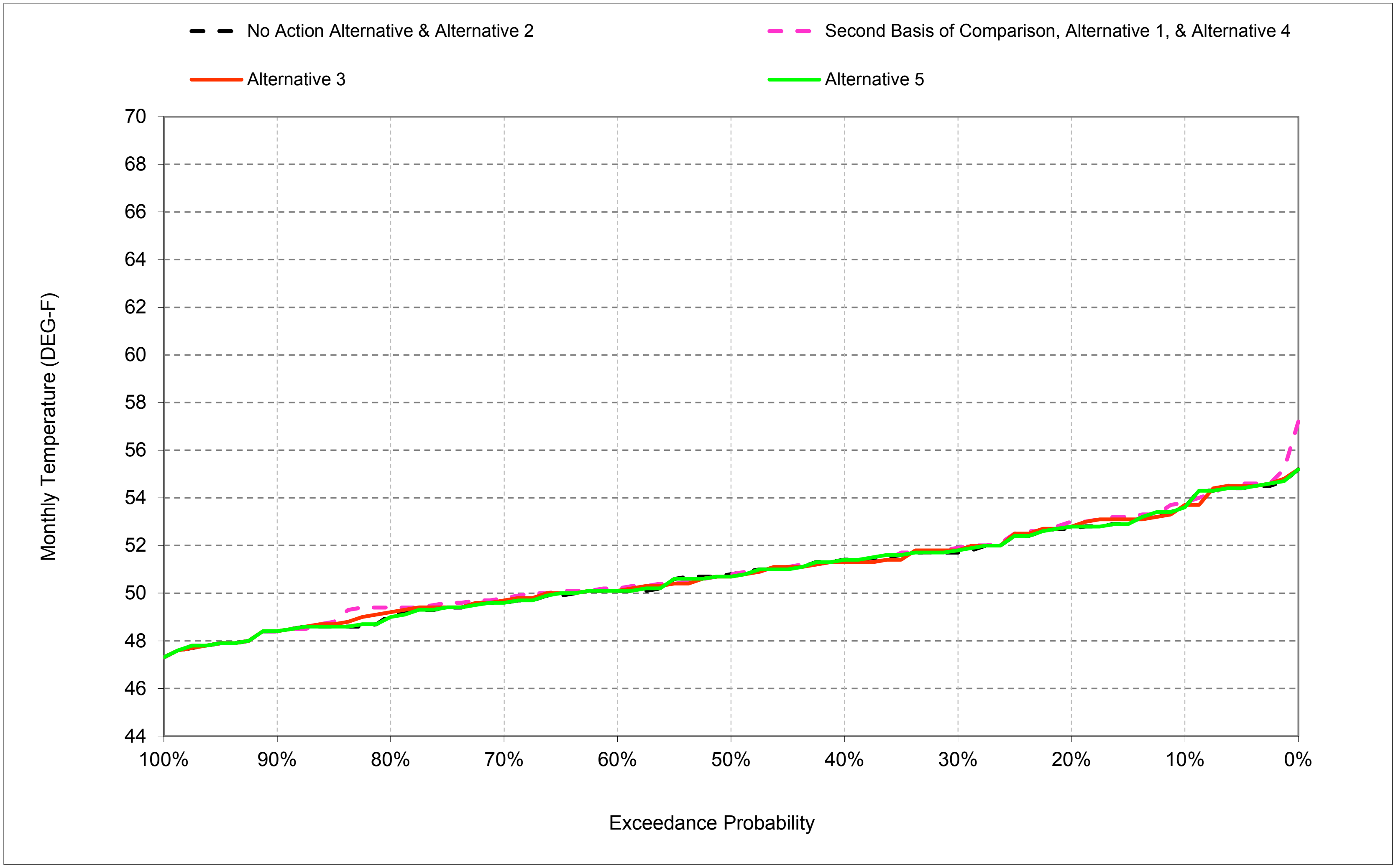
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-5. Feather River Low Flow Channel, February



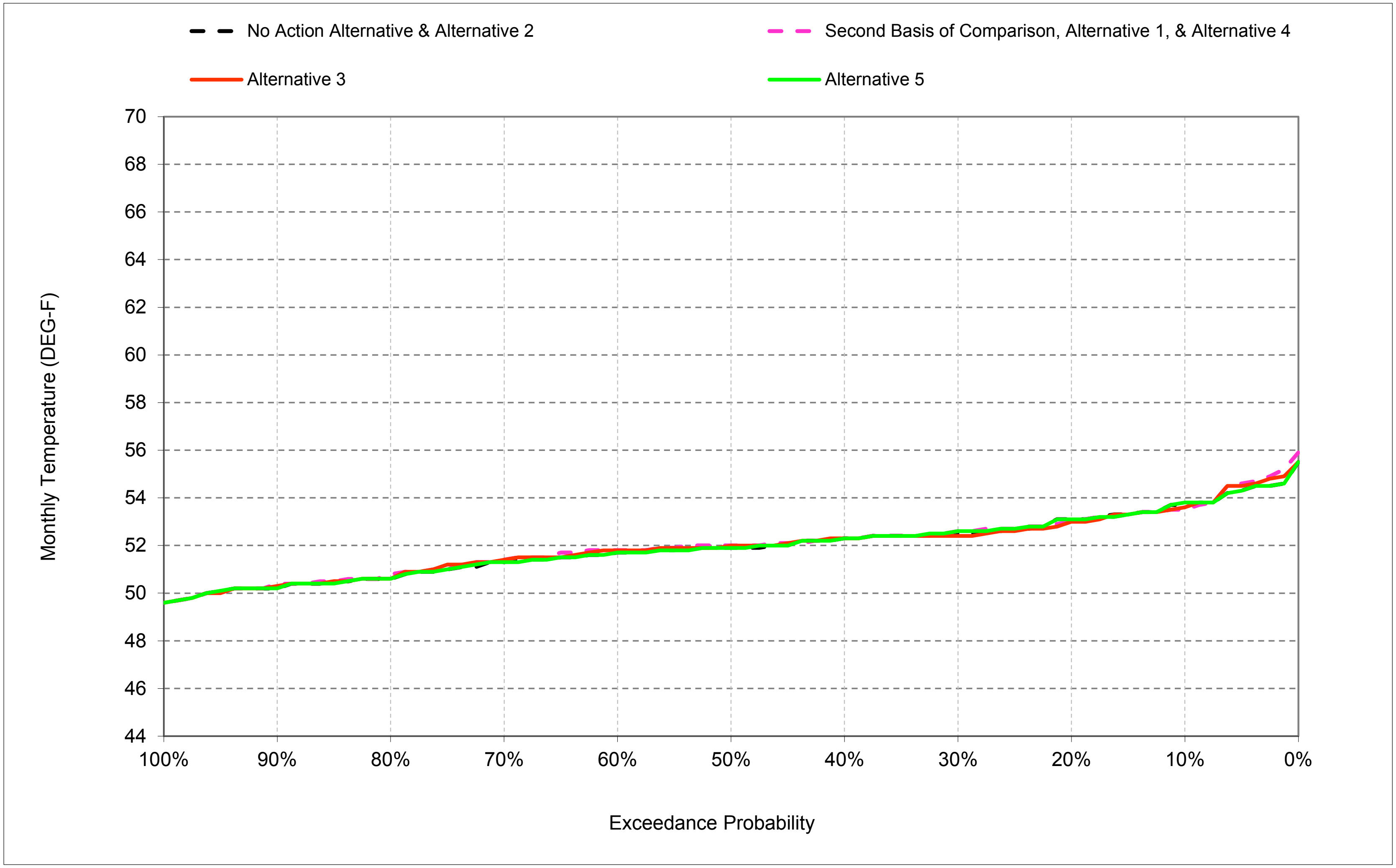
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-6. Feather River Low Flow Channel, March



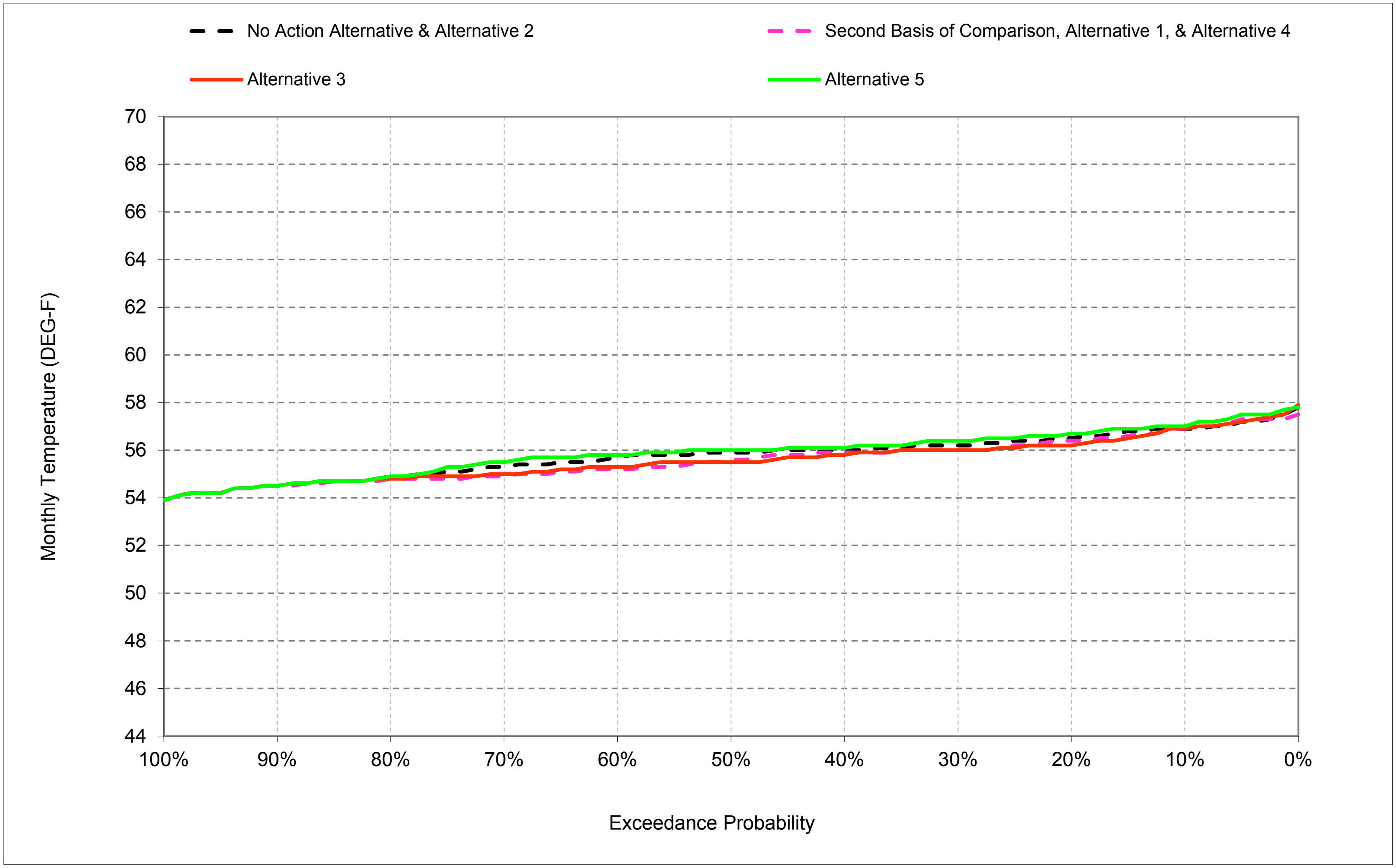
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-7. Feather River Low Flow Channel, April



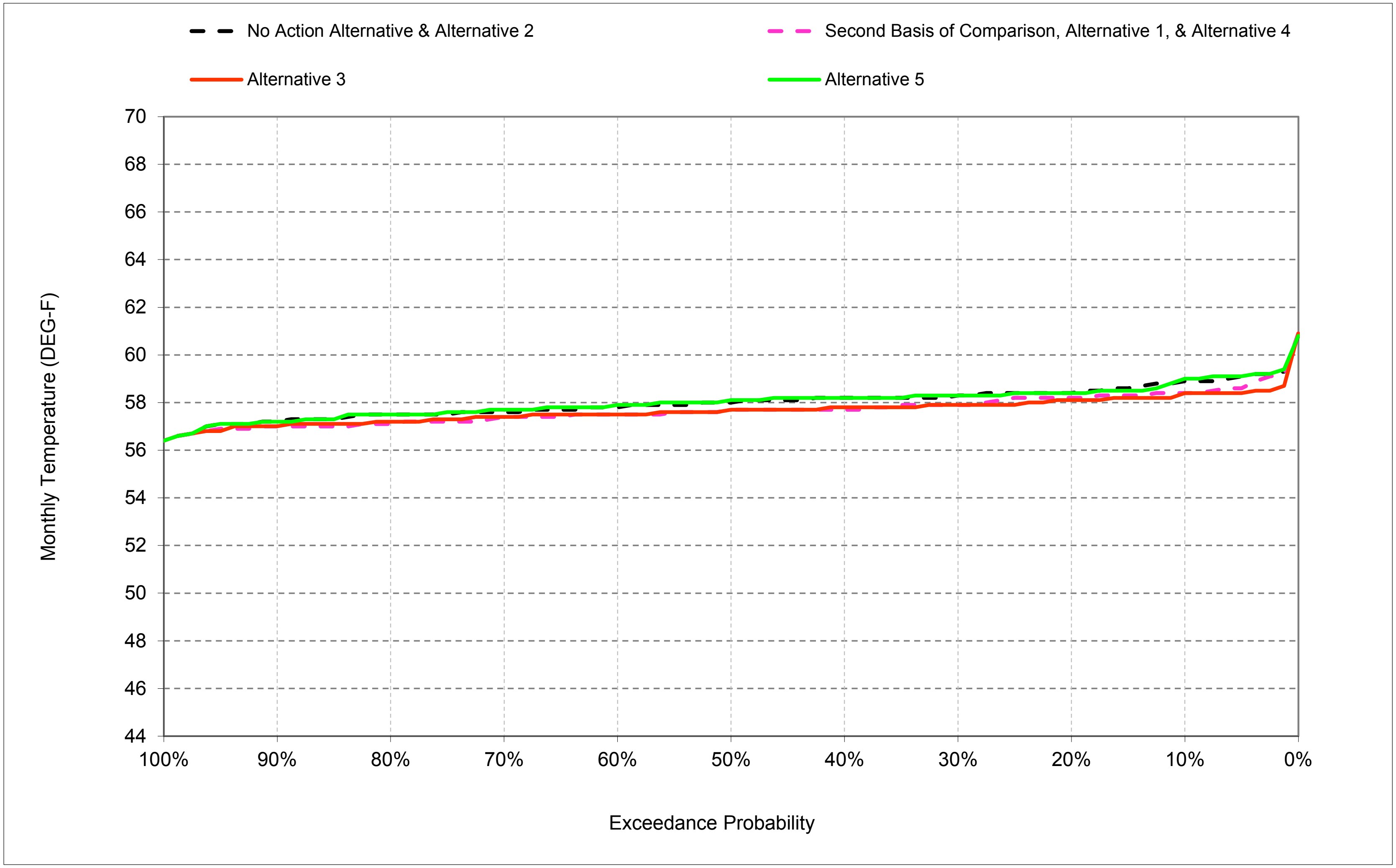
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-8. Feather River Low Flow Channel, May



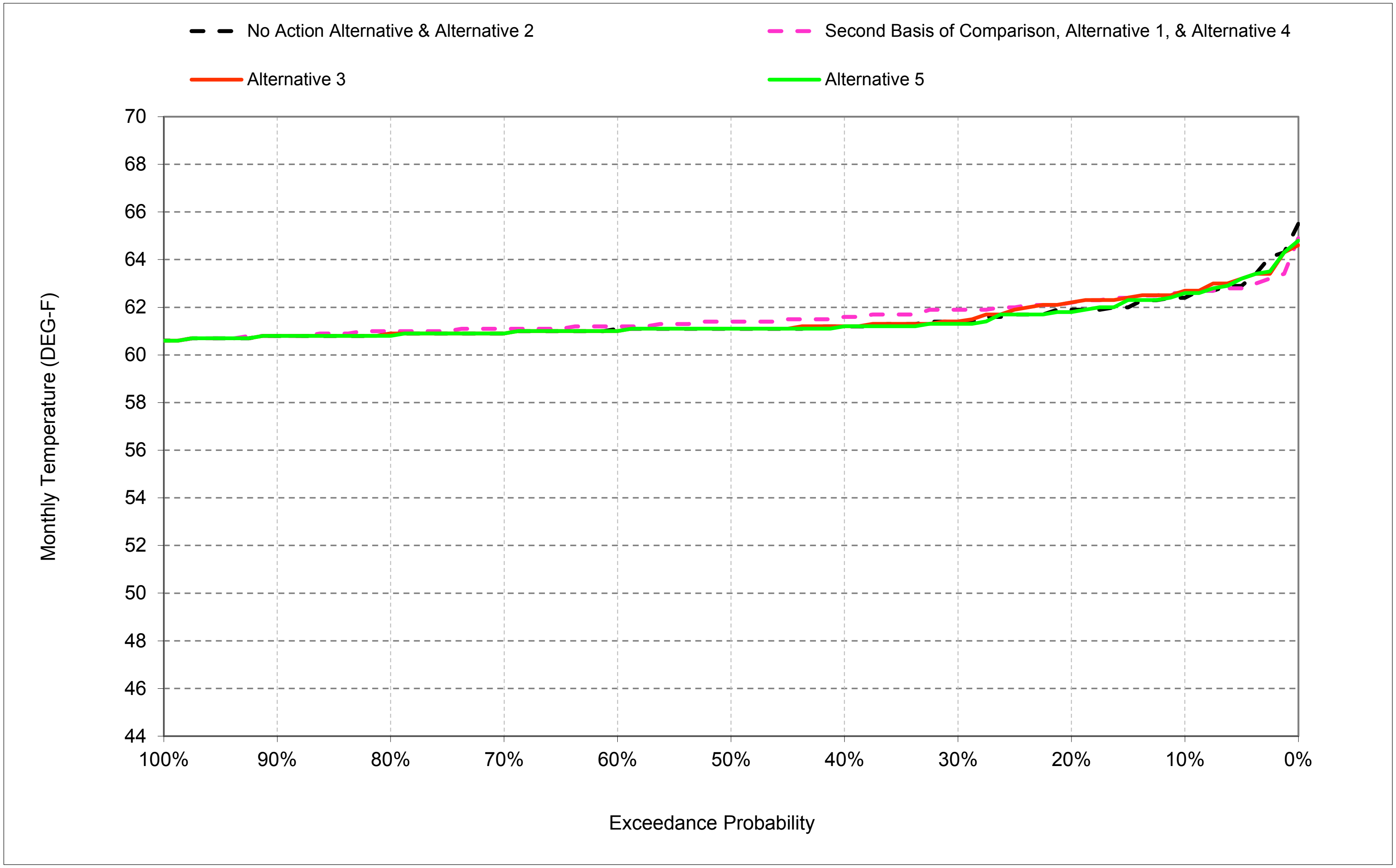
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-9. Feather River Low Flow Channel, June



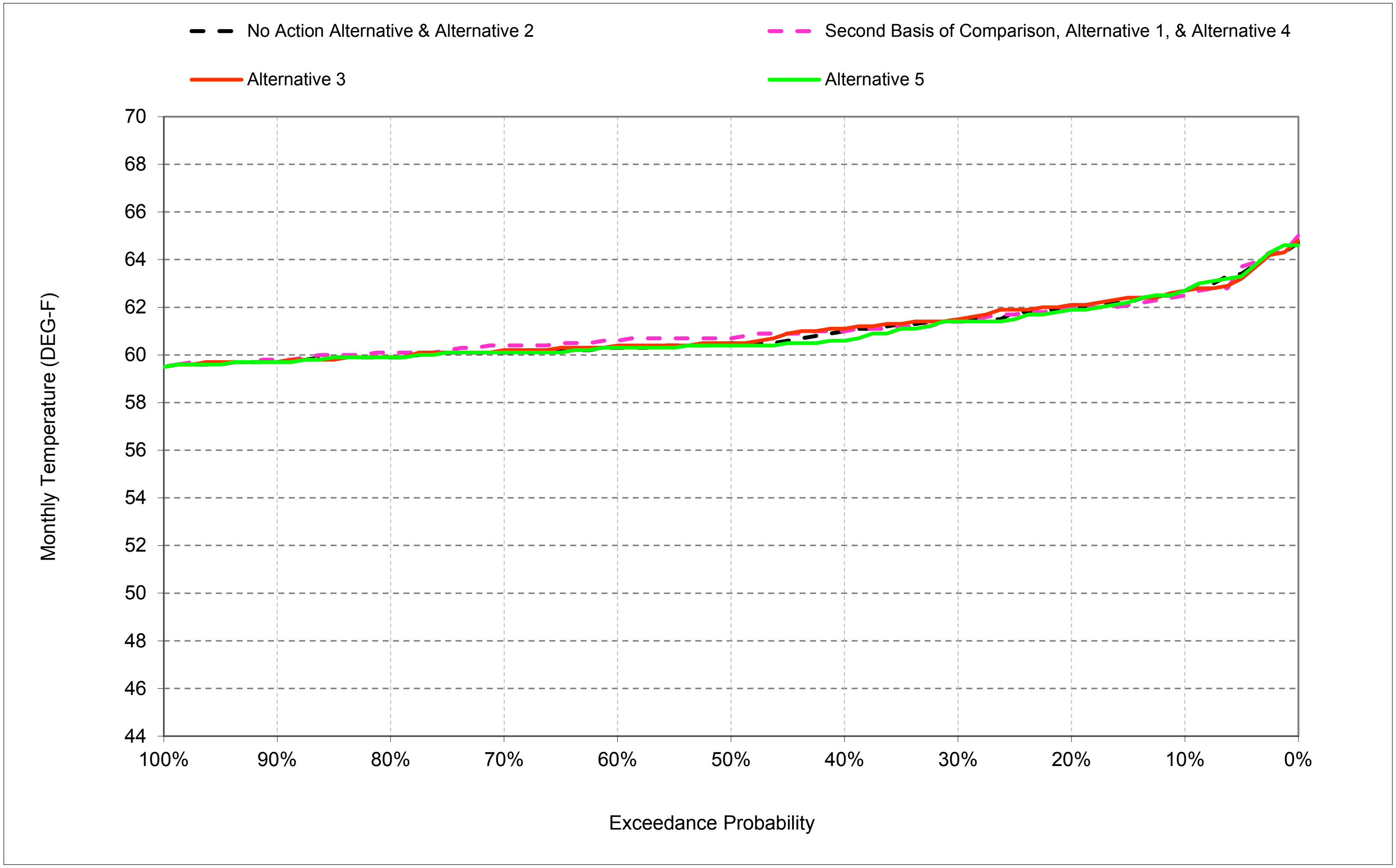
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-10. Feather River Low Flow Channel, July



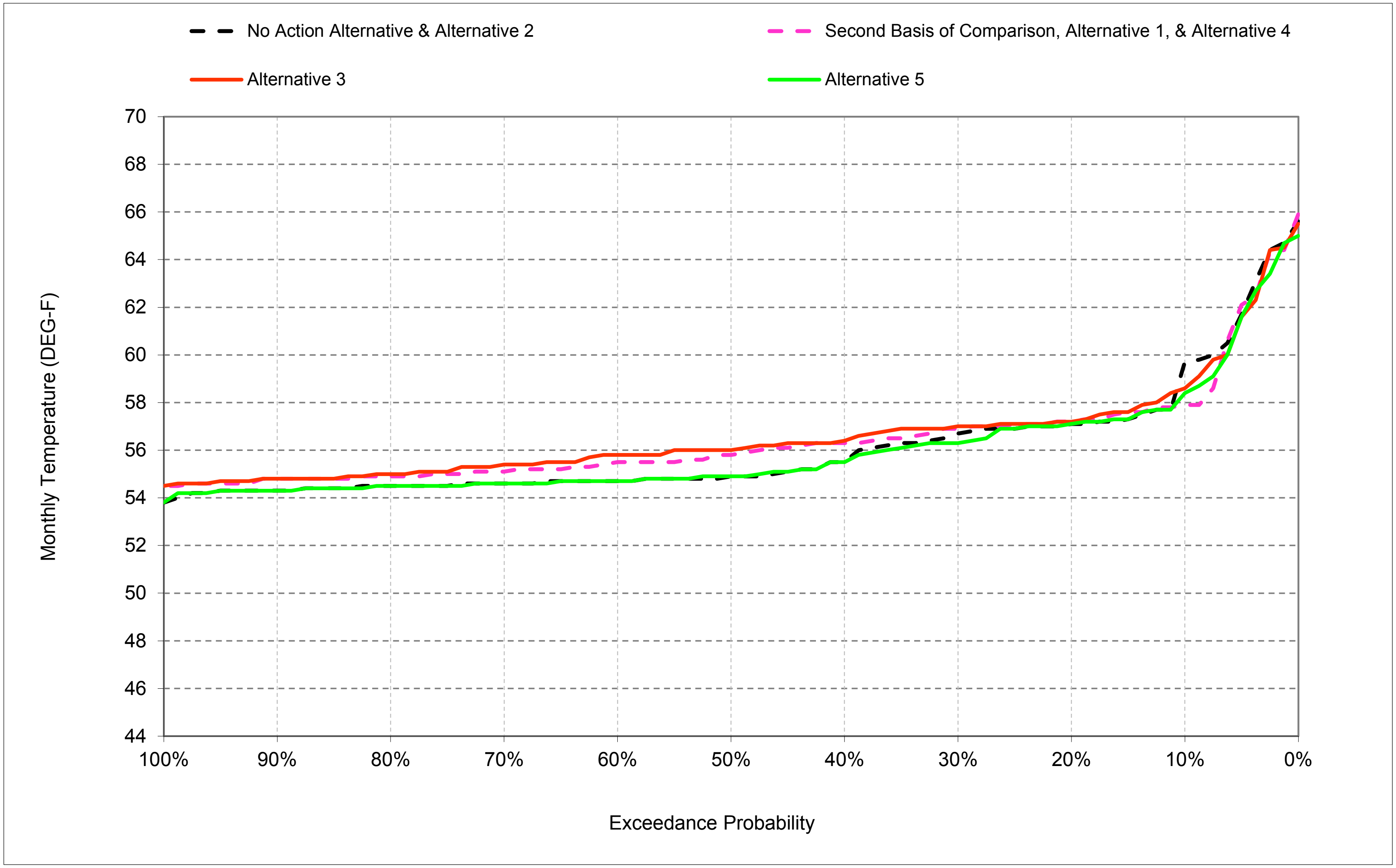
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-11. Feather River Low Flow Channel, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-20-12. Feather River Low Flow Channel, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-1. Feather River Low Flow Channel, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period[b]	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types[c]												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types[c]												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.9	0.5	-1.0	0.2	0.2	0.2	-0.2	0.0	-0.5	0.2	-0.2	-1.8
0.2	0.4	-0.2	-1.1	0.2	0.4	0.3	-0.1	-0.1	-0.2	0.3	0.1	0.1
0.3	0.2	0.1	-0.8	0.2	0.2	0.2	0.1	-0.2	-0.4	0.5	-0.1	0.2
0.4	-0.1	-0.3	-0.7	0.2	0.4	-0.1	0.0	-0.1	-0.5	0.4	0.0	0.8
0.5	-0.1	-1.3	-0.5	0.0	0.4	0.0	0.1	-0.3	-0.3	0.3	0.2	0.9
0.6	-0.2	-2.3	-0.3	0.0	0.2	0.1	0.1	-0.5	-0.3	0.1	0.3	0.8
0.7	-0.1	-1.5	-0.6	0.2	0.1	0.2	0.1	-0.4	-0.2	0.2	0.3	0.5
0.8	-0.2	-0.5	-1.0	0.0	-0.1	0.3	0.2	-0.1	-0.4	0.1	0.2	0.4
0.9	-0.2	-0.2	-0.4	0.1	-0.4	0.0	0.2	0.0	-0.2	0.0	0.1	0.5
Long Term												
Full Simulation Period[b]	-0.1	-0.5	-0.6	0.1	0.2	0.1	0.1	-0.2	-0.3	0.2	0.1	0.4
Water Year Types[c]												
Wet (32%)	-0.3	-1.0	-0.4	0.1	0.2	0.2	0.1	-0.1	-0.2	0.1	0.5	1.3
Above Normal (16%)	0.3	-0.3	-0.9	0.1	0.2	0.0	0.0	-0.4	-0.4	0.1	0.3	0.6
Below Normal (13%)	0.0	-1.2	-1.4	-0.1	0.0	0.0	0.1	-0.4	-0.7	0.2	0.4	0.0
Dry (24%)	-0.2	-0.4	-0.7	0.0	0.3	0.0	0.1	-0.2	-0.2	0.4	-0.6	-0.5
Critical (15%)	0.2	0.9	-0.2	0.1	0.1	0.4	-0.1	0.0	-0.3	0.0	-0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-2. Feather River Low Flow Channel, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period[b]	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types[c]												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	59	54	52	52	54	54	57	58	63	63	59
20%	56	57	53	50	51	53	53	56	58	62	62	57
30%	55	56	52	50	51	52	52	56	58	61	62	57
40%	54	55	52	49	50	51	52	56	58	61	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	49	50	52	55	58	61	60	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	49	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	61	61	57
Water Year Types[c]												
Wet (32%)	52	52	49	49	49	50	51	55	57	61	61	56
Above Normal (16%)	55	55	52	46	46	46	48	52	53	56	55	51
Below Normal (13%)	54	54	51	50	50	52	53	56	58	61	60	56
Dry (24%)	56	55	52	49	50	52	53	56	58	62	61	57
Critical (15%)	56	56	52	49	50	52	52	56	58	63	63	60

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.8	-0.3	-1.0	0.1	0.2	0.1	-0.1	0.0	-0.5	0.3	0.0	-1.1
0.2	-0.2	-0.5	-0.7	0.0	0.2	0.1	-0.1	-0.3	-0.3	0.3	0.2	0.1
0.3	-0.2	-0.9	-0.7	0.1	0.1	0.1	-0.1	-0.2	-0.4	0.0	0.0	0.3
0.4	0.0	-0.6	-0.8	0.0	0.1	-0.1	0.0	-0.2	-0.4	0.0	0.1	0.9
0.5	-0.1	-1.3	-0.6	0.1	0.1	-0.1	0.1	-0.4	-0.3	0.0	0.0	1.1
0.6	-0.2	-2.2	-0.4	0.0	0.0	0.0	0.1	-0.4	-0.3	-0.1	0.1	1.1
0.7	0.0	-1.5	-0.4	0.1	0.1	0.1	0.1	-0.3	-0.2	0.0	0.1	0.8
0.8	-0.1	-0.5	-0.7	0.0	0.0	0.1	0.0	-0.1	-0.3	0.0	0.0	0.5
0.9	0.0	-0.2	-0.5	0.0	-0.3	0.0	0.1	0.0	-0.2	0.0	0.0	0.5
Long Term												
Full Simulation Period[b]	-0.2	-0.8	-0.6	0.0	0.1	0.0	0.0	-0.2	-0.3	0.0	0.0	0.5
Water Year Types[c]												
Wet (32%)	-0.2	-1.0	-0.4	0.1	0.2	0.1	0.1	-0.1	-0.3	0.0	0.3	1.5
Above Normal (16%)	-0.2	-0.7	-0.7	0.1	0.1	0.0	-0.1	-0.3	-0.3	0.0	0.1	0.6
Below Normal (13%)	0.0	-1.3	-1.6	-0.1	0.0	0.0	0.0	-0.3	-0.4	-0.1	-0.2	0.3
Dry (24%)	0.0	-0.7	-0.6	0.0	0.1	0.1	0.1	-0.2	-0.3	0.2	-0.1	-0.2
Critical (15%)	-0.4	-0.1	-0.3	0.0	0.1	-0.1	0.0	0.1	-0.3	0.0	-0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-3. Feather River Low Flow Channel, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period[b]	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types[c]												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	59	55	51	52	54	54	57	59	63	63	58
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	61	56
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	55	52	49	50	51	52	56	58	61	60	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	56	58	61	60	55
80%	53	53	50	48	49	49	51	55	58	61	60	55
90%	53	53	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	61	61	56
Water Year Types[c]												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	55	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	53	57	59	63	63	60

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.9	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	-1.3
0.2	-0.4	-0.2	0.1	0.0	0.0	0.1	0.0	0.2	0.0	-0.1	0.0	0.0
0.3	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	-0.1	-0.1	-0.4
0.4	0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.4	0.0
0.5	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.1	0.1	0.0	-0.1	0.0
0.6	0.0	-0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.1	-0.1	0.0	0.0
0.7	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
0.8	0.0	0.0	-0.5	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0
0.9	0.0	0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long Term												
Full Simulation Period[b]	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above Normal (16%)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.2	-0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.0	-0.1	-0.1
Dry (24%)	-0.2	-0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	-0.1	-0.1
Critical (15%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	-0.1	-0.1	-0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-4. Feather River Low Flow Channel, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types[c]												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	60	59	55	51	52	54	54	57	59	62	63	60
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	62	57
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	56	52	49	50	51	52	56	58	61	61	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	55	58	61	60	55
80%	53	53	51	48	49	49	51	55	58	61	60	55
90%	53	52	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period[b]	55	56	52	49	50	51	52	56	58	61	61	56
Water Year Types[c]												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	56	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	52	56	58	63	63	60

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.9	-0.5	1.0	-0.2	-0.2	-0.2	0.2	0.0	0.5	-0.2	0.2	1.8
0.2	-0.4	0.2	1.1	-0.2	-0.4	-0.3	0.1	0.1	0.2	-0.3	-0.1	-0.1
0.3	-0.2	-0.1	0.8	-0.2	-0.2	-0.2	-0.1	0.2	0.4	-0.5	0.1	-0.2
0.4	0.1	0.3	0.7	-0.2	-0.4	0.1	0.0	0.1	0.5	-0.4	0.0	-0.8
0.5	0.1	1.3	0.5	0.0	-0.4	0.0	-0.1	0.3	0.3	-0.3	-0.2	-0.9
0.6	0.2	2.3	0.3	0.0	-0.2	-0.1	-0.1	0.5	0.3	-0.1	-0.3	-0.8
0.7	0.1	1.5	0.6	-0.2	-0.1	-0.2	-0.1	0.4	0.2	-0.2	-0.3	-0.5
0.8	0.2	0.5	1.0	0.0	0.1	-0.3	-0.2	0.1	0.4	-0.1	-0.2	-0.4
0.9	0.2	0.2	0.4	-0.1	0.4	0.0	-0.2	0.0	0.2	0.0	-0.1	-0.5
Long Term												
Full Simulation Period[b]	0.1	0.5	0.6	-0.1	-0.2	-0.1	-0.1	0.2	0.3	-0.2	-0.1	-0.4
Water Year Types[c]												
Wet (32%)	0.3	1.0	0.4	-0.1	-0.2	-0.2	-0.1	0.1	0.2	-0.1	-0.5	-1.3
Above Normal (16%)	-0.3	0.3	0.9	-0.1	-0.2	0.0	0.0	0.4	0.4	-0.1	-0.3	-0.6
Below Normal (13%)	0.0	1.2	1.4	0.1	0.0	0.0	-0.1	0.4	0.7	-0.2	-0.4	0.0
Dry (24%)	0.2	0.4	0.7	0.0	-0.3	0.0	-0.1	0.2	0.2	-0.4	0.6	0.5
Critical (15%)	-0.2	-0.9	0.2	-0.1	-0.1	-0.4	0.1	0.0	0.3	0.0	0.1	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-5. Feather River Low Flow Channel, Monthly Temperature

Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types[c]												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

Alternative 3

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	59	59	54	52	52	54	54	57	58	63	63	59
20%	56	57	53	50	51	53	53	56	58	62	62	57
30%	55	56	52	50	51	52	52	56	58	61	62	57
40%	54	55	52	49	50	51	52	56	58	61	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	49	50	52	55	58	61	60	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	49	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	61	61	57
Water Year Types[c]												
Wet (32%)	52	52	49	49	49	50	51	55	57	61	61	56
Above Normal (16%)	55	55	52	46	46	46	48	52	53	56	55	51
Below Normal (13%)	54	54	51	50	50	52	53	56	58	61	60	56
Dry (24%)	56	55	52	49	50	52	53	56	58	62	61	57
Critical (15%)	56	56	52	49	50	52	52	56	58	63	63	60

Alternative 3 minus Second Basis of Comparison

	Monthly Temperature (DEG-F)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	-0.8	0.0	-0.1	0.0	-0.1	0.1	0.0	0.0	0.1	0.2	0.7
0.2	-0.6	-0.3	0.4	-0.2	-0.2	-0.2	0.0	-0.2	-0.1	0.0	0.1	0.0
0.3	-0.4	-1.0	0.1	-0.1	-0.1	-0.1	-0.2	0.0	0.0	-0.5	0.1	0.1
0.4	0.1	-0.3	-0.1	-0.2	-0.3	0.0	0.0	-0.1	0.1	-0.4	0.1	0.1
0.5	0.0	0.0	-0.1	0.1	-0.3	-0.1	0.0	-0.1	0.0	-0.3	-0.2	0.2
0.6	0.0	0.1	-0.1	0.0	-0.2	-0.1	0.0	0.1	0.0	-0.2	-0.2	0.3
0.7	0.1	0.0	0.2	-0.1	0.0	-0.1	0.0	0.1	0.0	-0.2	-0.2	0.3
0.8	0.1	0.0	0.3	0.0	0.1	-0.2	-0.2	0.0	0.1	-0.1	-0.2	0.1
0.9	0.2	0.0	-0.1	-0.1	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0
Long Term												
Full Simulation Period[b]	-0.1	-0.3	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.2
Water Year Types[c]												
Wet (32%)	0.1	0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	-0.1	-0.1	-0.2	0.2
Above Normal (16%)	-0.5	-0.4	0.2	-0.1	-0.1	0.0	-0.1	0.0	0.1	-0.1	-0.2	0.0
Below Normal (13%)	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	0.1	0.2	-0.2	-0.7	0.3
Dry (24%)	0.2	-0.3	0.1	0.0	-0.2	0.0	-0.1	-0.1	-0.1	-0.2	0.5	0.3
Critical (15%)	-0.5	-1.0	-0.1	-0.1	0.0	-0.5	0.0	0.1	0.0	0.0	0.0	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-20-6. Feather River Low Flow Channel, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	59	54	52	52	54	54	57	58	63	63	58
20%	56	58	53	51	51	53	53	56	58	62	62	57
30%	55	57	52	50	51	52	53	56	58	62	61	57
40%	54	56	52	50	50	51	52	56	58	62	61	56
50%	54	54	52	49	50	51	52	56	58	61	61	56
60%	53	53	51	49	50	50	52	55	58	61	61	56
70%	53	53	51	48	49	50	51	55	57	61	60	55
80%	53	52	50	48	48	49	51	55	57	61	60	55
90%	53	52	49	47	47	48	50	55	57	61	60	55
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	62	61	56
Water Year Types[c]												
Wet (32%)	52	52	49	49	49	50	51	55	58	61	61	56
Above Normal (16%)	56	55	52	46	46	46	48	52	53	56	56	51
Below Normal (13%)	54	55	52	50	50	52	53	55	57	61	61	56
Dry (24%)	55	56	52	49	50	52	53	56	58	62	61	56
Critical (15%)	56	57	52	49	50	52	52	56	58	63	63	60

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	59	59	55	51	52	54	54	57	59	63	63	58
20%	56	58	54	50	51	53	53	57	58	62	62	57
30%	55	57	53	50	51	52	53	56	58	61	61	56
40%	54	56	53	49	50	51	52	56	58	61	61	56
50%	54	55	52	49	50	51	52	56	58	61	60	55
60%	54	55	52	49	49	50	52	56	58	61	60	55
70%	53	54	51	48	49	50	51	56	58	61	60	55
80%	53	53	50	48	49	49	51	55	58	61	60	55
90%	53	53	50	47	48	48	50	55	57	61	60	54
Long Term												
Full Simulation Period[b]	55	55	52	49	50	51	52	56	58	61	61	56
Water Year Types[c]												
Wet (32%)	52	53	49	49	49	49	51	55	58	61	60	55
Above Normal (16%)	55	56	53	45	46	46	48	52	54	56	55	50
Below Normal (13%)	54	56	53	50	50	52	53	56	58	61	60	56
Dry (24%)	55	56	53	49	50	52	53	56	58	61	61	57
Critical (15%)	56	56	53	49	50	52	53	57	59	63	63	60

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	-0.6	0.9	-0.2	-0.2	-0.2	0.3	0.1	0.6	0.0	0.2	0.5
0.2	-0.8	0.0	1.2	-0.2	-0.4	-0.2	0.1	0.3	0.2	-0.4	-0.1	-0.1
0.3	-0.2	0.0	0.8	-0.2	-0.1	-0.1	0.0	0.4	0.4	-0.6	0.0	-0.6
0.4	0.3	0.3	0.6	-0.2	-0.4	0.1	0.0	0.2	0.5	-0.4	-0.4	-0.8
0.5	0.2	1.2	0.5	0.0	-0.4	-0.1	-0.1	0.4	0.4	-0.3	-0.3	-0.9
0.6	0.2	2.0	0.4	0.0	-0.2	-0.1	-0.1	0.6	0.4	-0.2	-0.3	-0.8
0.7	0.0	1.3	0.6	-0.2	-0.1	-0.2	-0.1	0.6	0.3	-0.2	-0.3	-0.5
0.8	0.2	0.5	0.5	0.0	0.1	-0.4	-0.2	0.1	0.4	-0.2	-0.2	-0.4
0.9	0.2	0.4	0.4	-0.2	0.4	0.0	-0.2	0.0	0.2	0.0	-0.1	-0.5
Long Term												
Full Simulation Period[b]	0.0	0.4	0.6	-0.1	-0.2	-0.1	-0.1	0.3	0.3	-0.2	-0.2	-0.5
Water Year Types[c]												
Wet (32%)	0.3	1.1	0.4	-0.2	-0.2	-0.2	-0.1	0.1	0.2	-0.1	-0.5	-1.2
Above Normal (16%)	-0.4	0.2	0.8	-0.2	-0.2	0.0	0.0	0.4	0.4	-0.1	-0.3	-0.6
Below Normal (13%)	-0.2	1.0	1.5	0.1	0.1	0.0	-0.1	0.6	0.7	-0.2	-0.6	-0.1
Dry (24%)	0.1	0.2	0.7	0.0	-0.3	0.0	-0.1	0.4	0.2	-0.4	0.6	0.4
Critical (15%)	-0.3	-1.0	0.2	-0.1	-0.1	-0.4	0.1	0.2	0.3	0.0	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

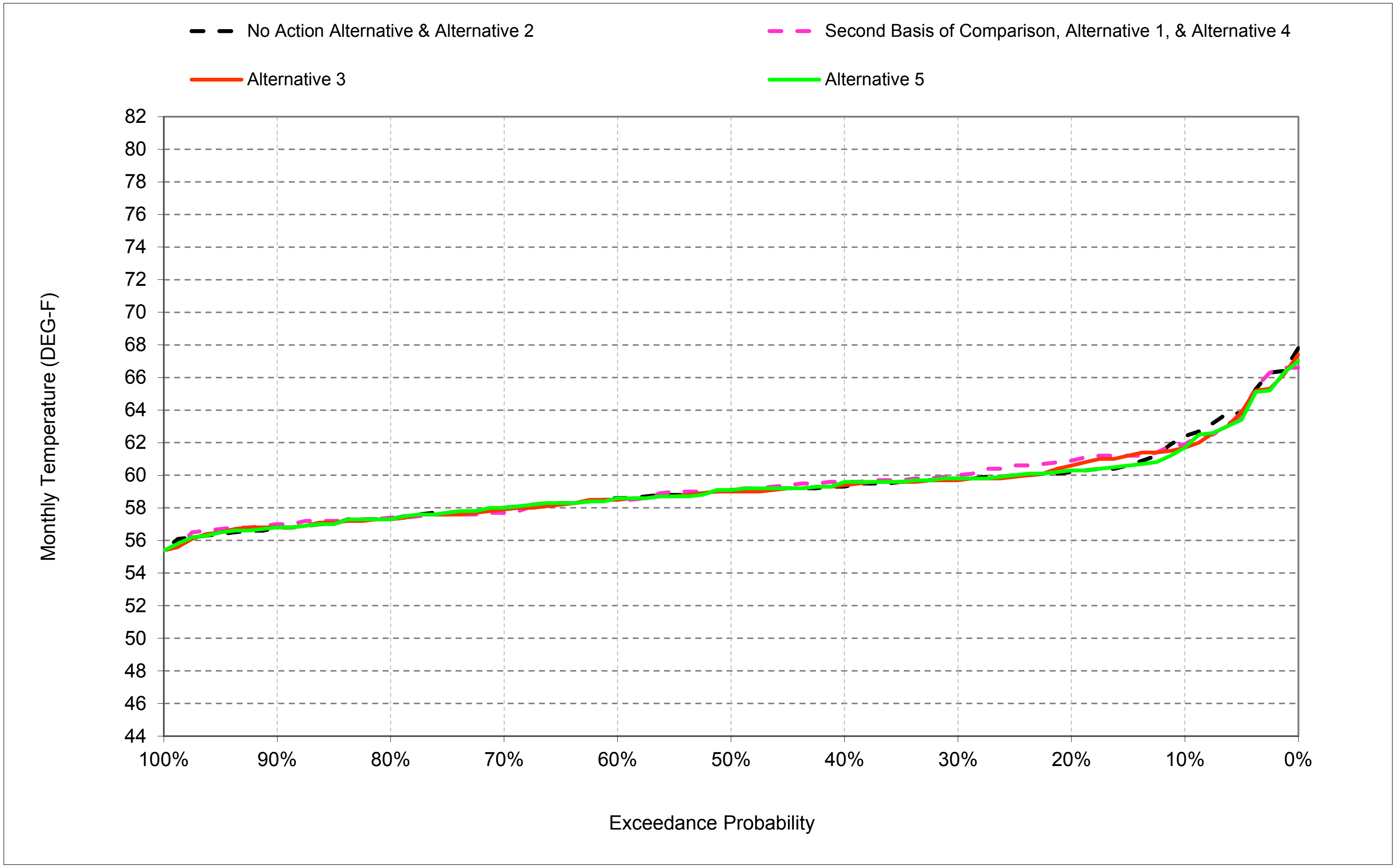
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

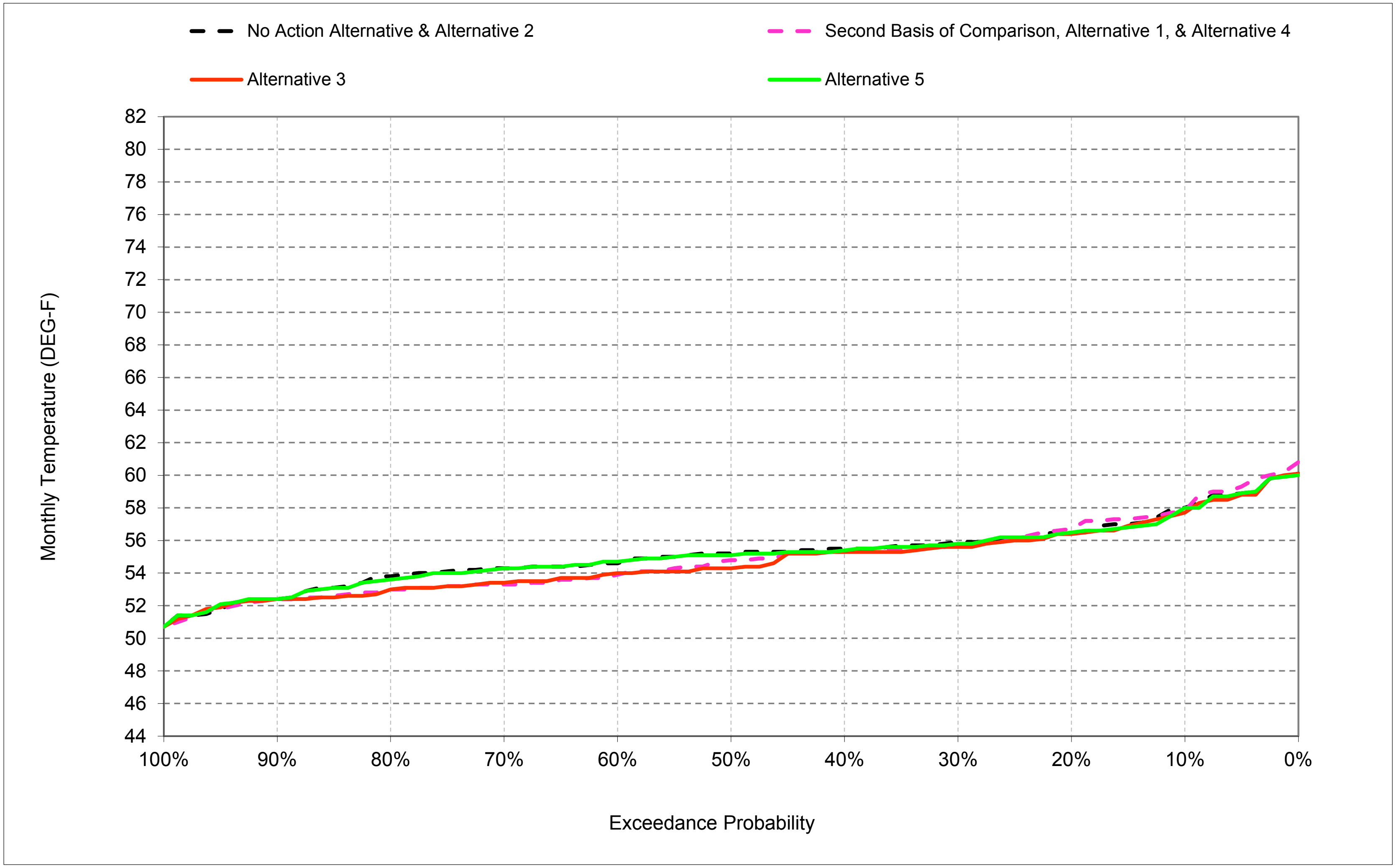
B.21. Feather River at Robinson Riffle

Figure B-21-1. Feather River at Robinson Riffle, October



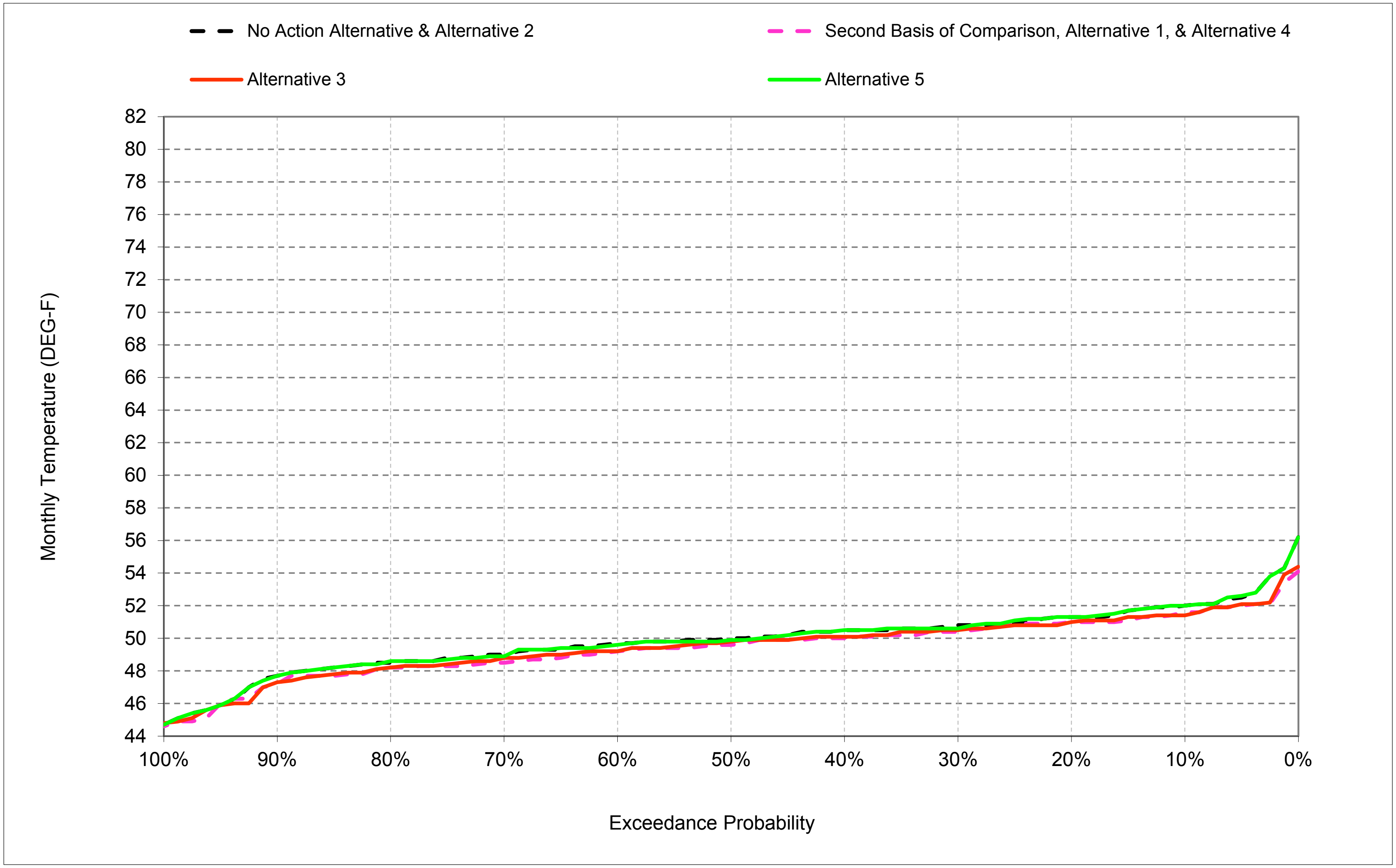
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-2. Feather River at Robinson Riffle, November



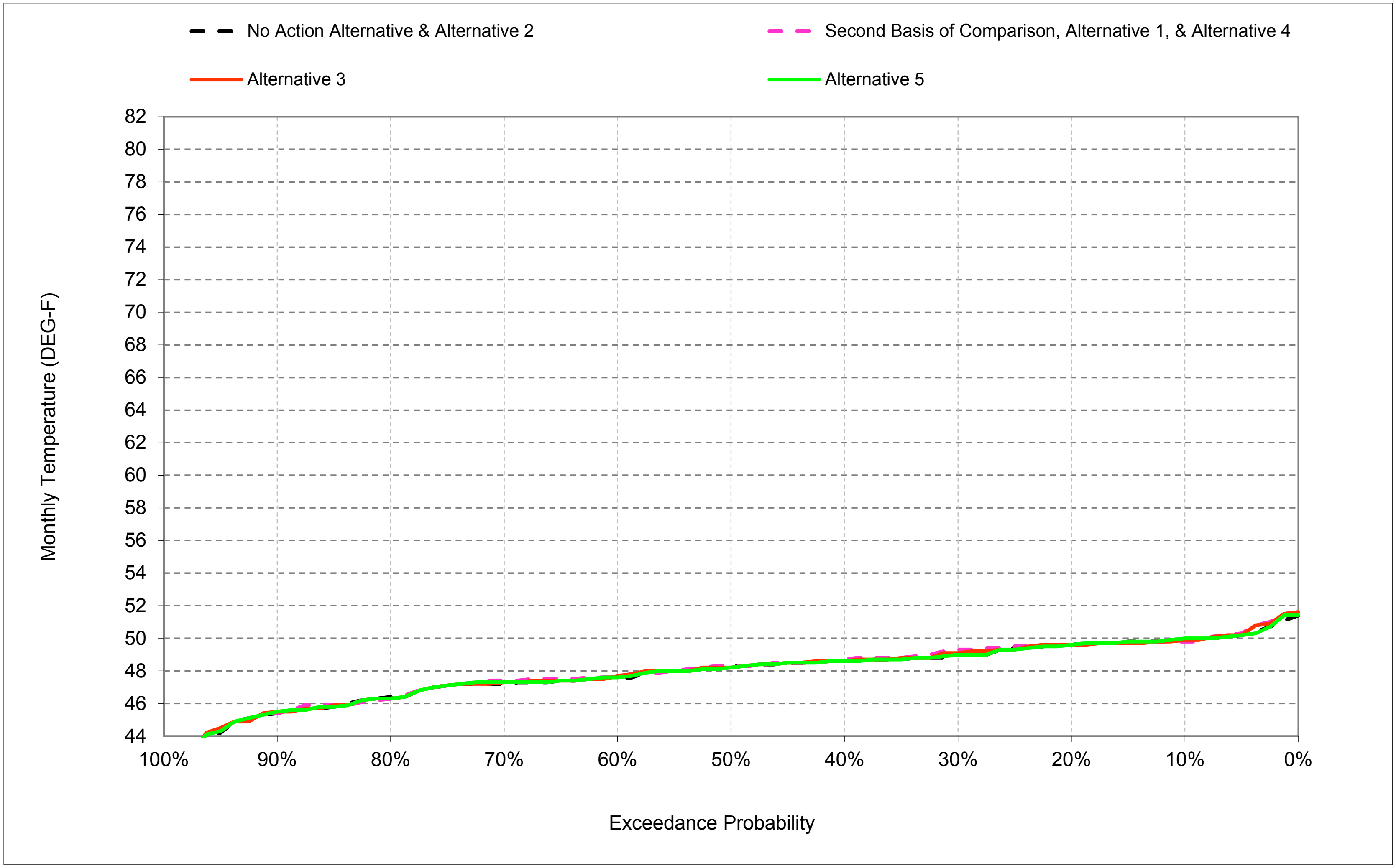
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-3. Feather River at Robinson Riffle, December



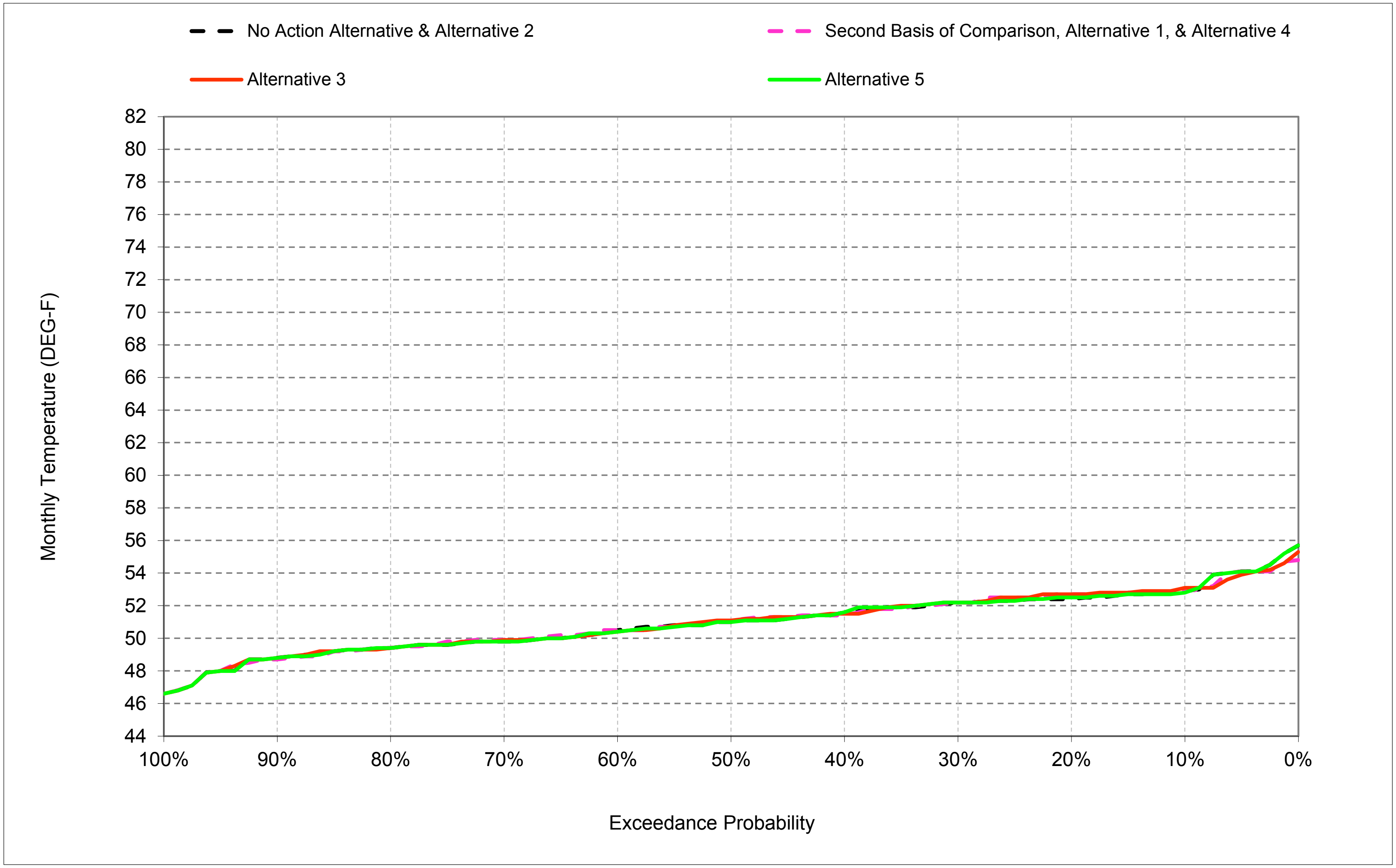
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-4. Feather River at Robinson Riffle, January



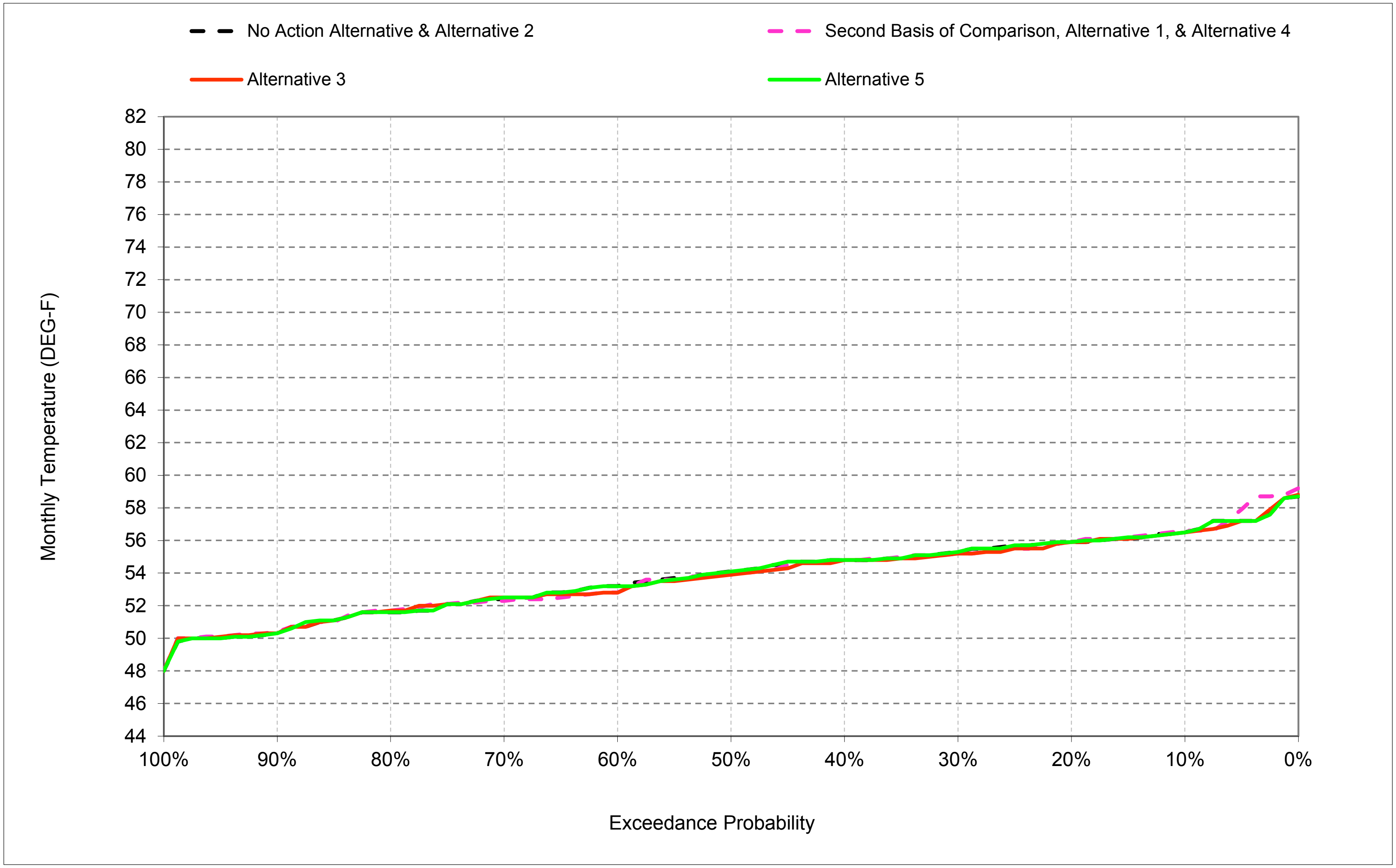
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-5. Feather River at Robinson Riffle, February



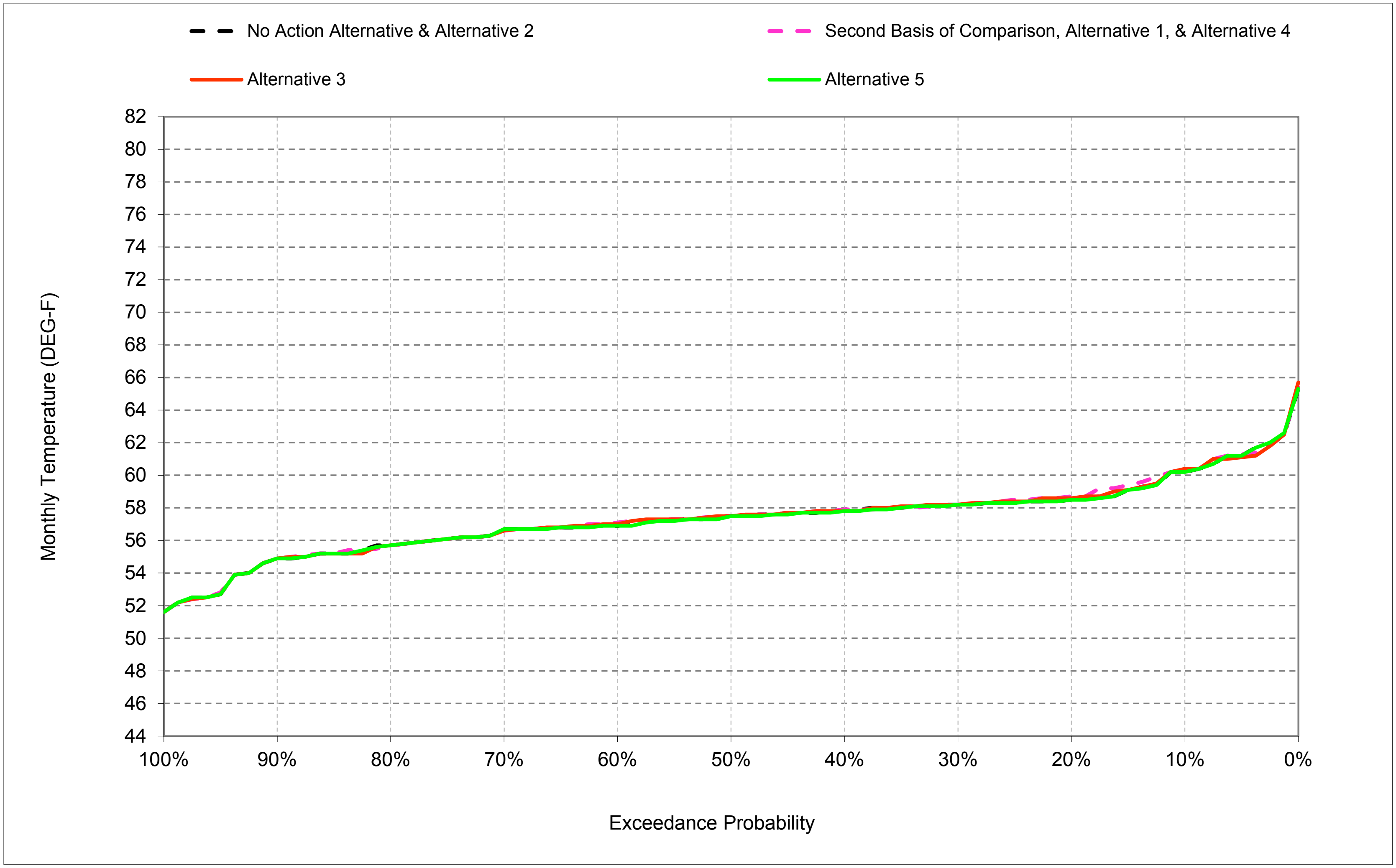
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-6. Feather River at Robinson Riffle, March



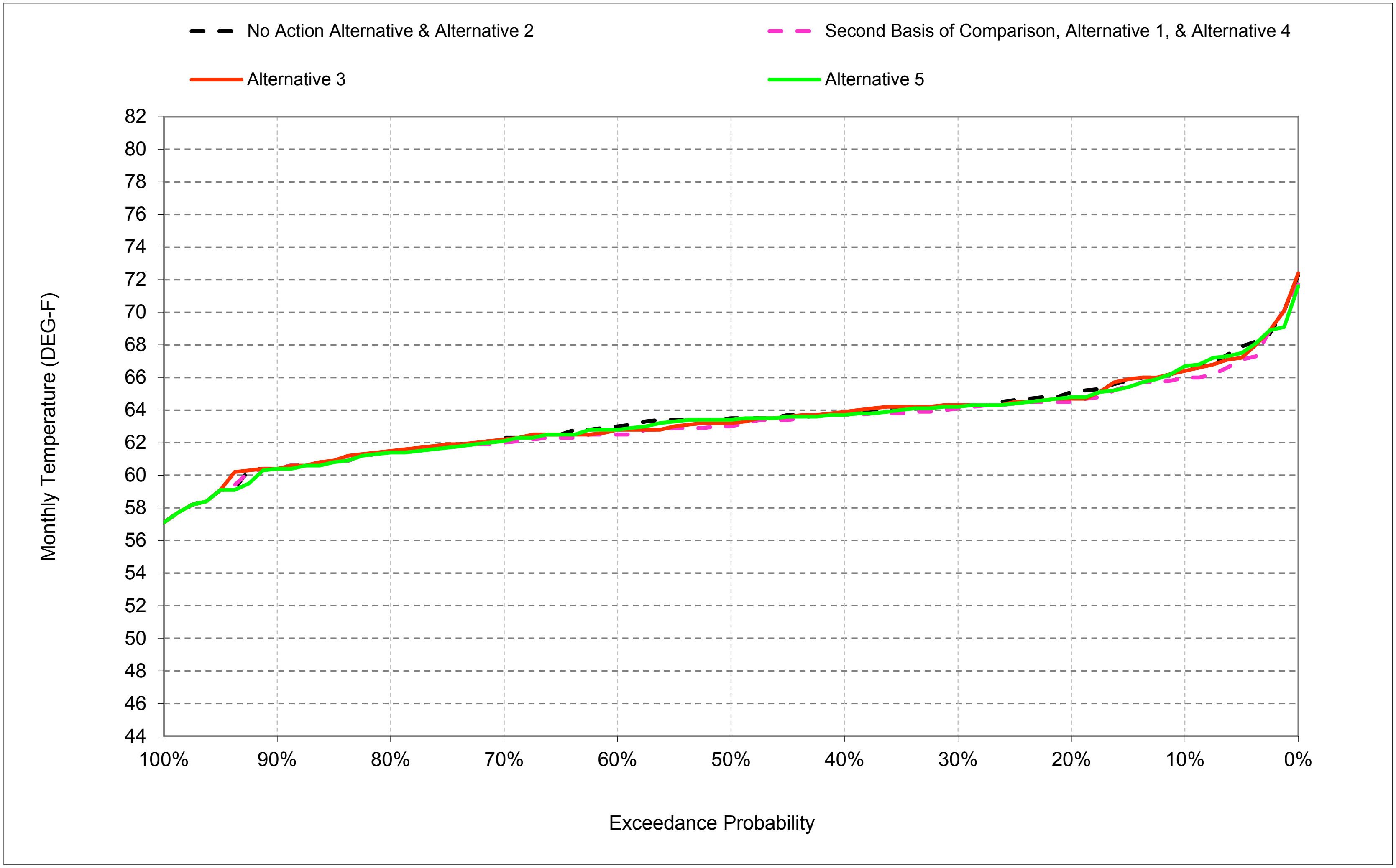
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-7. Feather River at Robinson Riffle, April



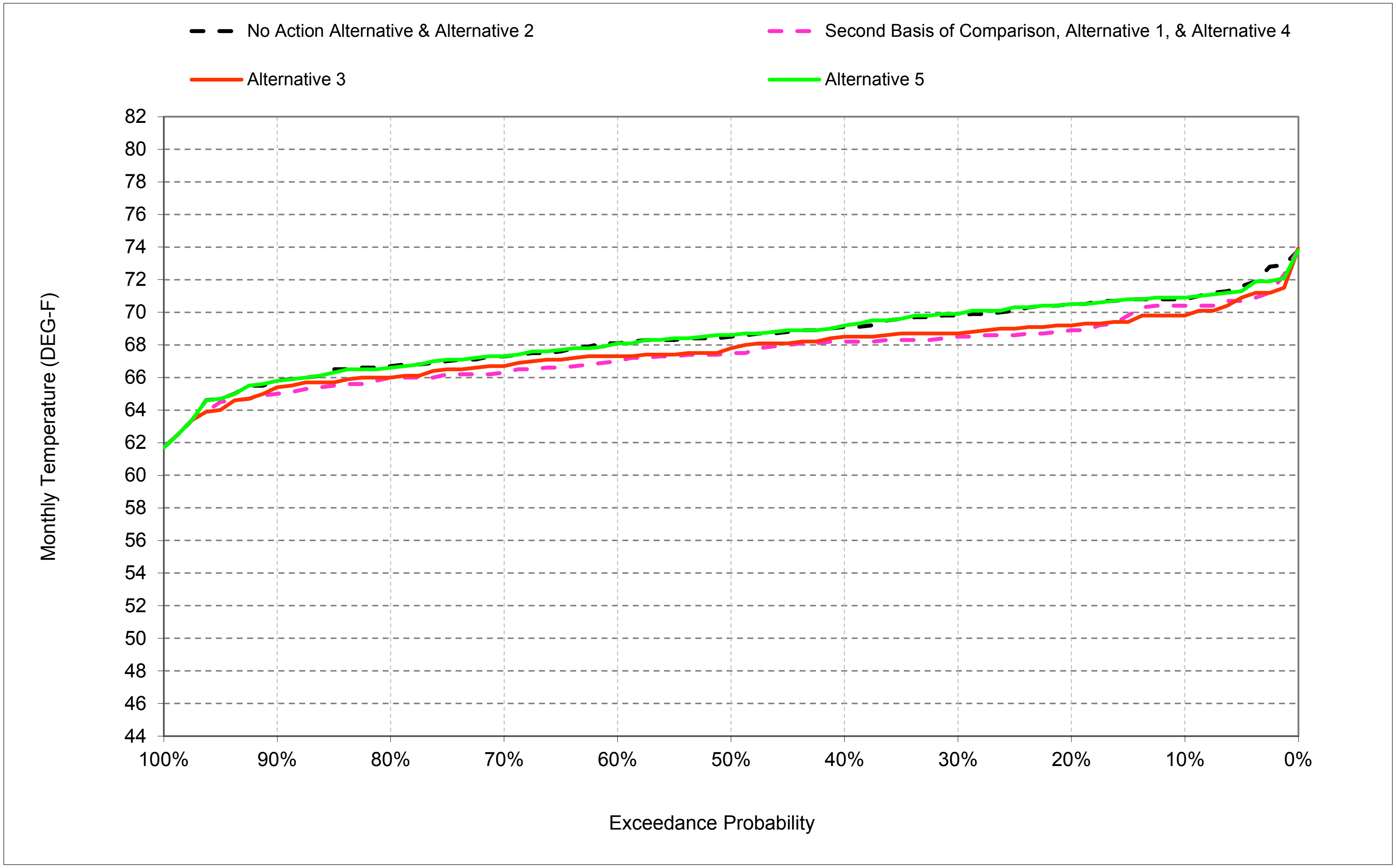
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-8. Feather River at Robinson Riffle, May



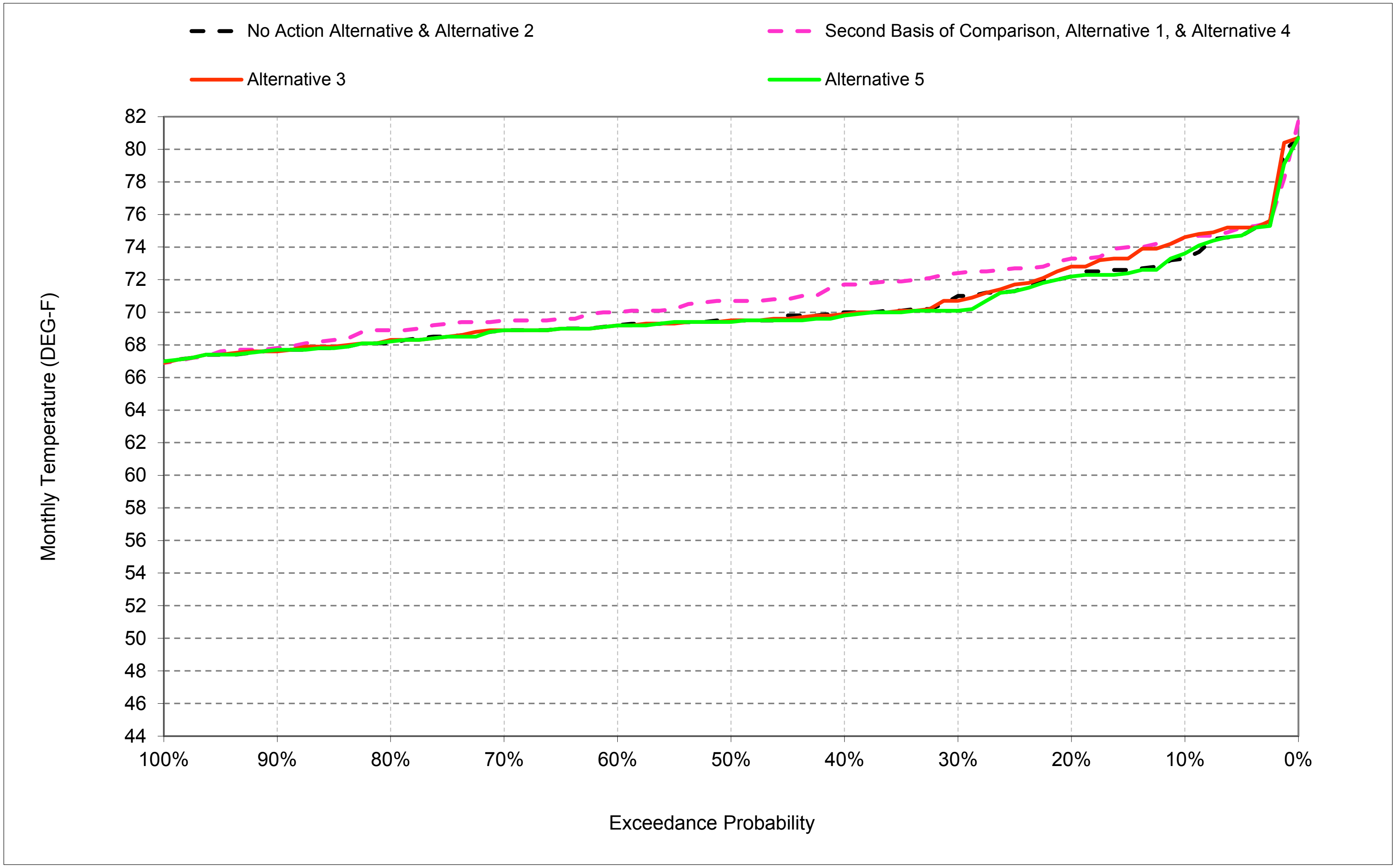
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-9. Feather River at Robinson Riffle, June



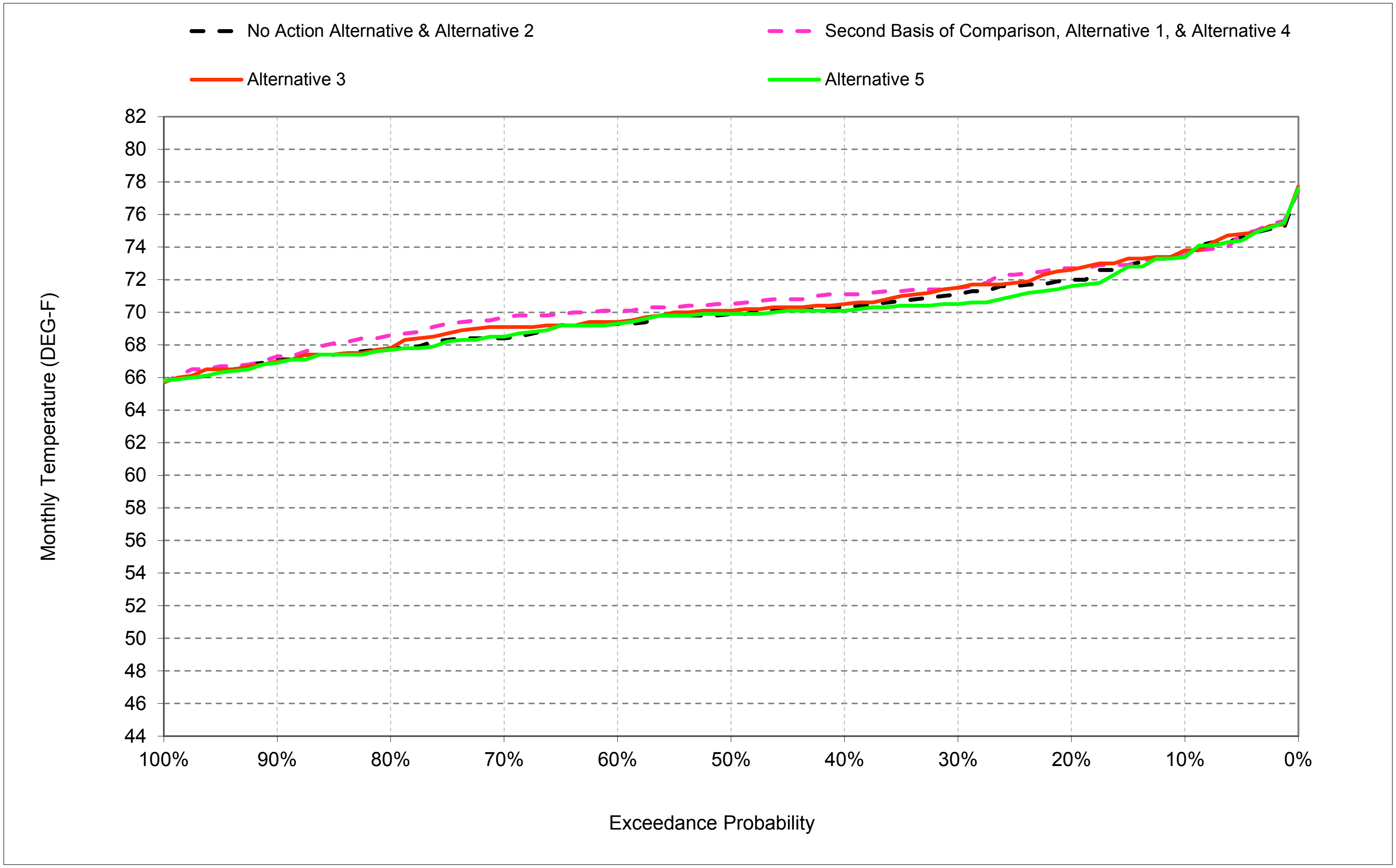
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-10. Feather River at Robinson Riffle, July



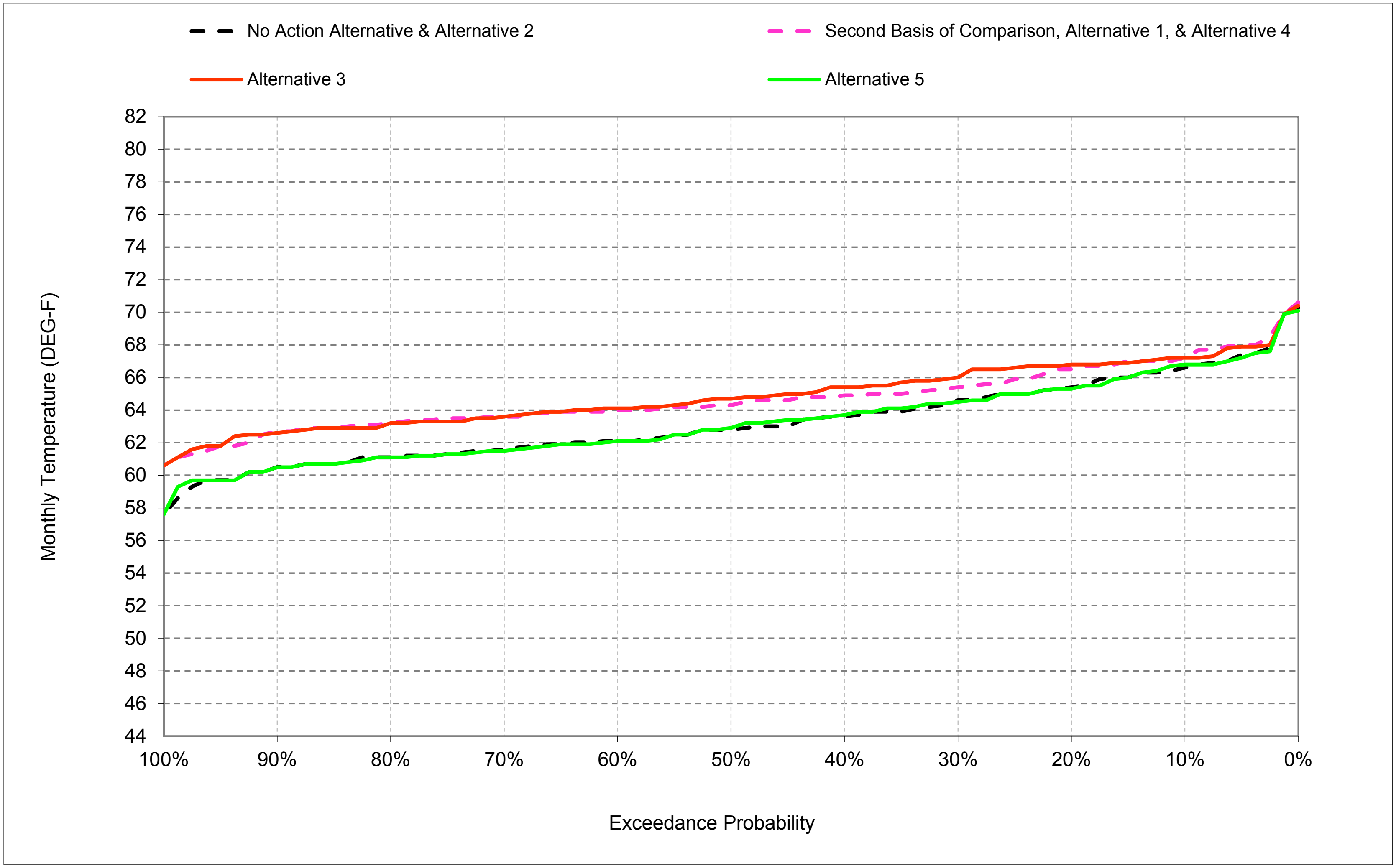
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-11. Feather River at Robinson Riffle, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-21-12. Feather River at Robinson Riffle, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-1. Feather River at Robinson Riffle, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types[c]												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period[b]	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types[c]												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.5	-0.2	-0.4	-0.1	0.0	0.1	0.2	-0.6	-0.4	1.3	0.3	0.6
0.2	0.7	0.2	-0.3	0.0	0.3	0.0	0.2	-0.6	-1.6	1.1	0.7	1.1
0.3	0.2	-0.2	-0.4	0.3	0.0	-0.1	0.0	-0.2	-1.3	1.4	0.4	0.8
0.4	0.3	-0.2	-0.5	0.1	-0.2	0.0	0.1	-0.1	-0.9	1.7	0.8	1.3
0.5	0.0	-0.4	-0.4	0.0	0.1	-0.2	0.0	-0.5	-1.0	1.2	0.6	1.5
0.6	-0.1	-0.7	-0.5	0.1	0.0	-0.4	0.2	-0.5	-1.1	0.8	0.8	1.9
0.7	-0.3	-1.0	-0.5	0.2	0.1	-0.1	-0.1	-0.3	-1.0	0.6	1.3	2.0
0.8	0.1	-0.8	-0.3	-0.1	0.0	0.1	0.0	0.0	-0.7	0.8	0.8	2.1
0.9	0.2	0.0	-0.5	0.0	-0.1	0.1	0.0	0.0	-0.8	0.1	0.2	2.2
Long Term												
Full Simulation Period[b]	0.1	-0.3	-0.4	0.1	0.0	0.0	0.1	-0.2	-0.9	0.9	0.5	1.5
Water Year Types[c]												
Wet (32%)	-0.2	-0.6	-0.1	0.2	0.1	0.0	0.0	0.1	-0.3	0.6	0.9	3.4
Above Normal (16%)	0.4	-0.1	-0.6	0.1	-0.2	-0.3	-0.1	-0.3	-1.5	0.4	0.8	1.9
Below Normal (13%)	0.1	-0.7	-0.9	0.0	-0.1	0.0	0.0	-0.7	-2.5	0.8	1.5	0.0
Dry (24%)	0.2	-0.3	-0.5	0.0	0.2	0.1	0.1	-0.4	-0.9	1.7	-0.2	0.2
Critical (15%)	0.4	0.6	-0.4	0.1	-0.1	0.3	0.2	-0.1	-0.3	0.4	-0.1	0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-2. Feather River at Robinson Riffle, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types[c]												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	60	66	70	75	74	67
20%	61	56	51	50	53	56	59	65	69	73	73	67
30%	60	56	51	49	52	55	58	64	69	71	72	66
40%	59	55	50	49	52	55	58	64	69	70	71	65
50%	59	54	50	48	51	54	58	63	68	70	70	65
60%	59	54	49	48	50	53	57	63	67	69	69	64
70%	58	53	49	47	50	53	57	62	67	69	69	64
80%	57	53	48	46	49	52	56	62	66	68	68	63
90%	57	52	47	46	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	65
Water Year Types[c]												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	58	64	68	69	69	65
Dry (24%)	60	55	49	47	51	55	58	64	68	71	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	66

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.7	-0.3	-0.6	0.0	0.2	0.0	0.2	-0.2	-1.0	1.3	0.4	0.6
0.2	0.4	-0.1	-0.3	0.0	0.3	0.0	0.1	-0.4	-1.3	0.6	0.6	1.4
0.3	-0.1	-0.3	-0.3	0.1	0.0	-0.1	0.0	0.0	-1.1	-0.3	0.4	1.4
0.4	0.1	-0.2	-0.4	0.0	-0.1	0.0	0.0	0.1	-0.6	-0.1	0.2	1.8
0.5	-0.1	-0.9	-0.2	-0.1	0.1	-0.2	0.0	-0.3	-0.7	0.0	0.2	1.9
0.6	-0.1	-0.6	-0.5	0.1	-0.1	-0.4	0.1	-0.2	-0.8	0.0	0.1	2.0
0.7	-0.1	-0.9	-0.2	0.1	0.1	0.1	-0.1	-0.1	-0.6	0.0	0.7	2.0
0.8	0.0	-0.8	-0.3	-0.1	0.0	0.1	0.0	0.1	-0.7	0.2	0.0	2.1
0.9	0.0	0.0	-0.4	0.1	0.0	0.0	0.0	0.0	-0.4	-0.1	-0.1	2.1
Long Term												
Full Simulation Period[b]	0.0	-0.4	-0.4	0.0	0.0	-0.1	0.0	-0.1	-0.8	0.1	0.2	1.7
Water Year Types[c]												
Wet (32%)	-0.2	-0.5	-0.1	0.1	0.1	0.0	0.0	0.0	-0.4	0.1	0.7	3.5
Above Normal (16%)	-0.1	-0.4	-0.5	0.0	0.0	-0.2	-0.1	-0.3	-0.8	0.0	0.3	2.2
Below Normal (13%)	0.1	-0.7	-1.0	0.0	-0.2	0.0	-0.1	-0.2	-1.1	-0.4	-0.5	0.8
Dry (24%)	0.2	-0.4	-0.4	0.0	0.1	0.0	0.1	-0.1	-1.1	0.6	0.1	0.4
Critical (15%)	-0.3	0.0	-0.1	0.0	0.1	-0.2	0.2	0.1	-0.5	0.3	-0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-3. Feather River at Robinson Riffle, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types[c]												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	67	71	74	73	67
20%	60	57	51	50	53	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	70	71	65
40%	60	55	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	63	69	69	70	63
60%	59	55	50	48	50	53	57	63	68	69	69	62
70%	58	54	49	47	50	53	57	62	67	69	69	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	46	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types[c]												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	55	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	52	55	59	64	69	69	69	65
Dry (24%)	59	55	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	49	48	52	55	58	64	70	74	72	66

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.7	0.0	0.0	0.1	-0.1	0.0	0.0	0.1	0.1	0.3	0.0	0.2
0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.0	-0.3	0.0	0.0	-0.4	-0.1
0.3	0.0	-0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	0.1	-0.9	-0.6	-0.1
0.4	0.3	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	-0.2	-0.2	0.1
0.5	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.1	-0.1	0.0	0.1
0.6	0.0	0.1	-0.1	0.0	-0.1	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
0.7	0.0	0.0	-0.1	0.1	0.0	0.1	0.0	-0.2	0.0	0.0	0.1	-0.1
0.8	0.0	-0.2	0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	-0.1	0.0
0.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0
Long Term												
Full Simulation Period[b]	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.1	0.0	-0.3	0.1
Dry (24%)	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.1	0.1
Critical (15%)	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-0.4	0.1	-0.1	-0.2	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-4. Feather River at Robinson Riffle, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period[b]	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types[c]												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	67	71	73	73	67
20%	60	57	51	50	52	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	71	71	65
40%	59	56	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	64	69	70	70	63
60%	59	55	50	48	51	53	57	63	68	69	69	62
70%	58	54	49	47	50	52	57	62	67	69	68	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	45	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types[c]												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	56	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	51	55	59	64	69	69	69	65
Dry (24%)	59	56	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	50	48	52	55	58	64	70	74	73	66

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.5	0.2	0.4	0.1	0.0	-0.1	-0.2	0.6	0.4	-1.3	-0.3	-0.6
0.2	-0.7	-0.2	0.3	0.0	-0.3	0.0	-0.2	0.6	1.6	-1.1	-0.7	-1.1
0.3	-0.2	0.2	0.4	-0.3	0.0	0.1	0.0	0.2	1.3	-1.4	-0.4	-0.8
0.4	-0.3	0.2	0.5	-0.1	0.2	0.0	-0.1	0.1	0.9	-1.7	-0.8	-1.3
0.5	0.0	0.4	0.4	0.0	-0.1	0.2	0.0	0.5	1.0	-1.2	-0.6	-1.5
0.6	0.1	0.7	0.5	-0.1	0.0	0.4	-0.2	0.5	1.1	-0.8	-0.8	-1.9
0.7	0.3	1.0	0.5	-0.2	-0.1	0.1	0.1	0.3	1.0	-0.6	-1.3	-2.0
0.8	-0.1	0.8	0.3	0.1	0.0	-0.1	0.0	0.0	0.7	-0.8	-0.8	-2.1
0.9	-0.2	0.0	0.5	0.0	0.1	-0.1	0.0	0.0	0.8	-0.1	-0.2	-2.2
Long Term												
Full Simulation Period[b]	-0.1	0.3	0.4	-0.1	0.0	0.0	-0.1	0.2	0.9	-0.9	-0.5	-1.5
Water Year Types[c]												
Wet (32%)	0.2	0.6	0.1	-0.2	-0.1	0.0	0.0	-0.1	0.3	-0.6	-0.9	-3.4
Above Normal (16%)	-0.4	0.1	0.6	-0.1	0.2	0.3	0.1	0.3	1.5	-0.4	-0.8	-1.9
Below Normal (13%)	-0.1	0.7	0.9	0.0	0.1	0.0	0.0	0.7	2.5	-0.8	-1.5	0.0
Dry (24%)	-0.2	0.3	0.5	0.0	-0.2	-0.1	-0.1	0.4	0.9	-1.7	0.2	-0.2
Critical (15%)	-0.4	-0.6	0.4	-0.1	0.1	-0.3	-0.2	0.1	0.3	-0.4	0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-5. Feather River at Robinson Riffle, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period[b]	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types[c]												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	60	66	70	75	74	67
20%	61	56	51	50	53	56	59	65	69	73	73	67
30%	60	56	51	49	52	55	58	64	69	71	72	66
40%	59	55	50	49	52	55	58	64	69	70	71	65
50%	59	54	50	48	51	54	58	63	68	70	70	65
60%	59	54	49	48	50	53	57	63	67	69	69	64
70%	58	53	49	47	50	53	57	62	67	69	69	64
80%	57	53	48	46	49	52	56	62	66	68	68	63
90%	57	52	47	46	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	65
Water Year Types[c]												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	58	64	68	69	69	65
Dry (24%)	60	55	49	47	51	55	58	64	68	71	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	66

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.2	-0.1	-0.2	0.1	0.2	-0.1	0.0	0.4	-0.6	0.0	0.1	0.0
0.2	-0.3	-0.3	0.0	0.0	0.0	0.0	-0.1	0.2	0.3	-0.5	-0.1	0.3
0.3	-0.3	-0.1	0.1	-0.2	0.0	0.0	0.0	0.2	0.2	-1.7	0.0	0.6
0.4	-0.2	0.0	0.1	-0.1	0.1	0.0	-0.1	0.2	0.3	-1.8	-0.6	0.5
0.5	-0.1	-0.5	0.2	-0.1	0.0	0.0	0.0	0.2	0.3	-1.2	-0.4	0.4
0.6	0.0	0.1	0.0	0.0	-0.1	0.0	-0.1	0.3	0.3	-0.8	-0.7	0.1
0.7	0.2	0.1	0.3	-0.1	0.0	0.2	0.0	0.2	0.4	-0.6	-0.6	0.0
0.8	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.6	-0.8	0.0
0.9	-0.2	0.0	0.1	0.1	0.1	-0.1	0.0	0.0	0.4	-0.2	-0.3	-0.1
Long Term												
Full Simulation Period[b]	-0.1	-0.1	0.1	0.0	0.0	-0.1	0.0	0.2	0.2	-0.7	-0.3	0.2
Water Year Types[c]												
Wet (32%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.5	-0.2	0.2
Above Normal (16%)	-0.5	-0.2	0.2	-0.1	0.2	0.1	0.0	0.1	0.6	-0.5	-0.5	0.3
Below Normal (13%)	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.5	1.4	-1.2	-2.0	0.8
Dry (24%)	0.1	-0.2	0.1	0.0	-0.1	-0.1	-0.1	0.3	-0.2	-1.2	0.3	0.2
Critical (15%)	-0.8	-0.5	0.3	-0.1	0.2	-0.5	0.0	0.3	-0.2	-0.1	0.0	-0.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-21-6. Feather River at Robinson Riffle, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	66	70	75	74	67
20%	61	57	51	50	53	56	59	65	69	73	73	67
30%	60	56	50	49	52	55	58	64	69	72	72	65
40%	60	55	50	49	51	55	58	64	68	72	71	65
50%	59	55	50	48	51	54	58	63	68	71	71	64
60%	59	54	49	48	51	53	57	63	67	70	70	64
70%	58	53	49	47	50	52	57	62	66	70	70	64
80%	57	53	48	46	49	52	56	61	66	69	69	63
90%	57	52	47	45	49	50	55	60	65	68	67	63
Long Term												
Full Simulation Period[b]	59	55	49	48	51	54	57	63	68	71	71	65
Water Year Types[c]												
Wet (32%)	56	52	48	48	50	52	56	62	67	70	70	65
Above Normal (16%)	60	55	50	45	47	49	53	59	62	63	63	59
Below Normal (13%)	59	54	49	48	51	55	59	63	67	70	71	65
Dry (24%)	60	55	49	47	51	55	58	64	68	72	71	65
Critical (15%)	60	56	49	48	52	55	58	64	69	75	73	67

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	60	67	71	74	73	67
20%	60	57	51	50	53	56	59	65	71	72	72	65
30%	60	56	51	49	52	55	58	64	70	70	71	65
40%	60	55	51	49	52	55	58	64	69	70	70	64
50%	59	55	50	48	51	54	58	63	69	69	70	63
60%	59	55	50	48	50	53	57	63	68	69	69	62
70%	58	54	49	47	50	53	57	62	67	69	69	62
80%	57	54	49	46	49	52	56	61	67	68	68	61
90%	57	52	48	46	49	50	55	60	66	68	67	61
Long Term												
Full Simulation Period[b]	59	55	50	48	51	54	57	63	68	70	70	63
Water Year Types[c]												
Wet (32%)	57	53	48	48	50	52	56	62	67	70	69	61
Above Normal (16%)	60	55	50	45	47	49	54	59	63	63	62	57
Below Normal (13%)	59	55	50	48	52	55	59	64	69	69	69	65
Dry (24%)	59	55	50	47	51	55	58	64	69	70	71	64
Critical (15%)	60	56	49	48	52	55	58	64	70	74	72	66

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.2	0.2	0.4	0.2	-0.1	-0.1	-0.2	0.7	0.5	-1.0	-0.3	-0.4
0.2	-0.6	-0.2	0.3	0.0	-0.2	0.0	-0.2	0.3	1.6	-1.1	-1.1	-1.2
0.3	-0.2	0.1	0.2	-0.3	0.0	0.1	0.0	0.1	1.4	-2.3	-1.0	-0.9
0.4	0.0	0.1	0.5	-0.1	0.2	0.0	-0.1	0.0	1.0	-1.9	-1.0	-1.2
0.5	0.0	0.3	0.3	-0.1	-0.1	0.2	0.0	0.4	1.1	-1.3	-0.6	-1.4
0.6	0.1	0.8	0.4	-0.1	-0.1	0.4	-0.2	0.3	1.1	-0.8	-0.8	-1.9
0.7	0.3	1.0	0.4	-0.1	-0.1	0.2	0.1	0.1	1.0	-0.6	-1.2	-2.1
0.8	-0.1	0.6	0.4	0.0	0.0	-0.1	0.0	0.0	0.6	-0.7	-0.9	-2.1
0.9	-0.2	0.0	0.5	0.1	0.1	-0.1	0.0	0.0	0.8	-0.1	-0.4	-2.2
Long Term												
Full Simulation Period[b]	-0.2	0.2	0.4	-0.1	0.0	0.0	-0.1	0.1	0.9	-0.9	-0.7	-1.5
Water Year Types[c]												
Wet (32%)	0.2	0.6	0.1	-0.2	-0.1	0.0	0.0	-0.1	0.3	-0.6	-1.0	-3.3
Above Normal (16%)	-0.4	0.0	0.6	-0.1	0.2	0.3	0.1	0.2	1.5	-0.4	-0.8	-1.9
Below Normal (13%)	-0.2	0.6	0.9	0.0	0.2	0.0	0.0	0.6	2.6	-0.9	-1.9	0.1
Dry (24%)	-0.3	0.1	0.4	0.0	-0.2	-0.1	-0.1	0.3	0.8	-1.9	0.1	-0.1
Critical (15%)	-0.6	-0.6	0.4	0.0	0.1	-0.3	-0.4	-0.2	0.4	-0.5	0.0	-0.6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

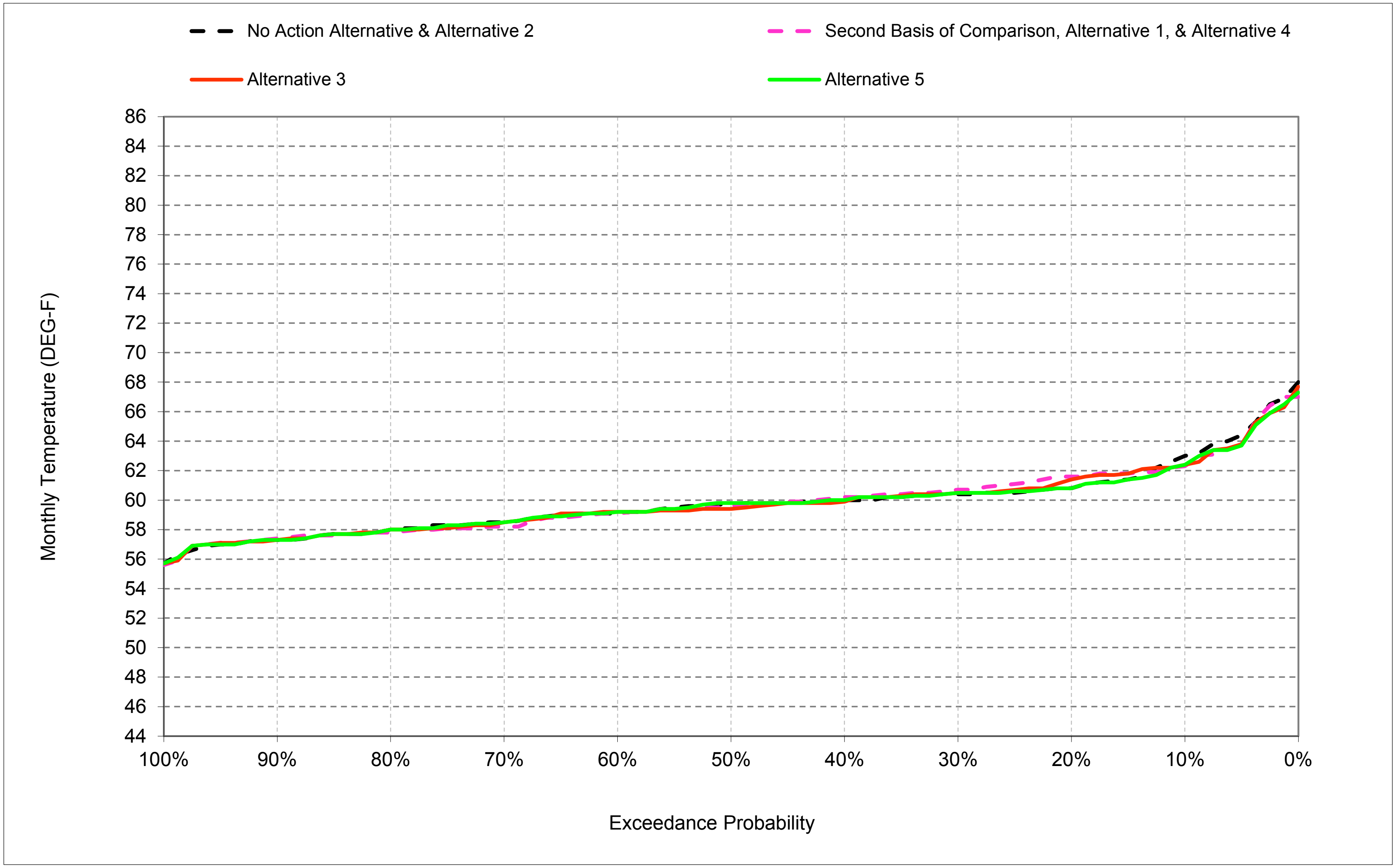
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

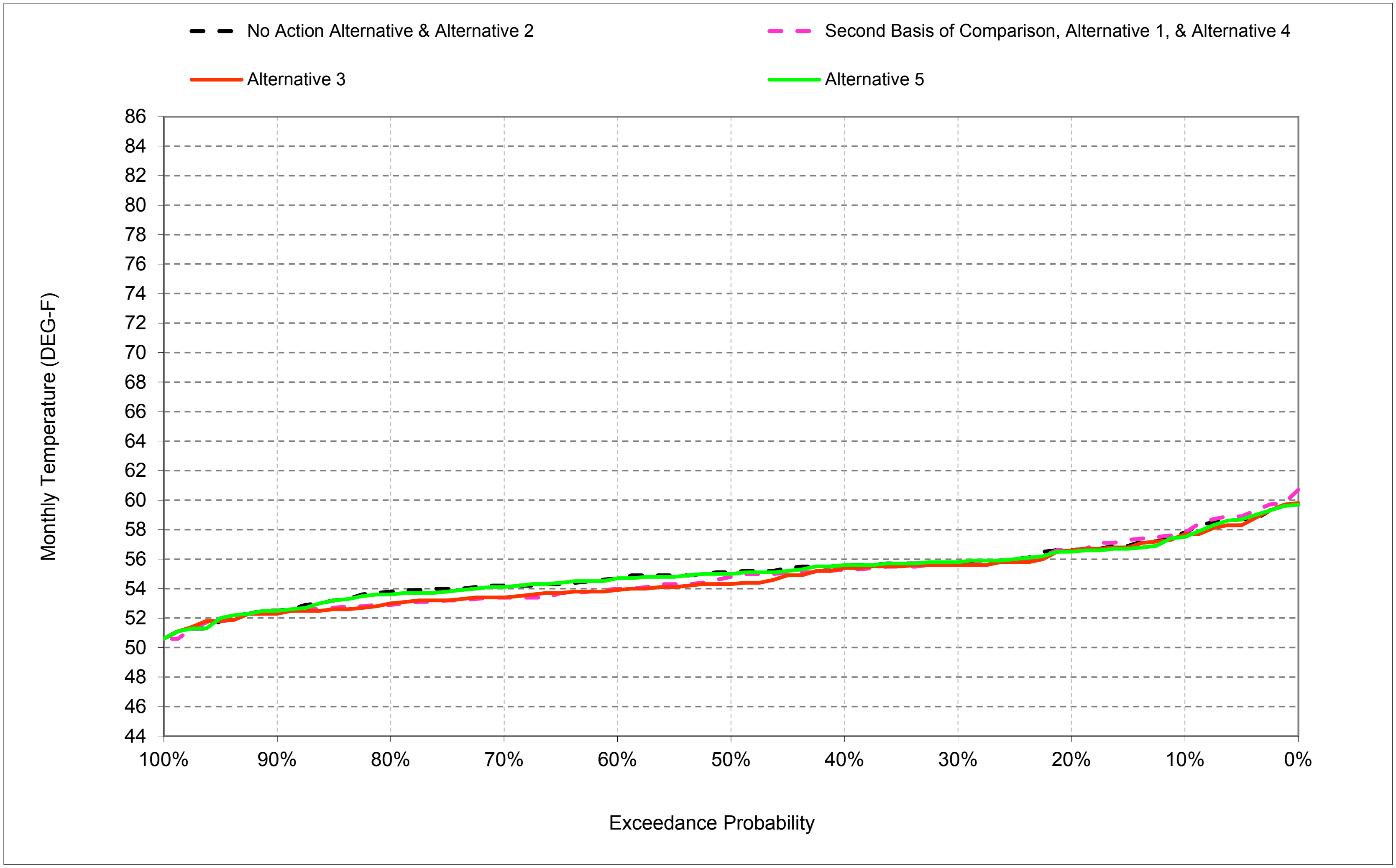
B.22. Feather River at Gridley Bridge

Figure B-22-1. Feather River at Gridley Bridge, October



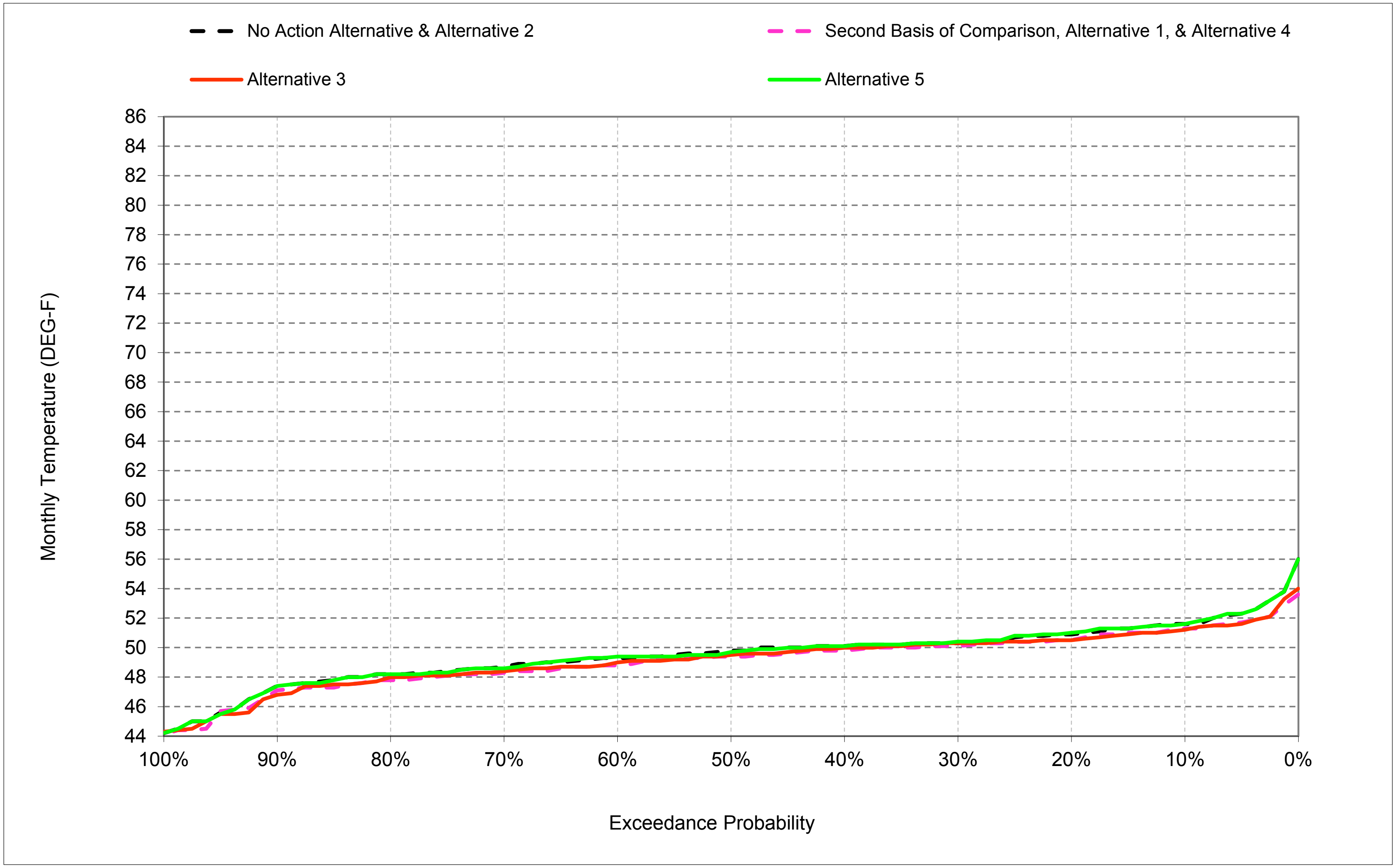
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-2. Feather River at Gridley Bridge, November



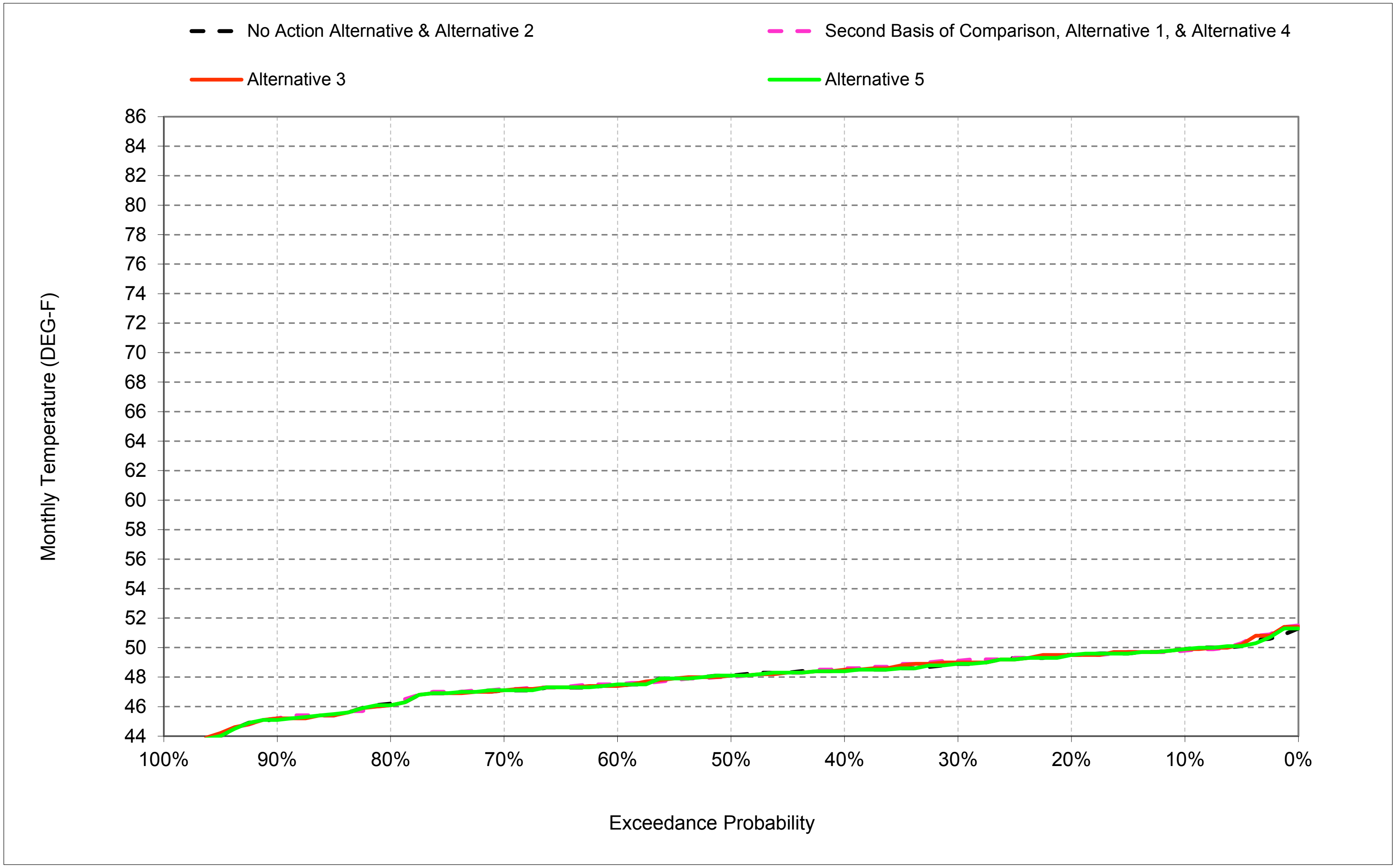
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-3. Feather River at Gridley Bridge, December



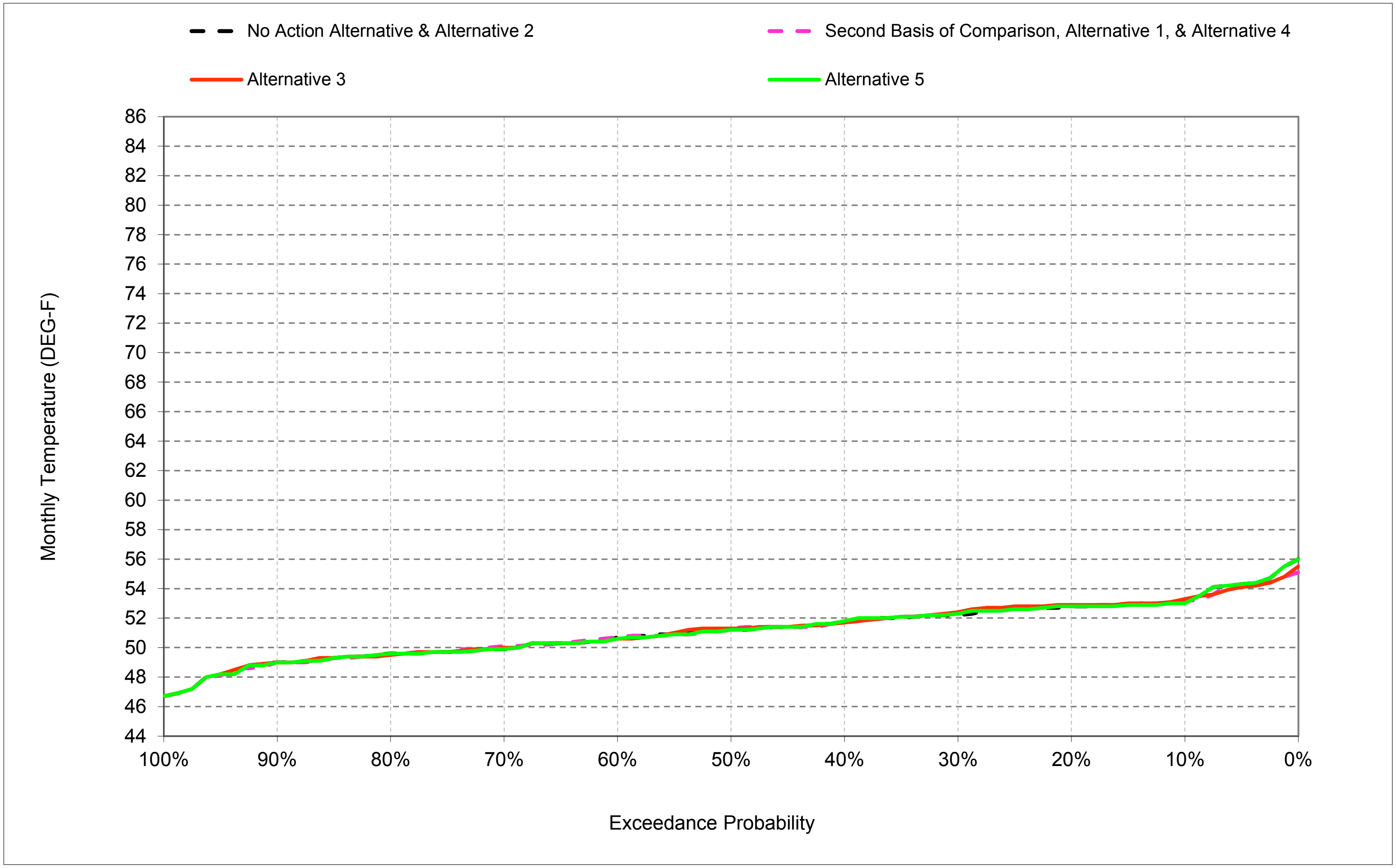
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-4. Feather River at Gridley Bridge, January



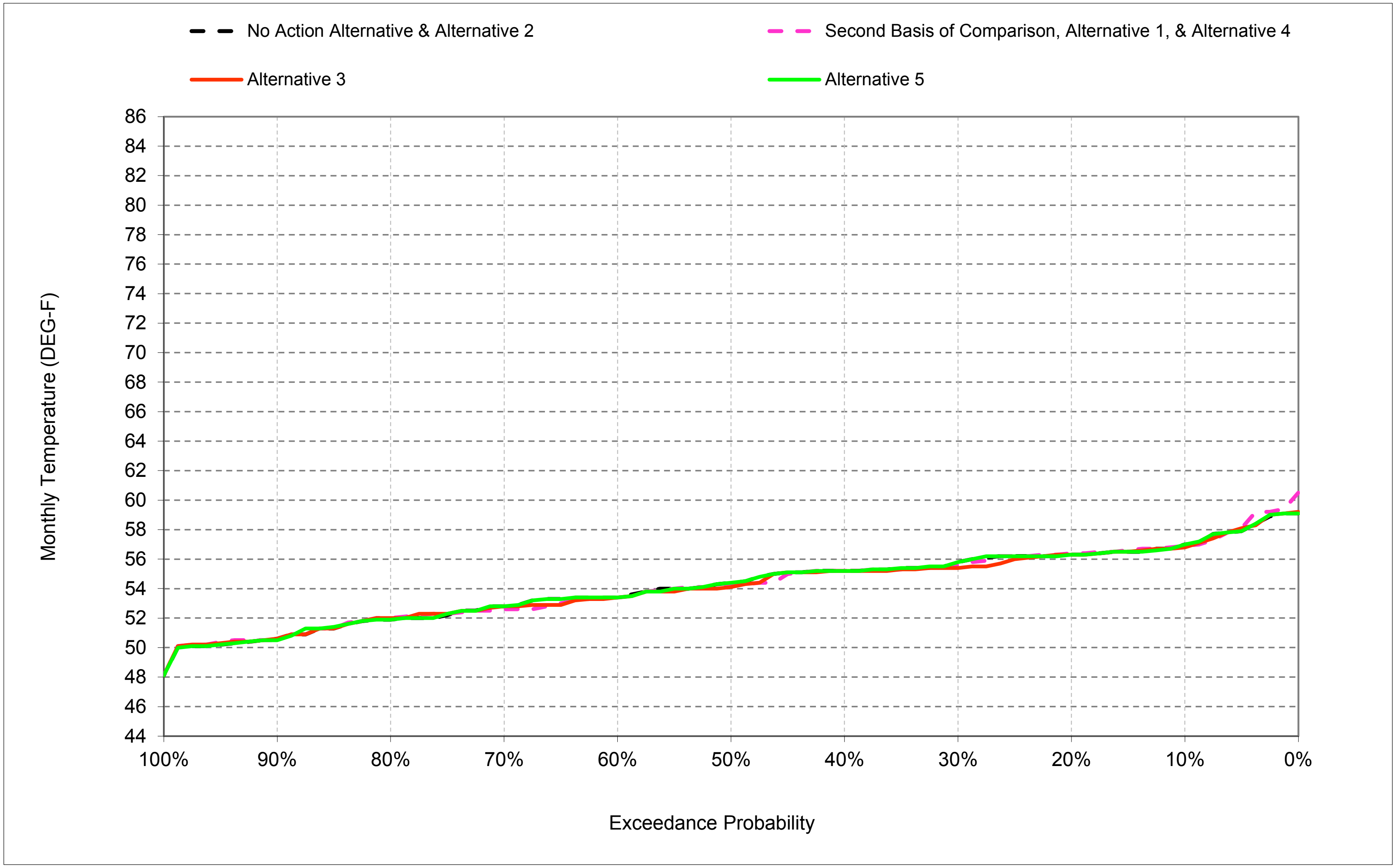
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-5. Feather River at Gridley Bridge, February



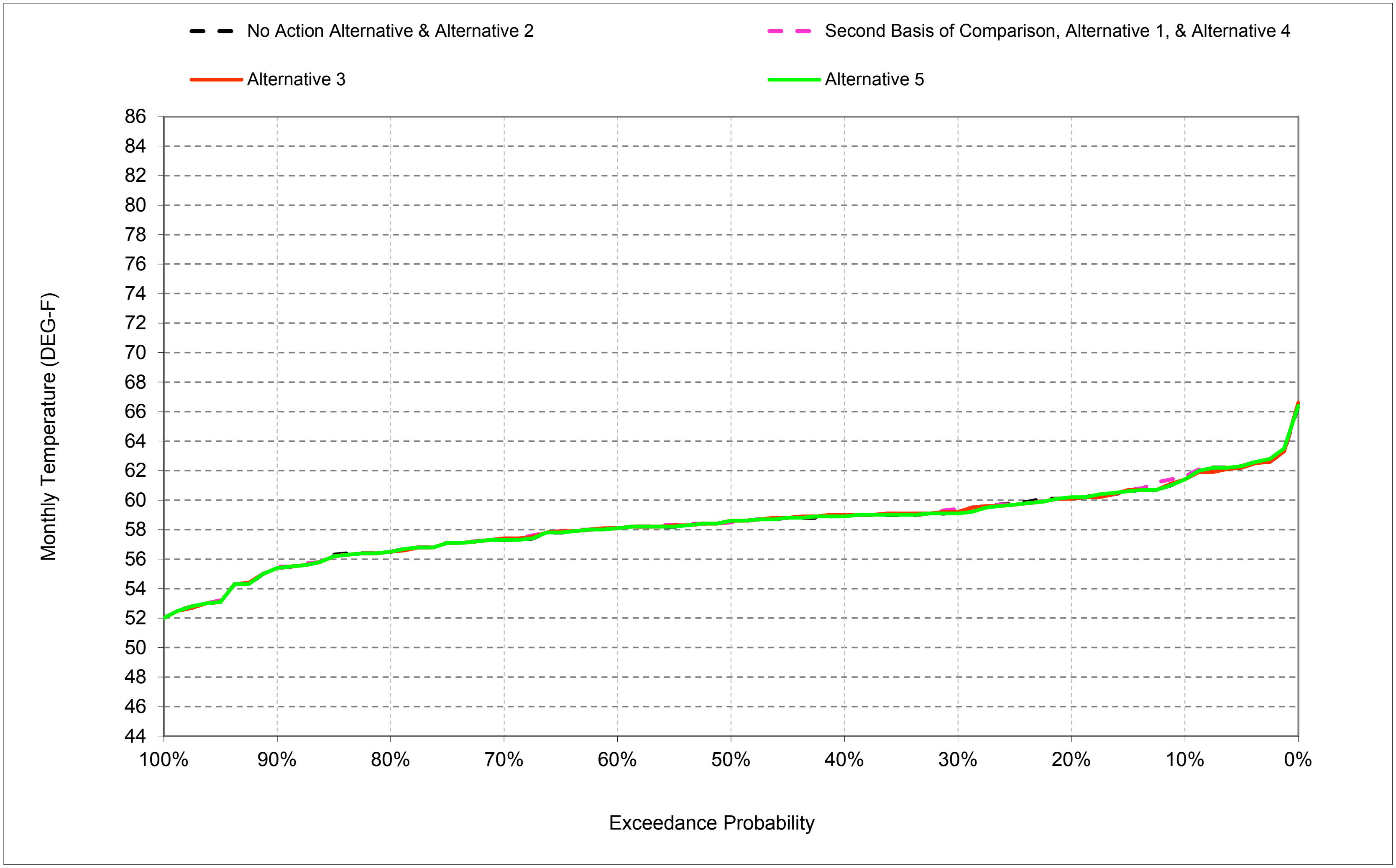
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-6. Feather River at Gridley Bridge, March



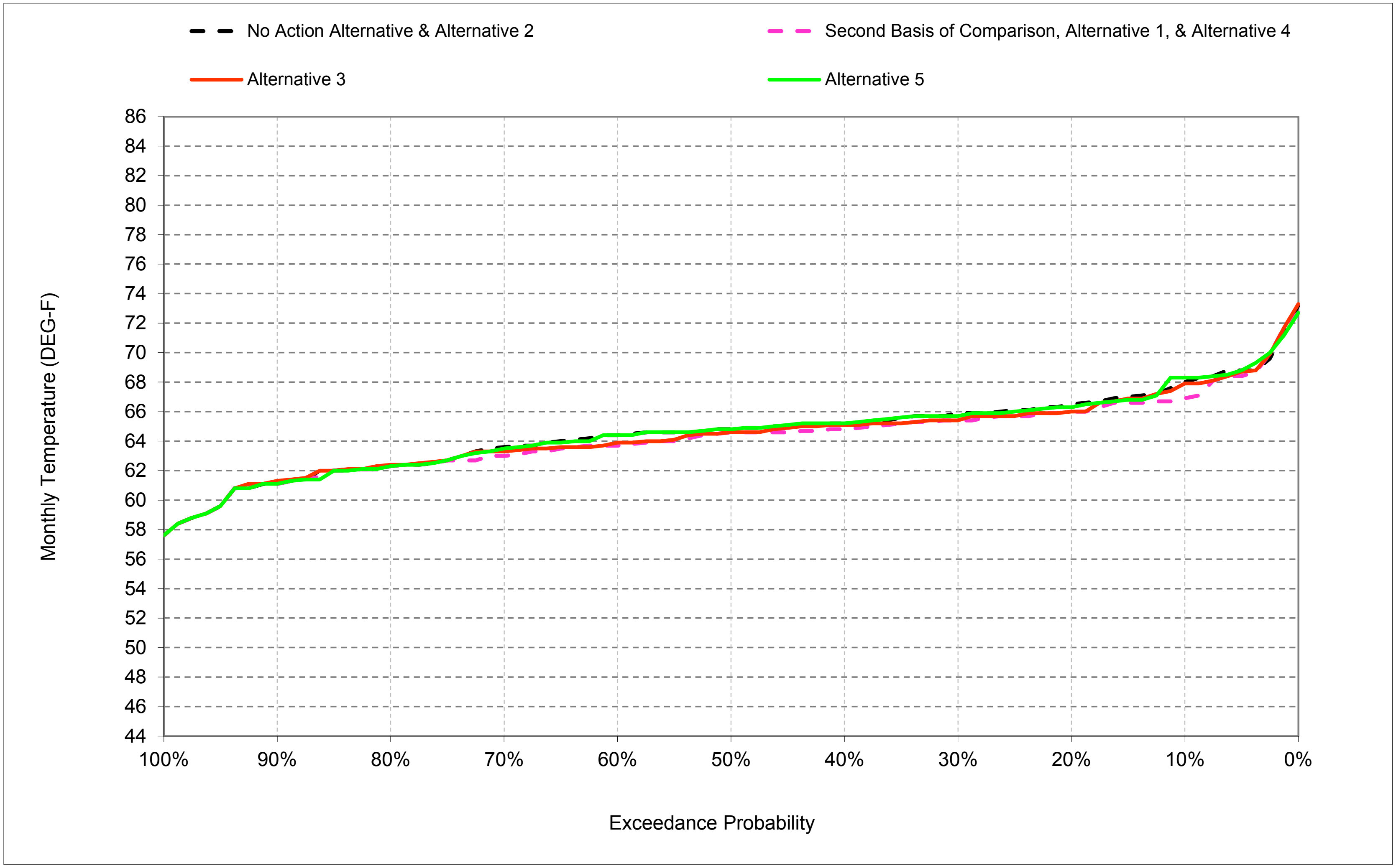
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-7. Feather River at Gridley Bridge, April



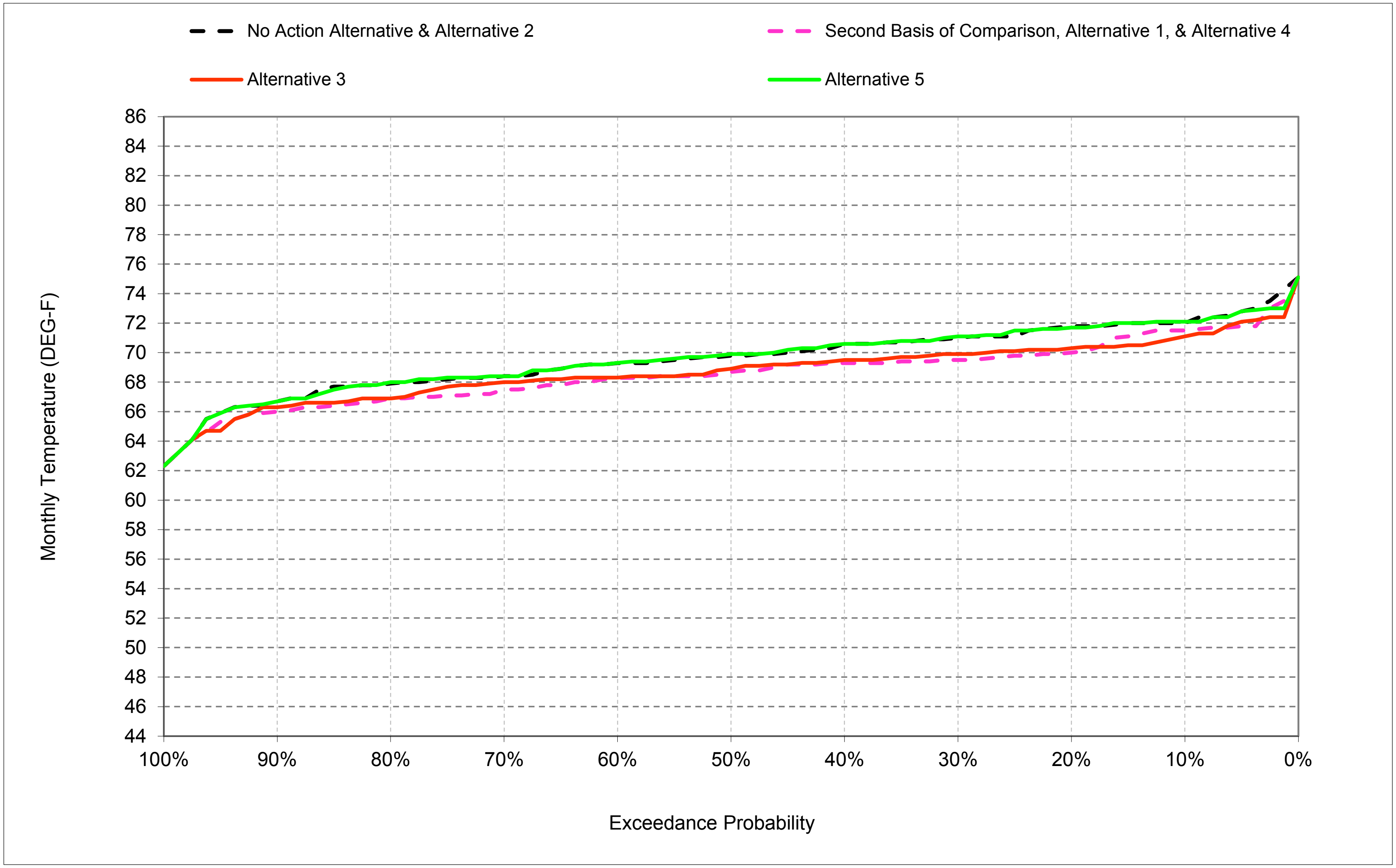
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-8. Feather River at Gridley Bridge, May



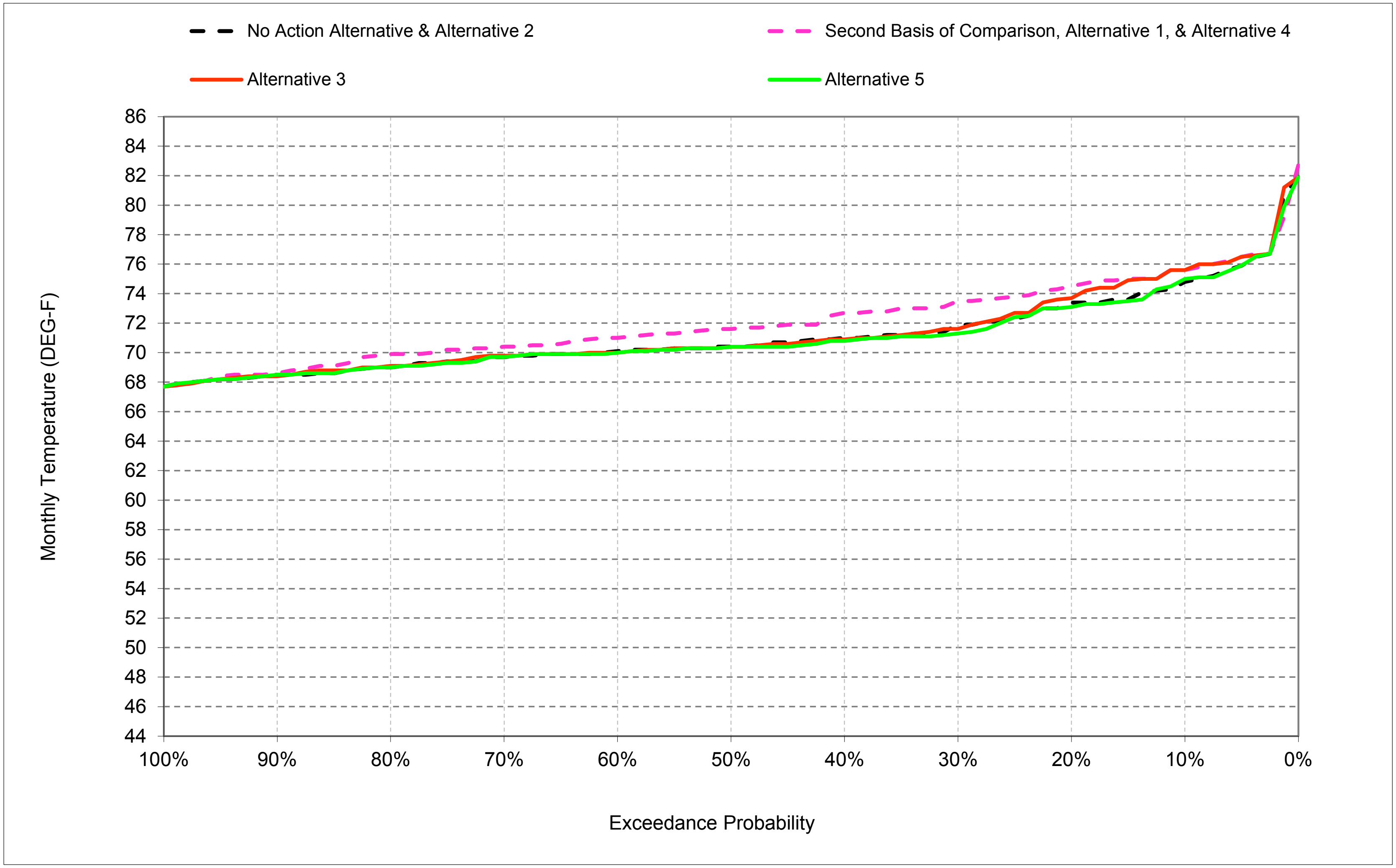
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-9. Feather River at Gridley Bridge, June



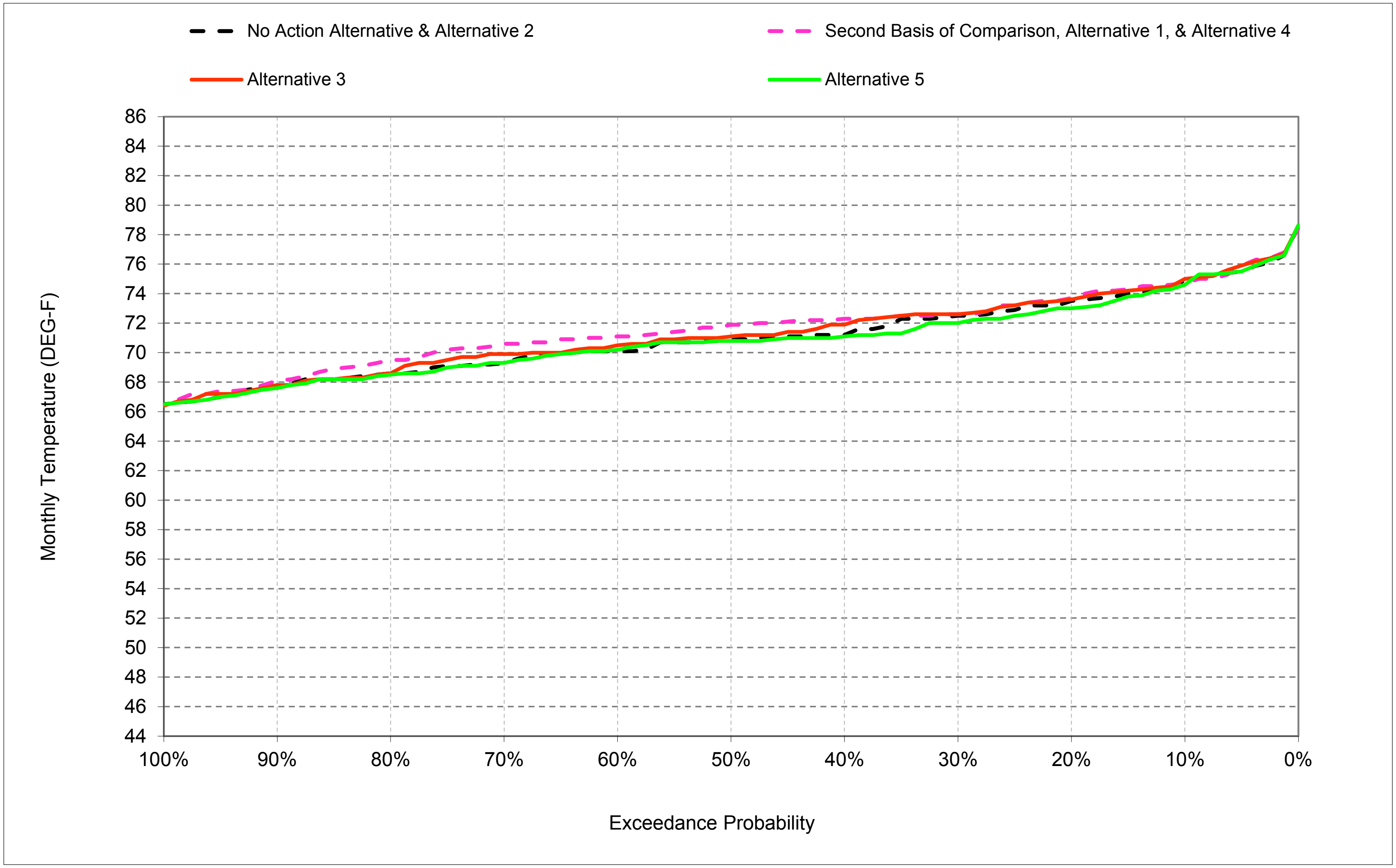
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-10. Feather River at Gridley Bridge, July



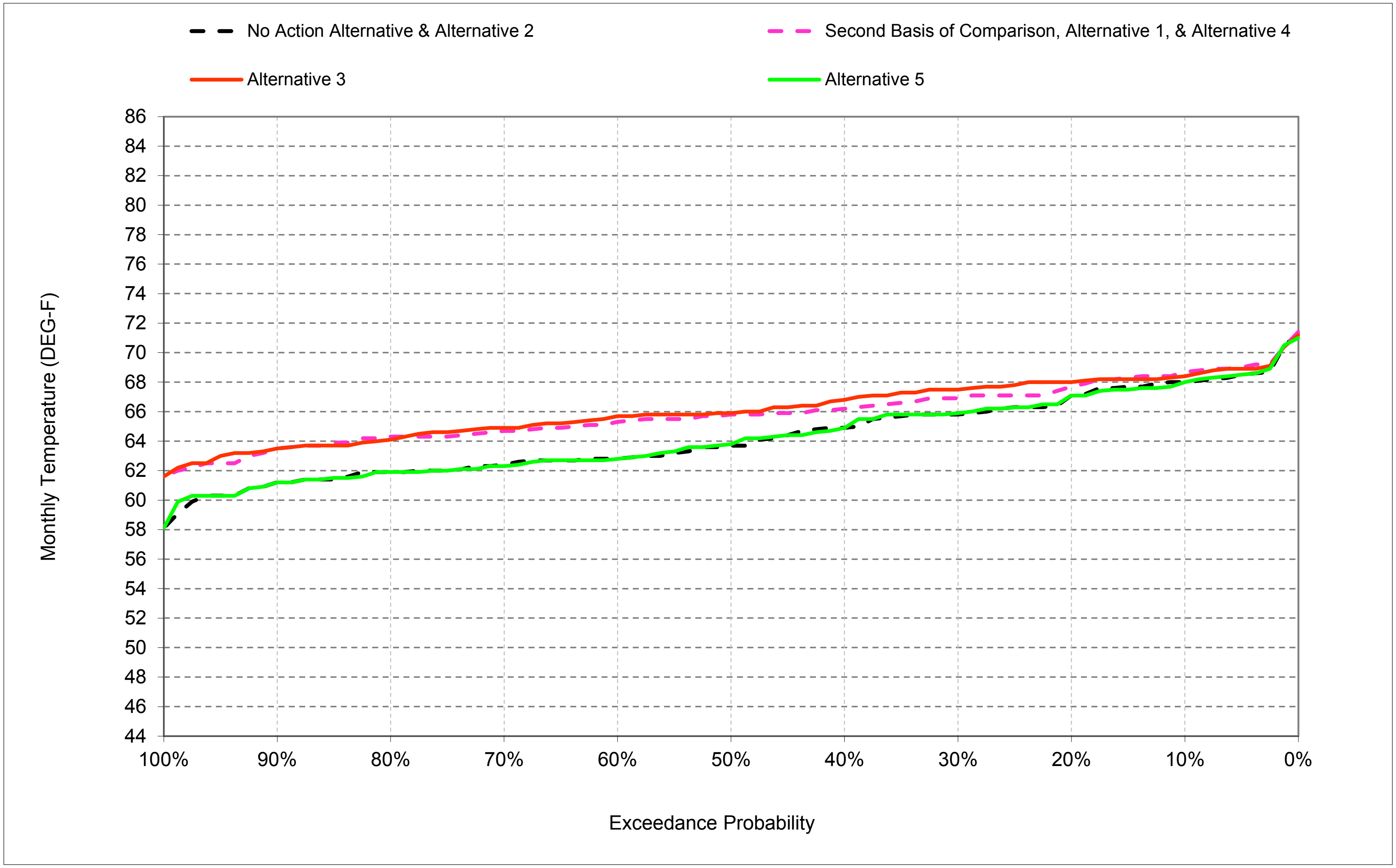
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-11. Feather River at Gridley Bridge, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-22-12. Feather River at Gridley Bridge, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-1. Feather River at Gridley Bridge, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period[b]	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Alternative 1

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period[b]	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

Alternative 1 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	-0.7	0.0	-0.3	-0.1	0.0	-0.1	0.2	-1.1	-0.5	0.8	-0.2	0.7
0.2	0.8	0.0	-0.4	0.0	0.0	0.1	0.0	-0.5	-1.8	1.1	0.2	0.6
0.3	0.3	-0.2	-0.2	0.2	0.1	-0.2	0.2	-0.5	-1.5	1.6	0.1	1.1
0.4	0.2	-0.3	-0.3	0.1	-0.1	0.0	0.0	-0.4	-1.3	1.7	1.1	1.3
0.5	-0.1	-0.3	-0.4	-0.1	0.1	-0.2	-0.1	-0.2	-1.1	1.2	1.0	2.1
0.6	0.0	-0.7	-0.5	0.1	0.0	0.0	0.0	-0.7	-1.0	0.9	1.0	2.5
0.7	-0.3	-0.8	-0.4	0.1	0.2	-0.2	0.1	-0.6	-0.9	0.7	1.3	2.3
0.8	-0.2	-0.9	-0.4	-0.1	-0.1	0.1	0.0	0.0	-1.0	0.9	0.9	2.4
0.9	0.1	0.0	-0.3	0.0	0.0	-0.1	0.1	0.0	-0.7	0.1	0.3	2.3
Long Term												
Full Simulation Period[b]	0.0	-0.3	-0.4	0.1	0.0	0.0	0.0	-0.3	-1.0	0.9	0.6	1.6
Water Year Types[c]												
Wet (32%)	-0.2	-0.5	-0.1	0.2	0.1	0.0	0.0	0.0	-0.3	0.6	1.0	3.9
Above Normal (16%)	0.3	-0.2	-0.6	0.0	-0.2	-0.3	-0.1	-0.5	-1.5	0.4	0.9	2.1
Below Normal (13%)	0.0	-0.6	-0.9	0.0	-0.2	0.0	0.0	-1.0	-2.7	0.9	1.6	0.0
Dry (24%)	0.1	-0.3	-0.4	0.0	0.1	0.1	0.1	-0.4	-1.0	1.8	-0.4	0.1
Critical (15%)	0.2	0.5	-0.3	0.0	-0.1	0.2	0.1	-0.1	-0.4	0.4	-0.2	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-2. Feather River at Gridley Bridge, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period[b]	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	61	68	71	76	75	68
20%	61	57	51	50	53	56	60	66	70	74	74	68
30%	61	56	50	49	52	55	59	65	70	72	73	68
40%	60	55	50	49	52	55	59	65	70	71	72	67
50%	59	54	50	48	51	54	59	65	69	70	71	66
60%	59	54	49	47	51	53	58	64	68	70	71	66
70%	59	53	48	47	50	53	57	63	68	70	70	65
80%	58	53	48	46	50	52	57	62	67	69	69	64
90%	57	52	47	45	49	51	55	61	66	68	68	64
Long Term												
Full Simulation Period[b]	60	55	49	48	51	54	58	64	69	71	71	66
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	60	55	50	45	48	49	54	60	64	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	65	69	70	70	67
Dry (24%)	60	55	49	47	51	56	59	66	69	72	72	66
Critical (15%)	60	56	49	48	52	55	59	66	70	76	74	67

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.6	-0.1	-0.4	0.0	0.1	-0.2	0.0	-0.1	-0.9	0.8	0.1	0.4
0.2	0.6	0.0	-0.4	0.0	0.1	0.0	0.0	-0.5	-1.5	0.3	0.1	0.9
0.3	0.1	-0.2	0.0	0.1	0.2	-0.4	0.0	-0.5	-1.1	-0.3	0.1	1.7
0.4	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.0	-0.1	-1.1	-0.1	0.7	1.9
0.5	-0.3	-0.8	-0.3	0.0	0.1	-0.3	0.0	-0.2	-0.9	0.0	0.2	2.2
0.6	0.1	-0.8	-0.3	0.0	-0.1	0.0	0.0	-0.5	-1.0	-0.1	0.4	2.9
0.7	0.0	-0.8	-0.3	0.0	0.1	0.0	0.1	-0.3	-0.4	0.1	0.6	2.5
0.8	0.0	-0.8	-0.2	-0.1	-0.1	0.1	0.0	0.1	-1.0	0.1	0.0	2.2
0.9	0.0	-0.2	-0.6	0.0	0.0	0.0	0.0	0.2	-0.4	-0.1	0.0	2.3
Long Term												
Full Simulation Period[b]	0.0	-0.4	-0.3	0.0	0.0	-0.1	0.0	-0.2	-0.9	0.2	0.2	1.9
Water Year Types[c]												
Wet (32%)	-0.1	-0.5	-0.1	0.1	0.0	0.0	0.0	-0.1	-0.6	0.1	0.8	4.1
Above Normal (16%)	-0.1	-0.4	-0.5	0.0	0.0	-0.2	-0.2	-0.4	-0.9	0.0	0.4	2.4
Below Normal (13%)	0.1	-0.6	-1.0	0.0	-0.2	0.0	-0.1	-0.4	-1.3	-0.4	-0.5	0.8
Dry (24%)	0.2	-0.4	-0.3	0.0	0.0	0.0	0.0	-0.2	-1.2	0.6	0.0	0.3
Critical (15%)	-0.3	0.0	-0.1	0.0	0.0	-0.1	0.1	0.1	-0.6	0.3	-0.1	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-3. Feather River at Gridley Bridge, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period[b]	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	66	72	73	73	67
30%	61	56	50	49	52	56	59	66	71	71	72	66
40%	60	56	50	48	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	48	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period[b]	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	55	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	71	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	65	71	75	74	67

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.6	-0.3	0.0	0.0	-0.2	0.0	0.0	0.3	0.1	0.2	-0.3	0.0
0.2	0.0	-0.1	0.1	0.0	0.0	0.0	0.1	-0.2	-0.1	-0.3	-0.5	0.0
0.3	0.1	0.0	0.1	0.0	0.1	0.0	-0.1	-0.2	0.1	-0.6	-0.5	0.1
0.4	0.0	0.0	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.2	-0.1	0.0
0.5	0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1
0.6	0.1	0.0	0.1	0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.1	0.0
0.7	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.1
0.8	0.0	-0.2	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0
0.9	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0	0.0	0.0	-0.2	0.0
Long Term												
Full Simulation Period[b]	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0
Above Normal (16%)	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.4	0.1
Dry (24%)	-0.1	-0.2	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	-0.2	-0.1	0.1
Critical (15%)	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.1	0.0	-0.1	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-4. Feather River at Gridley Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period[b]	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	63	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	67	72	73	74	67
30%	60	56	50	49	52	56	59	66	71	72	73	66
40%	60	56	50	49	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	47	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period[b]	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	56	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	70	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	66	71	75	74	68

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.7	0.0	0.3	0.1	0.0	0.1	-0.2	1.1	0.5	-0.8	0.2	-0.7
0.2	-0.8	0.0	0.4	0.0	0.0	-0.1	0.0	0.5	1.8	-1.1	-0.2	-0.6
0.3	-0.3	0.2	0.2	-0.2	-0.1	0.2	-0.2	0.5	1.5	-1.6	-0.1	-1.1
0.4	-0.2	0.3	0.3	-0.1	0.1	0.0	0.0	0.4	1.3	-1.7	-1.1	-1.3
0.5	0.1	0.3	0.4	0.1	-0.1	0.2	0.1	0.2	1.1	-1.2	-1.0	-2.1
0.6	0.0	0.7	0.5	-0.1	0.0	0.0	0.0	0.7	1.0	-0.9	-1.0	-2.5
0.7	0.3	0.8	0.4	-0.1	-0.2	0.2	-0.1	0.6	0.9	-0.7	-1.3	-2.3
0.8	0.2	0.9	0.4	0.1	0.1	-0.1	0.0	0.0	1.0	-0.9	-0.9	-2.4
0.9	-0.1	0.0	0.3	0.0	0.0	0.1	-0.1	0.0	0.7	-0.1	-0.3	-2.3
Long Term												
Full Simulation Period[b]	0.0	0.3	0.4	-0.1	0.0	0.0	0.0	0.3	1.0	-0.9	-0.6	-1.6
Water Year Types[c]												
Wet (32%)	0.2	0.5	0.1	-0.2	-0.1	0.0	0.0	0.0	0.3	-0.6	-1.0	-3.9
Above Normal (16%)	-0.3	0.2	0.6	0.0	0.2	0.3	0.1	0.5	1.5	-0.4	-0.9	-2.1
Below Normal (13%)	0.0	0.6	0.9	0.0	0.2	0.0	0.0	1.0	2.7	-0.9	-1.6	0.0
Dry (24%)	-0.1	0.3	0.4	0.0	-0.1	-0.1	-0.1	0.4	1.0	-1.8	0.4	-0.1
Critical (15%)	-0.2	-0.5	0.3	0.0	0.1	-0.2	-0.1	0.1	0.4	-0.4	0.2	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-5. Feather River at Gridley Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period[b]	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	61	68	71	76	75	68
20%	61	57	51	50	53	56	60	66	70	74	74	68
30%	61	56	50	49	52	55	59	65	70	72	73	68
40%	60	55	50	49	52	55	59	65	70	71	72	67
50%	59	54	50	48	51	54	59	65	69	70	71	66
60%	59	54	49	47	51	53	58	64	68	70	71	66
70%	59	53	48	47	50	53	57	63	68	70	70	65
80%	58	53	48	46	50	52	57	62	67	69	69	64
90%	57	52	47	45	49	51	55	61	66	68	68	64
Long Term												
Full Simulation Period[b]	60	55	49	48	51	54	58	64	69	71	71	66
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	60	55	50	45	48	49	54	60	64	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	65	69	70	70	67
Dry (24%)	60	55	49	47	51	56	59	66	69	72	72	66
Critical (15%)	60	56	49	48	52	55	59	66	70	76	74	67

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	-0.1	-0.1	0.1	0.1	-0.1	-0.2	1.0	-0.4	0.0	0.3	-0.3
0.2	-0.2	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.3	-0.8	-0.1	0.3
0.3	-0.2	0.0	0.2	-0.1	0.1	-0.2	-0.2	0.0	0.4	-1.9	0.0	0.6
0.4	-0.3	0.1	0.2	-0.1	0.0	0.0	0.0	0.3	0.2	-1.8	-0.4	0.6
0.5	-0.2	-0.5	0.1	0.1	0.0	-0.1	0.1	0.0	0.2	-1.2	-0.8	0.1
0.6	0.1	-0.1	0.2	-0.1	-0.1	0.0	0.0	0.2	0.0	-1.0	-0.6	0.4
0.7	0.3	0.0	0.1	-0.1	-0.1	0.2	0.0	0.3	0.5	-0.6	-0.7	0.2
0.8	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	-0.8	-0.9	-0.2
0.9	-0.1	-0.2	-0.3	0.0	0.0	0.1	-0.1	0.2	0.3	-0.2	-0.3	0.0
Long Term												
Full Simulation Period[b]	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.2	0.1	-0.7	-0.3	0.2
Water Year Types[c]												
Wet (32%)	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.5	-0.3	0.3
Above Normal (16%)	-0.3	-0.2	0.2	0.0	0.2	0.1	0.0	0.1	0.6	-0.5	-0.5	0.2
Below Normal (13%)	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.6	1.5	-1.3	-2.1	0.8
Dry (24%)	0.1	-0.1	0.1	0.0	-0.1	-0.1	0.0	0.2	-0.2	-1.2	0.5	0.2
Critical (15%)	-0.5	-0.5	0.2	-0.1	0.1	-0.4	0.0	0.2	-0.2	-0.1	0.1	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-22-6. Feather River at Gridley Bridge, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	51	50	53	57	62	67	72	76	75	69
20%	62	57	51	50	53	56	60	66	70	75	74	68
30%	61	56	50	49	52	56	59	65	70	74	73	67
40%	60	55	50	49	52	55	59	65	69	73	72	66
50%	60	55	49	48	51	54	59	65	69	72	72	66
60%	59	54	49	48	51	53	58	64	68	71	71	65
70%	58	53	48	47	50	53	57	63	68	70	71	65
80%	58	53	48	46	50	52	57	62	67	70	70	64
90%	57	53	47	45	49	51	56	61	66	69	68	64
Long Term												
Full Simulation Period[b]	60	55	49	48	51	54	58	64	69	72	72	66
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	71	66
Above Normal (16%)	61	55	50	45	47	49	54	60	63	64	64	60
Below Normal (13%)	59	54	49	48	51	55	60	64	68	71	72	66
Dry (24%)	60	55	49	47	52	56	59	65	69	73	72	66
Critical (15%)	61	56	49	48	52	56	59	66	70	76	74	68

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	62	58	52	50	53	57	61	68	72	75	75	68
20%	61	57	51	50	53	56	60	66	72	73	73	67
30%	61	56	50	49	52	56	59	66	71	71	72	66
40%	60	56	50	48	52	55	59	65	71	71	71	65
50%	60	55	50	48	51	54	59	65	70	70	71	64
60%	59	55	49	48	51	53	58	64	69	70	70	63
70%	59	54	49	47	50	53	57	64	68	70	69	62
80%	58	54	48	46	50	52	57	62	68	69	69	62
90%	57	53	47	45	49	51	55	61	67	69	68	61
Long Term												
Full Simulation Period[b]	60	55	50	48	51	54	58	65	70	71	71	64
Water Year Types[c]												
Wet (32%)	57	52	47	48	50	52	56	63	68	71	70	62
Above Normal (16%)	60	55	50	45	48	50	55	60	65	64	63	57
Below Normal (13%)	59	55	50	48	52	55	60	65	71	70	70	66
Dry (24%)	60	55	49	47	51	56	59	66	70	71	72	66
Critical (15%)	61	56	49	48	52	56	59	65	71	75	74	67

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.1	-0.3	0.3	0.1	-0.2	0.1	-0.2	1.4	0.6	-0.6	-0.1	-0.7
0.2	-0.8	-0.1	0.5	0.0	0.0	-0.1	0.1	0.3	1.7	-1.4	-0.7	-0.6
0.3	-0.2	0.2	0.3	-0.2	0.0	0.2	-0.3	0.3	1.6	-2.2	-0.6	-1.0
0.4	-0.2	0.3	0.3	-0.2	0.1	0.0	-0.1	0.4	1.3	-1.9	-1.2	-1.3
0.5	0.2	0.2	0.3	0.1	-0.1	0.2	0.1	0.2	1.2	-1.2	-1.1	-2.0
0.6	0.1	0.7	0.6	0.0	-0.1	0.0	0.0	0.7	1.0	-1.0	-0.9	-2.5
0.7	0.3	0.7	0.3	-0.1	-0.2	0.2	-0.1	0.5	0.9	-0.7	-1.3	-2.4
0.8	0.2	0.7	0.4	0.0	0.1	-0.1	0.0	0.0	1.1	-0.9	-1.0	-2.4
0.9	-0.1	0.0	0.3	-0.1	0.0	0.0	-0.1	0.0	0.7	-0.1	-0.5	-2.3
Long Term												
Full Simulation Period[b]	-0.1	0.2	0.4	-0.1	0.0	0.0	0.0	0.3	1.0	-1.0	-0.7	-1.6
Water Year Types[c]												
Wet (32%)	0.2	0.6	0.1	-0.2	-0.1	0.0	0.0	0.0	0.4	-0.7	-1.2	-3.8
Above Normal (16%)	-0.3	0.1	0.6	-0.1	0.2	0.3	0.1	0.5	1.5	-0.5	-0.9	-2.1
Below Normal (13%)	-0.1	0.5	0.9	0.1	0.2	0.0	0.0	1.0	2.8	-1.0	-2.0	0.1
Dry (24%)	-0.2	0.1	0.4	0.0	-0.1	-0.1	-0.1	0.5	0.9	-2.0	0.3	0.0
Critical (15%)	-0.3	-0.5	0.4	0.0	0.1	-0.2	-0.2	-0.1	0.5	-0.5	0.0	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

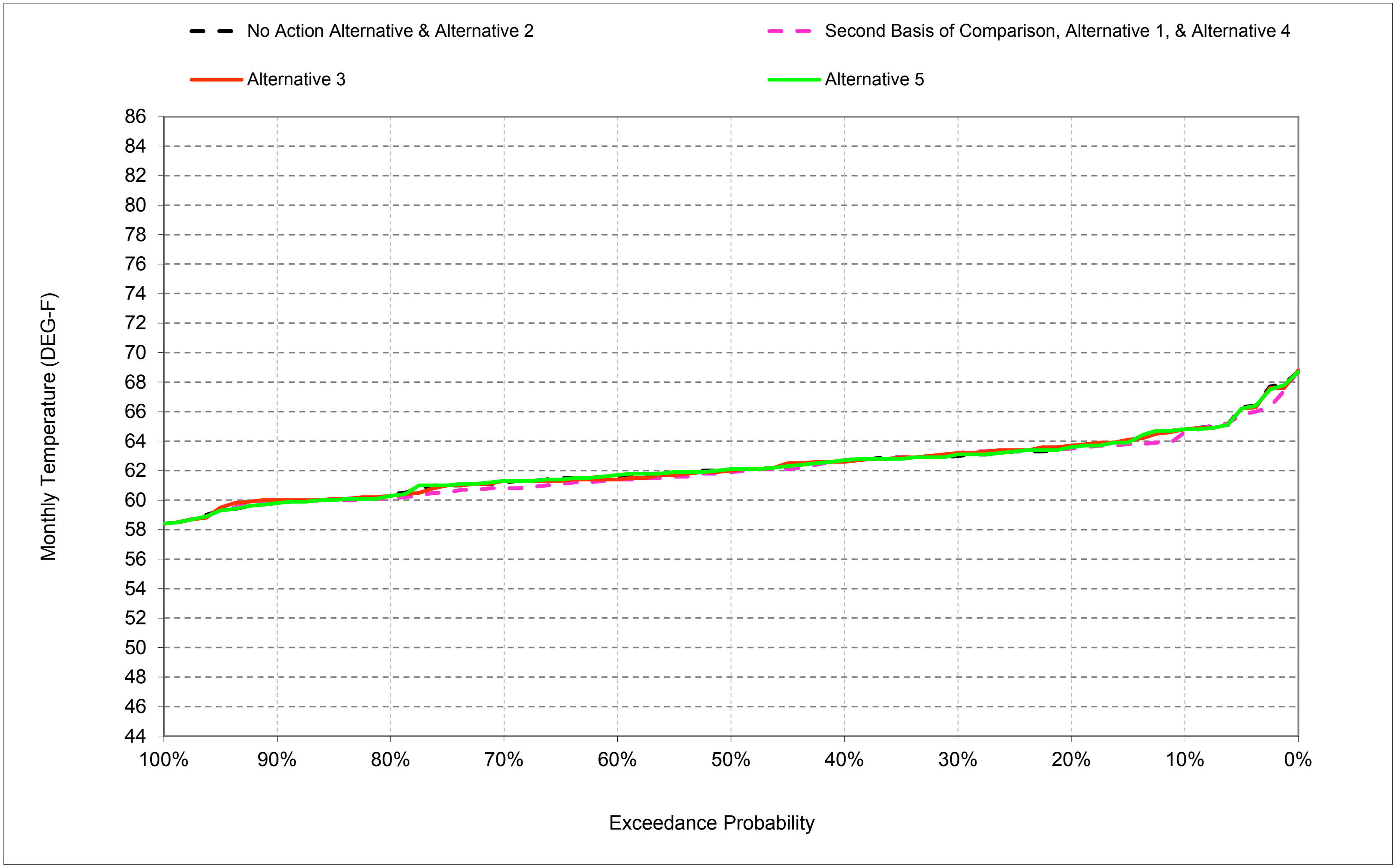
b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

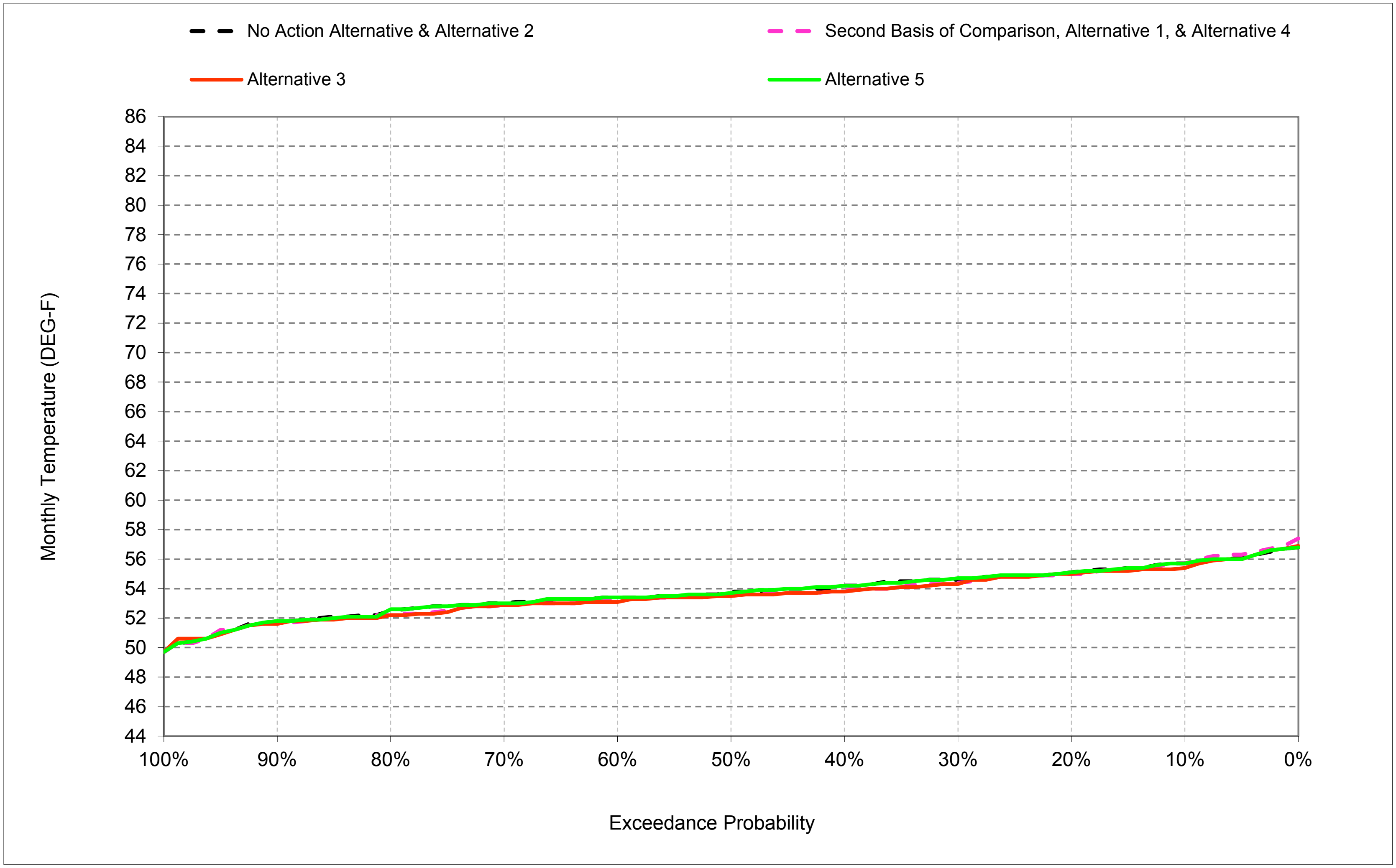
B.23. Feather River at Mouth

Figure B-23-1. Feather River at Mouth, October



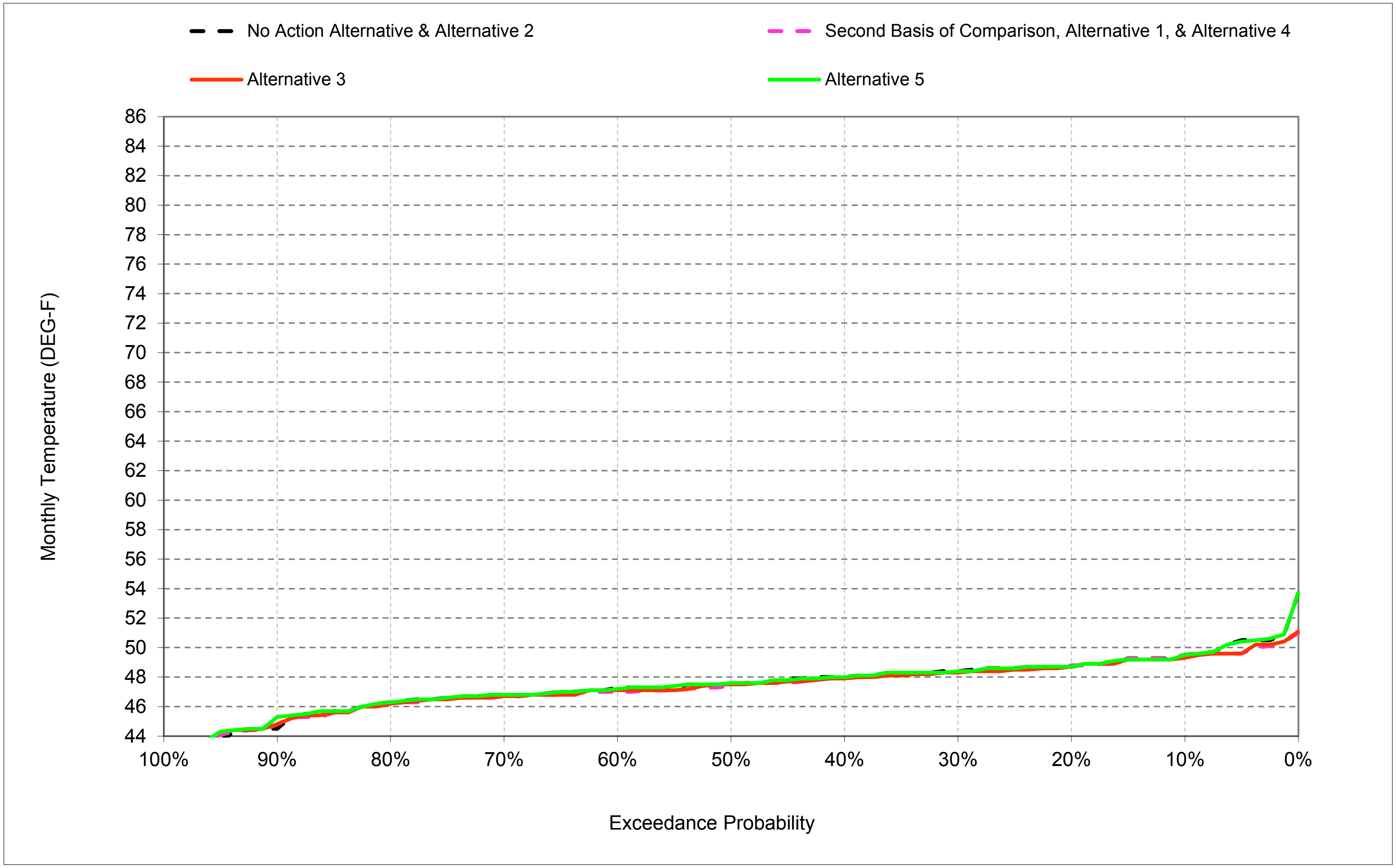
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-2. Feather River at Mouth, November



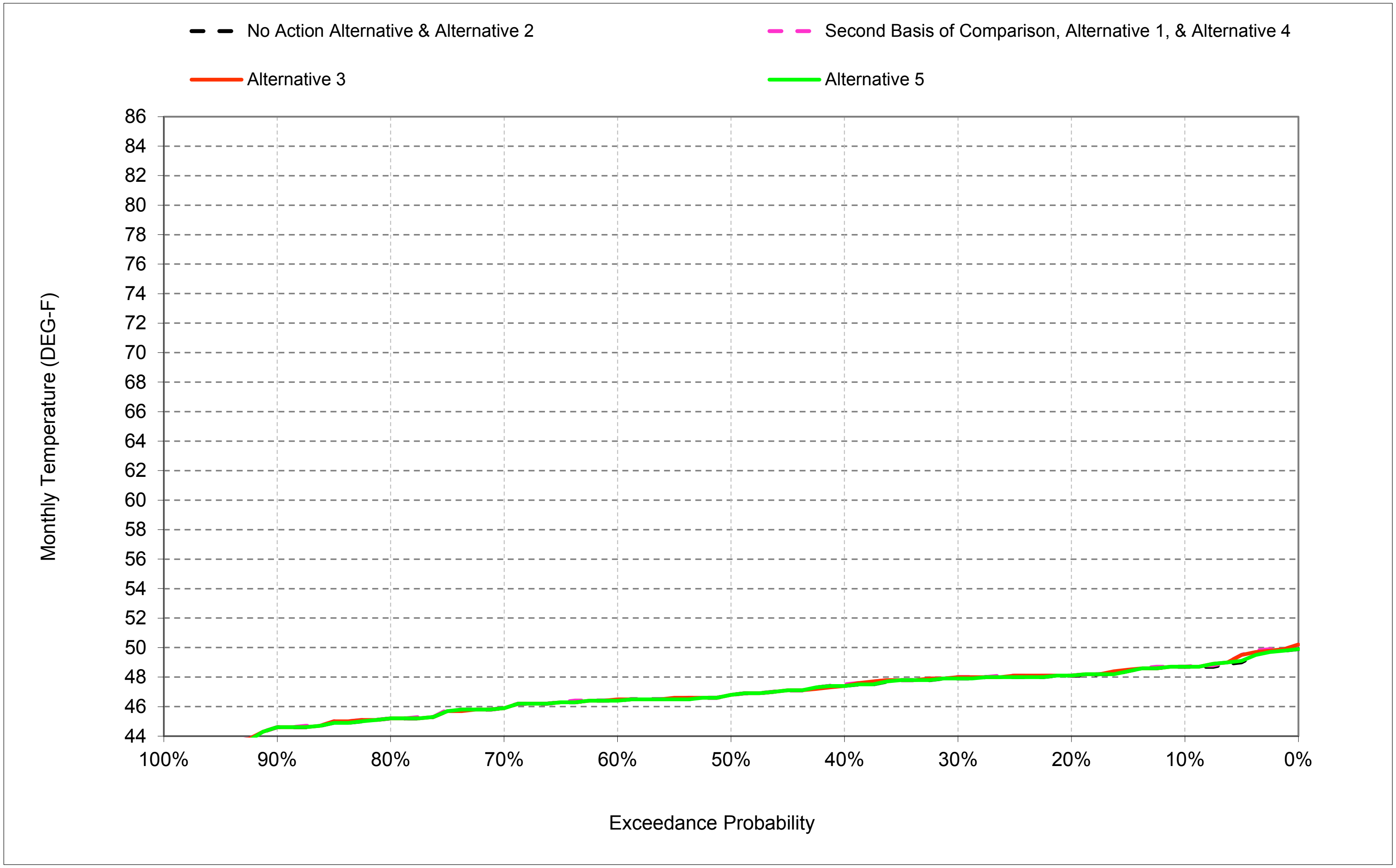
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-3. Feather River at Mouth, December



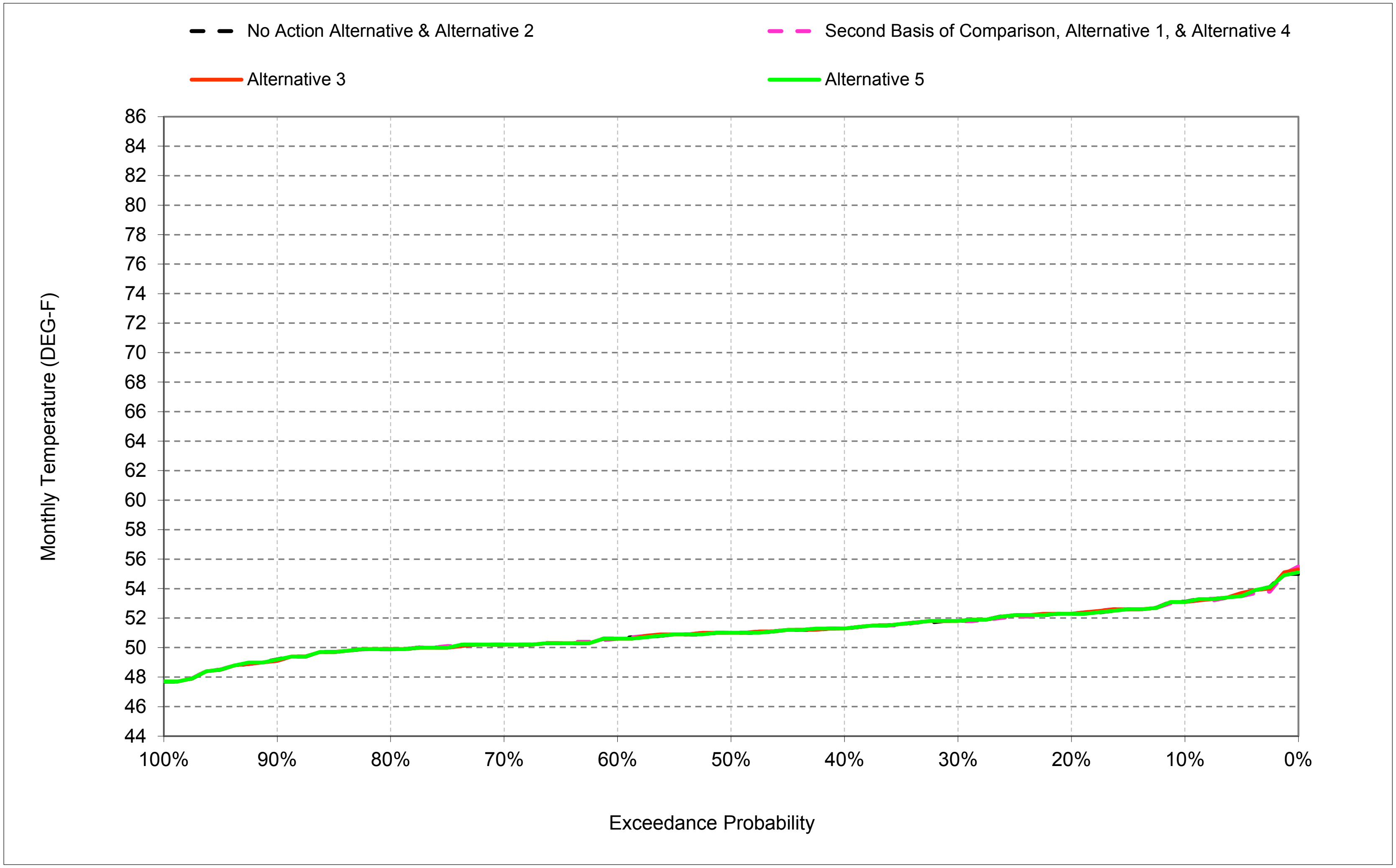
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-4. Feather River at Mouth, January



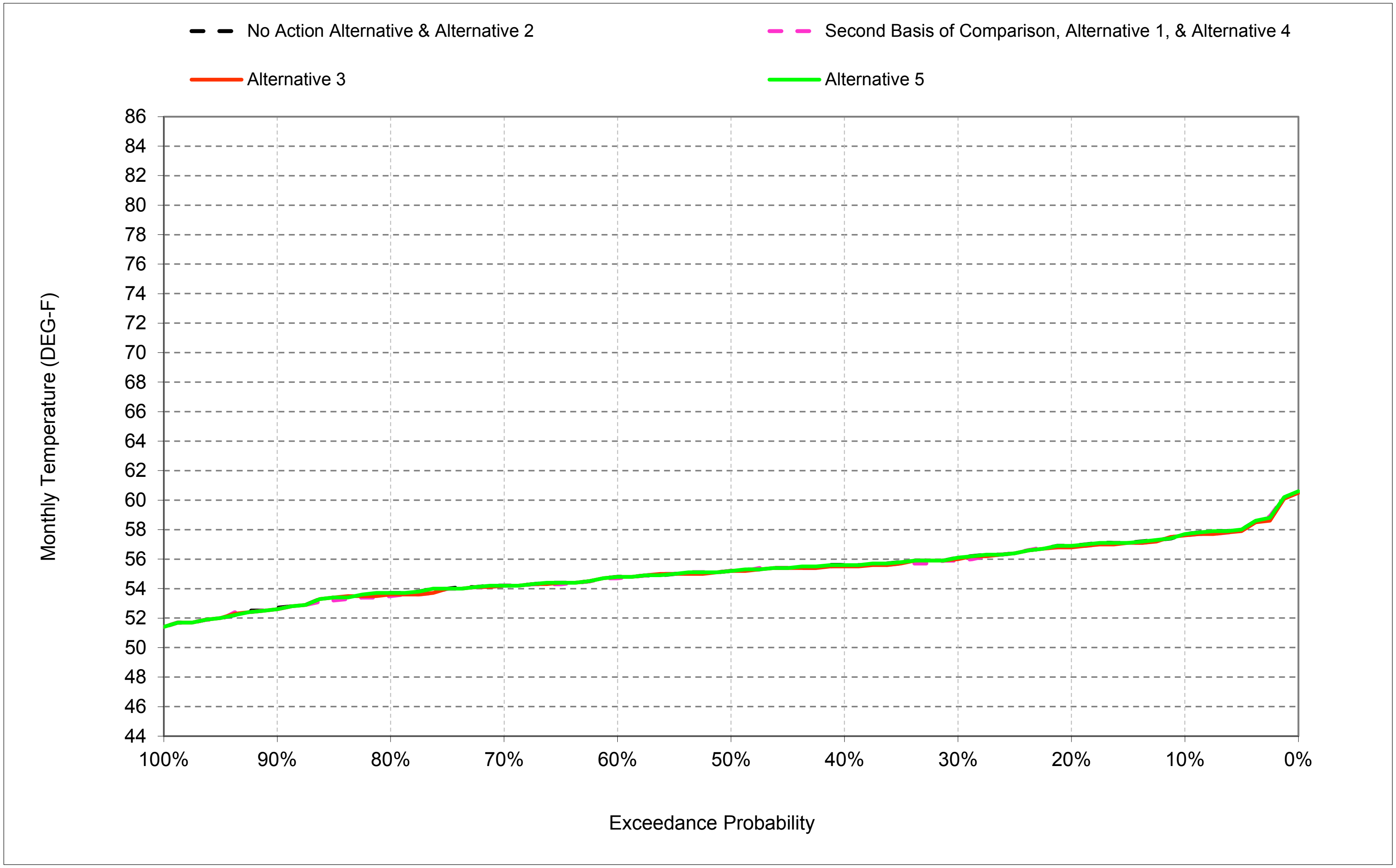
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-5. Feather River at Mouth, February



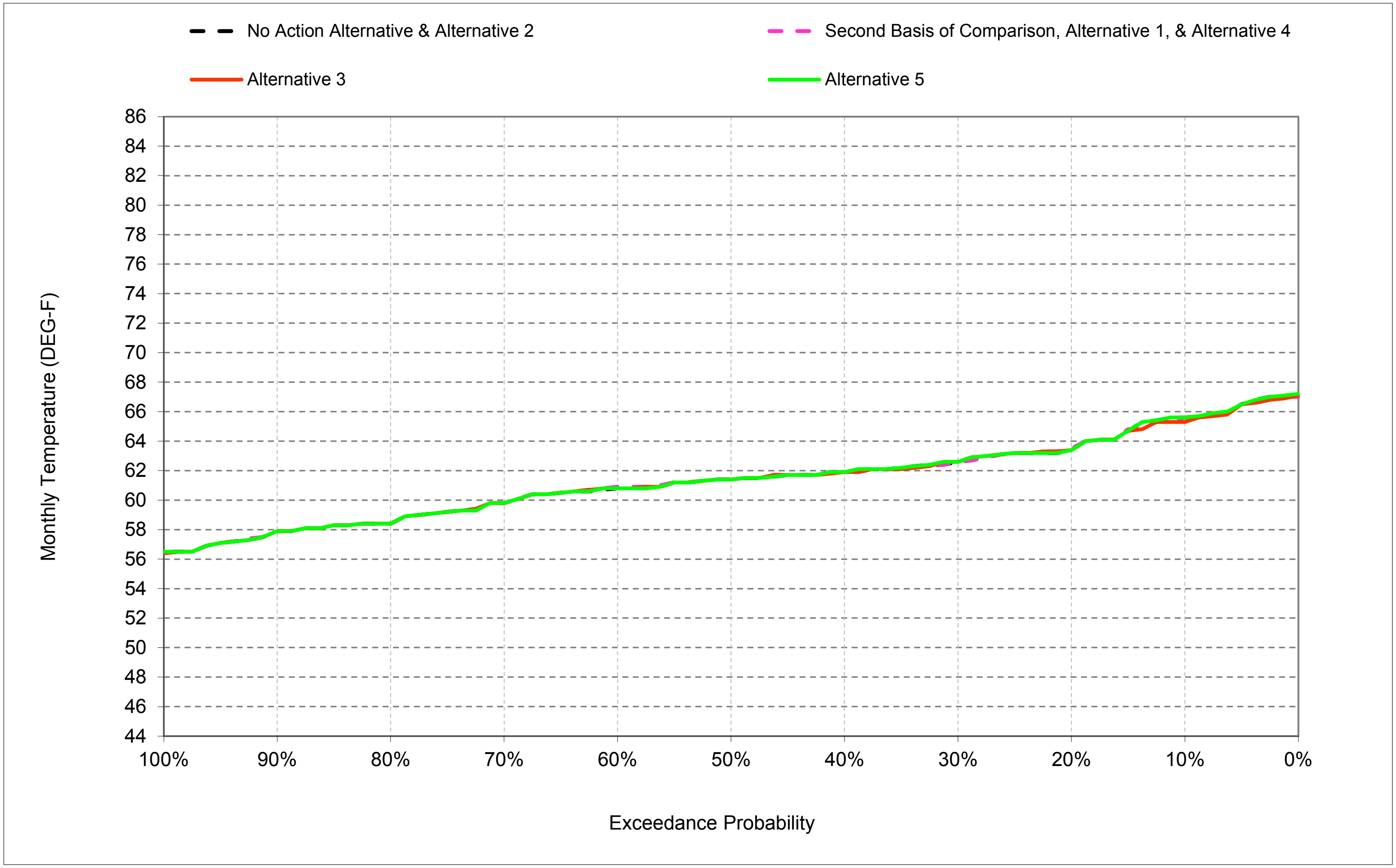
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-6. Feather River at Mouth, March



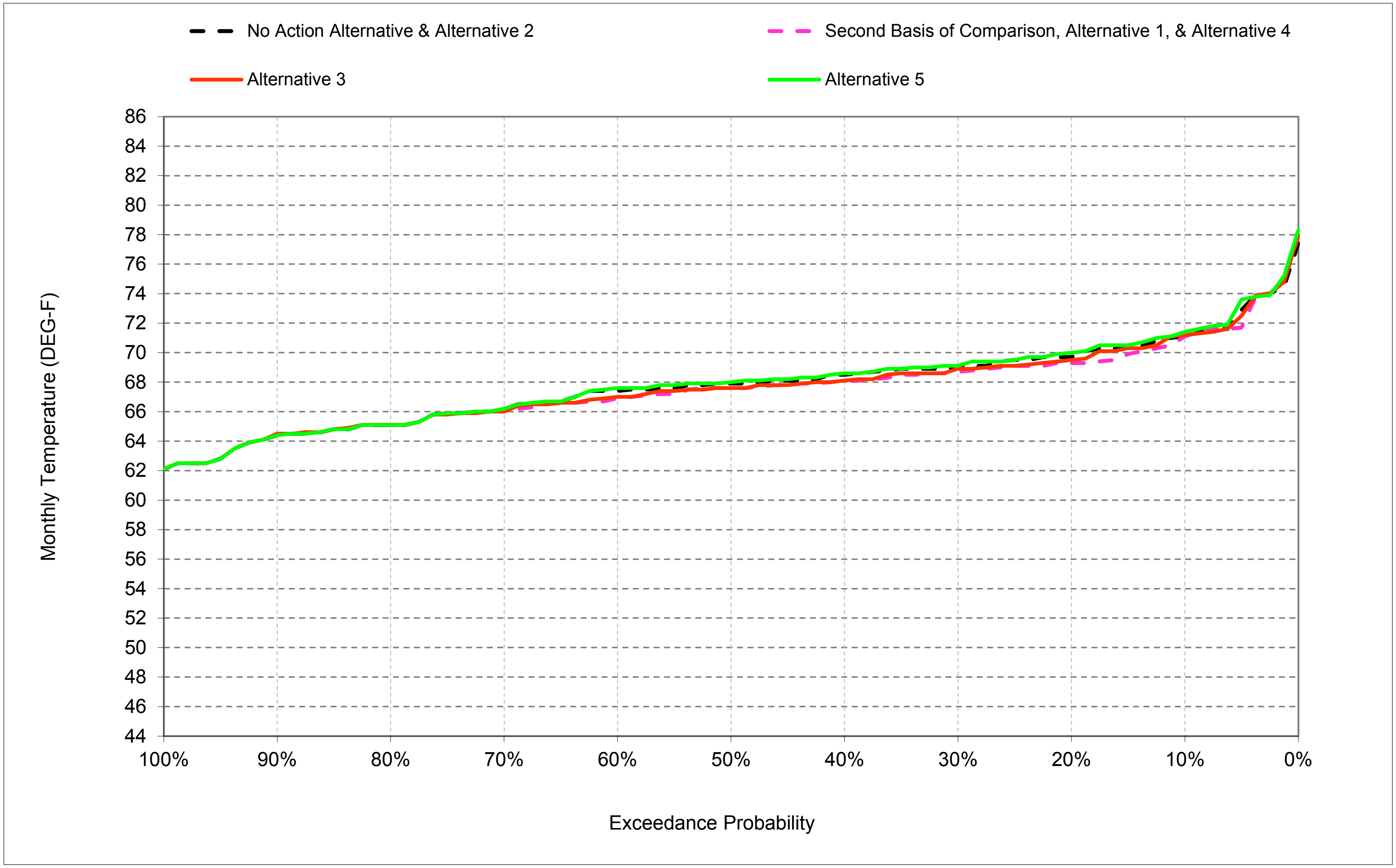
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-7. Feather River at Mouth, April



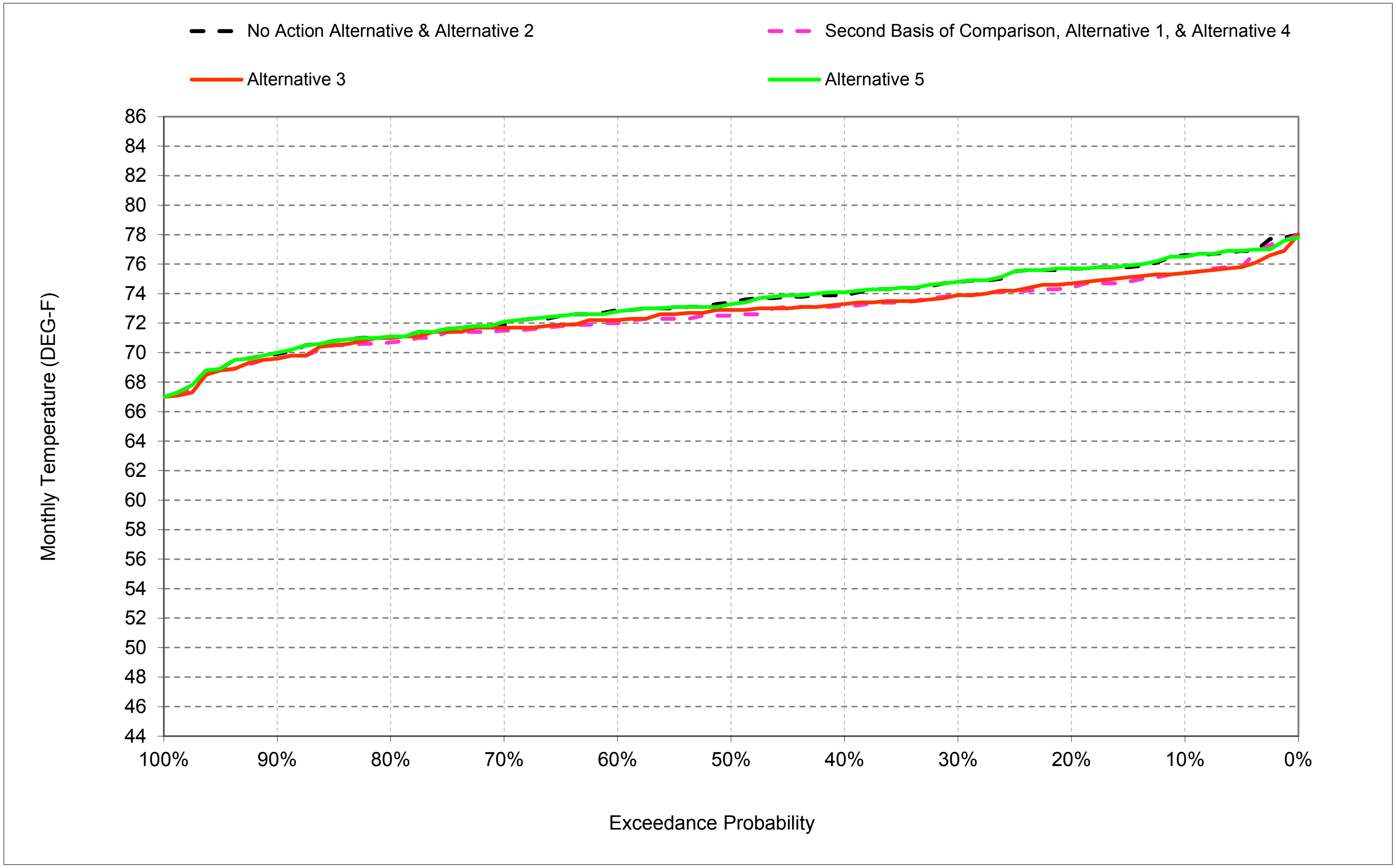
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-8. Feather River at Mouth, May



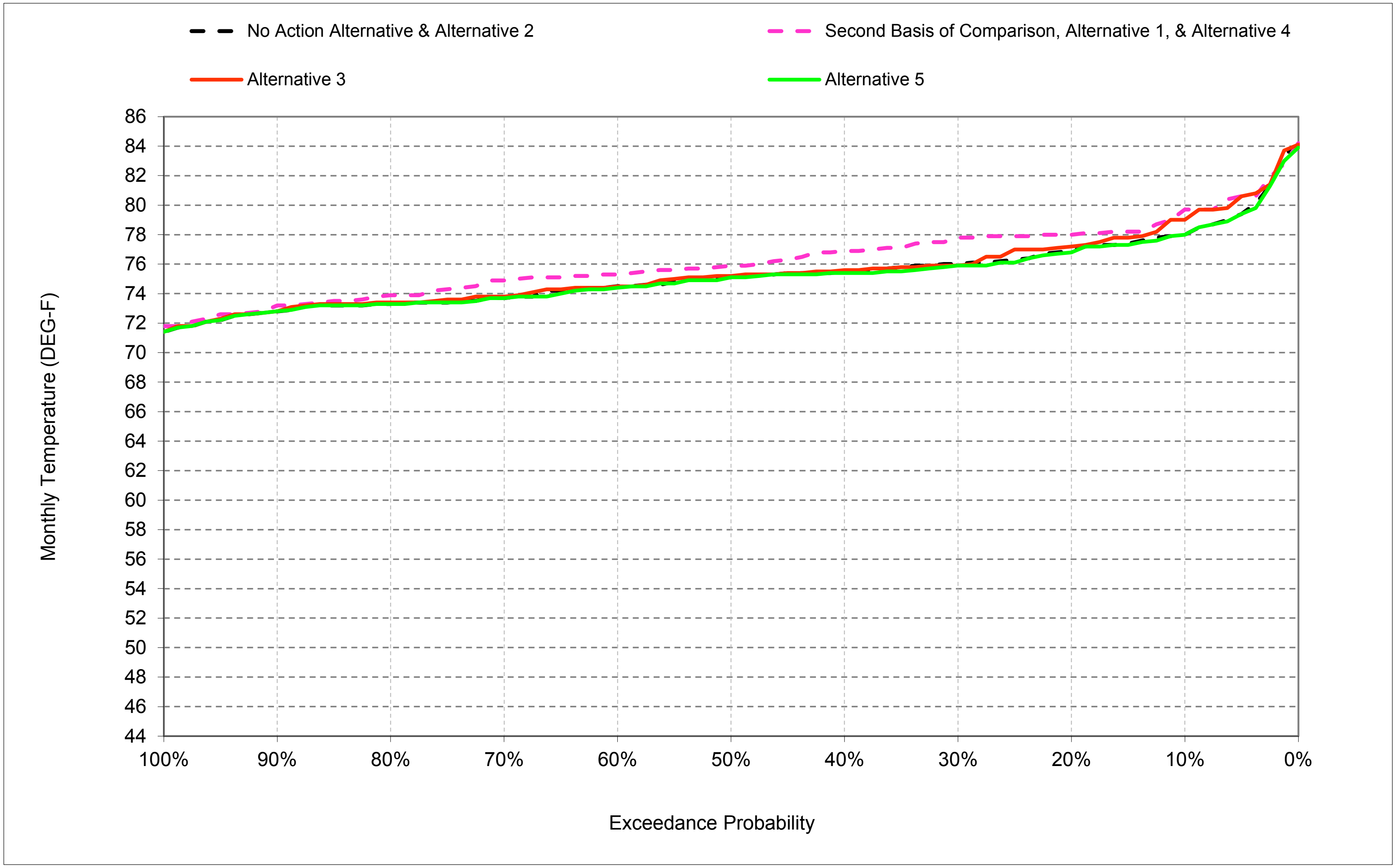
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-9. Feather River at Mouth, June



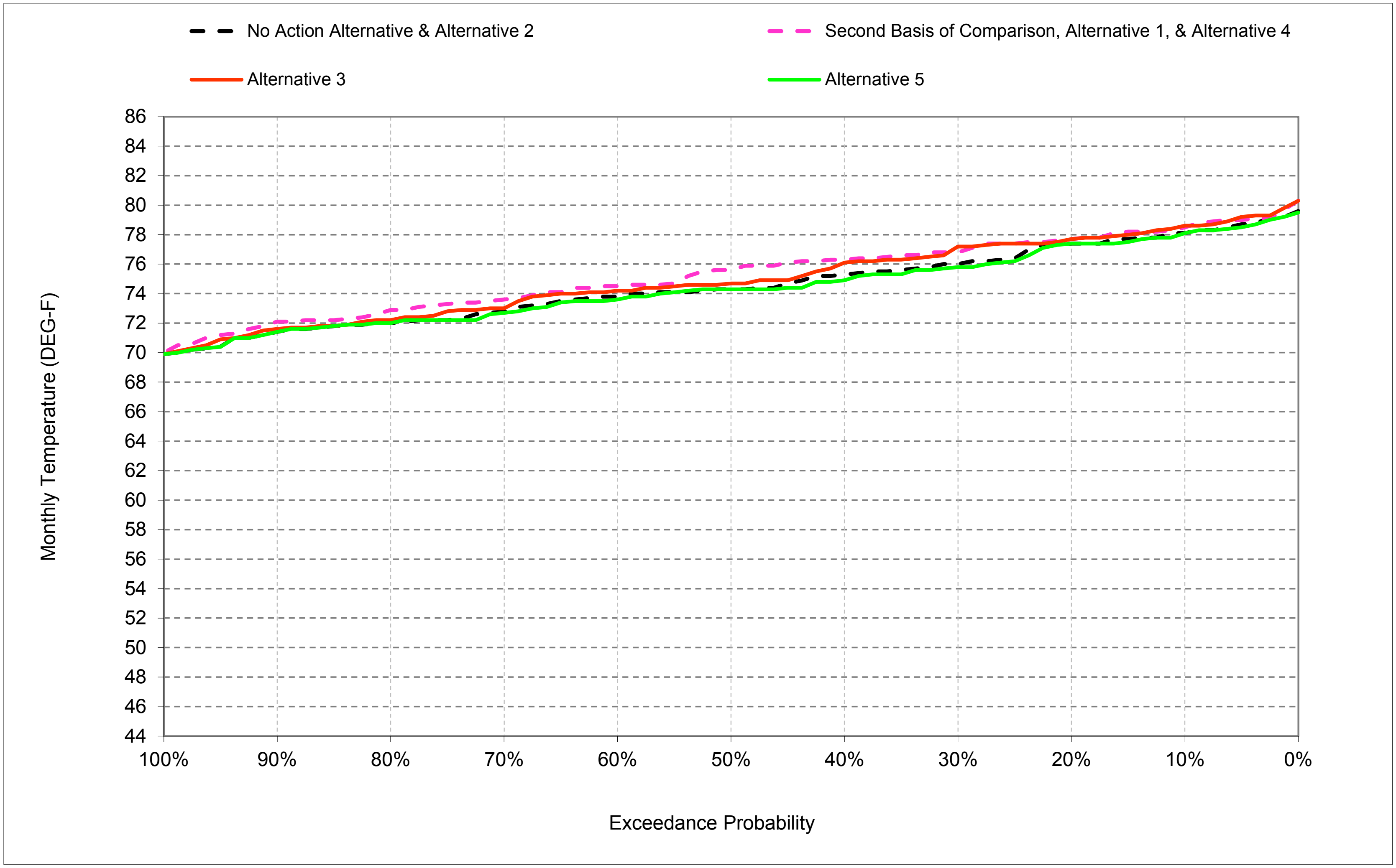
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-10. Feather River at Mouth, July



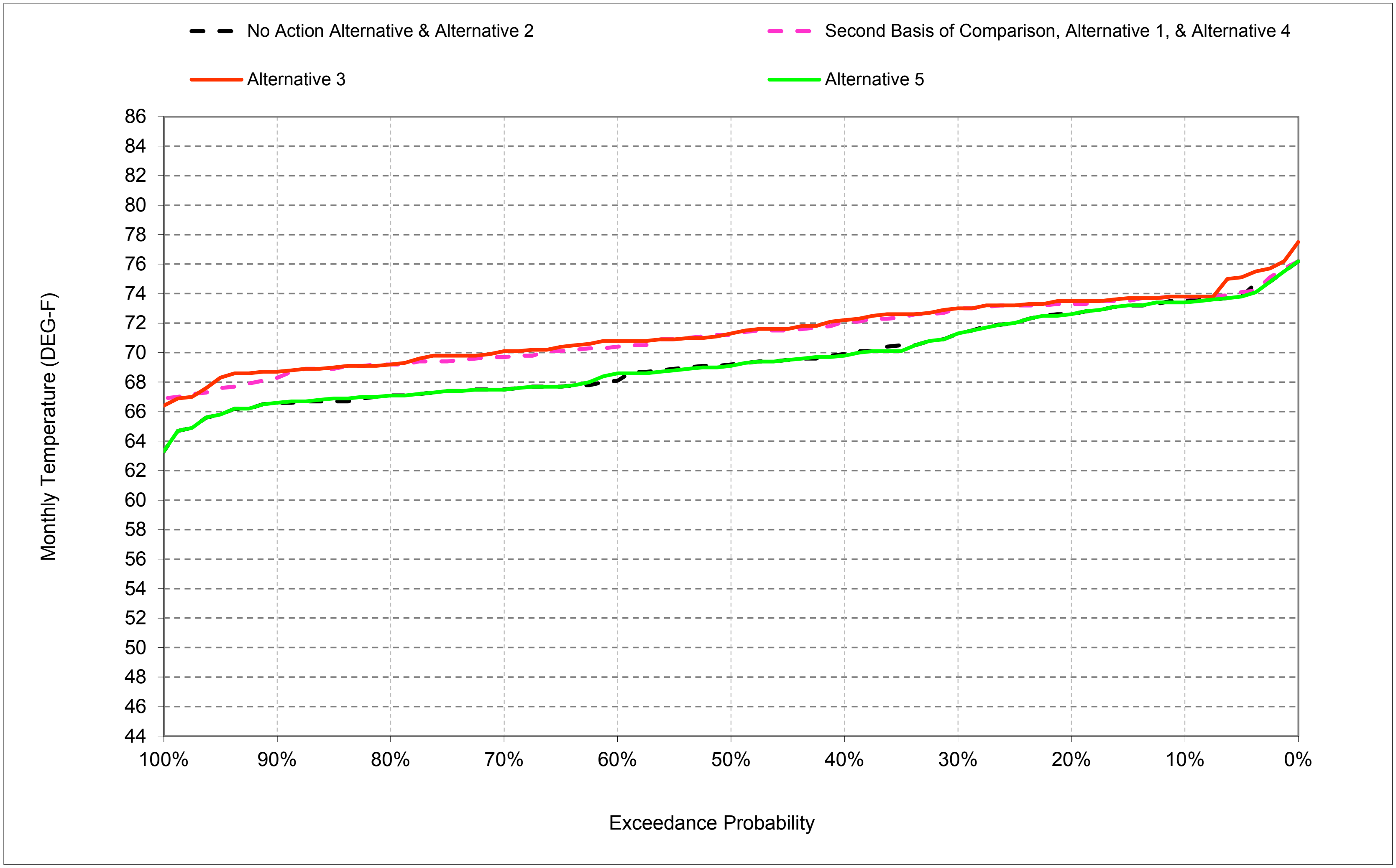
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-11. Feather River at Mouth, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-23-12. Feather River at Mouth, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-1. Feather River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	-0.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-1.2	1.7	0.4	0.3
0.2	-0.1	-0.1	0.1	0.0	0.0	0.0	0.1	-0.4	-1.3	1.1	0.3	0.7
0.3	0.2	-0.2	0.0	0.1	0.0	-0.2	0.0	-0.3	-0.9	1.8	0.8	1.7
0.4	0.0	-0.3	-0.1	0.1	0.0	0.0	0.0	-0.4	-0.7	1.4	1.0	2.2
0.5	-0.2	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.3	-0.9	0.8	1.3	2.0
0.6	-0.2	-0.2	-0.3	0.0	0.0	-0.1	0.1	-0.5	-0.9	0.8	0.7	2.3
0.7	-0.4	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.1	-0.4	1.2	0.8	2.2
0.8	-0.3	-0.3	-0.1	0.0	0.0	-0.2	0.0	0.0	-0.3	0.6	0.9	2.1
0.9	0.1	-0.1	0.3	0.0	-0.1	-0.1	0.0	0.1	-0.3	0.4	0.7	1.7
Long Term												
Full Simulation Period[b]	-0.2	-0.1	-0.1	0.1	0.0	-0.1	0.0	-0.2	-0.7	0.9	0.7	1.6
Water Year Types[c]												
Wet (32%)	-0.1	-0.2	0.1	0.1	0.0	0.0	0.0	0.0	-0.2	0.6	1.2	4.0
Above Normal (16%)	-0.1	-0.1	-0.4	0.0	0.0	-0.1	0.0	-0.3	-0.9	0.5	0.8	2.1
Below Normal (13%)	-0.1	-0.3	-0.6	0.0	0.1	-0.1	-0.1	-0.8	-2.0	0.9	1.5	0.2
Dry (24%)	-0.1	-0.1	-0.2	0.0	0.0	0.0	0.0	-0.3	-0.6	1.6	0.0	-0.1
Critical (15%)	-0.5	0.3	0.1	0.0	-0.1	0.0	-0.1	0.0	-0.5	0.6	0.0	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-2. Feather River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72

Alternative 3

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	55	49	49	53	58	65	71	75	79	79	74
20%	64	55	49	48	52	57	63	70	75	77	78	74
30%	63	54	48	48	52	56	63	69	74	76	77	73
40%	63	54	48	47	51	56	62	68	73	76	76	72
50%	62	54	48	47	51	55	61	68	73	75	75	71
60%	61	53	47	47	51	55	61	67	72	75	74	71
70%	61	53	47	46	50	54	60	66	72	74	73	70
80%	60	52	46	45	50	54	58	65	71	73	72	69
90%	60	52	45	45	49	53	58	65	70	73	72	69
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	68	73	74	73	71
Dry (24%)	62	54	47	46	51	56	62	69	74	76	76	72
Critical (15%)	63	54	46	46	52	57	64	69	74	79	78	72

Alternative 3 minus No Action Alternative

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.0	-0.3	-0.2	0.0	0.0	-0.1	-0.3	0.1	-1.2	1.0	0.5	0.3
0.2	0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.2	-1.0	0.3	0.3	0.9
0.3	0.2	-0.3	-0.1	0.1	0.0	-0.1	0.0	-0.1	-0.9	-0.1	1.2	1.7
0.4	-0.1	-0.4	-0.1	0.0	0.0	-0.1	0.0	-0.4	-0.6	0.1	0.8	2.3
0.5	-0.1	-0.3	0.0	0.0	0.0	0.0	0.0	-0.3	-0.5	0.1	0.4	2.1
0.6	-0.2	-0.3	-0.2	0.1	0.0	0.0	0.0	-0.4	-0.7	0.0	0.4	2.7
0.7	0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.2	0.1	0.2	2.6
0.8	-0.1	-0.3	-0.1	0.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.2	2.1
0.9	0.2	-0.2	0.3	0.0	-0.1	-0.1	0.0	0.1	-0.3	0.0	0.2	2.1
Long Term												
Full Simulation Period[b]	0.0	-0.2	-0.1	0.0	0.0	0.0	0.0	-0.2	-0.6	0.2	0.4	1.8
Water Year Types[c]												
Wet (32%)	0.0	-0.2	0.1	0.1	0.0	0.0	0.0	0.0	-0.4	0.2	1.0	4.4
Above Normal (16%)	-0.1	-0.2	-0.3	0.0	0.0	0.0	0.0	-0.3	-0.5	0.0	0.4	2.1
Below Normal (13%)	0.1	-0.3	-0.6	0.0	0.1	0.0	-0.1	-0.4	-0.8	-0.3	-0.2	0.5
Dry (24%)	0.2	-0.2	-0.2	0.0	0.0	-0.1	0.0	-0.2	-0.8	0.5	0.3	0.1
Critical (15%)	-0.2	0.0	0.2	0.0	0.0	-0.1	0.0	0.0	-0.7	0.3	0.0	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-3. Feather River at Mouth, Monthly Temperature

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	77	78	78	73
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	75	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	68	73	74	74	69
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	75	74	70
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	73	70
Dry (24%)	62	54	47	46	51	56	62	70	74	75	75	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	77	72

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-0.1	0.0	0.0	-0.1
0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.1	0.0	0.0
0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	0.0
0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	-0.1	-0.4	-0.1
0.5	0.0	-0.1	0.1	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	-0.1
0.6	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.2	-0.1	-0.1	-0.2	0.5
0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.1	0.0
0.8	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
0.9	0.0	0.0	0.8	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.0
Long Term												
Full Simulation Period[b]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.1	0.0
Water Year Types[c]												
Wet (32%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.1
Above Normal (16%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Below Normal (13%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	-0.2	-0.1
Dry (24%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.2	-0.1	0.0
Critical (15%)	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	-0.2	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-4. Feather River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	77	78	78	74
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	76	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	67	73	75	74	68
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	75	75	70
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	74	71
Dry (24%)	62	54	47	46	51	56	62	69	74	75	76	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	78	72

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.2	-1.7	-0.4	-0.3
0.2	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1	0.4	1.3	-1.1	-0.3	-0.7
0.3	-0.2	0.2	0.0	-0.1	0.0	0.2	0.0	0.3	0.9	-1.8	-0.8	-1.7
0.4	0.0	0.3	0.1	-0.1	0.0	0.0	0.0	0.4	0.7	-1.4	-1.0	-2.2
0.5	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.3	0.9	-0.8	-1.3	-2.0
0.6	0.2	0.2	0.3	0.0	0.0	0.1	-0.1	0.5	0.9	-0.8	-0.7	-2.3
0.7	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.4	-1.2	-0.8	-2.2
0.8	0.3	0.3	0.1	0.0	0.0	0.2	0.0	0.0	0.3	-0.6	-0.9	-2.1
0.9	-0.1	0.1	-0.3	0.0	0.1	0.1	0.0	-0.1	0.3	-0.4	-0.7	-1.7
Long Term												
Full Simulation Period[b]	0.2	0.1	0.1	-0.1	0.0	0.1	0.0	0.2	0.7	-0.9	-0.7	-1.6
Water Year Types[c]												
Wet (32%)	0.1	0.2	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	-0.6	-1.2	-4.0
Above Normal (16%)	0.1	0.1	0.4	0.0	0.0	0.1	0.0	0.3	0.9	-0.5	-0.8	-2.1
Below Normal (13%)	0.1	0.3	0.6	0.0	-0.1	0.1	0.1	0.8	2.0	-0.9	-1.5	-0.2
Dry (24%)	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.3	0.6	-1.6	0.0	0.1
Critical (15%)	0.5	-0.3	-0.1	0.0	0.1	0.0	0.1	0.0	0.5	-0.6	0.0	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-5. Feather River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
10%	65	55	49	49	53	58	65	71	75	79	79	74
20%	64	55	49	48	52	57	63	70	75	77	78	74
30%	63	54	48	48	52	56	63	69	74	76	77	73
40%	63	54	48	47	51	56	62	68	73	76	76	72
50%	62	54	48	47	51	55	61	68	73	75	75	71
60%	61	53	47	47	51	55	61	67	72	75	74	71
70%	61	53	47	46	50	54	60	66	72	74	73	70
80%	60	52	46	45	50	54	58	65	71	73	72	69
90%	60	52	45	45	49	53	58	65	70	73	72	69
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	68	73	74	73	71
Dry (24%)	62	54	47	46	51	56	62	69	74	76	76	72
Critical (15%)	63	54	46	46	52	57	64	69	74	79	78	72

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Temperature (DEG-F)											
Probability of Exceedance[a]												
0.1	0.2	-0.3	-0.2	0.0	0.0	0.0	-0.3	0.1	0.0	-0.7	0.1	0.0
0.2	0.2	0.0	-0.1	0.0	0.0	-0.1	-0.1	0.2	0.3	-0.8	0.0	0.2
0.3	0.0	-0.1	-0.1	0.0	0.0	0.1	0.0	0.2	0.0	-1.9	0.4	0.0
0.4	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.0	0.0	0.1	-1.3	-0.2	0.1
0.5	0.1	-0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4	-0.7	-0.9	0.1
0.6	0.0	-0.1	0.1	0.1	0.0	0.1	-0.1	0.1	0.2	-0.8	-0.3	0.4
0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.2	-1.1	-0.6	0.4
0.8	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	-0.5	-0.7	0.0
0.9	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	-0.5	0.4
Long Term												
Full Simulation Period[b]	0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	-0.7	-0.3	0.2
Water Year Types[c]												
Wet (32%)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.5	-0.2	0.4
Above Normal (16%)	0.0	-0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.4	-0.4	-0.5	-0.1
Below Normal (13%)	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.4	1.1	-1.1	-1.7	0.3
Dry (24%)	0.3	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	-0.2	-1.1	0.3	0.2
Critical (15%)	0.3	-0.3	0.1	0.0	0.1	0.0	0.0	0.0	-0.2	-0.3	0.0	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-23-6. Feather River at Mouth, Monthly Temperature

Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	75	80	79	74
20%	64	55	49	48	52	57	64	69	74	78	78	73
30%	63	54	48	48	52	56	63	69	74	78	77	73
40%	63	54	48	48	51	56	62	68	73	77	76	72
50%	62	54	47	47	51	55	61	68	73	76	76	71
60%	61	53	47	46	51	55	61	67	72	75	75	70
70%	61	53	47	46	50	54	60	66	72	75	74	70
80%	60	52	46	45	50	54	58	65	71	74	73	69
90%	60	52	45	45	49	53	58	65	70	73	72	68
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	76	75	71
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	71	75	75	72
Above Normal (16%)	62	54	48	44	47	51	57	62	67	68	67	64
Below Normal (13%)	62	53	47	47	51	56	62	67	72	75	75	71
Dry (24%)	62	54	47	46	51	56	62	69	74	77	76	71
Critical (15%)	63	55	46	46	52	57	64	69	74	79	78	72

Alternative 5

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	65	56	50	49	53	58	66	71	77	78	78	73
20%	64	55	49	48	52	57	63	70	76	77	77	73
30%	63	55	48	48	52	56	63	69	75	76	76	71
40%	63	54	48	47	51	56	62	69	74	75	75	70
50%	62	54	48	47	51	55	61	68	73	75	74	69
60%	62	53	47	46	51	55	61	68	73	74	74	69
70%	61	53	47	46	50	54	60	66	72	74	73	68
80%	60	53	46	45	50	54	58	65	71	73	72	67
90%	60	52	45	45	49	53	58	64	70	73	71	67
Long Term												
Full Simulation Period[b]	62	54	47	47	51	55	61	68	73	75	74	70
Water Year Types[c]												
Wet (32%)	59	51	46	47	51	54	59	66	72	75	74	68
Above Normal (16%)	62	54	48	44	47	51	57	63	68	68	66	62
Below Normal (13%)	62	53	48	47	51	56	63	68	74	74	73	70
Dry (24%)	62	54	47	46	51	56	62	70	74	75	75	71
Critical (15%)	64	54	46	46	52	57	64	69	74	79	77	72

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.3	1.1	-1.7	-0.4	-0.4
0.2	0.1	0.1	-0.1	0.0	0.0	0.0	-0.1	0.7	1.3	-1.2	-0.3	-0.7
0.3	-0.1	0.3	0.0	-0.1	0.0	0.2	0.0	0.4	0.9	-1.9	-1.0	-1.7
0.4	0.0	0.3	0.1	-0.1	0.0	0.0	0.0	0.5	0.9	-1.5	-1.4	-2.3
0.5	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.4	0.8	-0.8	-1.3	-2.1
0.6	0.3	0.2	0.2	0.0	0.0	0.1	-0.1	0.7	0.8	-0.9	-0.9	-1.8
0.7	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.6	-1.2	-0.9	-2.2
0.8	0.2	0.4	0.1	0.0	0.0	0.2	0.0	0.0	0.4	-0.6	-0.9	-2.1
0.9	-0.1	0.1	0.5	0.0	0.1	0.0	0.0	-0.1	0.4	-0.4	-0.7	-1.7
Long Term												
Full Simulation Period[b]	0.2	0.1	0.2	0.0	0.0	0.1	0.0	0.3	0.7	-1.0	-0.8	-1.6
Water Year Types[c]												
Wet (32%)	0.1	0.3	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	-0.7	-1.3	-3.9
Above Normal (16%)	0.1	0.1	0.4	0.0	0.0	0.1	0.0	0.3	0.9	-0.5	-0.8	-2.1
Below Normal (13%)	0.1	0.2	0.6	0.0	-0.1	0.1	0.1	1.0	2.0	-0.9	-1.7	-0.3
Dry (24%)	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.6	0.6	-1.8	-0.1	0.0
Critical (15%)	0.5	-0.3	0.2	0.0	0.1	0.1	0.1	0.1	0.4	-0.7	-0.2	0.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on an 81-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Appendix 6B, Section C

Surface Water Temperature Modeling – HEC-5Q Model Update

Information about the methods and assumptions used for the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis on surface water temperature is provided in this appendix. This appendix is organized into three sections that are briefly described below:

- Appendix 6B, Section A: Surface Water Temperature Modeling Methodology, Simulations, and Assumptions
  - The water quality impacts analysis uses the HEC-5Q and Reclamation Monthly Temperature models to assess and quantify effects of the alternatives on the environment. This section provides information about the overall analytical framework linkages with other models.
  - This section provides a brief description of the assumptions for the surface water temperature model simulations of the No Action Alternative, Second Basis of Comparison, and other alternatives.
- Appendix 6B, Section B: Surface Water Temperature Modeling Results
  - This section provides model outputs and a description of the model simulation output formats used in the analysis and interpretation of modeling results for the alternatives impacts assessment.
- Appendix 6B, Section C: HEC-5Q Model Update for Surface Water Temperature Modeling
  - This section provides a detailed description of the compilation and updates of the HEC-5Q models performed during development of the EIS for the Trinity-Sacramento, American, and Stanislaus Rivers.

6B.C.1 Introduction

This section describes tasks that were undertaken to update the Trinity-Sacramento River, American River, and San Joaquin River HEC-5Q models. The work performed was for the Bureau of Reclamation (Reclamation). Four tasks were performed as part of this update:

- A housekeeping task where all existing work prior to the updates was compiled, organized, and modified to create a base version from which all future work would be based from.
- A validation task where the Trinity-Sacramento and American River models were modified to better match observed data.

- A flow mapping task where improvements to the input flows coming from CalSim II were made where necessary.
- A temperature targeting and selective withdrawal task where the logic used to define temperature targets major reservoirs operate as well as the withdrawal logic used to meet those targets was refined.

The following sections in this appendix describe the background for the model updates, the five tasks, and the quality assurance/quality control (QA/QC) process used to ensure the quality of the work.

6B.C.2 Background

In January and February of 2014, there were three separate HEC-5Q modeling toolkits for Trinity-Sacramento, American, and San Joaquin River systems specifically for the EIS and based on CalSim II inputs. These toolkits were developed from models that Don Smith of Resource Management Associates (RMA) had delivered to Reclamation previously. Various issues began to arise with the model output results that resulted in a need to update the model files for several projects. This produced project-specific model versions that were different from the model versions delivered by RMA. After new issues continued to arise, it became apparent that there was a need to implement additional logic to the HEC-5Q model as well as provide organization and documentation for the models.

6B.C.3 Housekeeping Task

This section describes the Housekeeping Task, during which the initial work of compiling the Toolkit took place.

The goal of the Housekeeping Task was to lay out, structure, and compile an initial temperature model toolkit (Toolkit) that would serve to organize all of the existing work for the San Joaquin River, Trinity-Sacramento River, and American River HEC-5Q models as well provide improvements necessary to create a foundation for future improvements to the temperature models. The Housekeeping Task consisted of deciding on the contents of the Toolkit; laying out its structure; and compiling its contents, testing, improvements, and documentation.

The Housekeeping Task first identified the contents of the Toolkit and how it would be structured. It was recommended that there be one central HEC-5Q Toolkit that would contain an individual folder for the San Joaquin River, the Trinity-Sacramento Rivers, and the American River models. Within each river folder, there would be a complete application model (files, data, protocol document, and QA/QC tools) based on CalSim II inputs and that could support climate change scenarios. The river folders would also contain a complete calibration model from which the application model was developed. The Toolkit would support running the model through a batch process, which is the process through which the previous toolkits were run, as well as through the graphical user interface (GUI). Both the batch process and the GUI would utilize the same model files in order to eliminate redundant files. The models would run on the same executables, contained in a folder separate from the river folders (labeled bin). There would also be a folder for the GUI, which would include all the files required to run the GUI and a protocol document. There would also be a central reference document library and a version control folder that would track the source and changes of all the files contained within the Toolkit over the course of the updates.

The reference document library is a compilation of documents that were deemed necessary or useful as references for the user of the Toolkit. Included with the reference document library was the development of an HEC-5Q Quick Start Guide that was requested by Reclamation as part of the updates. This quick start guide provides an overview of how the all the model components work.

The file structure was designed to be compatible with either the use of the Batch Process or the GUI to run the models and to be consistent with the file structure used for the modeling for EIS. Ideally, the use of the GUI would fit within this structure. However, after some investigation into how the GUI locates the required input files, it was determined that using the GUI within the file structure and using only one set of model files for both the Batch Process and the GUI would require code changes to the GUI itself. Therefore, a decision was made to not fully implement the GUI into the Toolkit but to include it anyway.

After identifying the contents of the Toolkit and laying out the structure, the next task was to compile the contents. This involved reconciling different versions of the model files. Table 6B.C.1 shows the model versions that were reconciled for each river.

Table 6B.C.1 HEC-5Q Model Toolkits Reconciled during the Housekeeping Task

River	Models	Toolkits
Trinity-Sacramento	SRWQM** Extension (October 2013)	Remand_SRWQM_Toolkit (January 24, 2014)
San Joaquin	CDFW* SJR Model (June 2013)	Remand_SJR_HEC5Q_Toolkit (February 21, 2014)
American	SRWQM Extension (October 2013)	Remand_FAST_HEC5Q_Toolkit (February 18, 2014)

a. California Department of Fish and Wildlife

b. Sacramento River Water Quality Model

There were substantial differences between the versions of the Trinity-Sacramento River model. The SRWQM model (January 2014) was originally developed in 2002 and modeled only the Trinity River (to below Lewiston Dam) and the Sacramento River (to below Knights Landing). The SRWQM Extension (October 2013) extended the SRWQM model to include the Feather River (from Oroville Reservoir), the American River (from Folsom Reservoir), the Sutter

Bypass, and the lower Sacramento River (to below Freeport). The SRWQM Extension included new meteorological data that the Feather and American River extensions of the model were calibrated to. However, the older Trinity-Sacramento River section of the model was not recalibrated to the new meteorological data.

During compilation of the Toolkit, it was recommended that the Trinity and Sacramento River sections of the SRWQM Extension be the versions used moving forward. Those sections represented the latest modeling logic and nodal layout, including the Sutter Bypass. However, changes had to be made to the SRWQM Extension files before it could be incorporated. First, the Feather River was removed completely from the model files, as well as the lower Sacramento River (from the Feather River confluence to below Freeport) because it receives inputs from the Feather River. Second, a validation procedure was undertaken to adjust the necessary model parameters in order to incorporate the updated Gerber California Irrigation Management Information System (CIMIS) station meteorological data. A detailed description of this validation procedure is described below.

The San Joaquin River and American River versions were mostly consistent between the versions. Changes had been made on the Stanislaus River primarily for consistency with CalSim II. During the Housekeeping Task, an increase in the Tulloch power plant outflow capacity was implemented in the Toolkit. It should be noted that the previous versions of the San Joaquin River model included Electrical Conductivity as an additional output parameter of the model. This capability was removed for the Toolkit.

The American River version had a spreadsheet that computed downstream temperature targets for Folsom Outflow and Watt Avenue and two file changes for consistency with CalSim II. The spreadsheet and file changes were included in the Toolkit. During the Housekeeping Task, implementation of the Folsom Water Supply Intake Temperature Control Device (Folsom TCD) was included. Implementing the logic for the Folsom TCD required a validation run of the American River, which is described in detail below.

Compilation of the Toolkit into the agreed upon file structure included the need to change the reconciled files. These changes included changing path names in the batch files and renaming files so that there was a consistent naming convention across the three different river models. Also, among the changes was the implementation of common executables for the CalSim II pre-processor and HEC-5Q for each of the three models. This would eliminate redundant files and make changes to the CalSim II pre-processor and HEC-5Q codes easier, as code changes would only occur in one file. Also among the changes was the implementation of common executables for the CalSim II pre-processor and HEC-5Q.

In addition to the elements required for the models, model files and data from previous work that were part of the development of the models were compiled. These included the 2002 Sacramento River calibration (RMA 2003), the 2013

American River calibration (RMA 2013), the 2013 Stanislaus River calibration, and the Sacramento River and American River validations described below.

6B.C.4 Validation

This section describes the validation procedures and required updates to the model for the Trinity-Sacramento and American River models.

6B.C.4.1 Trinity-Sacramento River

The Trinity-Sacramento River model was originally developed and calibrated in 2002, using meteorological data from the Gerber CIMIS station (RMA 2003). Since that 2002 calibration, the model code has changed and there are updated meteorological data from the Gerber CIMIS station. During the Housekeeping Task, it was recommended that the Trinity-Sacramento River model incorporate the updated meteorological data from the Gerber CIMIS station. Fully incorporating the updated Gerber meteorological data would require a full recalibration of the model, which was beyond the scope of this project. Instead, a validation task was conducted to produce temperature results similar to the 2002 calibration. The validation task assumed the following conditions:

- 1981-2002 hydrology from the 2002 calibration
- Ambient temperature data that were used in 2002
- Revised meteorology developed in 2012
- Control point configuration consistent with CalSim II
- Bypasses included in the model representation

During the validation process, equilibrium temperature scaling factors for the reservoirs, reaches, reservoir inflows, and tributary inflows were adjusted to match observed data. The scaling factors were adjusted to compensate for higher equilibrium temperatures of the updated Gerber meteorology data. The equilibrium temperatures of the updated Gerber meteorology were higher than the 2002 Gerber meteorology because the updated data were computed without a wind speed scaling factor assumption, while the 2002 data had been computed with an assumed wind speed scaling factor.

Several comparison plots and tables from select locations that are representative of the computed versus observed temperature results of the Trinity-Sacramento River validation are contained in Appendix 6B, Section A. Comparison plots and tables at additional locations can be found in the document titled *Trinity Sacramento River 2014 Validation Plots* included in the file set for this report. In general, the validation task resulted in computed temperatures that had good agreement with observed data. Table 6B.C.2 shows the average computed and observed temperature at select locations in the Trinity-Sacramento River model.

Table 6B.C.2 Average Computed and Observed Temperatures at Select Locations Resulting from the Validation of the Trinity-Sacramento River Model

Location	Average Computed Temperature (^{0}F)	Average Observed Temperature (^{0}F)
Trinity River below Lewiston Dam	48.3	47.9
Sacramento River below Shasta Dam	49.8	58.6
Sacramento River below Keswick Dam	51.0	51.1
Sacramento River below Clear Creek	51.8	51.6
Sacramento River at Balls Ferry	52.7	52.7
Sacramento River at Bend Bridge	53.3	53.8
Sacramento River at Red Bluff	53.8	54.1
Sacramento River at Tehama	54.2	54.2
Sacramento River at Woodson Bridge	55.1	55.1
Sacramento River at Butte City	57.8	57.9
Sacramento River above Colusa Drain	59.4	58.8

6B.C.4.2 American River

The American River HEC-5Q model was developed in 2013 as part of the SRWQM Extension (RMA 2013). Subsequent to this initial development, the model shortcomings listed below were identified and addressed. Implementing the fixes required for these shortcomings required a validation of the American River HEC-5Q model data to make sure they still matched observed data.

6B.C.4.2.1 Folsom Water Supply Temperature Control Device

The Folsom Water Supply Intake Temperature Control Device (Folsom TCD) was not properly represented in the 2013 calibration model, resulting in withdrawal of cold water at depth. The model was modified to represent the withdrawal as a movable port that can move based on the following operating objectives and constraints:

- Minimum submergence limit of 15 feet. The negative value indicates the variable level output as opposed to a fixed port representation that was original envisioned.
- Maximum temperature constraint of 18^0C. The outlet will be lowered to access this or a lower temperature when constrained by the minimum submergence requirement.
- Operating elevation range between 320 feet and 460 feet.

The LD record in Figure 6B.C.1 shows the change in the American River HEC-5Q data file implemented for the Folsom TCD.

```
c....     Diversions
C  field  Original single port diversion
c    (1)     ADV   Area of the diversion withdrawal port in ft2 or m2.
c    (2)     QLDV  Fraction of the diverted flow assigned to the diversion. (TF)
c    (3)     ELDV  Centerline elevation of diversion point in feet or meters. (TEL1)
C            if TELT is negative, the TCD option is triggered

c....        TCD equiped water supply diversion (e.g., American River/Folsom Dam domestic water supply)
c     (3)    ELDV  Minimum depth of submergence - flagged by a minus depth. (TEL1<0.)
c     (4)    LDT   Maximum allowable temperature (C) at active outlet. (TET1)
c            The selected port will be the controling od these two constraint
c     (5)    DWSELDV(1) Centerline elevation of the lowest diversion point (TELP(1)) or
c            -1 for moveable outlet that can access any element

c...         If DWSELDV(1) = -1 (moveable outlet)
c     (6)    DWSELDV(2) Lowest diversion access elevation (TELP(2))
c     (7)    DWSELDV(2) highest diversion access elevation (TELP(3))
```

Current assumptions / data

```
c... Folsom Dam Water Supply TCD - represented as a variable level intake
c... Dec 22, 2014 ... Russ Yaworsky recommendation
c.      Withdrawal target temperature between 63-65F (17.2 - 18.3C)
c.      Lowest accessible level of approximately 320'
c... TCD operation rules as defined by "LD" record data:
c.     minimum submergence constraint = 15'
c.     maximum temperature constraint = 18C
c.     Folsom Water Supply option flag = -1
c.     Operating elevation range between 320 & 460
LD   135     1.0   -15.0    18.0      -1     320     460
```

Figure 6B.C.1 Change in the American River HEC-5Q Data File for the Folsom Water Supply Intake Temperature Control Device

6B.C.4.2.2 Folsom Inflow Temperatures

Inflow temperatures were lowered relative to observed data in the 2013 calibration model to compensate for the low level extraction of cold water by the fixed depth domestic water supply outlet. These inflow temperatures were increased relative to the 2013 calibration model temperatures with the implementation of the new Folsom TCD logic.

6B.C.4.2.3 Folsom Evaporation

A change in the L2 record (see Figure 6B.C.2) was made to account for the separation of evaporation in CalSim II. The standard version of HEC-5Q will only accommodate a single diversion; however, CalSim II reports evaporation as a flow equivalent rate (E8) which is represented as a surface diversion in HEC-5Q while the Folsom Lake domestic water supply diversion (D8) is diverted at depth. Therefore, these two rates cannot be combined for accurate temperature simulation. From a flow accounting perspective (HEC5), the total flow diverted from the lake is E8+D8. By setting IQDEV = 2, the evaporation component of total diversion is defined as a DSS path using the ZR Record and subtracted from E8+D8 in HEC-5Q.

```
c. Reservoir evaporation using CALSIMII operation data
c. HEC5Q can accommodate only one diversion.  CALSIM reports evaporation as a flow equivalent
c. rate which is represented as a surface diversion in HEC5Q.
c. Folsom also has a domestic water supply that is diverted at depth, therefore it cannot
c. be combined with evaporation.  By setting IQDEV = 2, the evaporation component of
c. total diversion is defined as a DSS path using the ZR Record.
c.  FK2R    FK2C    FK2S   SFMET1  SFMET2  sfmet3   IQDEV
L2     1       1       1     0.5    0.90    1.10       2
ZR EV590   A=American  B=Folsom Lake  C=flow-evap  E=1DAY F=2020D09E-1
```

Figure 6B.C.2 Change in the American River HEC-5Q Data File to Separate Evaporation from Total Diversion at Folsom Dam

6B.C.4.2.4 River Mile Correction

The river mile location of Nimbus and Folsom Dams were improperly defined in the 2013 calibration model. A half-mile reach was inserted below Nimbus Dam to match the river mile locations of Nimbus and Folsom Dams in the HEC-RAS model. The Nimbus Dam went from river mile 22 to 22.5 and Folsom Dam went from river mile 28.7 to 29.2. This change affects temperature results.

In general, the validation resulted in good agreement between computed and observed temperatures. The average computed and observed temperatures at select locations in the American River model are shown in Table 6B.C.3.

Table 6B.C.3 Average Computed and Observed Temperatures at Select Locations Resulting from the Validation of the Trinity-Sacramento River Model

Location	Average Computed Temperature (⁰F)	Average Observed Temperature (⁰F)
American River below Nimbus Dam	56.5	56.7
American River at William Pond Park	57.7	57.7
American River at Watt Avenue	58.5	58.3

6B.C.5 Flow/Boundary Condition Mapping

HEC-5Q receives flow inputs from CalSim II through the CalSim II_HEC-5Q pre-processing executable. Monthly CalSim II flow and storage time series outputs are read into the executable where they are combined and mapped to nodes in the HEC-5Q model based on specifications in the [River model]_CS.dat (e.g. SR_CS.dat) file, converted to daily time series, and stored in the HEC-5Q input DSS file (CalSim II_HEC5Q.DSS). In the case of the storage time series, a daily patterning procedure is applied. As part of the temperature model updates, several modifications were made to improve the flow mapping of CalSim II to HEC-5Q. Additionally, HEC-5Q provides flow and temperature inputs to several fisheries models. These modifications are described below.

6B.C.5.1 Sutter Bypass Boundary Conditions Mapping

During modifications of the SRWQM Extension model files for the Trinity-Sacramento River model, it was determined that there was some incorrect mapping with the CalSim II schematic at Butte Creek. Specifically, there was double-counting of the Butte Creek Inflow at the Knights Landing control point. In CalSim II, Butte Creek inflow is input into the Sutter Bypass. However, in the SRWQM Extension, that inflow was added directly into the Sacramento River, causing higher flows in the Sacramento River at Knights Landing in the HEC-5Q model as compared to CalSim II. The Butte City inflow record (specifically IN118 in the SR_CS.dat file) was removed in the SR_5CS.dat file for the final Trinity-Sacramento River model.

6B.C.5.2 American River Flow Mapping Change

The control point resolution below Nimbus Dam was inadequate in the 2013 calibration model to properly allocate the City of Sacramento withdrawal. This lack of resolution presented a problem in relating HEC-5Q flows to CalSim II flows. The additional control point that localizes the City of Sacramento withdrawal is shown on Figure 6B.C.3. The additional control point (CP) #572 results in the depletions / accretions being distributed uniformly between CP 572 and CP 578 (mile 7.5 to mile 22.0). The City of Sacramento diversion is applied at CP 570. This change only has a small impact on temperature (it reduces temperatures at Watt Avenue up to +/- 0.5^{0}F).

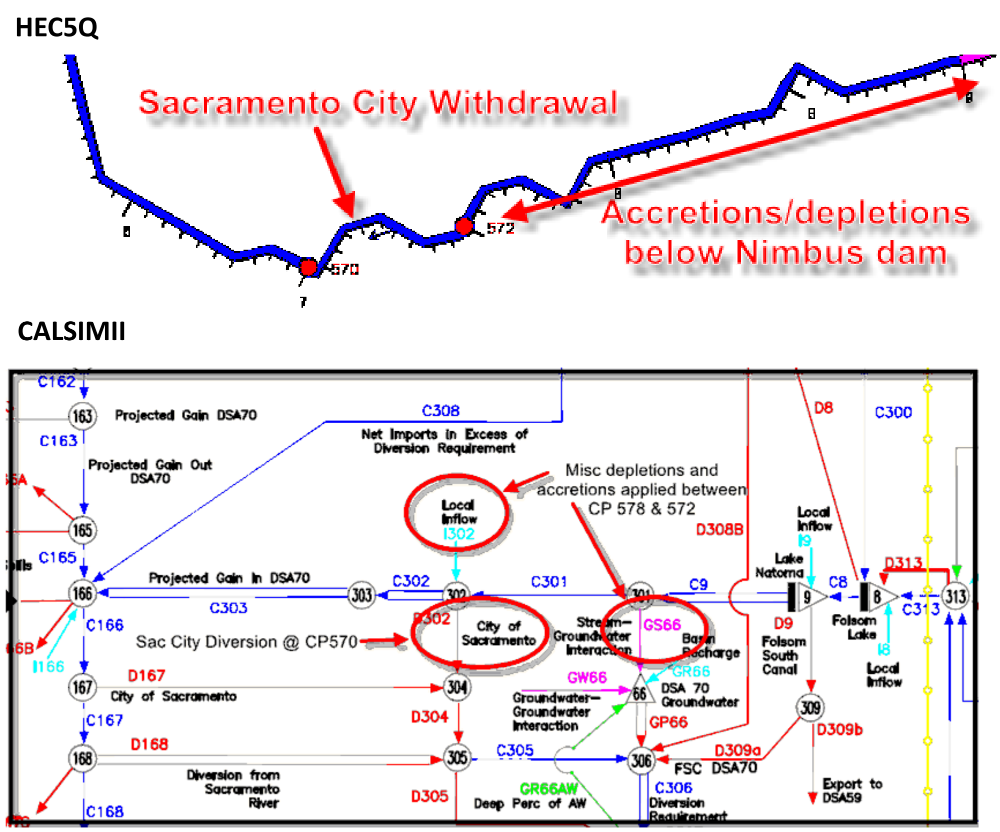


Figure 6B.C.3 Schematics of HEC-5Q and CalSim II Models with Additional Control Point 572

6B.C.5.3 Stanislaus River

The flow mapping between CalSim II and HEC-5Q in the Delta-Mendota Canal section of the San Joaquin River model is currently inadequate and results in serious flow differences. To fully address this requires a modification to the CalSim II schematic, which is beyond the scope of the work to update the temperature models. Since the EIS only focuses on temperature effects from Reclamation operations on the Stanislaus and Lower San Joaquin Rivers, the San Joaquin River model was reduced to only include the Stanislaus River and the San Joaquin River from the Stanislaus River confluence to the head of Old River. A requirement of this model to run and simulate temperatures at Vernalis was to develop a boundary condition time series of inflow temperature at the San Joaquin River above the Stanislaus River confluence. This time series would incorporate all the upstream temperature effects due to water operations above this point in the San Joaquin River basin (including Friant, Mendota Pool, and the Tuolumne and Merced Rivers). This time series was generated with the February 21, 2014 San Joaquin River HEC-5Q model using the EIS No Action Alternative Q5 CalSim II results for inputs.

6B.C.5.4 Mapping to Fisheries Models

The capability of mapping HEC-5Q flow and temperature outputs with three fisheries models was added to the Sacramento River model, including SALMOD, Reclamation Mortality model, and Cramer Fish Sciences models.

6B.C.6 Temperature Target, Selective Withdrawal, and Operational Outputs

This section describes the temperature targeting and/or selective withdrawal changes and procedures for the Trinity, Shasta, and Folsom Dams. These changes were completed after the validation was deemed appropriate because the temperature targets do not affect the matching of the observed temperatures; the validation period of record occurred when the Trinity Dam auxiliary outlet and Folsom Dam low-level outlets were not used.

6B.C.6.1 Trinity River

6B.C.6.1.1 Seasonal Temperature Target Schedule

A simplistic approach for seasonal temperature targets was implemented for the Trinity River. The seasonal targets are shown in Table 6B.C.4. The temperature targets of importance are the 49^{0}F temperatures between August and November when temperature management is the most crucial on the Trinity River and the auxiliary outlet (described in the next section) is allowed to operate. The 60^{0}F temperature target was implemented to force power generation in the model.

Table 6B.C.4 Seasonal Temperature Targets for Trinity Dam to Operate to in the HEC-5Q Model

Date	Temperature Target
January 1	60^0 F
July 31	60^0 F
August 15	49^0 F
November 30	49^0 F
December 1	60^0 F
December 31	60^0 F

Trinity Dam has a low-level (auxiliary) outlet, a morning glory spillway, and a single-level power intake that doubles as a high capacity river outlet. The relevant input data for Trinity Dam in the Trinity-Sacramento HEC-5Q data file are shown on Figure 6B.C.4. (Note that the line numbers are for reference only and are not line numbers in the Trinity-Sacramento HEC5Q data file.) Additional diagrams that were used as the basis for the improvements to Trinity Dam selective withdrawal logic in the Trinity-Sacramento River model are included in later portions of this appendix.

```
1  c... Trinity Dam power bypass operation is based on Dec 22 conference call, two Figures #2
2  c.   flow versus head plots and recent turbine retrofit plots. (references?)
3  c... History
4  c.   Power bypass for temperature control (access cold water pool) occurred in 2009 and 2014
5  c.   Turbines were upgraded to increase capacity and efficiency during the past few years
6  c... Operating rules for power bypass:
7  c.   The low level (Auxiliary) outlet is either open or closed with an outlet capacity computed
8  c      as a function of Lake elevation (approximately 2,000 cfs at typical Lake levels)
9  c.   Temperature compliance assumes a blend of power production to maintain minimum flow below the Dam
10 c.   and the Auxiliary open for a sufficient time to pass the bypass flow.
11 c.   (i.e., daily average flow through the Auxiliary outlet determines the hours of operation)
12 c.   Outlet data record definition:
13 c.      L5 = Auxiliary Outlet (power bypass)
14 c.      L7 = Power/River Outlet
15 c.      L6 = Morning Glory Spillway
16 c... Dimensions / elevation based on Figure 2 invert elevations and tunnel diameter
17 c...    Invert/crest Elev    Diameter   Centerline / Crest Elev (assumed)
18 c L5         1995.5           7'            2000
19 c L7         2100.0          20'            2110
20 c L6         2370.0          54'            2370
21 c.   Bypass power to achieve temperature compliance is based on targets defined by PT records
22 c.   (i.e., summer/fall temperature objective = 47 Fahrenheit)
23 c.   The first 72 columns of the L5 Record are standard HEC5Q data
24 c.   Data beyond column 72 provide the following power bypass constraints
25 c.    Maximum and minimum faction of flow through the Auxiliary outlet |       |       |
26 c.    Maximum flow through the Auxiliary outlet (e.g., 12 hrs at 2,000 = 1,000)       |       |
27 c.    Calendar date limits for Power bypass to low level outlet                       |       |       |
28 c.  area   Max Q    Elev
29 L5   100    2000    2000                                              .67     .16   1000.  15-Aug  30-Nov
30 c.   Standard HEC5Q input for spillway (L6) and power/river outlet (L7)
31 L6    54   12000    2370
32 L7   400    7800    2110
33 c.   The flow limits on the L5 and L7 Records are place holders to meet model requirements
34 c.   The actual outlet capacities are computed in the Trinity specific code section of HEC5Q
35 c.   as a function of watersurface elevation.  These relationships are described in
36 c.   "HEC-5Q Water Temperature Model, Sacramento River System"  The power generation outflow
37 c.   and the river outlet flow share the same outlet conduit, therefore, there is no distinction
38 c.   between the generation flow and release of excess flow to the River from a temperature
39 c.   perspective.  (The Auxiliary outlet is approximately 100' lower than the power/river outlet)
40 c.   The outlet operation summary file reports the maximum power potential for information only
41 c.   The following Record names the outlet summary file and implements the power bypass operation.
42 c.   note that the character string "USBR opp:" is interchangeable with "SAVE opp:"
43 USBR opp: Trinity_Power_Bypass.txt
44 c. Temperature targets control the seasonal limits for power bypass
45 c.   (subject to the calendar day constrains on the L5 Record)
46 c.   A high target temperature will preclude power bypass operation
47 c.   The calendar date input format assumes temperature units of degrees Fahrenheit
48 PT          1/01    60.0    7/31    60.0    8/15    47.0   11/30    47.0
49 PT         12/01    60.0   12/31    60.0
```

Figure 6B.C.4 Input Data Relevant to the Trinity Dam Selective Withdrawal Procedure in the Trinity-Sacramento HEC-5Q Data File

As the auxiliary outlet and power intake are at a fixed elevation, the only available temperature control option is to bypass power generation and divert colder temperature flows to the auxiliary outlet. The allocation between the auxiliary (power bypass) and power flows is designed to meet the seasonal temperature targets described earlier based on the Trinity-specific data described below.

The Line 29 (L5) defines the auxiliary outlet characteristics and serves as the power bypass outlet. The first 72 columns are standard inputs while the additional data beyond column 72 constrain operation rules for power bypass to the auxiliary outlet. The constraints imply that the auxiliary outlet can be throttled to a specified flow rate. In reality, the auxiliary outlet is fully open or completely closed. Therefore, the fraction of the total outflow translates to a time period when the auxiliary outlet is fully open. Power flows would provide the minimum flow requirement for the river above Lewiston Lake. Mixing within Lewiston Lake is assumed to blend the flows of different temperatures.

- Col 73-80: Maximum fraction of the total out flow allowed through the auxiliary outlet (power bypass)
- Col 81-88: Minimum fraction of the total outflow required for bypass through the auxiliary outlet
- Col 89-96: Maximum flow through the auxiliary outlet in cubic feet per second (cfs)
- Col 97-112: Calendar date limits for power bypass to the low-level outlet. These dates override the limits set by the "PT" record.

Lines 31 and 32 (L6 and L7) are standard inputs defining the spillway crest length and power intake area as well as the flow capacity and elevation. The maximum flow for both the auxiliary (L5) and power intake (L7) serve as placeholder data. The actual flow rates are defined within the code as a function of lake elevation. When the flow and elevation conditions fall within the constraints seen in Figure 6B.C.3, the generation flow is added to the river outlet capacity seen in Figure 6B.C.2. From a temperature simulation perspective, there is no difference between power flow and river release flows as they share the same outlet conduit. The power production only adds to the total flow capacity of the common outlet tunnel.

6B.C.6.1.2 Trinity Dam Operations Output

A single comma-delimited output file is generated by the Trinity Dam-specific option. This file is named on the "USBR_OPP " record that triggers the power bypass option. This comma-delimited file ("Trinity Power Bypass.txt") when imported into Excel produces a file that summarizes the outlet operation and other pertinent data. The file includes daily lake storage and elevation, flow capacity and allocation to the auxiliary and power outlets, total outflow (release), target and outflow temperature, and spill information. The screen capture shown in Figure 6B.C.5 is an example of the resulting Excel file. There are two flags that indicate constraints on the bypass flow. In the example, August 28 is the day that is constrained by the maximum daily flow limit.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Trinity Outlet Operation Log														
2	Units are cfs unless noted														
3	* Minimum Auxiliary outlet flow limitation														
4	** Maximum Auxiliary outlet flow limitation														
5	Date	storage	Elevation	Auxiliary Outlet			River Outlet + power		Total	Max Power	Temperature (F)				Spill
6		TAF	Ft	Capacity	Release		Capacity	Release	Release	capacity	Target	Outflow	Auxiliary	Power+River	
7	01-OCT-1993	1945.0	2337.1	2394	0		12126	356	356	4056	47.0	44.9	44.4	44.9	0
8	02-OCT-1993	1944.6	2337.1	2394	0		12126	974	974	4056	47.0	44.9	44.5	44.9	0
9	03-OCT-1993	1943.3	2337.0	2394	0		12126	330	330	4057	47.0	44.9	44.4	44.9	0
320	10-AUG-1994	1412.5	2295.8	2245	0		11780	3044	3044	4101	50.4	47.4	45.1	47.4	0
321	11-AUG-1994	1406.3	2295.3	2242	0		11771	2993	2993	4097	49.3	47.4	45.1	47.4	0
322	12-AUG-1994	1399.9	2294.7	2242	0		11761	2754	2754	4093	48.4	47.4	45.1	47.4	0
323	13-AUG-1994	1394.0	2294.2	2240	0		11752	2926	2926	4089	47.6	47.5	45.1	47.5	0
324	14-AUG-1994	1387.9	2293.7	2236	328		11742	2628	2956	4085	47.2	47.2	45.1	47.5	0
325	15-AUG-1994	1381.8	2293.1	2234	562		11733	2395	2957	4081	47.0	47.0	45.1	47.5	0
326	16-AUG-1994	1375.6	2292.6	2234	602		11723	2308	2910	4076	47.0	47.0	45.1	47.5	0
327	17-AUG-1994	1369.6	2292.0	2233	621		11714	2278	2899	4072	47.0	47.0	45.1	47.5	0
328	18-AUG-1994	1363.6	2291.5	2230	631		11704	2216	2846	4068	47.0	47.0	45.1	47.5	0
329	19-AUG-1994	1357.5	2291.0	2226	729		11695	2394	3123	4064	47.0	47.0	45.1	47.6	0
330	20-AUG-1994	1350.8	2290.4	2224	736		11684	2316	3052	4059	47.0	47.0	45.2	47.6	0
331	21-AUG-1994	1344.4	2289.8	2223	648		11674	2045	2693	4055	47.0	47.0	45.2	47.6	0
332	22-AUG-1994	1338.4	2289.3	2220	712		11664	2034	2746	4051	47.0	47.0	45.2	47.7	0
333	23-AUG-1994	1333.0	2288.8	2218	707		11656	1950	2657	4047	47.0	47.0	45.2	47.7	0
334	24-AUG-1994	1327.8	2288.3	2216	749		11647	1999	2748	4043	47.0	47.0	45.2	47.7	0
335	25-AUG-1994	1322.8	2287.8	2215	803		11639	2031	2833	4040	47.0	47.0	45.2	47.7	0
336	26-AUG-1994	1317.4	2287.3	2213	871		11631	2128	2999	4036	47.0	47.0	45.2	47.8	0
337	27-AUG-1994	1311.3	2286.8	2213	884		11621	2084	2968	4032	47.0	47.0	45.2	47.8	0
338	28-AUG-1994	1304.7	2286.2	2209	1000	**	11610	2307	3307	4027	47.0	47.1	45.2	47.8	0
339	29-AUG-1994	1298.5	2285.6	2208	959		11600	1989	2948	4023	47.0	47.0	45.2	47.9	0
340	30-AUG-1994	1292.4	2285.0	2205	959		11590	1923	2882	4018	47.0	47.0	45.2	47.9	0
341	31-AUG-1994	1286.4	2284.5	2205	951		11580	1875	2826	4014	47.0	47.0	45.3	47.9	0
342	01-SEP-1994	1281.6	2284.0	2202	183		11571	373	555	4010	47.0	47.0	45.2	47.9	0

Figure 6B.C.5 Example Trinity Outlet Operations File Generated when Running the Model (The file is titled "Trinity Power Bypass.txt after the Trinity-Sacramento River model is run")

6B.C.6.2 Shasta Dam

6B.C.6.2.1 Seasonal Temperature Target Schedule

A Shasta Dam release temperature target scheduling spreadsheet for the Trinity-Sacramento River model was developed using logic that was derived from the National Marine Fisheries Service 2009 Biological Opinion on the Long-Term Operations of the Central Valley Project and State Water Project (NMFS BO) and actual temperature management operations provided by Reclamation. The spreadsheet generates a PT record that is referenced at line 580 in the Trinity-Sacramento HEC-5Q data file.

6B.C.6.2.2 Shasta Operations Output File

Two comma-delimited files (*.2xl) are produced that summarize the Shasta TCD operation. Both files provide similar information; however, the file "TCD_xx.log0.2xl" contains zeros while "TCD_xx.log.2xl" contains blanks in the computed flows and temperatures columns. The blank-filled file is easier to read but precludes arithmetic manipulation. Figure 6B.C.6 is an example Excel file generated by the "TCD_xx.log0.2xl" text file. This figure separated into two parts for ease of reading.

Columns A - U

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	USBR Sacramento River specific: Run date and time: 20MAR15 - 14:01:02																				
2	Date	Water Surface	total release	Number of Operating Shutters				Shutter Flows - cfs					TCD Leakage (by elevation range) - cfs								Total Generation - cfs
3		elevation - ft	cfs	top	middle	penstock	lower	top	middle	penstock	lower	Total	>1000 (Over)	1000-945	945-900	900-831	831-804	804-780	780-750	Total	(Shutter+Leakage)
4	1-Oct-93	1012	8722.1			3	1			4798.7	2124	6922.7		198	57.6	246	59.3	1197.5	41	1799.4	8722.1
302	26-Jul-94	1004.5	9124			3	1			4922.6	2319.1	7241.7		207.1	60.2	257.3	62	1252.7	42.9	1882.3	9124
303	27-Jul-94	1003.9	8706.2			3	1			4793.8	2116.3	6910.1		197.6	57.5	245.5	59.2	1195.4	40.9	1796.1	8706.2
304	28-Jul-94	1003.3	9276.4			3	1			4969.6	2393.1	7362.7		210.6	61.2	261.6	63.1	1273.6	43.6	1913.7	9276.4
305	29-Jul-94	1002.8	8705.1			3	1			4793.5	2115.7	6909.2		197.6	57.5	245.5	59.2	1195.2	40.9	1795.9	8705.1
306	30-Jul-94	1002.2	8873.7			3	1			4845.5	2197.6	7043.1		201.4	58.6	250.2	60.3	1218.4	41.7	1830.6	8873.7
307	31-Jul-94	1001.6	8303.8			3	1			4050.5	2540.3	6590.7		188.5	54.8	234.2	56.5	1140.1	39	1713.1	8303.8
308	1-Aug-94	1001.1	8353.2			3	1			4063.7	2566.3	6629.9		189.6	55.1	235.6	56.8	1146.9	39.3	1723.3	8353.2
309	2-Aug-94	1000.6	8040.4			2	1			3980	2401.6	6381.7		182.5	53.1	226.7	54.7	1103.9	37.8	1658.7	8040.4
310	3-Aug-94	1000.2	8655.6			3	1			4144.5	2725.4	6869.9		196.5	57.1	244.1	58.9	1188.4	40.7	1785.7	8655.6
311	4-Aug-94	999.8	8946.6			3	1			4222.3	2878.6	7100.9		203.1	59	252.3	60.8	1228.4	42	1845.7	8946.6
312	5-Aug-94	999.4	9022.8			2	1			3474.7	3686.7	7161.4		204.8	59.6	254.4	61.4	1238.8	42.4	1861.4	9022.8
313	6-Aug-94	998.8	8555.8			2	1			3372.4	3418.3	6790.7		194.2	56.5	241.3	58.2	1174.7	40.2	1765.1	8555.8
314	7-Aug-94	998.2	8086.8			2	1			3269.7	3148.8	6418.5		183.6	53.4	228	55	1110.3	38	1668.3	8086.8
315	8-Aug-94	997.5	8447.6			2	1			2458.6	4246.3	6704.9		191.8	55.8	238.2	57.4	1159.9	39.7	1742.7	8447.6
316	9-Aug-94	996.9	9069.7			2	1			2558.6	4640	7198.6		205.9	59.9	255.8	61.7	1245.3	42.6	1871.1	9069.7
317	10-Aug-94	996.4	8930.7			2	1			2536.2	4552.1	7088.3		202.7	58.9	251.8	60.7	1226.2	42	1842.4	8930.7
318	11-Aug-94	995.9	8345.1			2	1			2442.1	4181.4	6623.5		189.4	55.1	235.3	56.7	1145.8	39.2	1721.6	8345.1
319	12-Aug-94	995.3	8281			2	1			2431.8	4140.9	6572.6		188	54.7	233.5	56.3	1137	38.9	1708.4	8281
320	13-Aug-94	994.8	8264.8				1				6559.8	6559.8		187.6	54.5	233.1	56.2	1134.8	38.8	1705	8264.8
321	14-Aug-94	994.3	8276.9				1				6569.4	6569.4		187.9	54.6	233.4	56.3	1136.4	38.9	1707.5	8276.9
322	15-Aug-94	993.8	7930.8				1				6294.7	6294.7		180	52.3	223.6	53.9	1088.9	37.3	1636.1	7930.8
323	16-Aug-94	993.3	8512.1				1				6756.1	6756.1		193.2	56.2	240	57.9	1168.7	40	1756	8512.1
324	17-Aug-94	992.8	8342.9				1				6621.8	6621.8		189.4	55.1	235.3	56.7	1145.5	39.2	1721.1	8342.9
325	18-Aug-94	992.3	9607.8				1				7625.7	7625.7		218.1	63.4	270.9	65.3	1319.2	45.2	1982.1	9607.8
326	19-Aug-94	991.6	9746				1				7735.4	7735.4		221.2	64.3	274.8	66.3	1338.1	45.8	2010.6	9746
327	20-Aug-94	990.8	10047.8				1				7974.9	7974.9		228.1	66.3	283.3	68.3	1379.6	47.2	2072.9	10047.8

Columns V-AG

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ
Sluice Gate Flows - cfs				Drum	Temperature	Shutter Temperatures - F				TCD Leakage Temperature(by elevation range) - F							Generation	Sluice Gate Temperatures - F			Drum Spillway
Upper	Middle	Lower	Total	Spillway flow - cfs	Target - F	top	middle	penstock	lower	1000 (Over	1000-945	945-900	900-831	831-804	804-780	780-750	Temperature - F	Upper	Middle	Lower	Temperature - F
					51.2	73	65.4	52.5	46.5		71.8	64.5	54.7	51.2	49.6	48.1	51.2				
					49.7	74.3	57.4	49.8	48.1		64.1	54.3	50.1	49.3	48.9	48.5	49.6				
					49.7	74.6	57.6	49.8	48.1		64.3	54.4	50.1	49.3	48.9	48.5	49.6				
					49.7	74.5	57.6	49.9	48.1		64.5	54.5	50.1	49.3	49	48.5	49.6				
					49.7	75	57.8	49.9	48.1		64.6	54.7	50.2	49.4	49	48.5	49.7				
					49.7	75.1	58.2	50	48.1		65.9	55.2	50.3	49.4	49	48.6	49.8				
					49.7	75.1	58.4	49.9	48.2		65.9	55.3	50.3	49.5	49.1	48.6	49.7				
					49.7	75.1	58.5	50	48.2		66	55.5	50.4	49.5	49.1	48.6	49.7				
					49.7	75.1	58.7	50	48.2		66.1	55.6	50.4	49.5	49.1	48.6	49.8				
					49.7	75.3	58.8	50.1	48.2		66.4	55.7	50.5	49.6	49.2	48.7	49.8				
					49.7	75.1	58.9	50.1	48.2		66.6	55.9	50.5	49.6	49.2	48.7	49.8				
					49.7	75.3	59.1	50.1	48.3		66.7	56.1	50.6	49.6	49.2	48.7	49.7				
					49.7	75.7	59.8	50.2	48.3		67.7	56.7	50.7	49.7	49.3	48.8	49.8				
					49.7	75.6	59.9	50.2	48.3		67.8	56.8	50.7	49.8	49.3	48.8	49.8				
					49.7	75.5	59.9	50.2	48.4		68	56.9	50.8	49.8	49.3	48.8	49.6				
					49.7	75.1	60	50.2	48.5		68	57.1	50.9	49.9	49.4	48.9	49.7				
					49.7	75.1	60.1	50.3	48.5		68.1	57.2	50.9	49.9	49.4	48.9	49.7				
					49.7	75.2	60.7	50.4	48.5		69	57.7	51.1	50	49.5	48.9	49.8				
					49.7	75.2	60.8	50.4	48.5		69	57.8	51.1	50	49.6	49	49.8				
					49.2	75.2	61	50.9	48.7		69.1	58	51.2	50.1	49.6	49	49.4				
					49.2	75.2	61.1	50.9	48.7		69.2	58.1	51.3	50.2	49.7	49.1	49.5				
					49.2	75.3	61.1	51	48.8		69.2	58.3	51.4	50.2	49.7	49.1	49.5				
					49.2	75	61.4	51.2	48.8		69.3	58.5	51.4	50.3	49.8	49.2	49.6				
					49.2	75	61.5	51.2	48.9		69.3	58.6	51.5	50.3	49.9	49.3	49.6				
					49.2	74.6	61.9	51.4	49		70.2	59.6	51.7	50.4	50	49.4	49.7				
					49.2	74.6	62	51.5	49		70.3	59.8	51.8	50.5	50	49.4	49.8				

Figure 6B.C.6 Example Shasta Outlet Operations File Generated in the Model (The file is titled "TCD_xx.log.2xl after the Trinity-Sacramento River model is run")

Columns D-K list the number of shutters and flow allocation to the top, middle, penstock and lower levels. Columns M-S list the leakage flows by elevation ranges. (Note that these leakage flows may have changed due to shutter maintenance and modification.)

Column C equals columns L+T (total release and power flow components) and are identical except when the power flow capacity is exceeded. When the total release exceeds the allowable power flow, the excess is allocated to the sluice gate with the temperature nearest the temperature objective. Use of the spillway occurs only after the power and sluice gate are fully utilized. Columns V-Z list the sluice gate and spillway flows.

The remaining columns report water temperatures. The shutter temperatures (AB-AE) are reported for all possible levels even though there may be no flow.

Temperatures for all possible leakage levels appear in columns AF-AL. Columns AA and AM report the temperature object and the power flow temperature respectively. The remaining columns report the sluice and spillway temperatures only when there is flow.

6B.C.6.3 Folsom Dam

6B.C.6.3.1 Seasonal Temperature Target Schedule

A Folsom Dam release temperature target scheduling procedure for the American River model was developed using logic that was derived from the NMFS BO and actual temperature management operations provided by Reclamation. The spreadsheet generates a PT record that is referenced at line 262 in the American River HEC-5Q data file.

6B.C.6.3.2 Selective Withdrawal Operations

The shutter position and power bypass are set to meet the temperature targets based on the Folsom-specific data described below. Figure 6B.C.7 shows the relevant input data for Folsom Dam in the American River HEC-5Q data file and has additional comments that supplement this text. (Note that the line numbers are for reference only and are not line numbers in the American River HEC-5Q data file.)

```
11 c... Folsom Dam shutter operation  (Reference Figure 5, 2013 project report)
12 c.    P1 - Centerline of the power penstocks
13 c     P2 thru P4 - Centerline elevation of the shutter openings (crest elevation + 26/2)
14 c.    Center line     307     Power Penstocks
15 c.    Crest elev              336     362     401  (add 13' to crest elevation - P2, P3 & P4 of L7 Record)
16 c.    Note that the depth of submergence "Dout" is referenced to the centerline of the equivalent port representation
17 c.    e.g. elevation submergence limit for the upper port is 414+20-401 = 33'  The minimum required
18 c.    submergence is 27' so the L7 data provide a 6' safty factor (approx 1/2 the height of each shutter)
19 c. Minimum fraction of flow through any port before any change          |       |
20 c   Aout    Qmax      P1      P2      P3      P4      P5      P6    Dout
21 c. CL/crest elev     307     336     362     401  (add 13' to crest elevation - P2, P3 & P4)
22 L7   400    8000     307     349     375     414                      20       1     .10
23 c.. check this      ^^^^^   may be 290'??? 307' from Figure 5, August 2013 report
24 c.  Two adjacent ports may be operated, flow allocation between ports as a function of target temperature.
25 c. The character string "Save opp:" combined with the Control Point Number 590 triggers this outlet option
26 c. The output file "Folsom.TCD.Opp" summarizes outlet structure operation.  "FOLSOM.TCD.2XLS" is a
27 c. comma delimited reformatted version of the summary table.
28 c. The word "lower" followed by a series of months defines the period when all shutters are lowered
29 c. (subject to elevation constraints)  Two shutter operation approaches during spilling are available.
30 c. If "spill#1" is present of the Save_opp record (example), all shutters lowered with all units at 2,680 cfs
31 c. If "spill#2" is present, two elevations for the three sutters are based on temperature objective
32 c. (e.g., two at 5,360 cfs, one at 2,680 cfs) - both options subject to submergence constraints
33 c. (subject to elevation constraints)
34 c. The "plus" option will add an elevation increment (ft) to the withdrawal elevation to delay adding a shutter (raising environment)
35 Save opp: Folsom.TCD.Opp  Lower   Dec  Jan   Feb   March          spill#1
```

Figure 6B.C.7 Input Data Relevant to the Folsom Dam Selective Withdrawal Procedure in the American River HEC-5Q Data File

Line 19 (L5) defines the low level outlet characteristics that serves as the power bypass outlet. The first 72 columns are standard inputs while the additional data beyond column 72 control operation of the power bypass. The following three inputs provide limit on flow and date limits for power bypass.

- Col 73-80: Maximum fraction of flow through the low level power bypass
- Col 81-88: Minimum fraction of flow through the low level power bypass
- Col 89-96: Maximum flow through the low level power bypass
- Col 97-112: Calendar date limits for power bypass to the low level outlet

Line 29 (L7) is a standard input for representing a multi-port withdrawal structure. For the Folsom Lake TCD (shutters) option, the standard inputs are used to define the penstock (all shutters raised) and three possible shutter elevations and the shutter submergence criteria. The value defined in columns 81-88 (.10) is the threshold fraction of the total flow required for a shutter change.

Line 36 initiates the Folsom Dam-specific option. The character string "Save opp:" ("USBR_opp" is an alternate flag) combined with the control point number 590 triggers this outlet operation option. Two adjacent shutters are operated and flow is allocation between shutters to provide an outflow that approximates the target temperature. Following the file naming, a series of months (e.g., December thru March) may be included to specify that shutters be set in the lowered position. During tainter gate operation, the shutters are operated to meet the temperature objective after correcting for the temperature of the spill. Including "SPILL#1" following the months will force the outflow at the highest possible level, thus conserving the cold water resource.

6B.C.6.3.3 Folsom Dam Operations Output

There are two output files generated by the Folsom-specific option. The "Folsom.TCD.Opp" is a text file that is produced as the simulation progresses. This text file is reformatted to produce a file with a "2xls" file extension upon completion of the temperature simulation (this file will not be created if the run ends prematurely). This comma-delimited file, when imported into Excel, produces a file that summarizes the Folsom shutter operation and power bypass. The file includes daily flow allocation, outflow temperature, temperature compliance, lake elevation and storage information. An example of the resulting Excel file is shown on Figure 6B.C.8. There are two flags in column A that indicate operation constrained by lake elevation or specified shutter lowering. Shutter changes are indicated by "TRUE" in column C. Shutter changes are indicated when a shutter level is discontinued and when a new shutter level is added. In reality, the two shutter changes indicated on September 22 and 26 would actually be one change in which the "middle raised" shutter (one or two shutter bays) would remain unchanged while both remaining shutters in the "upper raised" position would be removed to move from the "upper raised" condition to the "lower raised" condition. The number of shutter bays at the indicated level is not considered in the flow allocation. Therefore, the total generation flow for a shutter level may exceed the capacity of a single penstock. Power bypass assumes that all shutters are raised and the power bypass fraction is indicated only by flow. There are temperatures circled in red in the sample output that have no corresponding flow. These temperatures indicate that a shutter change would have occurred if not for the minimum flow requirement.

Shutter Position (U-Upper raised _ M-Middle raised _ L-Lower raised _ A-All lowered
El=>> elevation constrained
low>> specified lowering per "Save opp" record

		Shutter		All Lowered			Upper Raised			Middle Raised			Lower Raised		Power Bypass		Total Release		Target Compliance		Elevation	Storage	Spillway(est)	
Flag	Date	Change	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	% of Q	Q-Out	T-Out	Q-Out	T-Out	Q-Out	T-Out	T-Targ	T-diff	Feet	TAF	% of Q	Q-Spill
El=>>	1-Jan-22	TRUE	0	0	0	100	1737	49.11	0	0	0	0	0	0	0	0	1737	49.11	52	-2.89	405.98	419.761	0	0
El=>>	2-Jan-22		0	0	0	100	1737	49.05	0	0	0	0	0	0	0	0	1737	49.05	52	-2.95	406	419.905	0	0
	2-Sep-22		0	0	74.09	100	5102.9	59.79	0	0	0	0	0	0	0	0	5102.9	59.79	60.4	-0.61	445.79	763.401	0	0
	3-Sep-22		0	0	75.34	100	5102.91	60.33	0	0	0	0	0	0	0	0	5102.9	60.33	60.4	-0.07	444.96	755.062	0	0
	4-Sep-22		0	0	0	100	5102.9	60.5	0	0	51.32	0	0	0	0	0	5102.9	60.5	60.4	0.1	444.12	746.687	0	0
	5-Sep-22		0	0	0	100	5102.9	60.87	0	0	51.45	0	0	0	0	0	5102.9	60.87	60.4	0.47	443.28	738.351	0	0
	6-Sep-22		0	0	0	100	5102.9	60.96	0	0	51.46	0	0	0	0	0	5102.9	60.96	60.4	0.56	442.44	730.062	0	0
	7-Sep-22	TRUE	0	0	0	88	4490.56	61.44	12	612.35	52.55	0	0	0	0	0	5102.9	60.37	60.4	-0.03	441.58	721.632	0	0
	8-Sep-22		0	0	0	86	4388.5	61.61	14	714.41	52.68	0	0	0	0	0	5102.9	60.36	60.4	-0.04	440.73	713.335	0	0
	9-Sep-22		0	0	0	81	4133.35	62.39	19	969.55	53.22	0	0	0	0	0	5102.9	60.65	60.4	0.25	439.87	704.983	0	0
	10-Sep-22		0	0	0	77	3929.24	63.01	23	1173.67	53.44	0	0	0	0	0	5102.9	60.81	60.4	0.41	439	696.593	0	0
	11-Sep-22		0	0	0	70	3572.03	63.06	30	1530.87	53.89	0	0	0	0	0	5102.9	60.31	60.4	-0.09	438.13	688.269	0	0
	12-Sep-22		0	0	0	68	3469.98	63.83	32	1632.93	54.24	0	0	0	0	0	5102.9	60.76	60.4	0.36	437.25	679.913	0	0
	13-Sep-22		0	0	0	60	3061.74	64.21	40	2041.16	54.59	0	0	0	0	0	5102.9	60.37	60.4	-0.03	436.37	671.565	0	0
	14-Sep-22		0	0	0	54	2755.57	64.7	46	2347.33	55.18	0	0	0	0	0	5102.9	60.32	60.4	-0.08	435.49	663.288	0	0
	15-Sep-22		0	0	0	51	2602.48	65.01	49	2500.42	55.55	0	0	0	0	0	5102.9	60.37	60.4	-0.03	434.59	654.913	0	0
	16-Sep-22		0	0	0	42	2143.22	65.82	58	2959.68	56.33	0	0	0	0	0	5102.9	60.32	60.4	-0.08	433.7	646.671	0	0
	17-Sep-22		0	0	0	39	1990.13	66.23	61	3112.77	56.52	0	0	0	0	0	5102.9	60.31	60.4	-0.09	432.79	638.276	0	0
	18-Sep-22		0	0	0	28	1428.81	66.94	72	3674.09	57.5	0	0	0	0	0	5102.9	60.14	60.4	-0.26	431.88	629.937	0	0
	19-Sep-22		0	0	0	25	1275.73	67.22	75	3827.18	58.03	0	0	0	0	0	5102.9	60.33	60.4	-0.07	430.96	621.62	0	0
	20-Sep-22		0	0	0	18	918.53	67.88	82	4184.38	58.71	0	0	0	0	0	5102.9	60.36	60.4	-0.04	430.04	613.335	0	0
	21-Sep-22		0	0	0	15	765.44	68.42	85	4337.47	59.53	0	0	0	0	0	5102.9	60.86	60.4	0.46	429.11	605.019	0	0
	22-Sep-22	TRUE	0	0	0	0	0	68.76	100	5102.9	59.82	0	0	0	0	0	5102.9	59.82	60.4	-0.58	428.17	596.679	0	0
	23-Sep-22		0	0	0	0	0	0	100	5102.9	60.57	0	0	49.56	0	0	5102.9	60.57	60.4	0.17	427.22	588.339	0	0
	24-Sep-22		0	0	0	0	0	0	100	5102.9	60.58	0	0	49.58	0	0	5102.9	60.58	60.4	0.18	426.27	580.05	0	0
	25-Sep-22		0	0	0	0	0	0	100	5102.9	61.31	0	0	49.62	0	0	5102.9	61.31	60.4	0.91	425.31	571.733	0	0
	26-Sep-22	TRUE	0	0	0	0	0	0	89	4541.58	61.73	11	561.32	50.06	0	0	5102.9	60.44	60.4	0.04	424.35	563.499	0	0
	27-Sep-22		0	0	0	0	0	0	86	4388.5	62.14	14	714.41	50.2	0	0	5102.9	60.47	60.4	0.07	423.37	555.167	0	0
	28-Sep-22		0	0	0	0	0	0	82	4184.38	62.73	18	918.52	50.48	0	0	5102.9	60.52	60.4	0.12	422.39	546.901	0	0
	29-Sep-22		0	0	0	0	0	0	79	4031.29	63.11	21	1071.61	50.57	0	0	5102.9	60.48	60.4	0.08	421.39	538.558	0	0

Figure 6B.C.8 Example Folsom Outlet Operations File Generated when Running the Model (The file is titled “Folsom.TCD.Opp.txt after the American River model is run”)

The other Folsom operations output (Figure 6B.C.9) is a text file that summarizes the Folsom TCD operation. The file is named “WS_TCD.txt” and includes the operational information seen below. The output is daily except when the reservoir element location changes and there is an additional line of output during that day.

```
CP  590: sliding diversion intake between       61        320.00
                                    and        147        460.00

                                   Elem     Height      Resel      Temp(F)
          01-JAN-1922 06:00         105     391.48     405.95      49.10
          02-JAN-1922 06:00         105     391.48     405.98      49.19
          03-JAN-1922 06:00         105     391.48     406.03      49.02
          04-JAN-1922 06:00         105     391.48     406.08      48.95
          05-JAN-1922 06:00         105     391.48     406.14      48.82
          06-JAN-1922 06:00         105     391.48     406.19      48.75
          07-JAN-1922 06:00         105     391.48     406.24      48.64
          08-JAN-1922 06:00         105     391.48     406.29      48.60
          09-JAN-1922 06:00         105     391.48     406.34      48.55
          10-JAN-1922 06:00         105     391.48     406.39      48.36
          11-JAN-1922 06:00         105     391.48     406.44      48.19
```

Figure 6B.C.9 Example Folsom TCD Operations File Generated when Running the Model (The file is titled “WS_TCD.txt after the American River model is run”)

6B.C.7 Quality Assurance/Quality Control

This section describes two different elements of the QA/QC process used to ensure the quality for the Toolkit. The first section describes the update and review process for the Toolkit. The second section describes the spreadsheets that were developed to perform a QA/QC process on application model runs from the Toolkit.

6B.C.7.1 Update and Review Process

Three QA/QC spreadsheet tools were also developed as part of the updates to the Toolkit. The spreadsheet tools are designed to be used for a QA/QC process of all application model runs from the Toolkit.

6B.C.7.1.1 CalSim II and HEC-5Q Comparison Spreadsheet

The first spreadsheet tool HEC5Q_CalSim II_QA/QC_[River Model]_rev06_011615_Template_NAA_Example compares CalSim II storages and flows with HEC-5Q storages and flows to ensure that storages and flows are translating correctly. A procedure for performing a QA/QC of CalSim II and HEC-5Q flows and storages is described in the spreadsheet. Minor differences between CalSim II input flows and HEC-5Q output flows are expected because HEC-5Q storages and flows are modified to meet downstream temperature targets. In addition, not all HEC-5Q output locations map well with CalSim II nodes, which can cause significant flow differences. The flow mapping task reduced this issue but additional changes to CalSim II are required. Expected differences for each HEC-5Q location are described in the spreadsheet and deviations from those expected results are recommended to be investigated for potential issues.

6B.C.7.1.2 HEC-5Q Alternative Comparison Spreadsheet

The second spreadsheet tool HEC-5Q_AltCompare_[River Model]_rev03_012715_Template_Example compares HEC5Q storages, flows, and temperatures between two alternatives to ensure that temperature results make logical sense based on flow and storage differences. A procedure for performing a temperature comparison procedure is described in the spreadsheet. This spreadsheet assumes that a comparison procedure of flows and storages differences has been already been completed as part of review of CalSim II results and that the flow and storage differences are accurate. Use of this spreadsheet requires the user to have performed a prior HEC-5Q and CalSim II QA/QC procedure with the tool described previously for both alternatives. It also requires the user to have a prepared expectation of temperature differences based on their knowledge of the differences between the alternatives.

6B.C.7.1.3 Operation Diagnostic Spreadsheets

The third spreadsheet tool is an operation diagnostic tool [Reservoir] _Operations_Diagnostic_rev01_030515. There is one for Shasta, Trinity, and Folsom Dams. The purpose of the tool is to graphically display the flows and temperatures through the various temperature control structures and outlets for Shasta, Trinity, and Folsom Dams to view how the reservoirs are operating to meet downstream temperature targets.

6B.C.8 Trinity-Sacramento River Model Validation

This section provides comparisons between observed temperature data and computed temperature results from the validation task for the Trinity-Sacramento

River. Figures 6B.C.10 through 6B.C.42 present geographic locations used in the HEC-5Q Model and comparisons of observed and computed data at these locations. Observed results are from Reclamation, Department of Water Resources (DWR), and U.S. Geological Survey (USGS) data. The results indicate overall good agreement between computed and observed data.

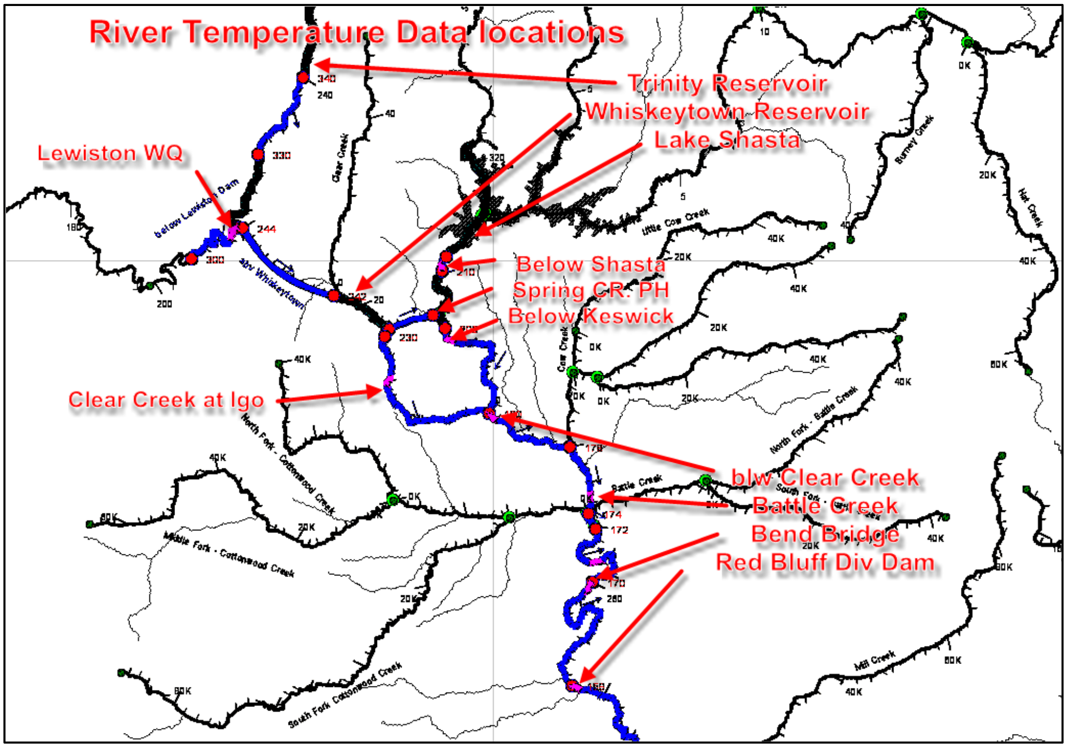


Figure 6B.C.10 Schematic of the Trinity-Sacramento River HEC-5Q Model Upstream of Red Bluff Diversion Dam Location

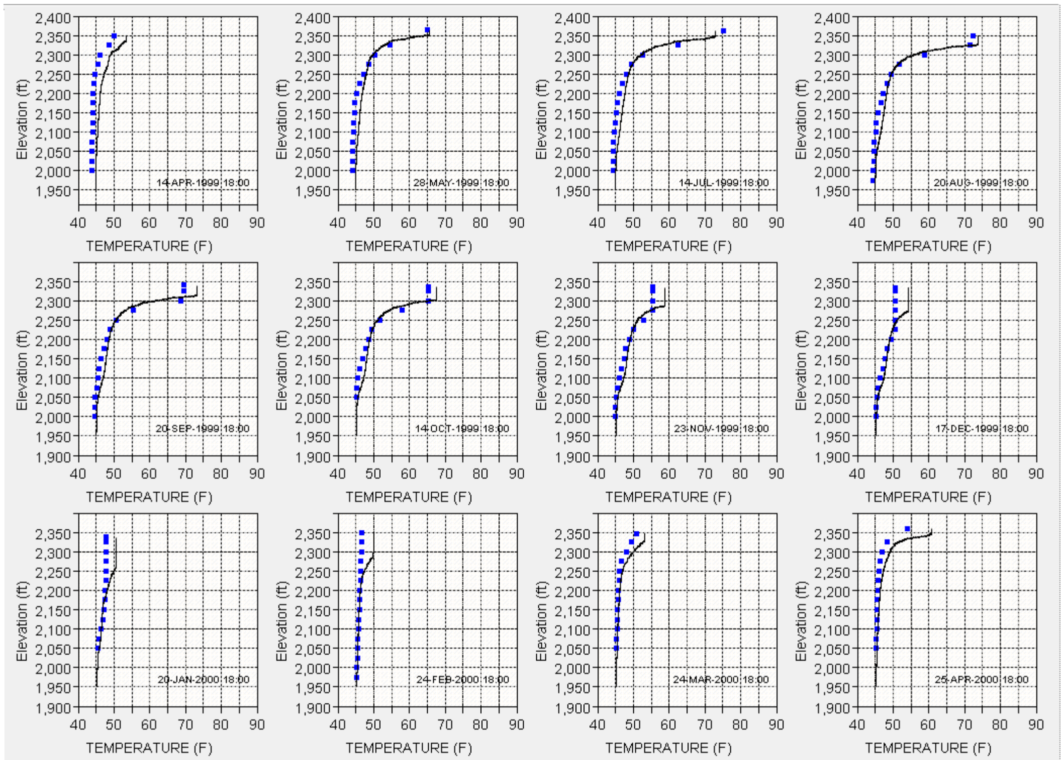


Figure 6B.C.11 Trinity Lake Observed (blue dots) and Computed (black line) Temperature Profiles Resulting from the Trinity-Sacramento River Validation

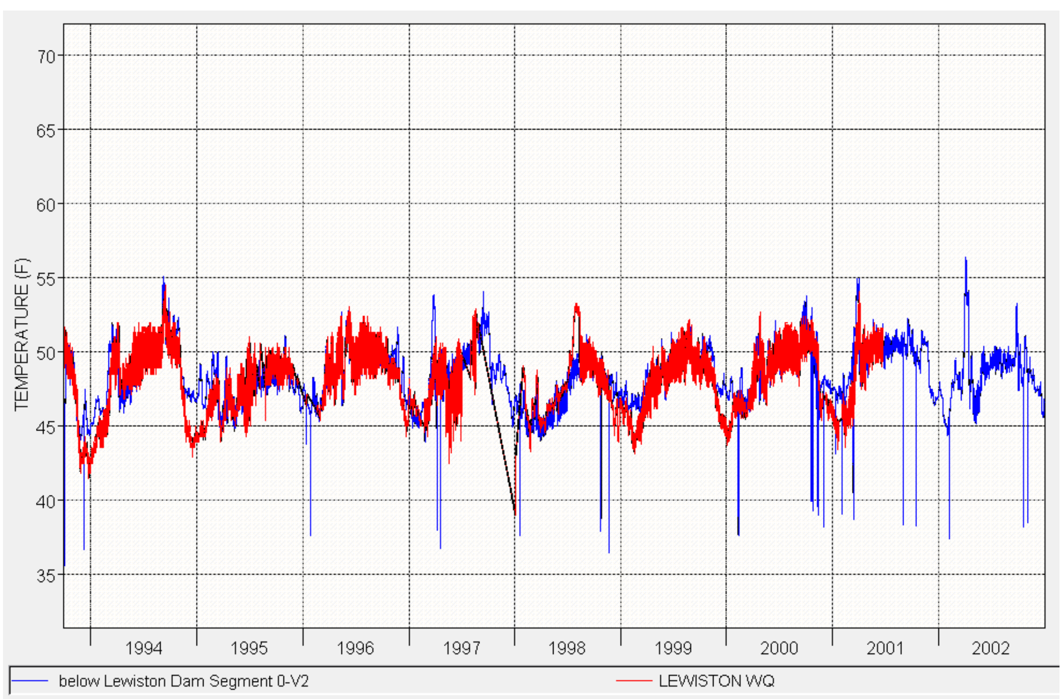


Figure 6B.C.12 Trinity River below Lewiston Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

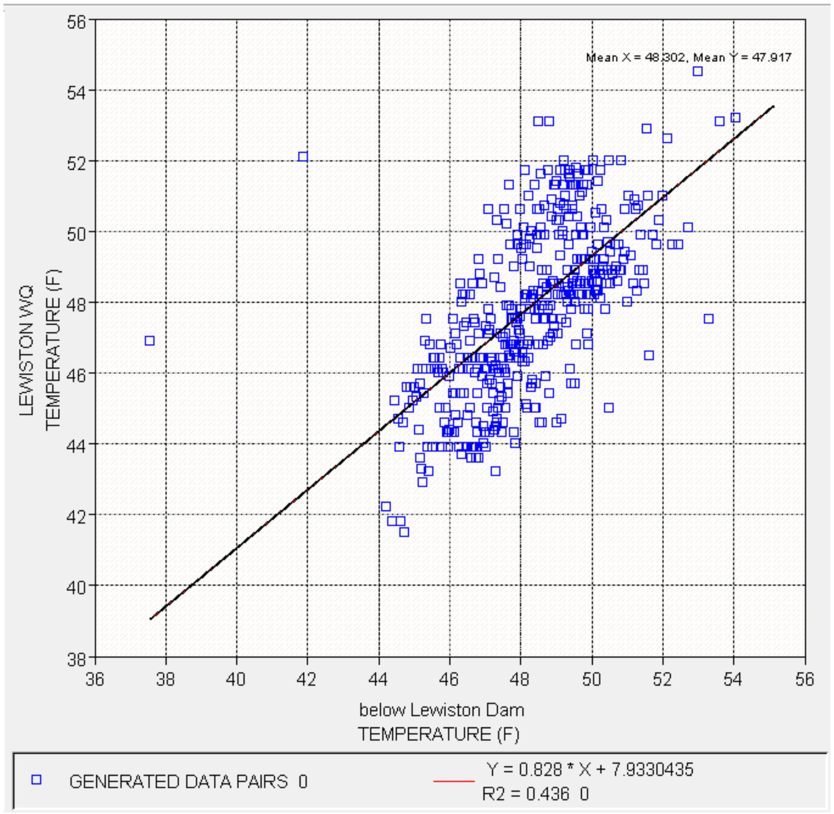


Figure 6B.C.13 Trinity River below Lewiston Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.5 Trinity River below Lewiston Dam Computed and Observed Statistical Comparison

Period	Values	Computed (oF)	Observed (oF)	Bias (oF)	RMS Differences (oF)	Mean Differences (oF)
Jan	356	46.60	45.23	1.37	2.04	1.77
Feb	394	46.59	45.60	1.00	1.73	1.37
Mar	468	47.99	46.99	1.00	2.04	1.57
Apr	468	47.79	48.06	-0.27	1.77	1.31
May	490	48.08	48.16	-0.08	1.47	1.12
Jun	452	48.71	48.91	-0.20	1.73	1.42
Jul	336	49.24	49.82	-0.58	1.96	1.72
Aug	344	49.68	50.21	-0.53	1.98	1.72
Sep	356	49.85	49.97	-0.12	1.49	1.22
Oct	366	49.64	49.47	0.16	1.68	1.16
Nov	354	48.58	48.01	0.57	1.58	1.15

Period	Values	Computed (oF)	Observed (oF)	Bias (oF)	RMS Differences (oF)	Mean Differences (oF)
Dec	296	47.29	45.48	1.81	2.01	1.82
Jan-Mar	1218	47.13	46.02	1.11	1.94	1.56
Apr-Jun	1410	48.19	48.37	-0.18	1.66	1.28
Jul-Sep	1036	49.60	50.00	-0.40	1.82	1.55
Oct-Dec	1016	48.58	47.80	0.79	1.75	1.35
Average Year	4680	48.31	48.00	0.31	1.79	1.43

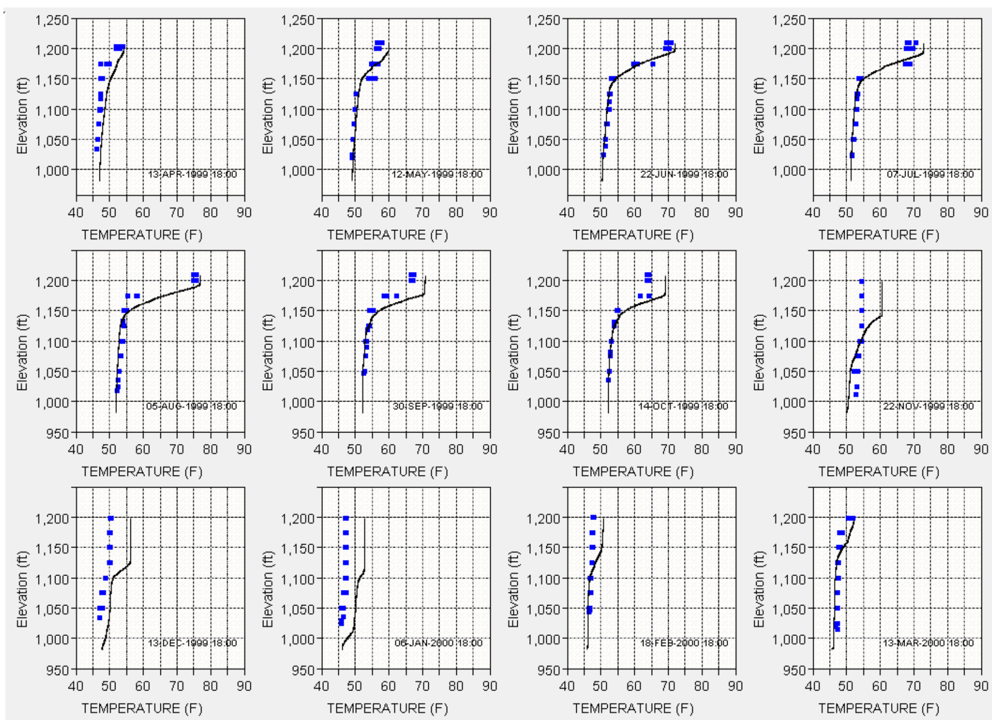


Figure 6B.C.14 Whiskeytown Lake Observed (blue dots) and Computed (black line) Temperature Profiles Resulting from the Trinity-Sacramento River Validation

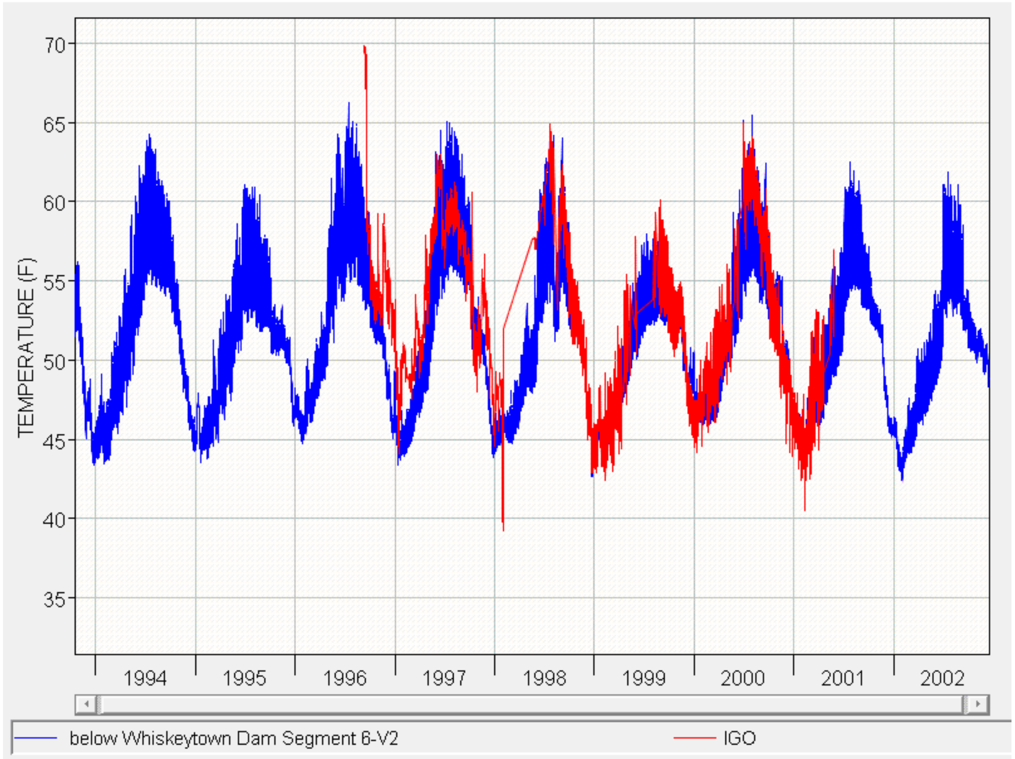


Figure 6B.C.15 Clear Creek below Whiskeytown Lake Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

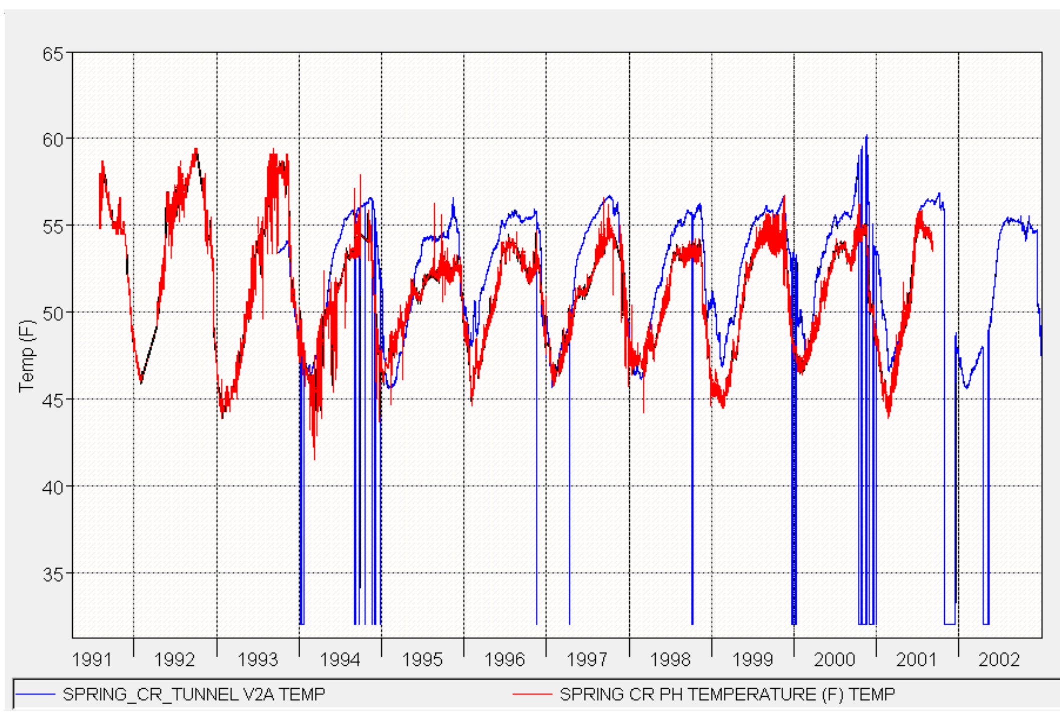


Figure 6B.C.16 Spring Creek Powerhouse Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

Table 6B.C.6 Clear Creek below Whiskeytown Computed and Observed Statistical Comparison

Period	Values	Computed (ºF)	Observed (ºF)	Bias (ºF)	RMS Differences (ºF)	Mean Differences (ºF)
Jan	458	47.11	47.07	0.05	5.17	3.15
Feb	432	47.22	46.37	0.85	1.99	1.64
Mar	464	47.95	47.31	0.64	1.75	1.46
Apr	444	49.43	48.76	0.67	2.16	1.34
May	480	50.89	50.44	0.45	0.97	0.79
Jun	458	52.36	51.93	0.43	1.03	0.75
Jul	460	53.23	53.19	0.04	0.74	0.58
Aug	474	53.57	53.57	0.00	0.50	0.36
Sep	418	53.01	53.54	-0.52	3.81	1.22
Oct	326	52.59	53.55	-0.97	6.01	2.44
Nov	352	51.37	53.14	-1.77	8.04	4.06
Dec	414	48.47	49.72	-1.25	6.63	3.82
Jan-Mar	1354	47.43	46.93	0.50	3.37	2.09
Apr-Jun	1382	50.91	50.40	0.51	1.47	0.95
Jul-Sep	1352	53.28	53.43	-0.15	2.18	0.70
Oct-Dec	1092	50.64	51.97	-1.33	6.95	3.48
Average Year	5180	50.56	50.61	-0.05	3.87	1.72

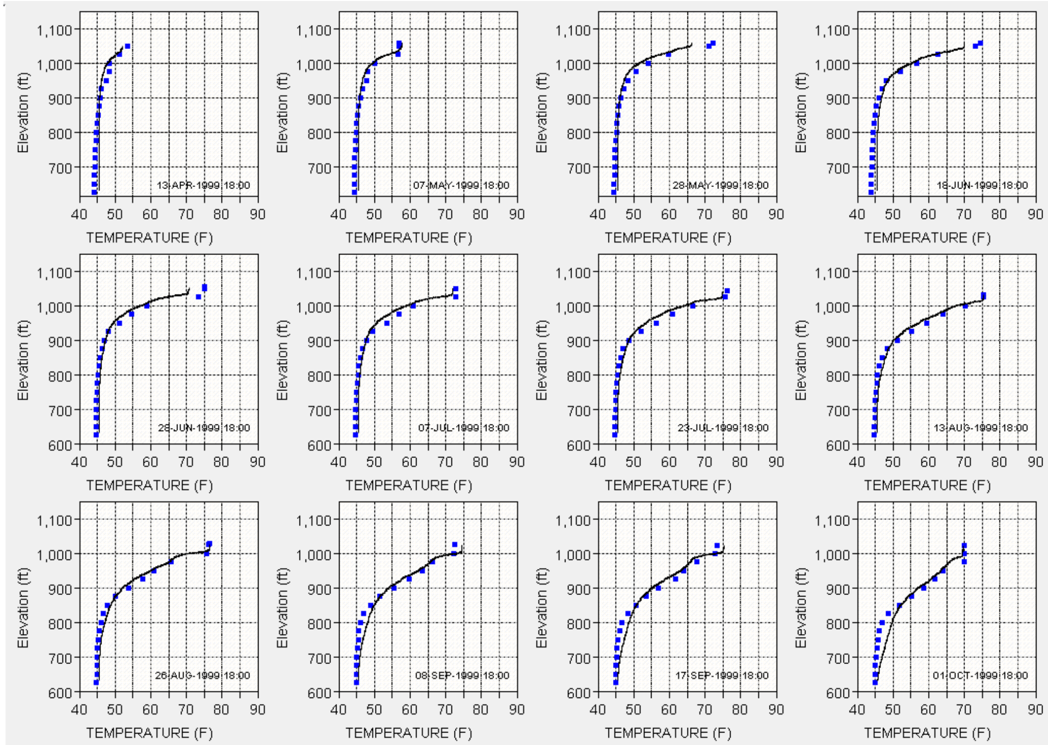


Figure 6B.C.17 Shasta Lake Observed (blue dots) and Computed (black line) Temperature Profiles Resulting from the Trinity-Sacramento River Validation

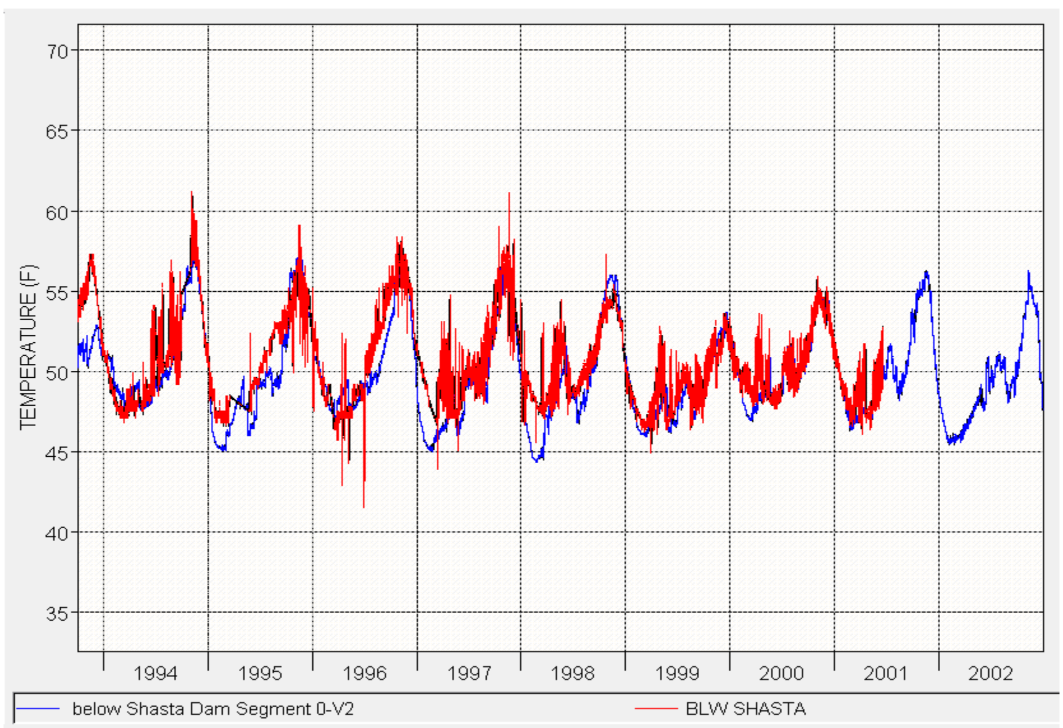


Figure 6B.C.18 Sacramento River below Shasta Lake Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

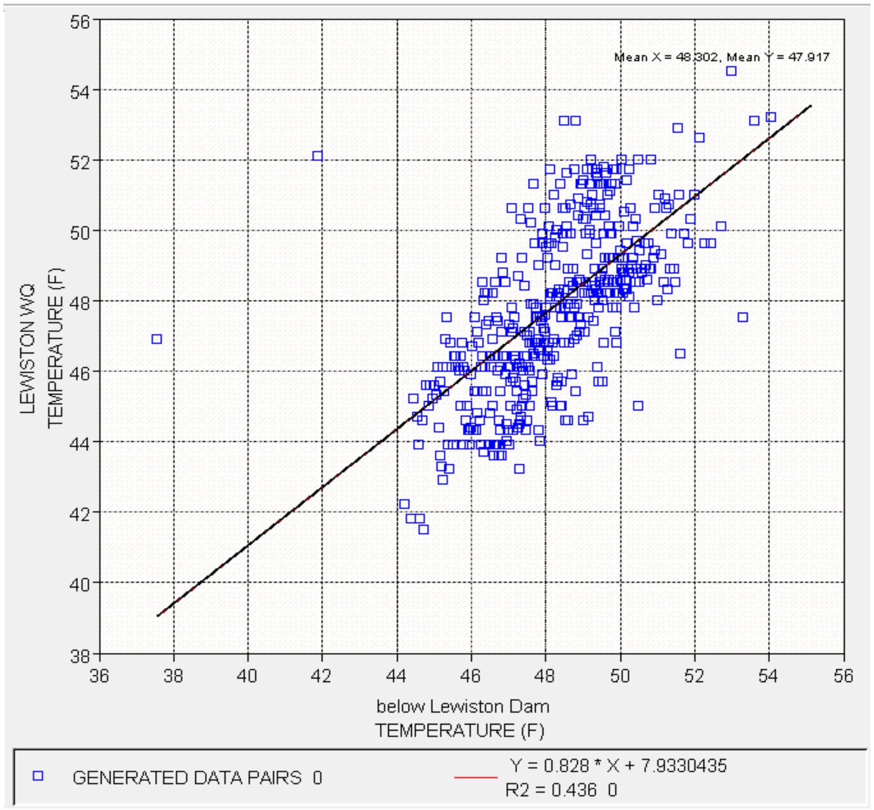


Figure 6B.C.19 Sacramento River below Shasta Lake Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.7 Sacramento River below Shasta Lake Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	424	49.16	49.82	-0.66	1.69	1.21
Feb	404	47.04	48.19	-1.15	1.92	1.54
Mar	384	46.81	47.89	-1.08	1.83	1.39
Apr	364	47.77	48.74	-0.97	2.12	1.62
May	386	48.27	48.81	-0.54	1.62	1.18
Jun	428	48.46	49.03	-0.56	1.54	1.09
Jul	374	49.19	50.03	-0.84	1.59	1.23
Aug	408	49.40	50.79	-1.39	2.11	1.72
Sep	410	50.80	51.70	-0.90	1.73	1.35
Oct	318	53.10	53.39	-0.28	1.34	1.06
Nov	360	55.27	55.00	0.27	1.49	1.09

Period	Values	Computed (ºF)	Observed (ºF)	Bias (ºF)	RMS Differences (ºF)	Mean Differences (ºF)
Dec	318	53.05	53.14	-0.09	1.16	0.86
Jan-Mar	1212	47.71	48.66	-0.96	1.81	1.38
Apr-Jun	1178	48.19	48.87	-0.68	1.77	1.28
Jul-Sep	1192	49.81	50.86	-1.05	1.83	1.44
Oct-Dec	996	53.87	53.89	-0.03	1.34	1.01
Average Year	4578	49.72	50.43	-0.71	1.71	1.29

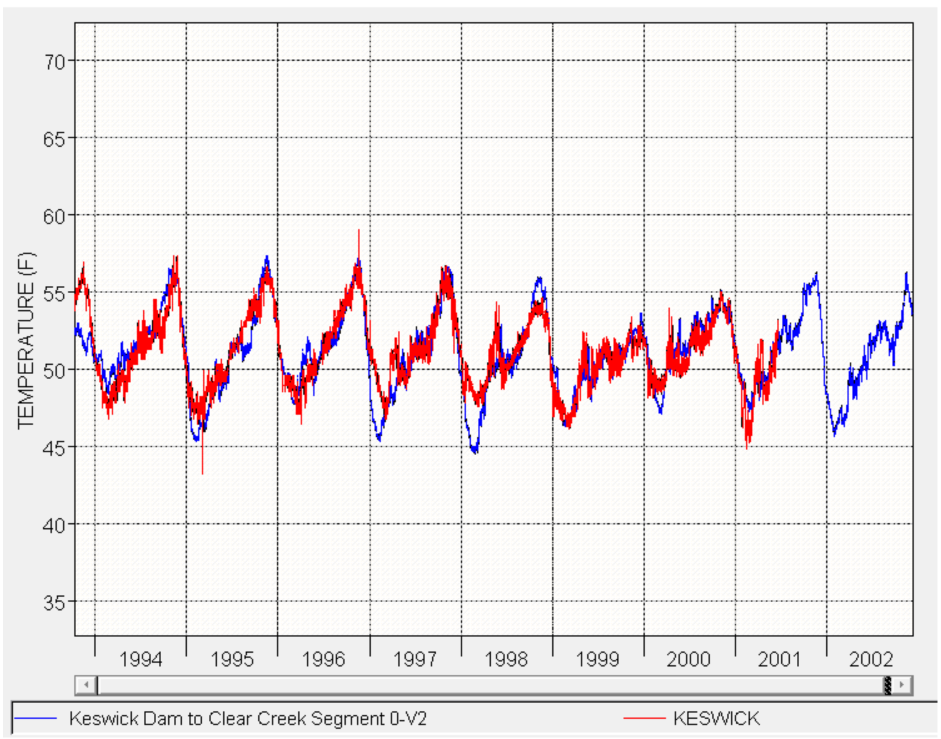


Figure 6B.C.20 Sacramento River below Keswick Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

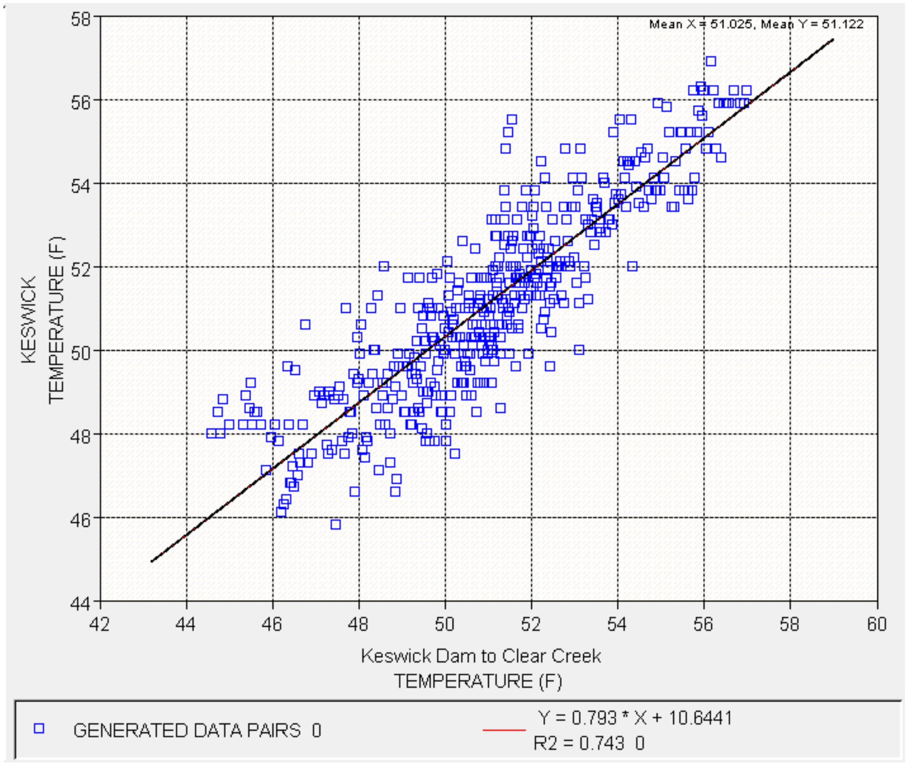


Figure 6B.C.21 Sacramento River below Keswick Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.8 Sacramento River below Keswick Dam Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	468	49.22	49.52	-0.29	1.85	1.40
Feb	434	47.35	48.08	-0.72	1.89	1.52
Mar	496	47.90	48.25	-0.36	1.41	1.17
Apr	466	49.53	49.65	-0.12	1.43	1.19
May	486	50.20	50.06	0.14	1.22	0.98
Jun	400	50.73	50.47	0.26	0.89	0.71
Jul	402	51.47	51.38	0.09	0.65	0.52
Aug	430	51.68	51.89	-0.21	0.97	0.78
Sep	414	52.62	52.65	-0.03	1.11	0.85
Oct	428	54.20	53.82	0.37	0.95	0.75
Nov	418	55.21	54.69	0.53	0.99	0.82
Dec	426	52.83	52.72	0.11	0.90	0.73

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan-Mar	1398	48.17	48.62	-0.45	1.72	1.36
Apr-Jun	1352	50.13	50.04	0.09	1.21	0.97
Jul-Sep	1246	51.92	51.98	-0.05	0.93	0.72
Oct-Dec	1272	54.07	53.74	0.33	0.95	0.77
Average Year	5268	50.99	51.02	-0.03	1.26	0.97

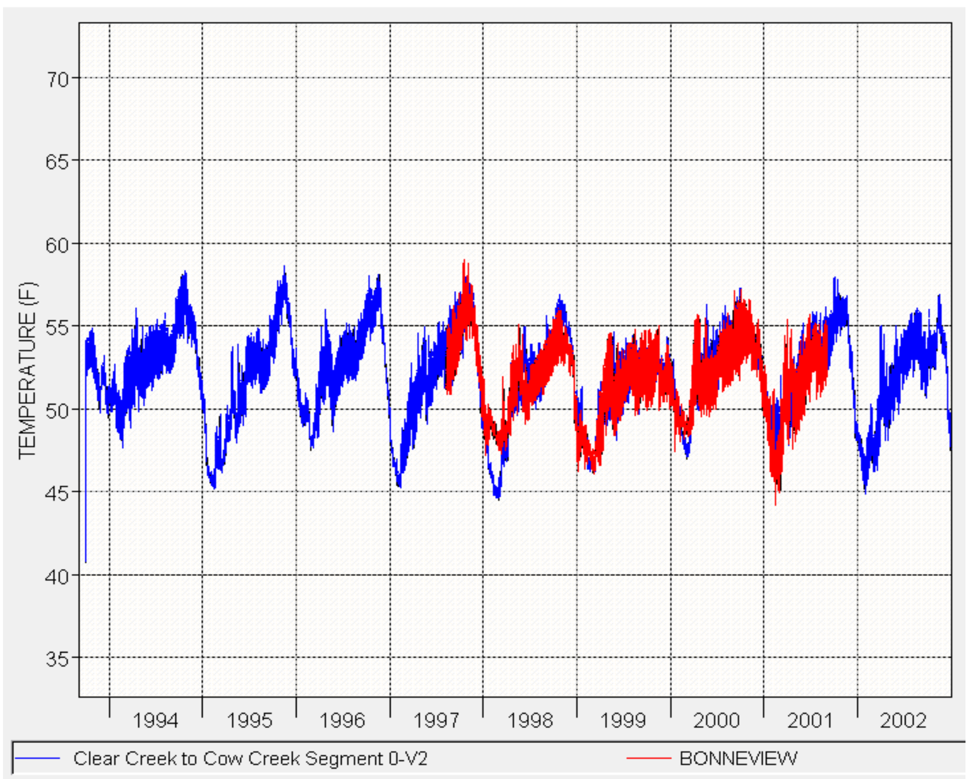


Figure 6B.C.22 Sacramento River below Clear Creek Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

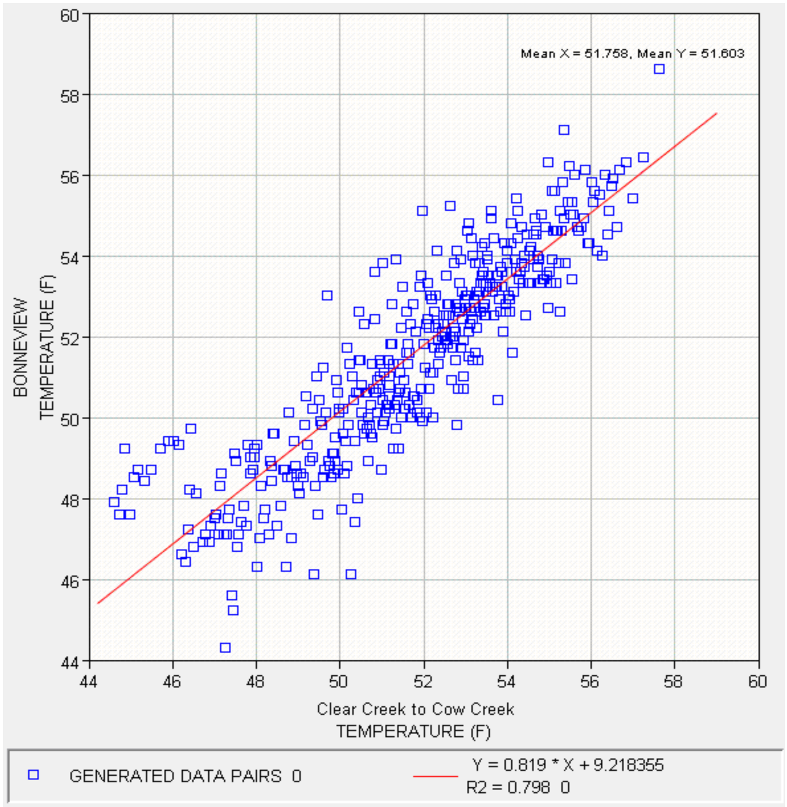


Figure 6B.C.23 Sacramento River below Clear Creek Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.9 Sacramento River below Clear Creek Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	248	49.39	49.27	0.12	1.41	1.08
Feb	226	47.33	48.08	-0.75	1.98	1.57
Mar	248	48.24	48.80	-0.57	1.36	1.06
Apr	240	50.40	50.93	-0.53	1.29	1.00
May	248	51.56	51.38	0.18	1.44	1.16
Jun	236	52.14	51.39	0.75	1.31	1.11
Jul	242	52.88	52.52	0.36	0.87	0.66
Aug	292	53.11	52.69	0.42	0.85	0.68
Sep	252	53.62	53.41	0.21	0.84	0.66
Oct	248	54.17	54.24	-0.07	0.98	0.77
Nov	240	54.48	53.93	0.55	1.07	0.88

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	246	52.25	52.14	0.11	0.94	0.79
Jan-Mar	722	48.35	48.74	-0.39	1.60	1.23
Apr-Jun	724	51.37	51.24	0.13	1.35	1.09
Jul-Sep	786	53.20	52.87	0.34	0.85	0.67
Oct-Dec	734	53.63	53.43	0.19	0.99	0.81
Average Year	2966	51.68	51.60	0.07	1.23	0.94

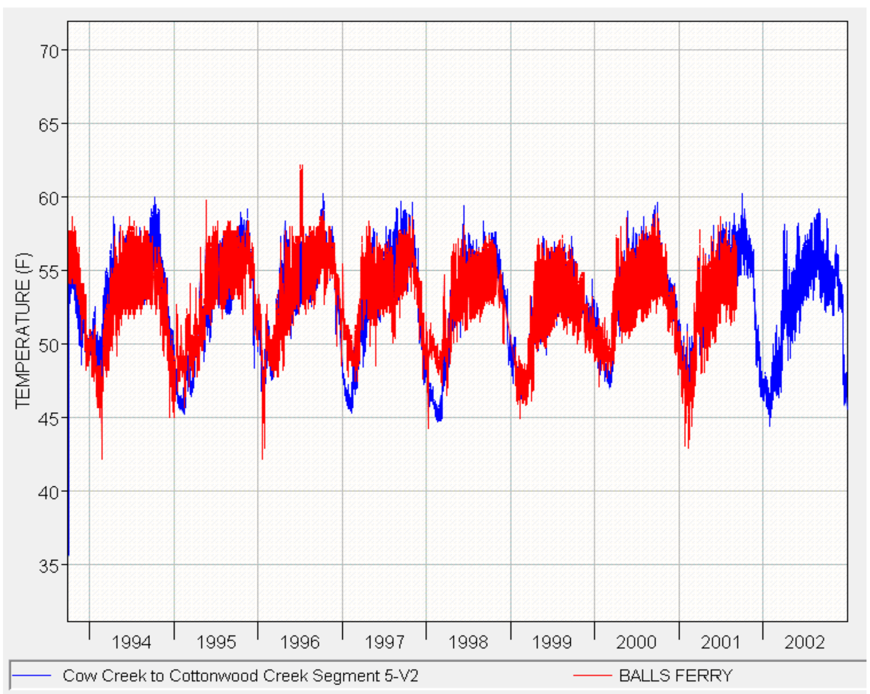


Figure 6B.C.24 Sacramento River at Balls Ferry Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

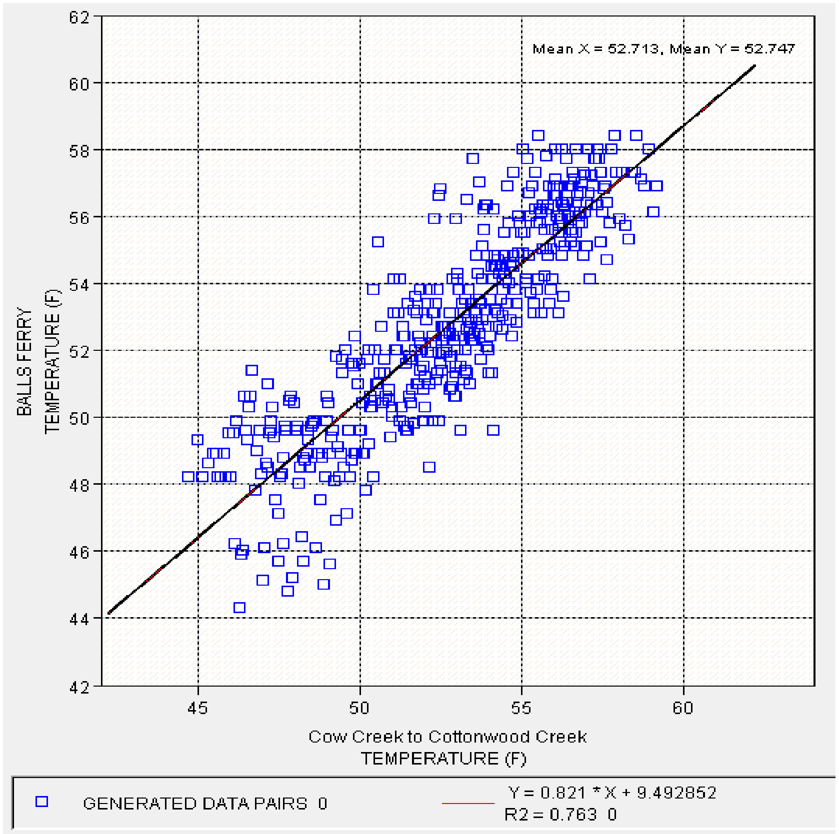


Figure 6B.C.25 Sacramento River at Balls Ferry Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.10 Sacramento River at Balls Ferry Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	442	48.25	49.31	-1.05	2.42	1.93
Feb	432	47.51	48.49	-0.98	2.20	1.79
Mar	496	49.42	50.25	-0.83	1.73	1.43
Apr	452	52.06	52.50	-0.44	1.74	1.41
May	472	53.08	53.34	-0.25	1.51	1.21
Jun	446	53.81	54.10	-0.29	1.48	1.17
Jul	452	54.59	54.76	-0.17	1.44	0.99
Aug	464	54.54	54.62	-0.08	1.34	1.05
Sep	426	55.23	55.08	0.15	1.20	0.97
Oct	410	55.54	54.96	0.59	1.27	0.99
Nov	392	54.50	54.06	0.44	1.08	0.85

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	374	51.29	51.44	-0.15	1.52	1.21
Jan-Mar	1370	48.44	49.39	-0.95	2.12	1.70
Apr-Jun	1370	52.98	53.31	-0.33	1.58	1.26
Jul-Sep	1342	54.77	54.81	-0.04	1.33	1.01
Oct-Dec	1176	53.84	53.54	0.30	1.30	1.01
Average Year	5258	52.45	52.72	-0.27	1.63	1.26

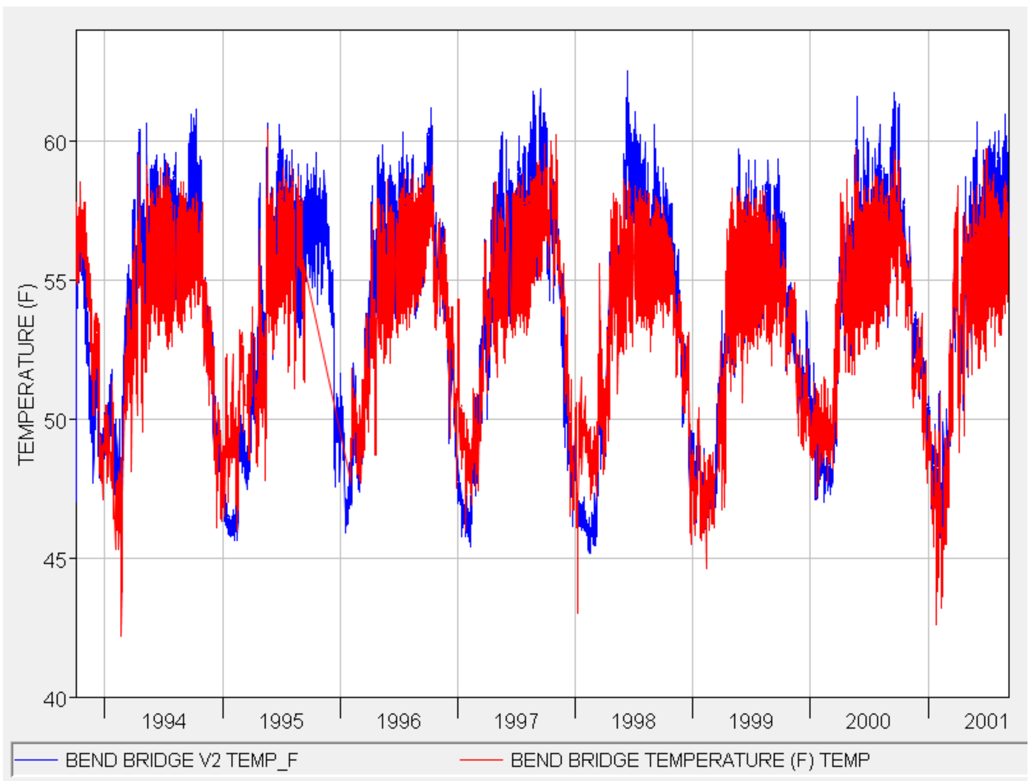


Figure 6B.C.26 Sacramento River at Bend Bridge Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

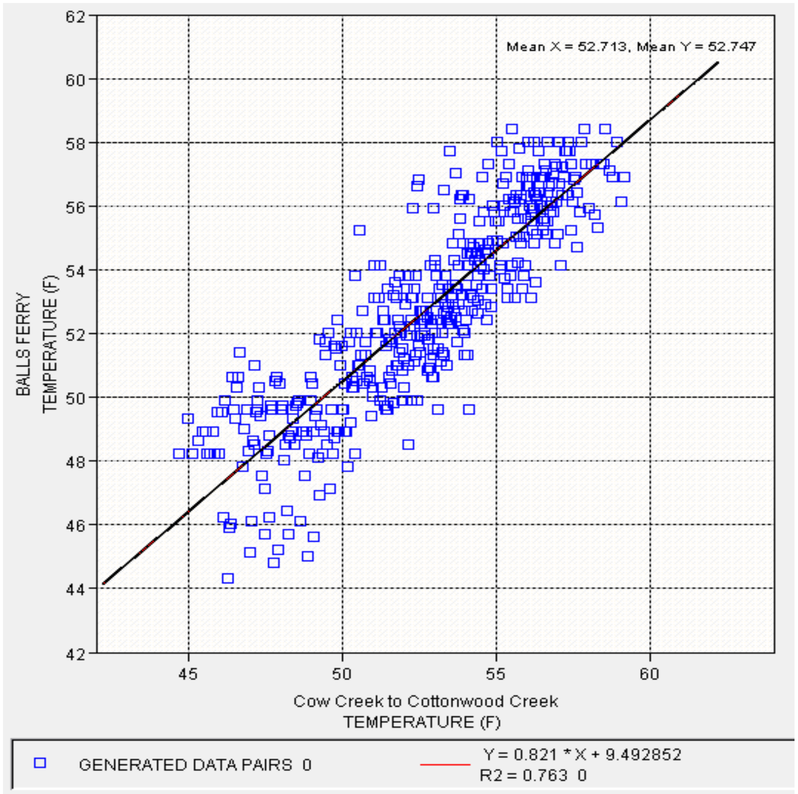


Figure 6B.C.27 Sacramento River at Bend Bridge Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.11 Sacramento River at Balls Ferry Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	406	47.53	48.79	-1.26	2.25	1.76
Feb	446	47.51	48.45	-0.94	1.95	1.60
Mar	472	50.40	51.08	-0.69	1.52	1.20
Apr	472	53.76	53.64	0.12	1.60	1.29
May	486	55.45	54.74	0.71	1.48	1.18
Jun	432	56.32	55.33	1.00	1.70	1.30
Jul	474	56.72	55.74	0.98	1.42	1.18
Aug	466	56.53	55.81	0.72	1.32	1.11
Sep	390	56.99	56.14	0.85	1.42	1.12
Oct	366	56.25	55.80	0.45	1.17	0.95
Nov	360	53.45	53.70	-0.25	1.16	0.90

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	366	50.03	50.36	-0.33	1.33	1.04
Jan-Mar	1324	48.55	49.49	-0.95	1.91	1.51
Apr-Jun	1390	55.15	54.55	0.60	1.59	1.26
Jul-Sep	1330	56.73	55.88	0.85	1.39	1.14
Oct-Dec	1092	53.24	53.29	-0.04	1.22	0.97
Average Year	5136	53.45	53.32	0.13	1.56	1.23

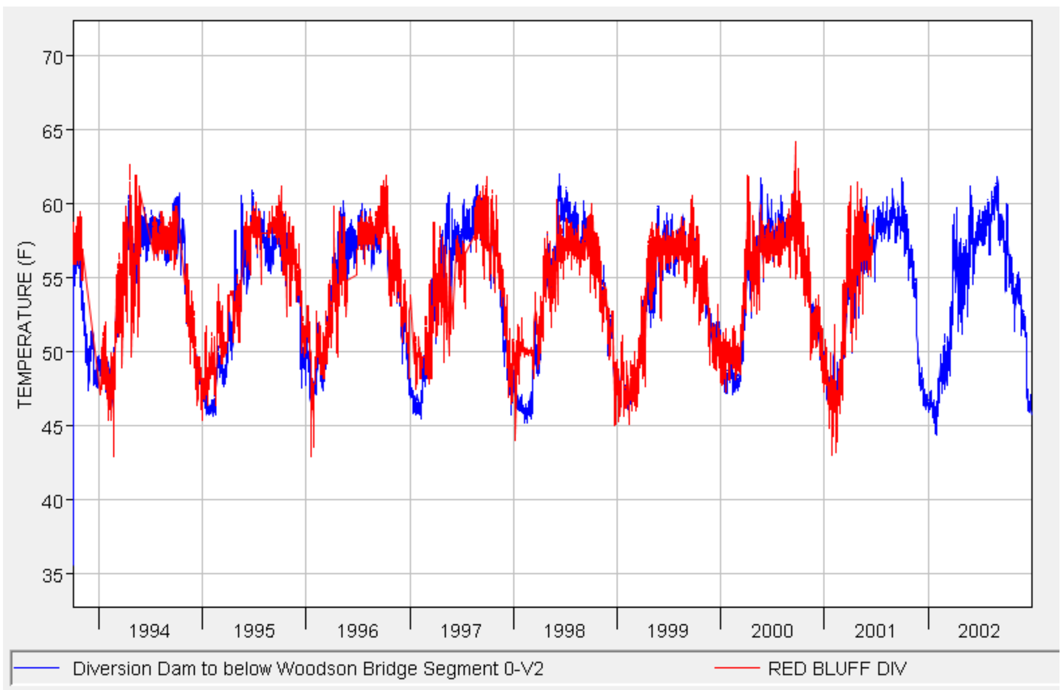


Figure 6B.C.28 Sacramento River at Red Bluff Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

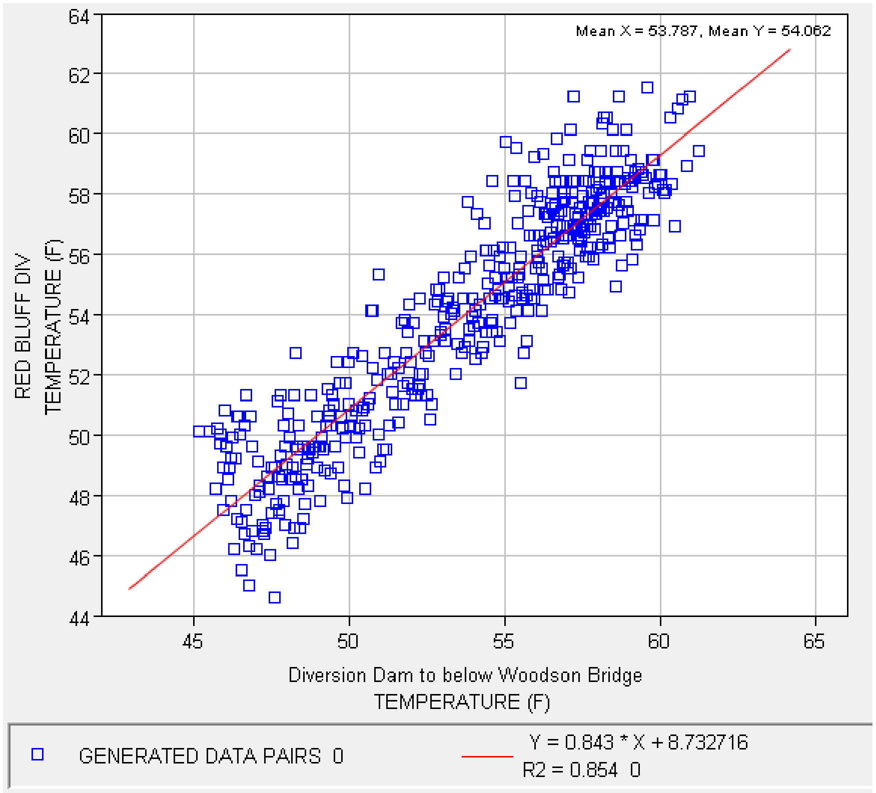


Figure 6B.C.29 Sacramento River at Red Bluff Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.12 Sacramento River at Red Bluff Dam Computed and Observed Statistical Comparison

Period	Values	Computed (ºF)	Observed (ºF)	Bias (ºF)	RMS Differences (ºF)	Mean Differences (ºF)
Jan	448	47.72	48.76	-1.04	2.09	1.65
Feb	434	47.63	48.95	-1.32	2.29	1.83
Mar	485	50.71	51.68	-0.97	1.71	1.38
Apr	460	54.30	54.51	-0.21	1.97	1.57
May	402	56.22	55.77	0.45	1.81	1.39
Jun	312	57.73	56.92	0.81	1.62	1.25
Jul	346	58.09	57.48	0.61	1.19	0.91
Aug	366	57.83	57.65	0.18	1.07	0.86
Sep	416	58.14	58.08	0.07	1.35	1.11
Oct	357	56.70	56.86	-0.16	1.08	0.88
Nov	408	53.97	54.22	-0.25	1.20	0.95

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Dec	430	50.09	50.62	-0.54	1.55	1.20
Jan-Mar	1367	48.75	49.86	-1.11	2.04	1.61
Apr-Jun	1174	55.87	55.58	0.29	1.82	1.42
Jul-Sep	1128	58.03	57.76	0.27	1.21	0.96
Oct-Dec	1195	53.39	53.72	-0.33	1.30	1.02
Average Year	4864	53.76	54.02	-0.26	1.65	1.27

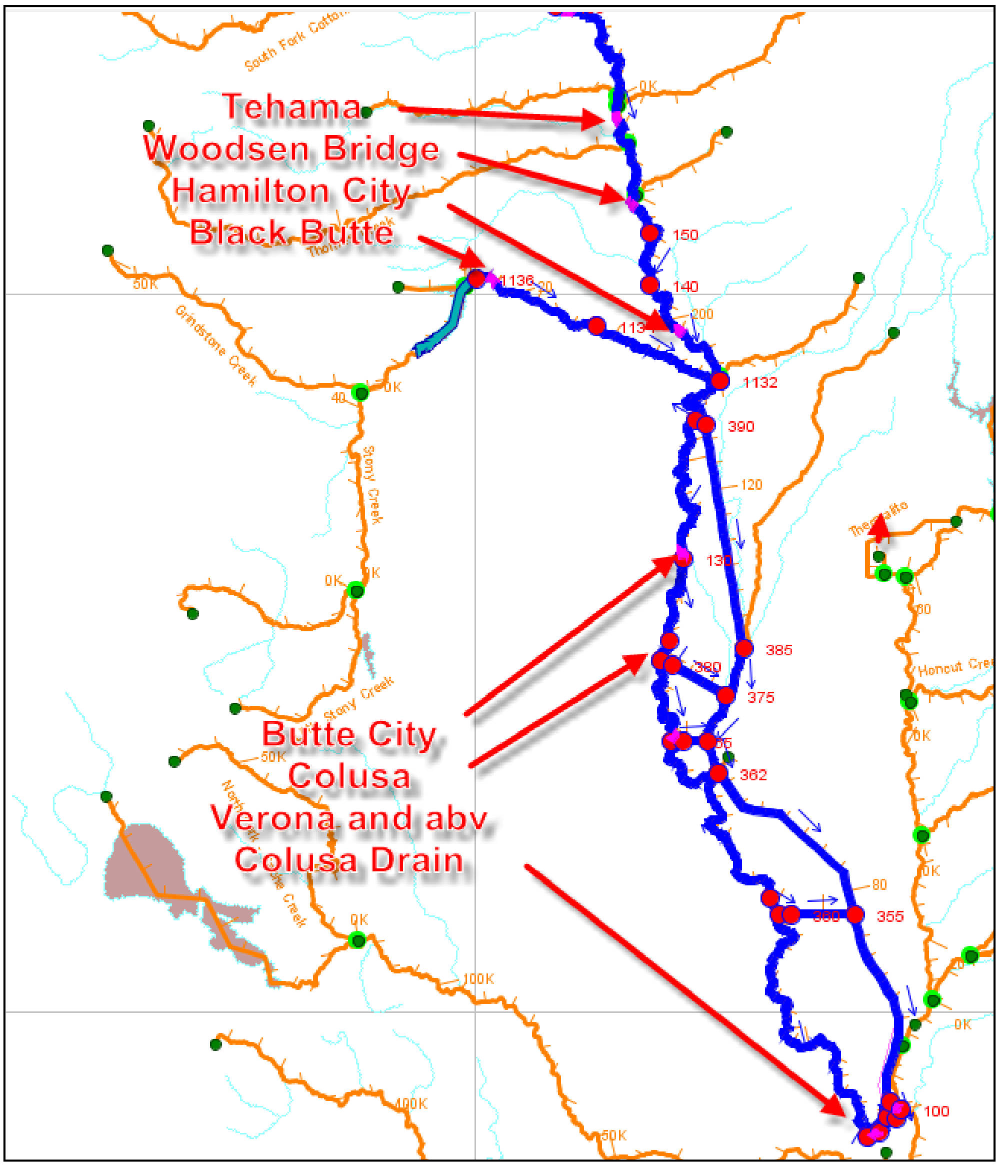


Figure 6B.C.30 Schematic of the Trinity-Sacramento River HEC-5Q Model Downstream of the Tehama Colusa Canal

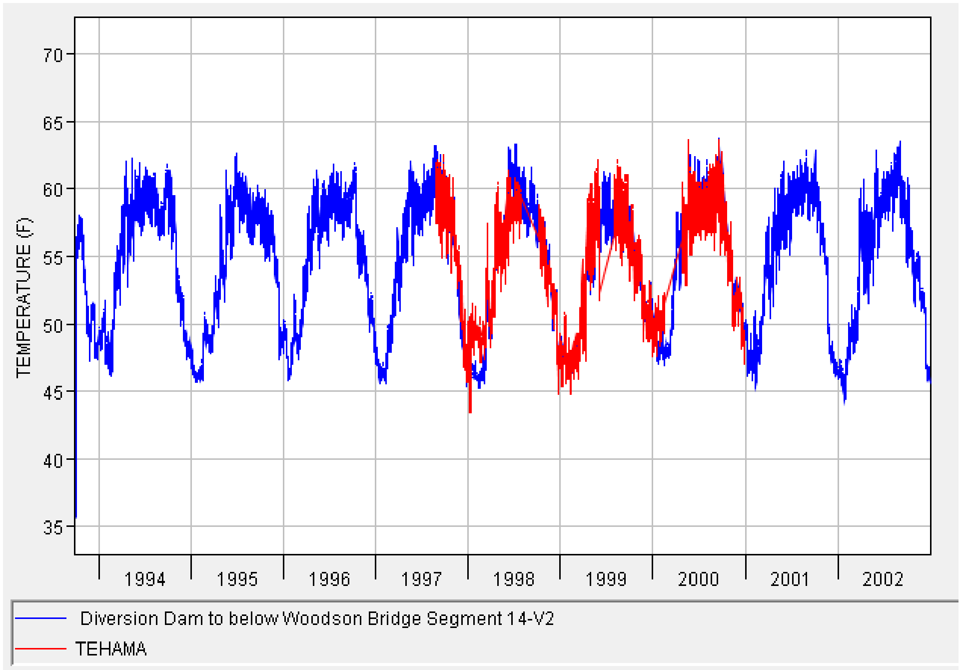


Figure 6B.C.31 Sacramento River at Tehama Colusa Canal Observed (red) and Computed (blue) temperature Time Series Resulting from the Trinity-Sacramento River Validation

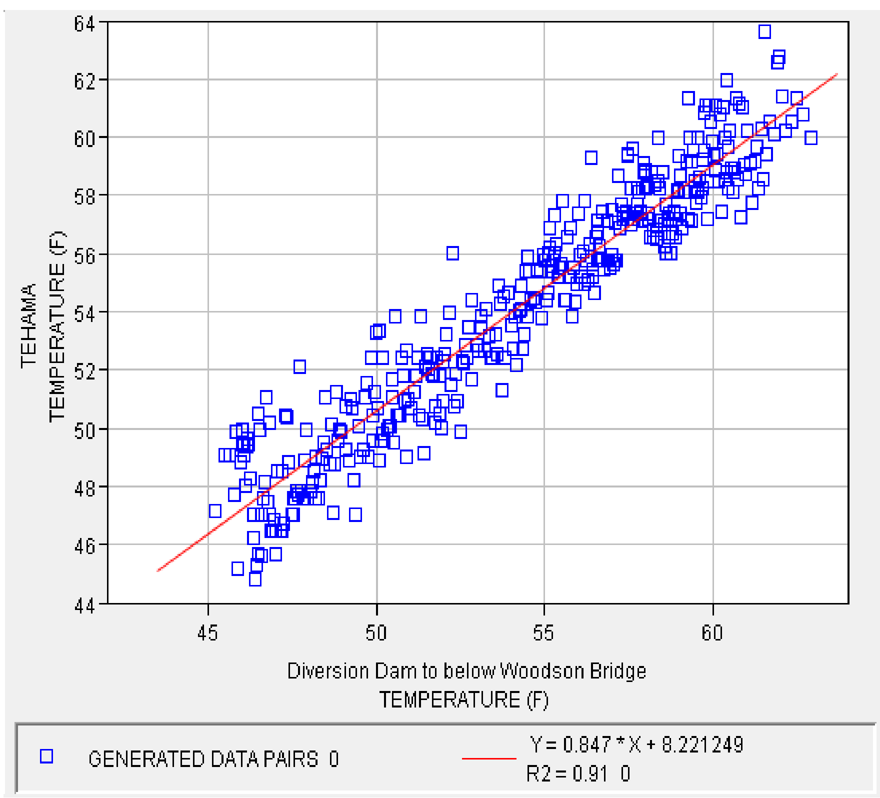


Figure 6B.C.32 Sacramento River at Tehama Colusa Canal Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.13 Sacramento River at Tehama Colusa Canal Computed and Observed Statistical Comparison

Period	Values	Computed (ºF)	Observed (ºF)	Bias (ºF)	RMS Differences (ºF)	Mean Differences (ºF)
Jan	448	47.72	48.76	-1.04	2.09	1.65
Feb	434	47.63	48.95	-1.32	2.29	1.83
Mar	485	50.71	51.68	-0.97	1.71	1.38
Apr	460	54.30	54.51	-0.21	1.97	1.57
May	402	56.22	55.77	0.45	1.81	1.39
Jun	312	57.73	56.92	0.81	1.62	1.25
Jul	346	58.09	57.48	0.61	1.19	0.91
Aug	366	57.83	57.65	0.18	1.07	0.86
Sep	416	58.14	58.08	0.07	1.35	1.11
Oct	357	56.70	56.86	-0.16	1.08	0.88
Nov	408	53.97	54.22	-0.25	1.20	0.95
Dec	430	50.09	50.62	-0.54	1.55	1.20
Jan-Mar	1367	48.75	49.86	-1.11	2.04	1.61
Apr-Jun	1174	55.87	55.58	0.29	1.82	1.42
Jul-Sep	1128	58.03	57.76	0.27	1.21	0.96
Oct-Dec	1195	53.39	53.72	-0.33	1.30	1.02
Average Year	4864	53.76	54.02	-0.26	1.65	1.27

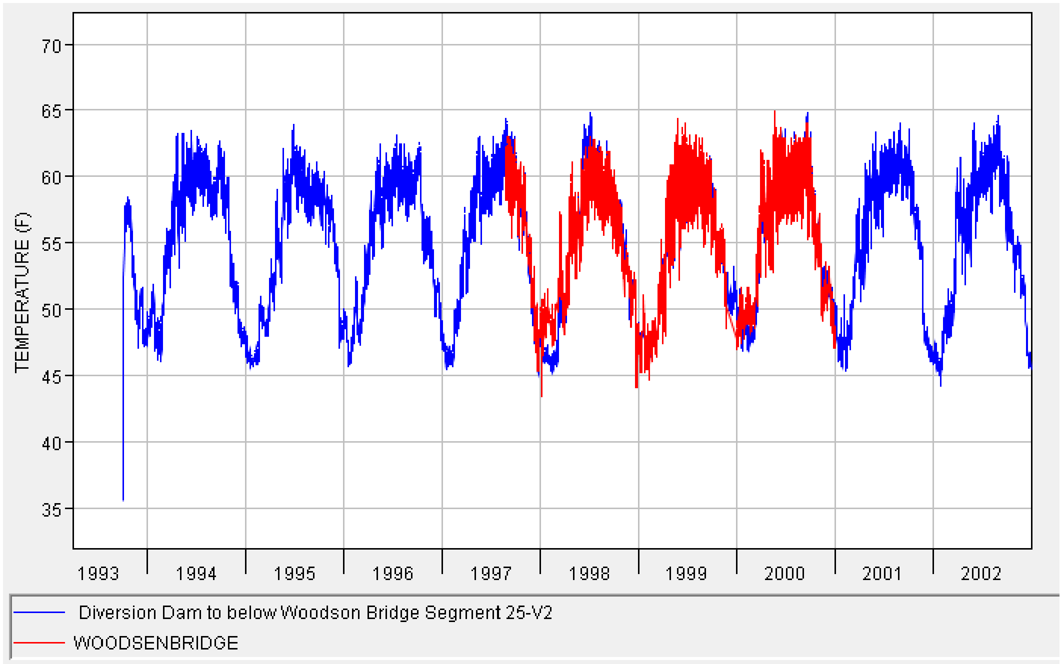


Figure 6B.C.33 Sacramento River below Woodson Bridge Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

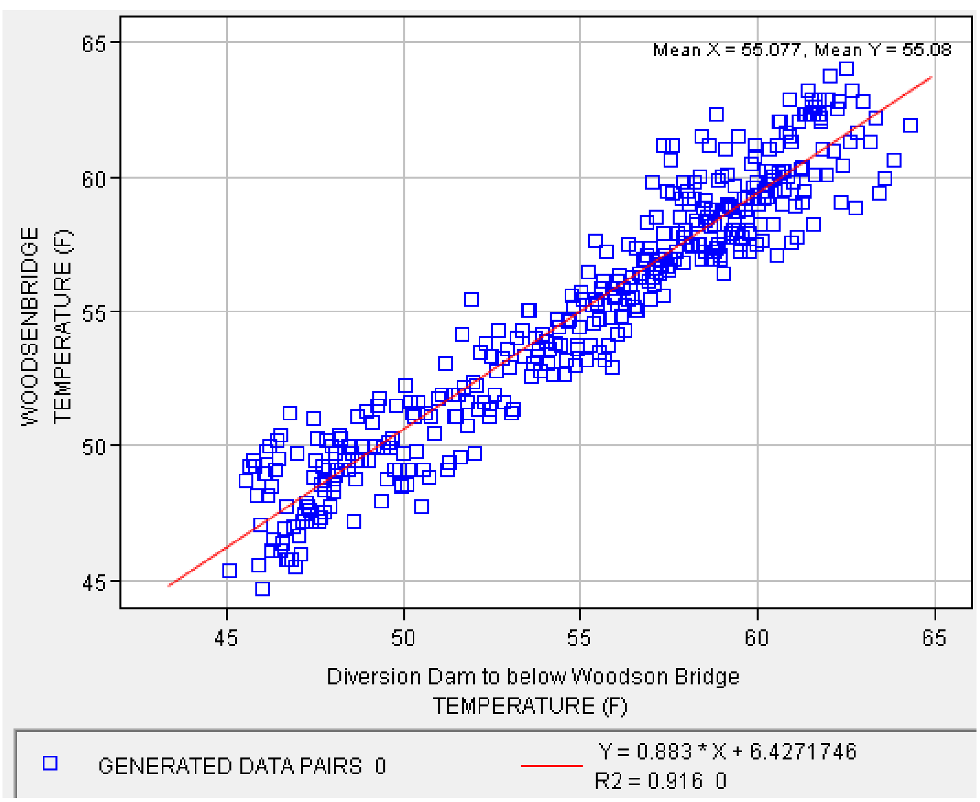


Figure 6B.C.34 Sacramento River below Woodson Bridge Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.14 Sacramento River below Woodson Bridge Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15

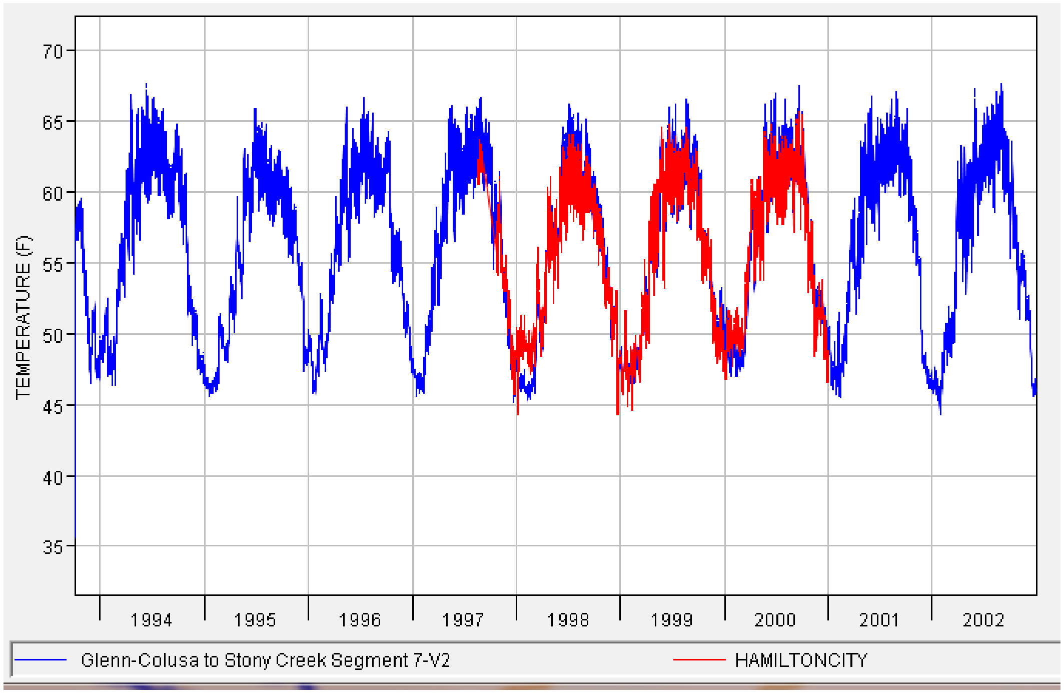


Figure 6B.C.35 Sacramento River at Hamilton City Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

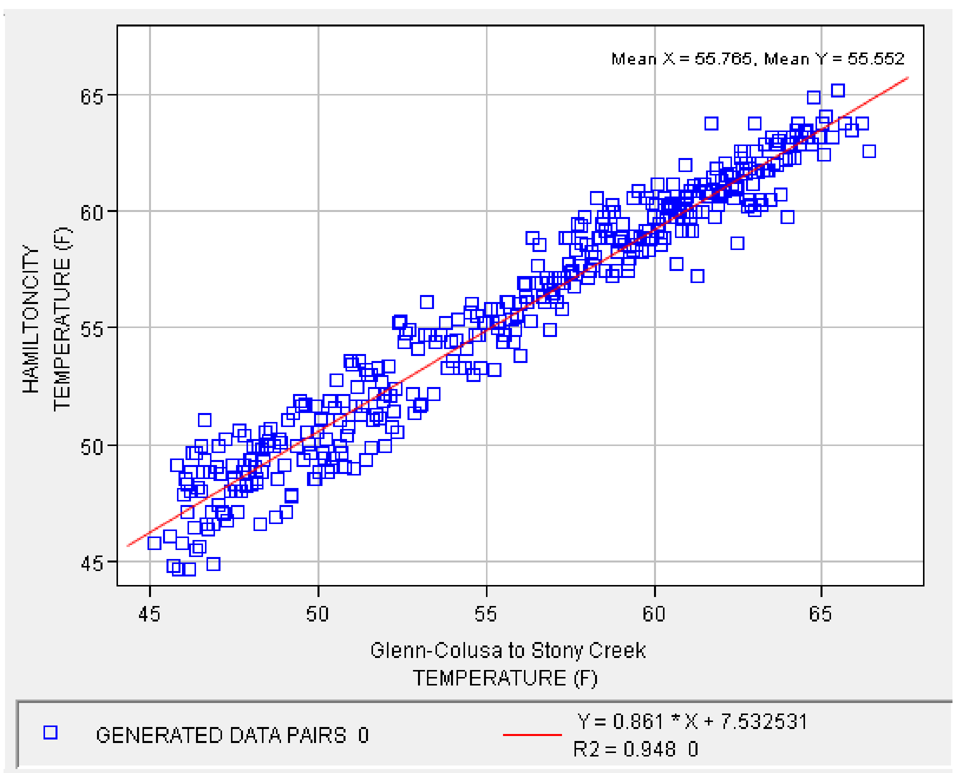


Figure 6B.C.36 Sacramento River at Hamilton City Observed (Y-Axis) as Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.15 Sacramento River at Hamilton City Computed and Observed Statistical Comparison

Period	Values	Computed (ºF)	Observed (ºF)	Bias (ºF)	RMS Differences (ºF)	Mean Differences (ºF)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15

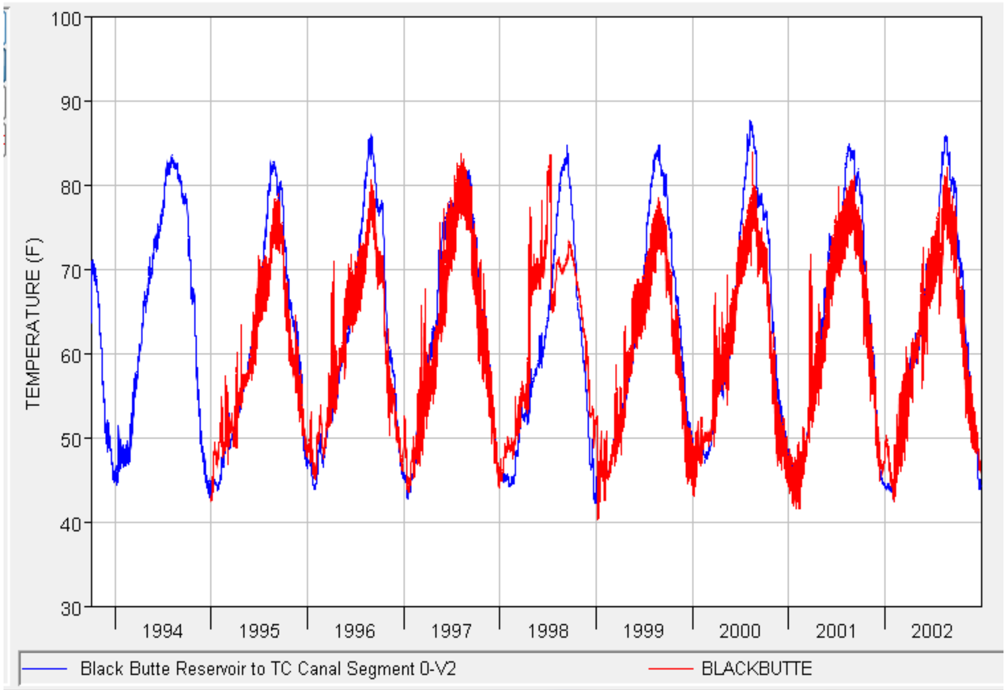


Figure 6B.C.37 Stony Creek below Black Butte Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

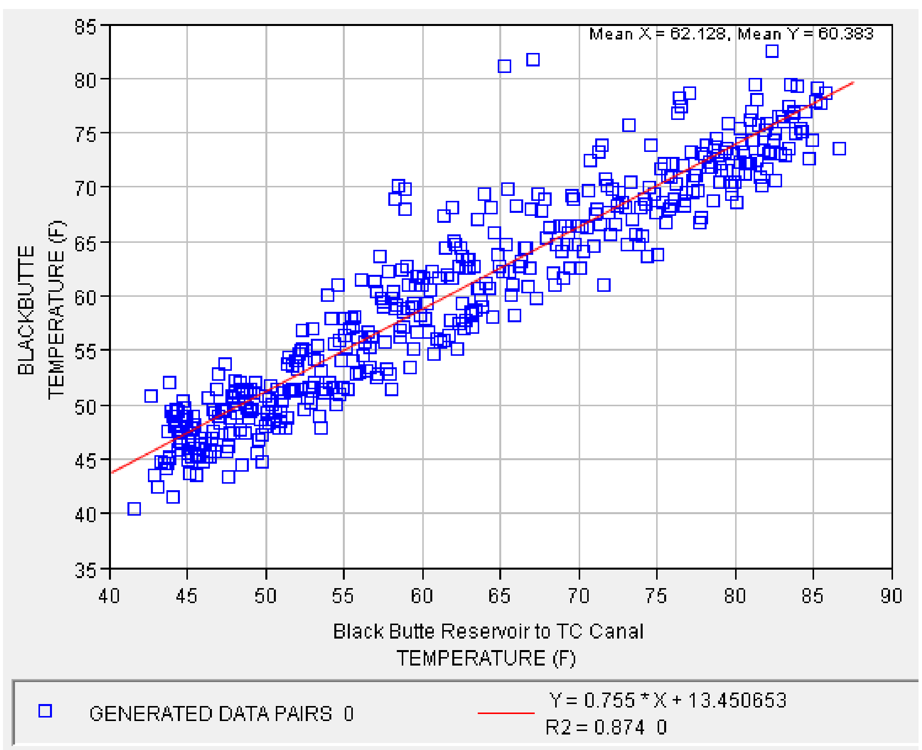


Figure 6B.C.38 Stony Creek below Black Butte Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.16 Stony Creek below Black Butte Dam Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15

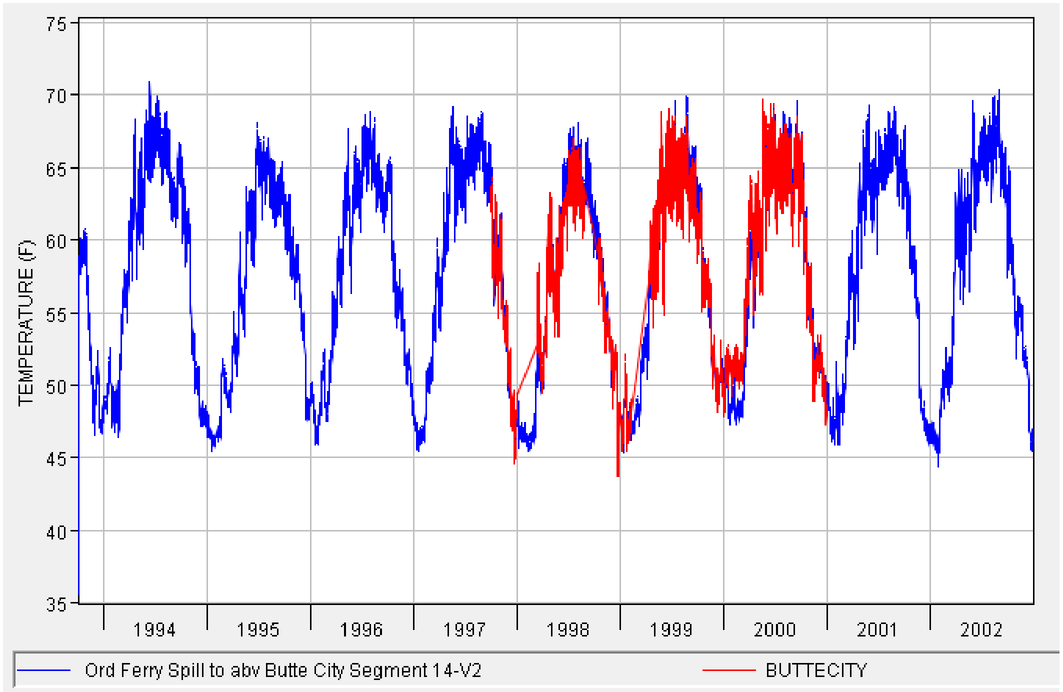


Figure 6B.C.39 Sacramento River at Butte City Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

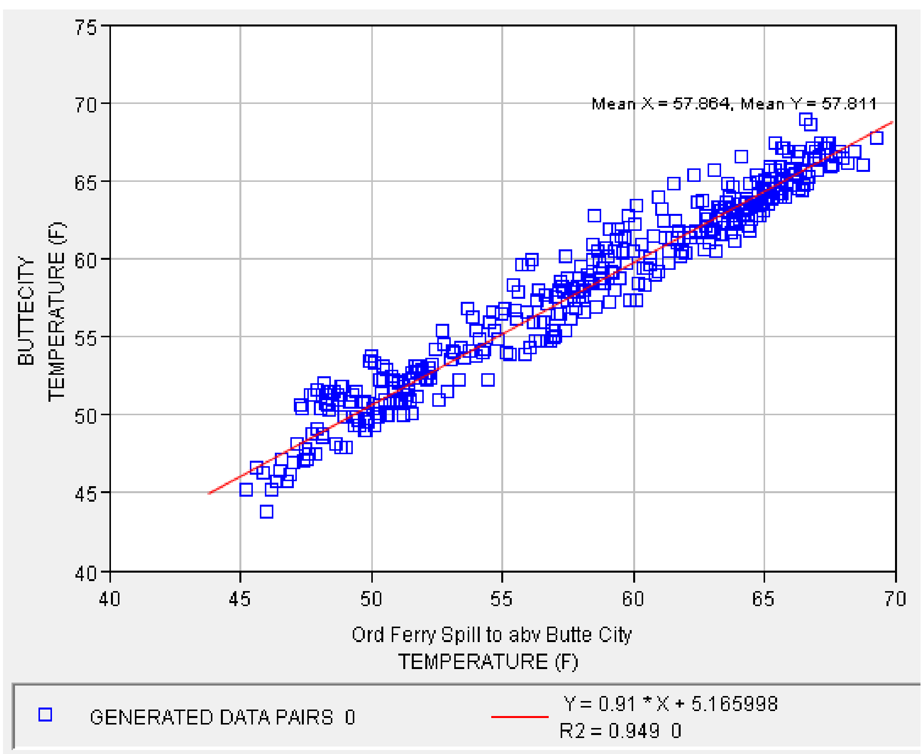


Figure 6B.C.40 Sacramento River at Butte City Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.17 Sacramento River at Butte City Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	47.71	48.54	-0.84	1.90	1.48
Feb	255	47.14	48.65	-1.51	1.96	1.62
Mar	249	50.06	51.08	-1.02	1.58	1.25
Apr	270	54.74	55.37	-0.63	1.52	1.21
May	279	57.27	57.31	-0.04	1.52	1.21
Jun	270	59.93	59.11	0.82	2.07	1.72
Jul	279	59.92	59.53	0.39	1.55	1.22
Aug	300	59.84	59.49	0.35	1.18	0.97
Sep	360	59.92	59.20	0.72	1.26	1.03
Oct	372	57.11	56.88	0.23	0.80	0.63
Nov	339	53.82	53.57	0.24	1.19	0.95
Dec	279	49.42	49.49	-0.06	1.13	0.90
Jan-Mar	783	48.27	49.38	-1.11	1.82	1.45
Apr-Jun	819	57.32	57.26	0.05	1.72	1.38
Jul-Sep	939	59.89	59.39	0.50	1.33	1.07
Oct-Dec	990	53.82	53.67	0.15	1.04	0.82
Average Year	3531	55.01	55.07	-0.06	1.48	1.15

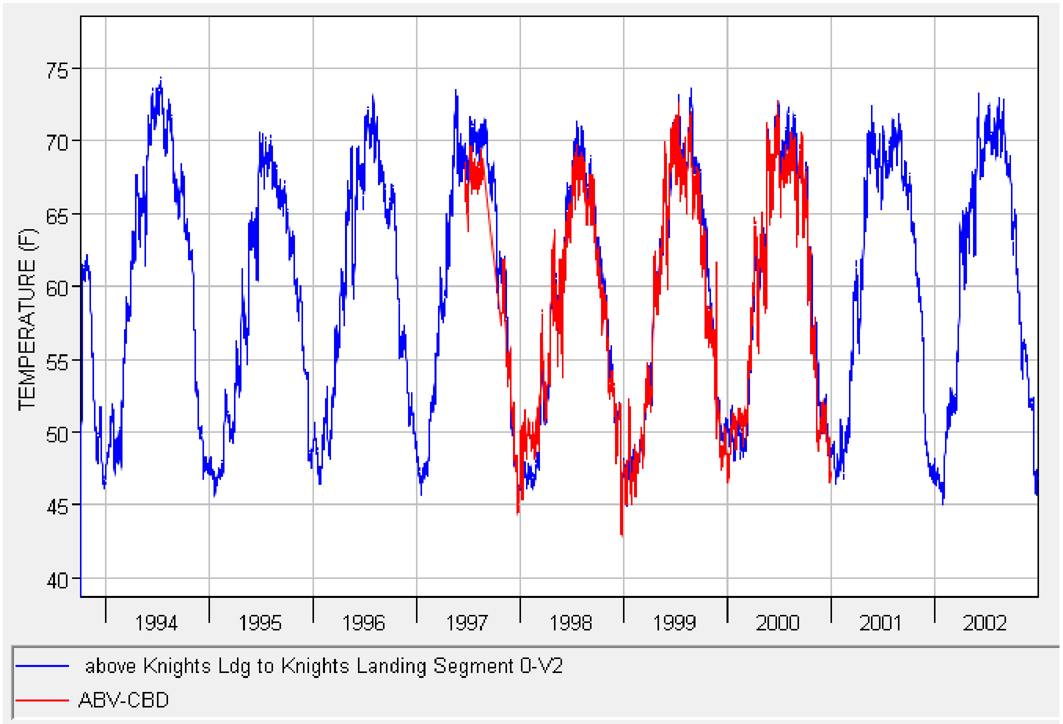


Figure 6B.C.41 Sacramento River above the Colusa Drain Observed (red) and Computed (blue) Temperature Time Series Resulting from the Trinity-Sacramento River Validation

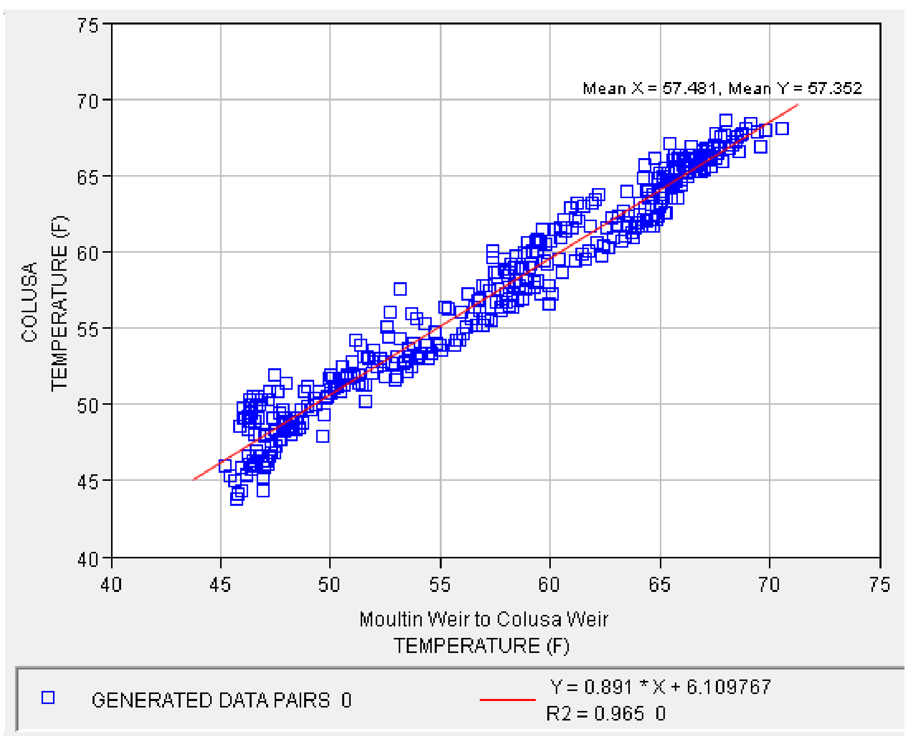


Figure 6B.C.42 Sacramento River above the Colusa Drain Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the Trinity-Sacramento River Validation

Table 6B.C.18 Sacramento River above the Colusa Drain Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	279	48.27	48.70	-0.43	1.84	1.48
Feb	243	48.16	49.29	-1.13	1.72	1.41
Mar	273	51.55	52.63	-1.08	1.62	1.33
Apr	270	57.76	58.08	-0.32	1.12	0.89
May	279	62.57	62.12	0.45	1.39	1.03
Jun	303	67.25	66.42	0.83	1.49	1.27
Jul	372	69.51	67.90	1.61	1.84	1.63
Aug	342	69.61	68.08	1.53	1.80	1.54
Sep	270	67.27	65.88	1.38	1.93	1.47
Oct	288	62.42	60.14	2.28	2.93	2.39
Nov	360	55.52	54.39	1.13	2.03	1.61
Dec	372	49.60	48.96	0.64	1.30	1.05
Jan-Mar	795	49.36	50.23	-0.87	1.73	1.41
Apr-Jun	852	62.71	62.37	0.34	1.35	1.07
Jul-Sep	984	68.93	67.41	1.52	1.85	1.56
Oct-Dec	1020	55.31	54.03	1.28	2.12	1.62
Average Year	3651	59.41	58.76	0.66	1.80	1.43

6B.C.9 American River Model Validation

Comparisons between observed temperature data and computed temperature results from the validation task for the American River are provided in this section. Figures 6B.C.43 through 6B.C.50 present geographic locations used in the HEC-5Q model and comparisons of observed and computed data at these locations. Observed results are from Reclamation, DWR, and USGS data. The results indicate overall good agreement between computed and observed data.

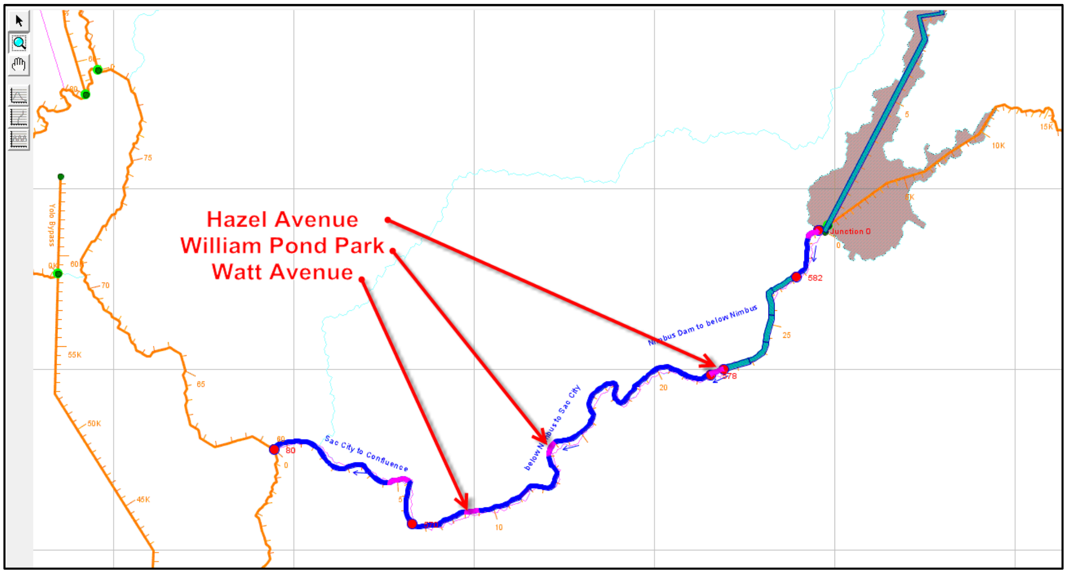


Figure 6B.C.43 Schematic of the American River HEC-5Q Model

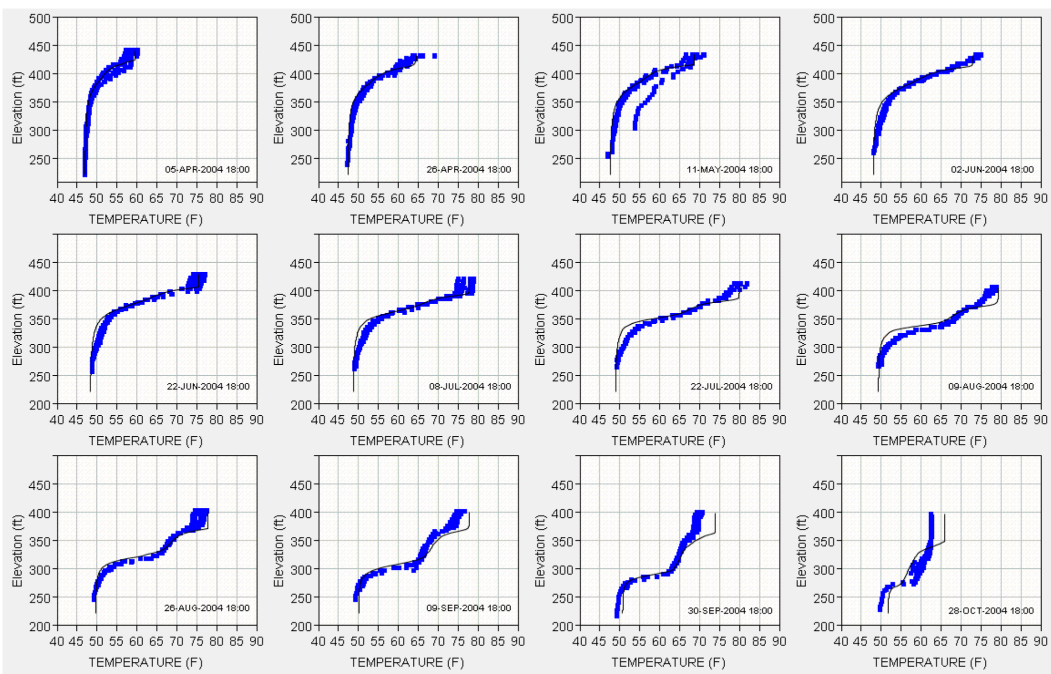


Figure 6B.C.44 Folsom Lake Observed (blue dots) and Computed (black line) Temperature Profiles Resulting from the American River Validation

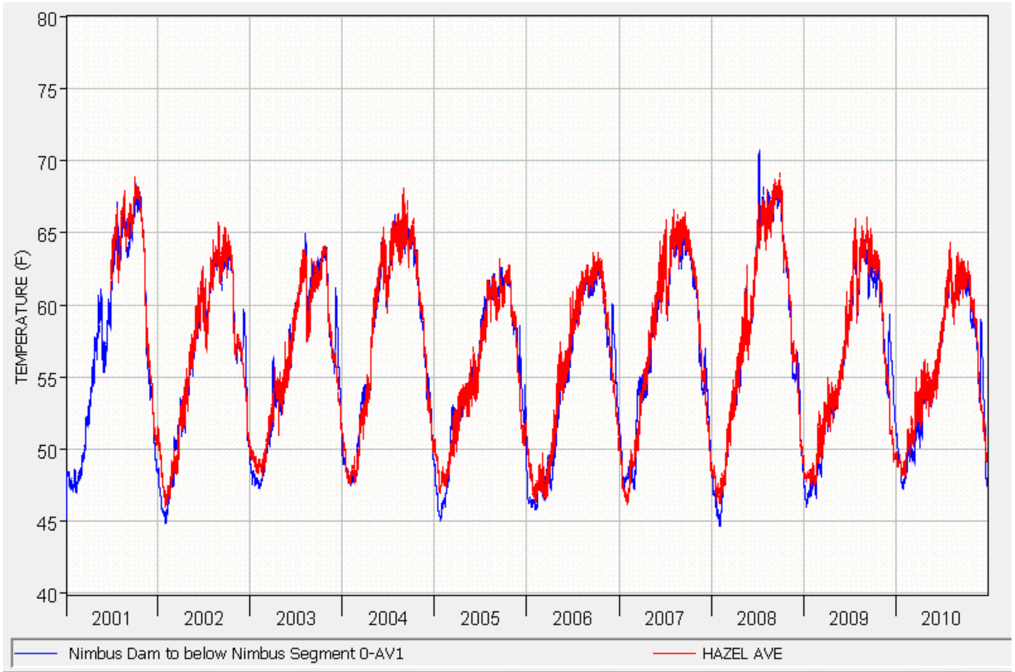


Figure 6B.C.45 American River below Nimbus Dam Observed (red) and Computed (blue) Temperature Time Series Resulting from the American River Validation

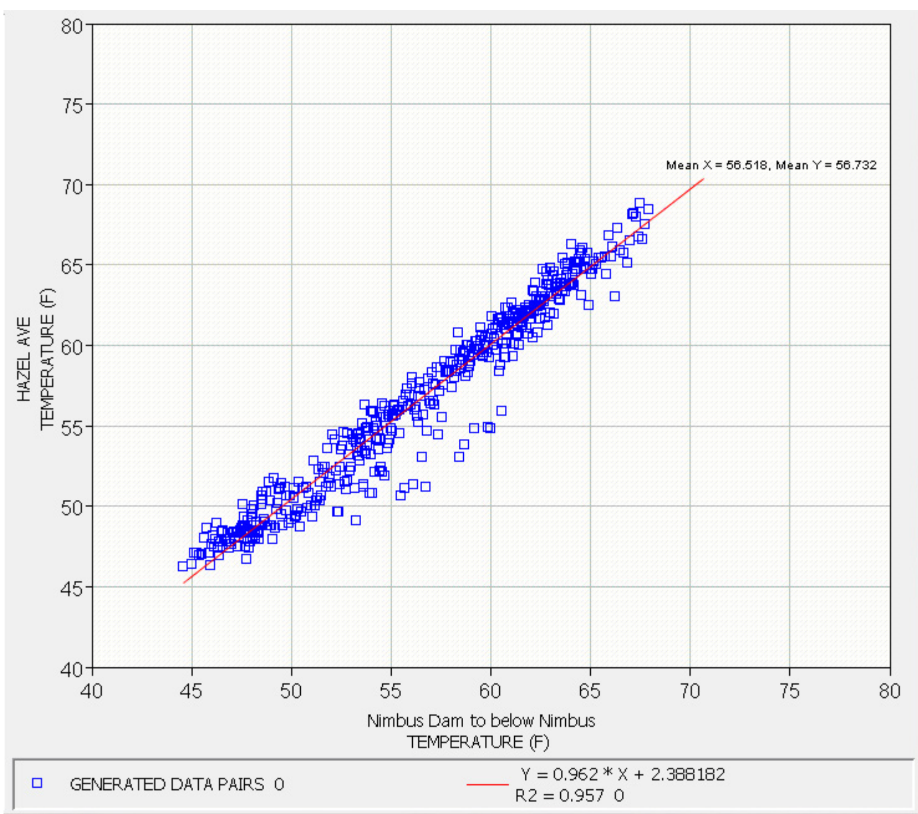


Figure 6B.C.46 American River below Nimbus Dam Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the American River Validation

Table 6B.C.19 American River below Nimbus Dam Computed and Observed Statistical Comparison

Period	Values	Computed (ºF)	Observed (ºF)	Bias (ºF)	RMS Differences (ºF)	Mean Differences (ºF)
Jan	1108	47.54	48.53	-1.00	1.40	1.14
Feb	1016	47.71	48.21	-0.49	0.83	0.68
Mar	1116	51.03	50.71	0.32	1.29	1.05
Apr	1064	53.07	53.57	-0.50	0.96	0.78
May	1093	55.83	56.12	-0.29	0.90	0.69
Jun	1075	58.56	58.67	-0.11	0.84	0.66
Jul	1199	61.91	61.88	0.04	0.93	0.72
Aug	1192	63.08	63.08	0.00	0.89	0.68
Sep	1164	63.26	63.68	-0.42	0.99	0.82
Oct	1240	62.82	63.26	-0.44	0.66	0.56
Nov	1200	57.69	58.27	-0.58	1.05	0.88
Dec	1236	53.28	52.39	0.89	2.00	1.56
Jan-Mar	3240	48.79	49.18	-0.39	1.20	0.97
Apr-Jun	3232	55.83	56.13	-0.30	0.90	0.71
Jul-Sep	3555	62.75	62.87	-0.12	0.94	0.74
Oct-Dec	3676	57.94	57.97	-0.04	1.36	1.00
Average Year	13703	56.53	56.73	-0.20	1.12	0.86

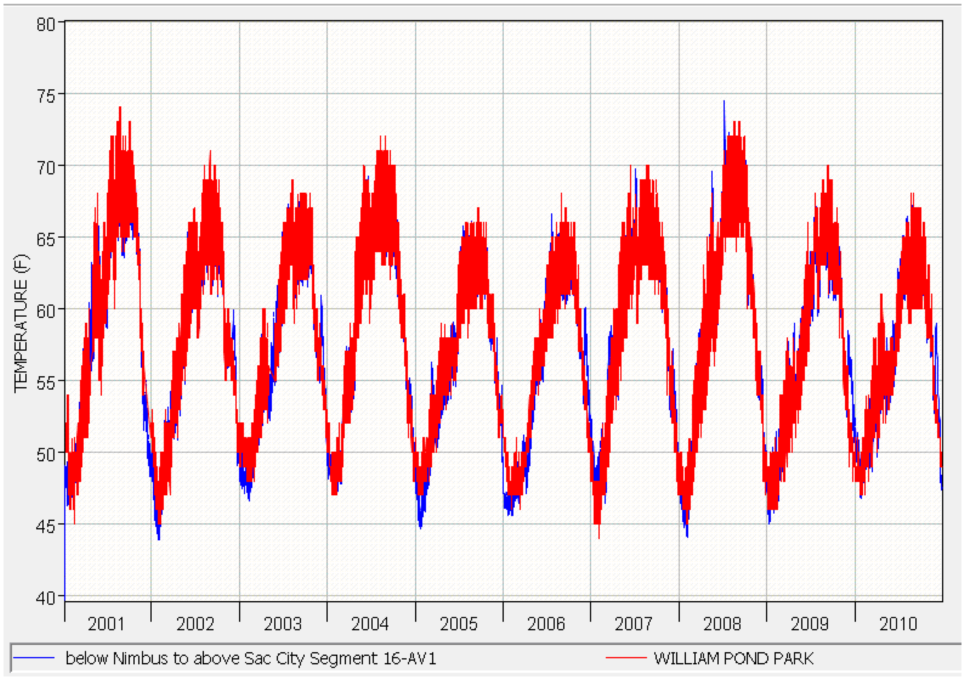


Figure 6B.C.47 American River at William Pond Park Observed (red) and Computed (blue) Temperature Time Series Resulting from the American River Validation

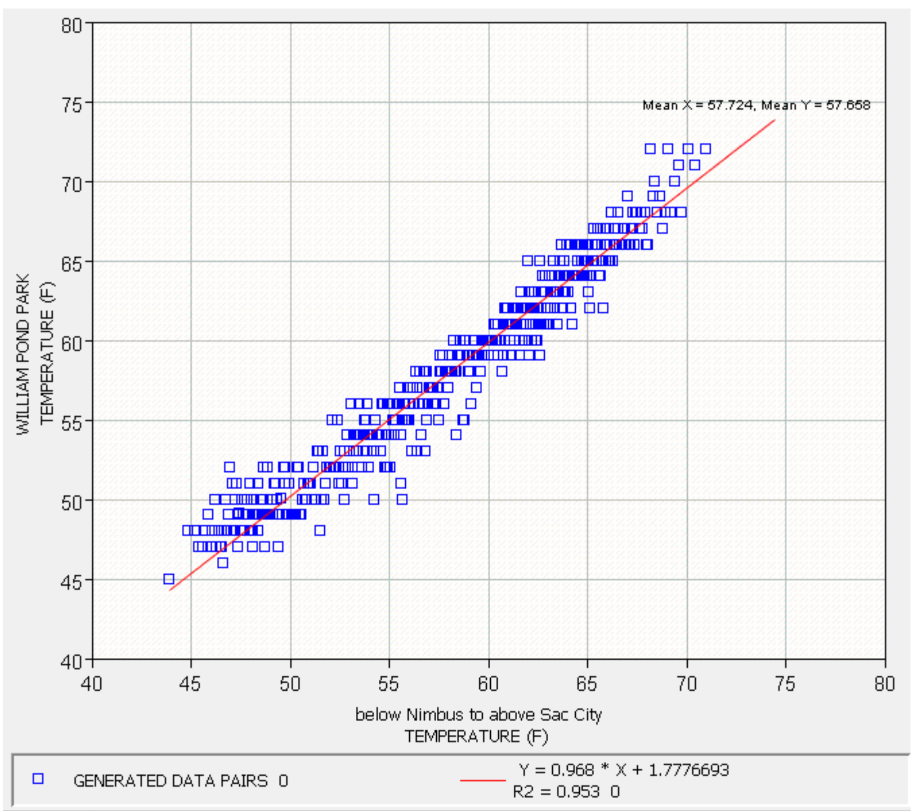


Figure 6B.C.48 American River at William Pond Park Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the American River Validation

Table 6B.C.20 American River at William Pond Park Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	1198	47.78	48.68	-0.91	1.63	1.29
Feb	1121	48.51	48.75	-0.23	1.05	0.85
Mar	1219	52.35	51.80	0.54	1.39	1.12
Apr	1157	54.59	54.83	-0.24	1.16	0.92
May	1131	58.36	58.25	0.12	1.13	0.89
Jun	1196	60.62	60.27	0.34	1.07	0.84
Jul	1236	63.93	63.38	0.55	1.14	0.88
Aug	1232	65.15	64.94	0.22	1.09	0.86
Sep	1200	64.79	65.18	-0.39	1.17	0.93
Oct	1240	63.24	63.76	-0.52	0.98	0.78
Nov	1200	57.70	58.26	-0.56	1.13	0.90
Dec	1113	53.24	52.24	0.99	1.84	1.43
Jan-Mar	3538	49.58	49.78	-0.19	1.38	1.09
Apr-Jun	3484	57.88	57.81	0.08	1.12	0.88
Jul-Sep	3668	64.63	64.49	0.13	1.13	0.89
Oct-Dec	3553	58.24	58.30	-0.06	1.35	1.02
Average Year	14243	57.65	57.66	-0.01	1.25	0.97

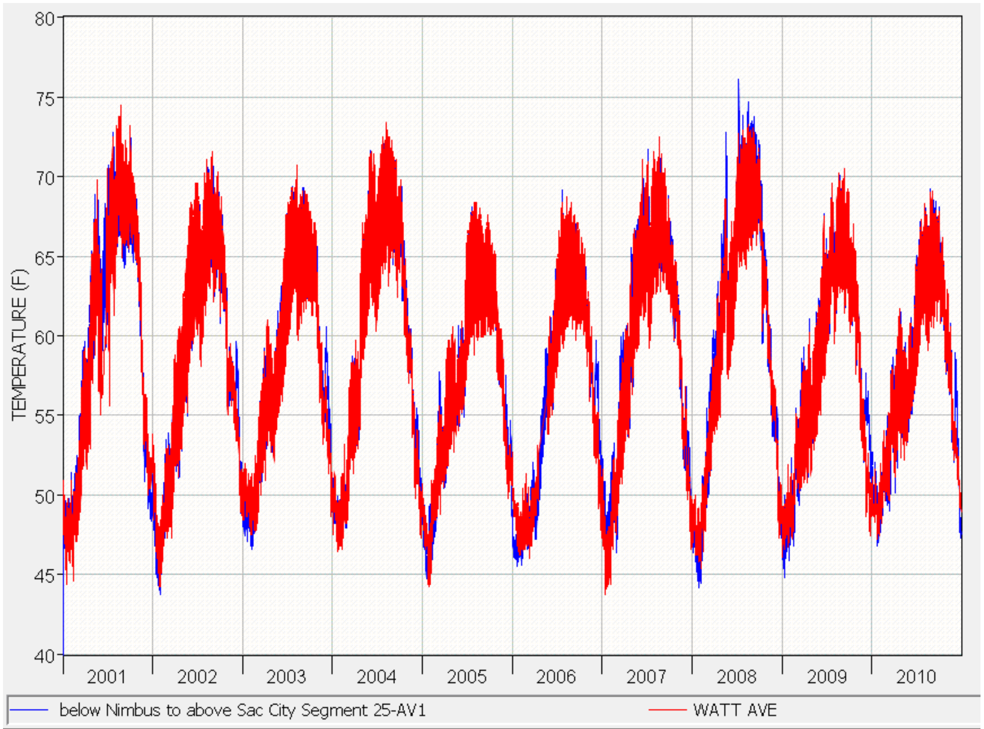


Figure 6B.C.49 American River at Watt Avenue Observed (red) and Computed (blue) Temperature Time Series Resulting from the American River Validation

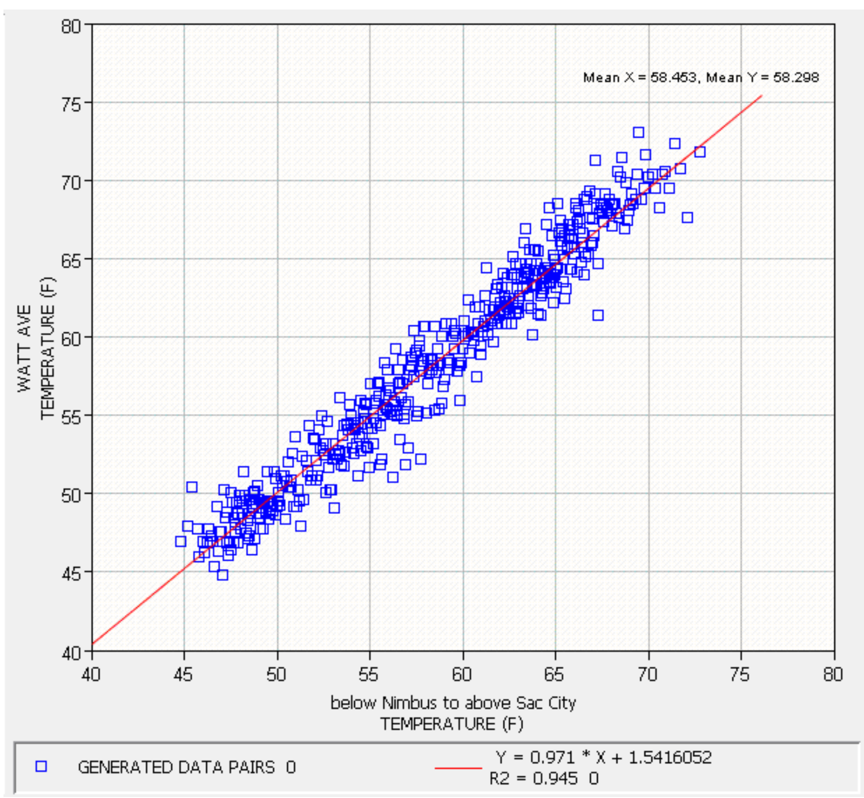


Figure 6B.C.50 American River at Watt Avenue Observed (Y-Axis) and Computed (X-axis) Temperature Data Pairs Resulting from the American River Validation

Table 6B.C.21 American River at Watt Avenue Computed and Observed Statistical Comparison

Period	Values	Computed (°F)	Observed (°F)	Bias (°F)	RMS Differences (°F)	Mean Differences (°F)
Jan	1223	47.91	48.48	-0.57	1.45	1.09
Feb	1128	49.14	49.11	0.02	1.02	0.83
Mar	1224	53.40	52.77	0.63	1.44	1.17
Apr	1153	55.98	55.99	0.00	1.26	1.02
May	1151	59.88	59.52	0.36	1.37	1.08
Jun	1200	62.20	61.43	0.77	1.89	1.35
Jul	1240	65.51	64.67	0.84	1.75	1.25
Aug	1236	66.64	66.42	0.22	1.40	1.16
Sep	1196	65.96	66.32	-0.36	1.38	1.14
Oct	1240	63.58	64.03	-0.46	1.01	0.84
Nov	1188	57.72	58.06	-0.35	1.05	0.83
Dec	1232	52.76	51.95	0.81	1.91	1.57
Jan-Mar	3575	50.18	50.15	0.02	1.33	1.04
Apr-Jun	3504	59.39	59.01	0.38	1.54	1.15
Jul-Sep	3672	66.04	65.80	0.24	1.52	1.18
Oct-Dec	3660	58.04	58.03	0.01	1.39	1.08
Average Year	14411	58.46	58.29	0.16	1.45	1.11

6B.C.10 Trinity River Outlet Diagrams

Diagrams that were used to simulate the Trinity Dam selective withdrawal procedure and the associated updates to the Trinity Dam outlets in the Trinity-Sacramento HEC-5Q model are presented in this section. Figure 6B.C.51 shows a schematic of the Trinity Dam outlets. Figure 6B.C.52 shows outlet capacity curves for the different Trinity Dam outlets. Figure 6B.C.53 shows the operational and flow vs. head (0 feet head at 1,900 feet lake elevation) characteristics of the Trinity Dam retrofitted turbine.

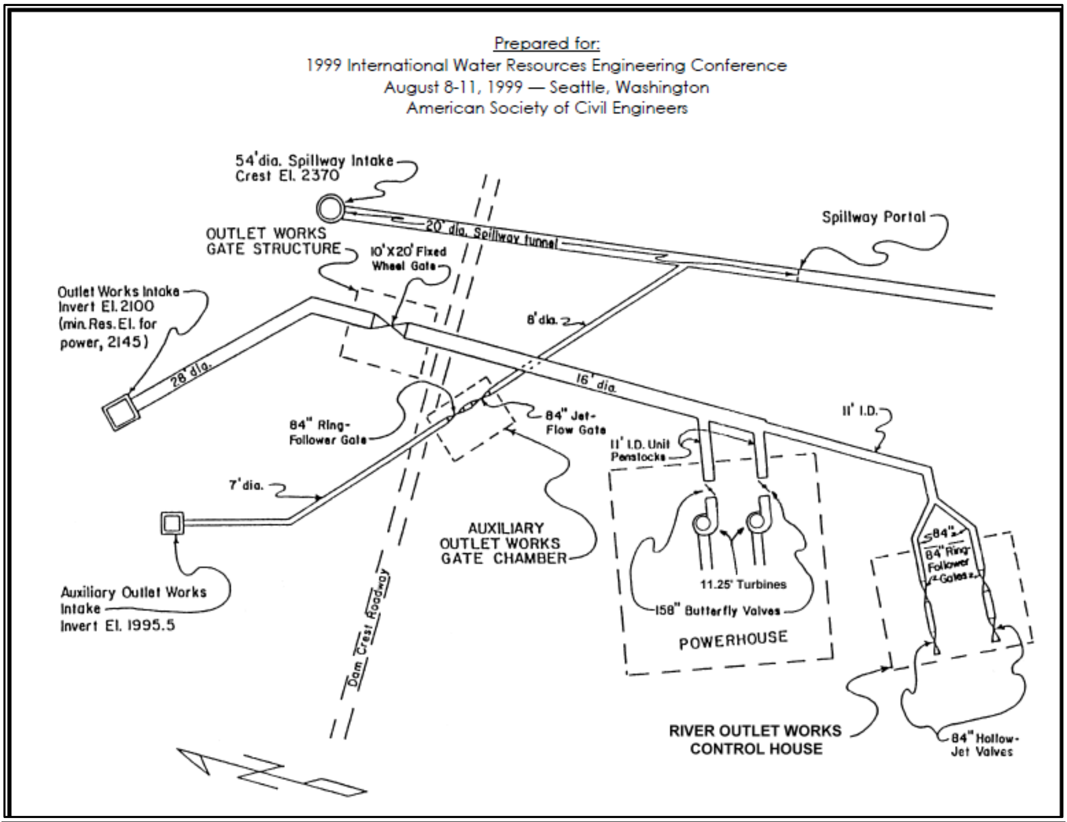


Figure 6B.C.51 Schematic of Trinity Dam Outlets (Wahl and Cohen 1999)

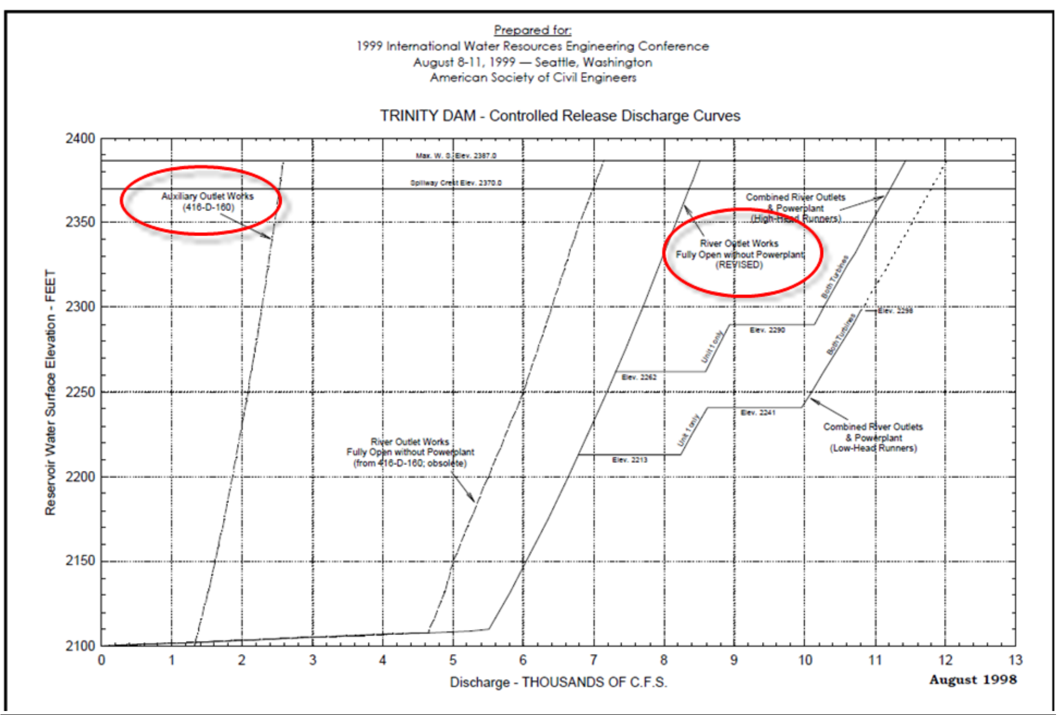


Figure 6B.C.52 Outlet Capacity Curves for Trinity Dam Outlets (Wahl and Cohen 1999)

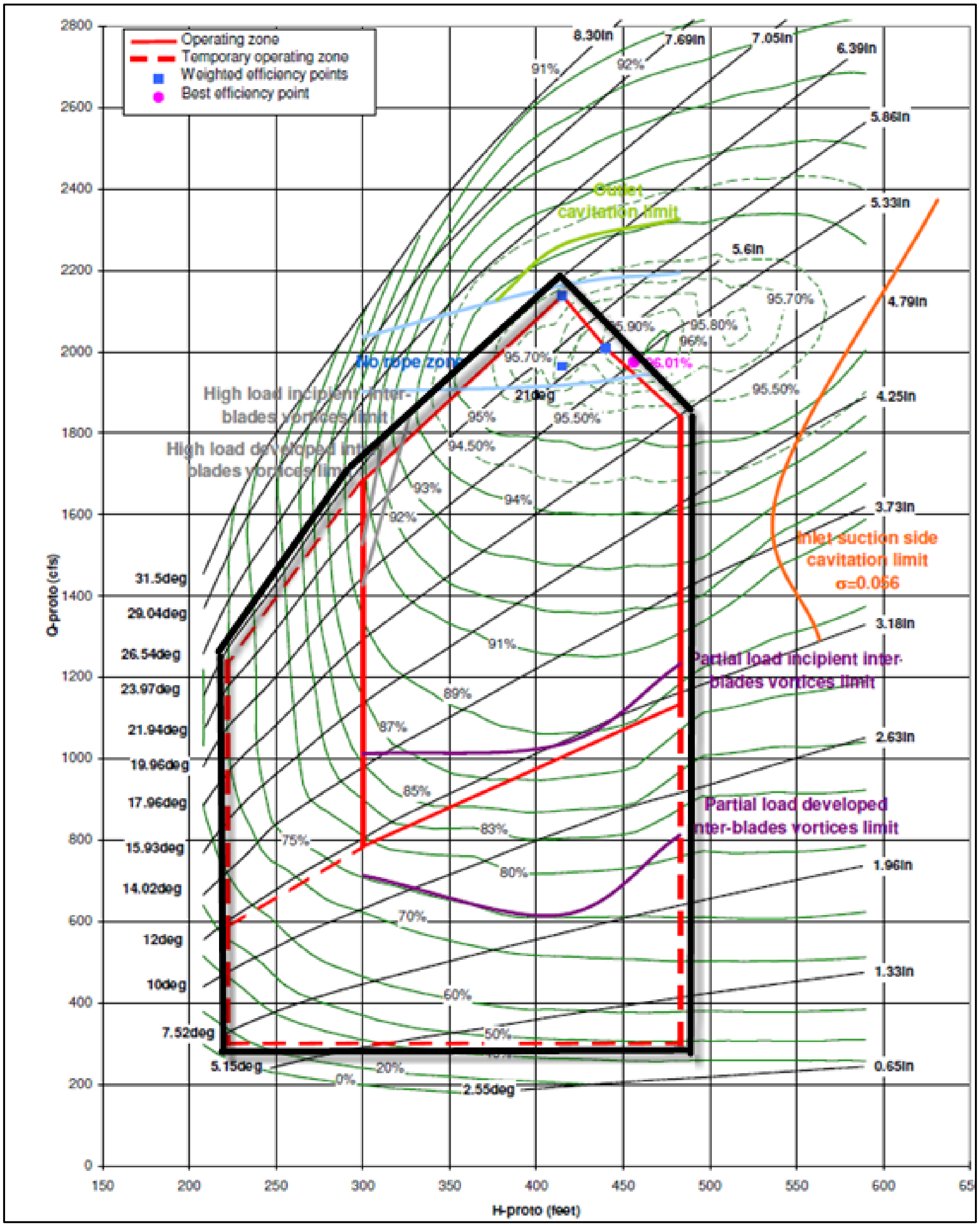


Figure 6B.C.53 Operational and Flow Compared to Total Head (with 0 feet head at 1,900 feet lake elevation) Characteristics of the Trinity Dam Retrofitted Turbine

6B.C.11 Shasta Release Temperature Target Schedules Spreadsheet Development

An approach to setting Shasta Dam release temperature target schedules in accordance with the 2009 NMFS BO, current management of the temperature target locations, and the spreadsheet tool SacR_Temp_Sel_Tool_rev05_FULL_FINAL_3-3-15.xlsm are presented in this section.

6B.C.11.1 Background

The SWRCB Water Rights Order 90-05 and NMFS BO include water temperature criteria in Sacramento River downstream of Shasta Dam. The NMFS BO Reasonable and Prudent Alternative (RPA) I.2.1 sets forth temperature compliance percentages for the summer season at specified locations on the Sacramento River (Table 6B.C.22) for not exceeding 56^0F at the specified location. These compliance percentages do not apply during extended drought periods.

Table 6B.C.22 Compliance Percentage for Not Exceeding 56^0F at Select Locations on the Sacramento River in the NMFS BO

Location	Compliance Percentage in NMFS BO (based on 10-year moving average)
Clear Creek	95 percent of Time
Balls Ferry	85 percent of Time
Jelly's Ferry	40 percent of Time
Bend Bridge	15 percent of Time

Shasta Lake releases are operated to not exceed 56^0F at the compliance locations, to the extent possible. The Sacramento River Temperature Task Group (SRTTG) meets once a month from April to October to discuss temperature compliance actions, as described in Appendix 3A.

Historically, initial compliance locations have been correlated to End-of-April storage, as summarized in Table 6B.C.23.

Table 6B.C.23 Compliance Location Based Upon End-of-April Storage

Compliance Location	End-of-April Storage (TAF)
Clear Creek	<3600
Balls Ferry	3600 – 4000
Jelly's Ferry	4000 – 4400
Bend Bridge	>4400

Figure 6B.C.54 shows the temperature compliance from 1996 to 2014 based on monthly Sacramento River Temperature Reports (Reclamation 2015). Shasta

Dam releases were operated under SWRCB Water Rights Order 90-05 during this entire time period. Operations under the NMFS BO were initiated in 2009.

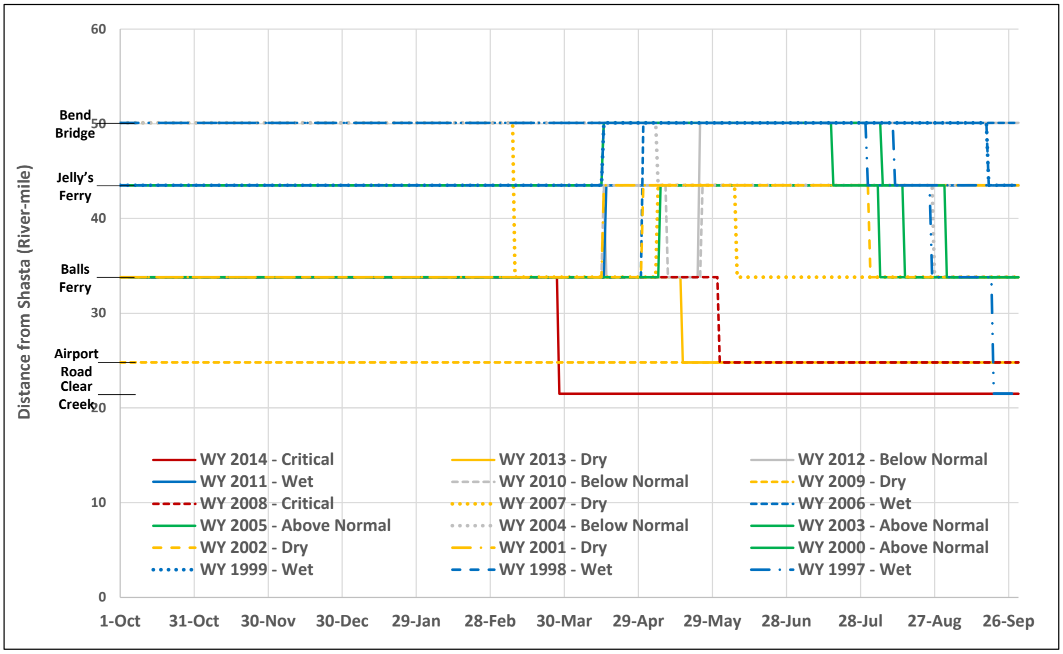


Figure 6B.C.54 Temperature Compliance Locations from 1996 through 2014

As shown in Figure 6B.C.54, the compliance location often changed multiple times in a year as Shasta storage, meteorology, tributary, and fisheries conditions changed through the year. No specific procedure could be identified for when locations were changed. In some years, such as 2007, the location would start further downstream (Bend Bridge), then move upstream (Balls Ferry), then move downstream (Jelly's Ferry), and then back upstream (Balls Ferry). In other years (e.g., 2004), the location would progressively move upstream.

Two general trends were identified. First, the compliance locations tended to be at Balls Ferry, Airport Road, and/or Clear Creek in dryer years (when Shasta Lake storage was low with less cold-water), and at Jelly's Ferry and Bend Bridge in wetter years. Second, the compliance location tended to move closer to Shasta Dam later in the year (as the cold-water pool became more depleted and meteorological conditions became warmer). These two trends, combined with the general operations used by Reclamation to set the initial annual compliance location, were used to help develop the temperature scheduling logic described below.

6B.C.11.2 Temperature Target Spreadsheet Development

This section describes the development of the Sacramento River Temperature Targeting Spreadsheet SacR_Temp_Sel_Tool_rev05_FULL_FINAL_3-3-15.xlsm.

Shasta storage data from the CalSim II EIS No Action Alternative Q5 run dated January 27, 2015 was loaded into the spreadsheet. This storage data set the compliance location for each year of the CalSim II simulation period and the data remain unchanged throughout the temperature schedule development. April storage was chosen as the parameter from which to choose the compliance location because it was specified as the indicator of cold-water pool storage in the NMFS BO. April storage was divided into five tiers, each tier representing a different compliance location based on Reclamation's rule-of-thumb approach for Shasta End-of-April storage shown in Table 6B.C.23. (Note that the storage tier for compliance with Jelly's Ferry is at 4,425 TAF in this procedure instead of 4,400 TAF.)

The four compliance locations (see Table 6B.C.22) were given an annual temperature schedule of monthly Shasta release temperature targets. These targets were developed using the following logic.

- **Step 1:** For each month individually, the difference between the modeled temperature at the compliance location and the modeled temperature below Shasta Dam was calculated for each year.
- **Step 2:** The difference value calculated in Step 1 that represented a specified exceedance for each month was then calculated for all compliance locations. This helped characterize the warming that occurred between Shasta release temperatures and each compliance location. For example, September at Bend Bridge was given a 5 percent exceedance. This exceedance says that only 5 percent of years had a September temperature difference higher than this difference value (e.g. 11.2^{0}F). In other words, warming that occurred between Shasta and Bend Bridge in September for the previous model run was 11.2^{0}F or lower for 95 percent of years.
- **Step 3:** The value calculated in Step 2 was then subtracted from 56^{0}F and this became the Shasta release temperature target for that compliance location in that month. This step assumes that the Shasta release temperature target will meet 56^{0}F or lower at the compliance location for the exceedance percentage number of years. For example, a Shasta release temperature target of 44.8^{0}F in September will meet 56^{0}F or lower at Bend Bridge for 95 percent of years.

The Sacramento River HEC-5Q model was run, using the January 13, 2015 version delivered to Reclamation and the CalSim II data described in previously, and the temperature output was loaded into the spreadsheet. The compliance performance was checked by calculating the percentage of years, over the 81-year simulation period, each compliance location exceeded 56^{0}F for each month and the difference between that percentage and the compliance percentage listed in Table 6B.C.22. Then, using an initial set of exceedance percentages (described in Step 2) and the latest Sacramento River HEC-5Q model code (March 3, 2015) to set the new temperature schedules, the Sacramento River HEC-5Q model was re-run and the temperature output reloaded in the spreadsheet. An iterative process was then performed where the exceedance percentages were adjusted, the Sacramento River HEC-5Q model was re-run and the temperature output was reloaded, and the compliance performance was checked until the compliance performance was deemed satisfactory. The final exceedance percentages (June to December) are listed in Table 6B.C.24.

Table 6B.C.24 Exceedance Percentages for June through December at the Four Temperature Compliance Locations

	June	July	August	September	October	November	December
Clear Creek	75.00	50.00	15.00	5.00	25.00	40.00	50.00
Balls Ferry	75.00	50.00	15.00	5.00	25.00	40.00	50.00
Jelly's Ferry	75.00	50.00	15.00	5.00	25.00	40.00	50.00
Bend Bridge	75.00	50.00	15.00	5.00	25.00	40.00	50.00

January through May were not given exceedance percentages as temperature management during those months is generally not an issue. Instead, January, February, and March were given a constant temperature target of 60.8^0F, which is the average temperature above the thermocline in Lake Shasta. Shasta Lake generally does not stratify during those months so the temperature at the top of the thermocline is assumed to be consistent through the entire depth of Shasta Lake (Rettig and Bortleson 1983). April and May were given a constant temperature of 53.6^0F, which is the average temperature below the thermocline in Shasta Lake. Stratification starts to occur in April and May and it is assumed that there is enough storage in Shasta Lake to conserve the cold-water pool. The final Shasta release temperature targets used in the spreadsheet for each compliance location are shown in Table 6B.C.25.

Table 6B.C.25 Final Shasta Lake Release Temperature Targets Used in the Temperature Targeting Spreadsheet

Location	Shasta Storage (TAF)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
None	<2000	60.8	60.8	60.8	53.6	53.6	52.6	52.6	51.8	50.8	54.6	56.0	56.2
Clear Creek	<3600	60.8	60.8	60.8	53.6	53.6	52.6	52.6	51.8	50.8	54.6	56.0	56.2
Balls Ferry	<4000	60.8	60.8	60.8	53.6	53.6	51.2	51.5	50.4	49.3	54.1	56.3	56.9
Jelly's Ferry	<4425	60.8	60.8	60.8	53.6	53.6	49.6	50.1	48.7	47.7	53.6	56.7	57.6
Bend Bridge	<9999	60.8	60.8	60.8	53.6	53.6	48.5	49.0	47.4	46.6	53.4	56.9	58.1

This modeling approach does not dynamically change the compliance location that in reality changes throughout the year based on the SRTTG recommendations. While the temperature release targets would not change using for the year with this modeling logic, the logic recognizes that those temperature release targets will not be possible to meet in each year due to changes in Shasta Lake storage and meteorological conditions. If modeled Shasta Lake releases are lower than the temperature target, then it could be considered that the compliance location was moved downstream. In addition, if Shasta Lake releases are higher than the temperature target, then it could be considered that the compliance location was moved upstream.

As an example, the End-of-April Storage from the CalSim II run in Year 1940 is 4,140 TAF. The compliance location is therefore set to be Jelly’s Ferry and the temperature schedule in Table 6B.C.25 is for Jelly’s Ferry. Using those temperature targets, the HEC-5Q model run produces Shasta Lake outflow temperatures that do not meet those temperature targets and thus result in temperatures that do not meet 56^{0}F at Jelly’s Ferry, due to Shasta Lake storage and downstream meteorological conditions. For instance, in July the Shasta Lake outflow was 48.6^{0}F, even though the release target was 50.1^{0}F. This is because Shasta Lake storage was still relatively high to preserve more cold water in the reservoir pool and meteorological conditions were cooler than were typical for July. Thus the release temperature was cooler than the temperature target and as a result, 56^{0}F was met at Bend Bridge. In September, Shasta Lake outflow was 53.7^{0}F, even though the temperature target was 47.7^{0}F. This is because meteorological conditions were warmer than were typical for September. Thus the release temperature was warmer than the temperature target and as result, 56^{0}F could only be met at Clear Creek. A full illustration of modeled Year 1940 and the compliance location changes based on Shasta release temperatures are presented on Figure 6B.C.55.

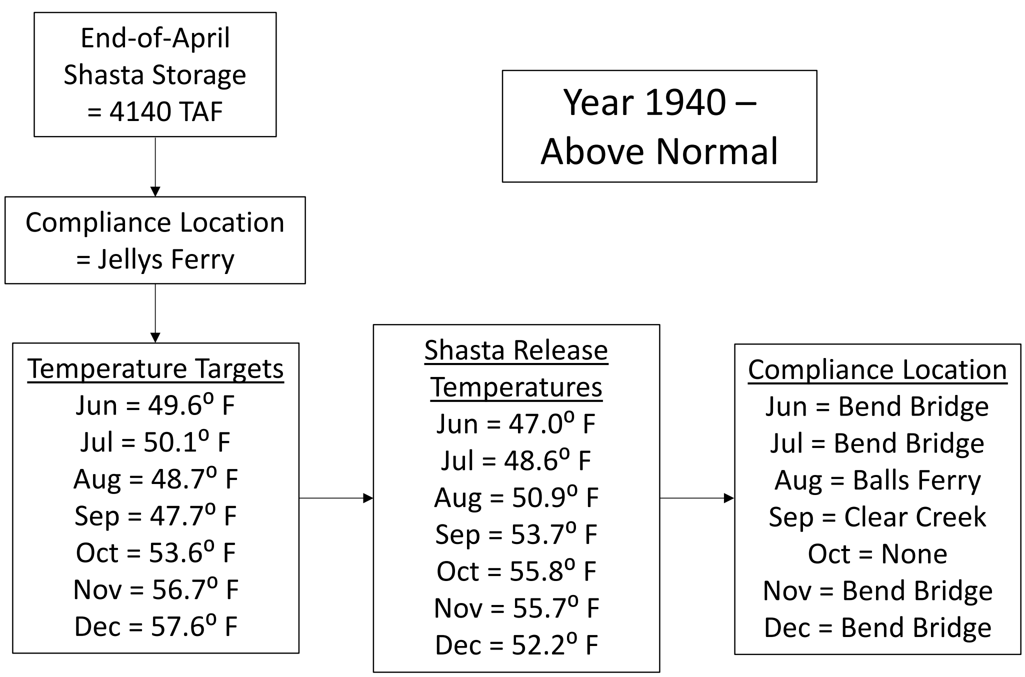


Figure 6B.C.55 Changes in Compliance Location Based on Shasta Lake Release Temperatures for Year 1940

While during all months the temperature target was set based on a compliance location of Jelly's Ferry, the actual compliance location changed. Thus the model passively mimics the SRTTG changing the compliance location based on Shasta Lake storage conditions and downstream meteorological conditions.

The chosen compliance location based on End-of-April storage and the actual compliance location achieved over the 81-year simulation period are shown on Figure 6B.C.56.

Year	WYT	Target	May	June	July	August	September	October	November	December
1922	AN	Jellys Ferry	Clear Creek	None	None	None	None	None	Bend Bridge	Bend Bridge
1923	BN	Clear Creek	Bend Bridge	Jellys Ferry	None	None	None	None	Bend Bridge	Bend Bridge
1924	C	Clear Creek	Clear Creek	None	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1925	D	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge
1926	D	Balls Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1927	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1928	AN	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	Bend Bridge	Bend Bridge
1929	C	Clear Creek	Bend Bridge	Jellys Ferry	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1930	D	Clear Creek	Jellys Ferry	Jellys Ferry	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1931	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1932	D	None	Balls Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1933	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1934	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1935	BN	Clear Creek	Balls Ferry	Jellys Ferry	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1936	BN	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Clear Creek	Bend Bridge	Bend Bridge
1937	BN	Balls Ferry	Balls Ferry	Jellys Ferry	Balls Ferry	Balls Ferry	None	Clear Creek	Bend Bridge	Bend Bridge
1938	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1939	D	Clear Creek	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1940	AN	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	None	Bend Bridge	Bend Bridge
1941	W	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1942	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1943	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Bend Bridge	Bend Bridge
1944	D	Clear Creek	Jellys Ferry	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1945	BN	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1946	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge
1947	D	Clear Creek	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1948	BN	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1949	D	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge	Bend Bridge
1950	BN	Balls Ferry	Jellys Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	Clear Creek	Bend Bridge	Bend Bridge	Bend Bridge
1951	AN	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1952	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1953	W	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1954	AN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1955	D	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Clear Creek	None	Jellys Ferry	Bend Bridge	Bend Bridge
1956	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1957	AN	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge
1958	W	Jellys Ferry	Balls Ferry	Balls Ferry	Jellys Ferry	Jellys Ferry	Bend Bridge	Clear Creek	Bend Bridge	Bend Bridge
1959	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1960	D	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Balls Ferry	None	None	Bend Bridge	Bend Bridge
1961	D	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Balls Ferry	Bend Bridge	Bend Bridge
1962	BN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	Jellys Ferry	Bend Bridge	Bend Bridge
1963	W	Jellys Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Balls Ferry	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge
1964	D	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	None	Clear Creek	Bend Bridge	Bend Bridge
1965	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1966	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Clear Creek	Bend Bridge	Bend Bridge
1967	W	Bend Bridge	Bend Bridge	Balls Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1968	BN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Balls Ferry	Bend Bridge	Bend Bridge
1969	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1970	W	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1971	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1972	BN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	None	Bend Bridge	Bend Bridge	Bend Bridge
1973	AN	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1974	W	Jellys Ferry	Jellys Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge
1975	W	Jellys Ferry	Bend Bridge	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Jellys Ferry	Bend Bridge	Bend Bridge
1976	C	Balls Ferry	Bend Bridge	Jellys Ferry	Balls Ferry	None	None	Balls Ferry	Bend Bridge	Bend Bridge
1977	C	None	Jellys Ferry	Clear Creek	None	None	None	None	Bend Bridge	Bend Bridge
1978	AN	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1979	BN	Balls Ferry	Balls Ferry	Bend Bridge	Jellys Ferry	Clear Creek	None	Clear Creek	Bend Bridge	Bend Bridge
1980	AN	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1981	D	Jellys Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1982	W	Jellys Ferry	Balls Ferry	Jellys Ferry	Jellys Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge
1983	W	Jellys Ferry	Jellys Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1984	W	Bend Bridge	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Jellys Ferry	Clear Creek	Bend Bridge	Bend Bridge
1985	D	Balls Ferry	Bend Bridge	Bend Bridge	Jellys Ferry	Clear Creek	None	None	Bend Bridge	Bend Bridge
1986	W	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Clear Creek	Bend Bridge	Bend Bridge
1987	D	Clear Creek	Bend Bridge	Bend Bridge	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1988	C	Clear Creek	Bend Bridge	Bend Bridge	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
1989	D	Balls Ferry	Bend Bridge	Jellys Ferry	Jellys Ferry	None	None	None	Bend Bridge	Bend Bridge
1990	C	Clear Creek	Balls Ferry	Balls Ferry	Clear Creek	None	None	None	Bend Bridge	Bend Bridge
1991	C	Clear Creek	Jellys Ferry	Balls Ferry	None	None	None	None	None	Bend Bridge
1992	C	Clear Creek	Jellys Ferry	Clear Creek	None	None	None	None	None	Bend Bridge
1993	AN	Jellys Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Balls Ferry	Bend Bridge	Bend Bridge
1994	C	Clear Creek	Balls Ferry	Bend Bridge	Clear Creek	None	None	None	Bend Bridge	Bend Bridge
1995	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Balls Ferry	Balls Ferry	Jellys Ferry	Bend Bridge	Bend Bridge
1996	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Clear Creek	Clear Creek	None	Bend Bridge	Bend Bridge
1997	W	Balls Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Clear Creek	None	Clear Creek	Bend Bridge	Bend Bridge
1998	W	Jellys Ferry	Bend Bridge	Balls Ferry	Balls Ferry	Balls Ferry	None	Clear Creek	Bend Bridge	Bend Bridge
1999	W	Bend Bridge	Bend Bridge	Jellys Ferry	Bend Bridge	Balls Ferry	Jellys Ferry	Balls Ferry	Bend Bridge	Bend Bridge
2000	AN	Bend Bridge	Balls Ferry	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	None	Bend Bridge	Bend Bridge
2001	D	Balls Ferry	Bend Bridge	Bend Bridge	Balls Ferry	None	None	None	Bend Bridge	Bend Bridge
2002	D	Jellys Ferry	Bend Bridge	Bend Bridge	Bend Bridge	Balls Ferry	Clear Creek	Bend Bridge	Bend Bridge	Bend Bridge

Figure 6B.C.56 Simulated Compliance Location Target and Achievement for Each Year over the 81-Year CalSim II Period

6B.C.11.3 Temperature Compliance Performance

As shown in Table 6B.C.26, the compliance location achieved during each month for each year over the 81-year simulation period mimics the general trends described previously. During dry periods (e.g., 1985 to 1992), the compliance location generally starts out at the upstream locations Clear Creek and Balls Ferry. Over the course of each year, the compliance location moves progressively upstream.

Table 6B.C.26 shows the percentage of years the HEC-5Q model (using the CalSim II data described earlier and the temperature targets shown in Table 6B.C.25) met 56^{0}F at each compliance location and the years short of meeting the compliance percentage.

Table 6B.C.26 Compliance Performance of the Final Temperature Targets

Location and Percentage of Years Required for Compliance	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Percentage of Years 56^{0}F Was Met at Each Compliance Location (N=81 Years)						
Clear Creek (95 percent of years)	98	89	72	57	62	91	100
Balls Ferry (85 percent of years)	90	86	62	42	47	93	100
Jelly's Ferry (40 percent of years)	75	69	33	26	33	91	98
Bend Bridge (15 percent of years)	54	47	7	14	26	95	98
	Number of Years Short of Compliance						
Clear Creek (95 percent of years)	-	5	19	31	27	3	-
Balls Ferry (85 percent of years)	-	-	19	35	31	-	-
Jelly's Ferry (40 percent of years)	-	-	5	11	5	-	-
Bend Bridge (15 percent of years)	-	-	6	1	-	-	-

6B.C.12 Folsom Release Temperature Target Schedules Spreadsheet Development

An approach to setting Folsom Dam release temperature target schedules for temperature management on the Lower American River based on NMFS BO and is an accompanying document to the spreadsheet tool AmerR_Temp_Sel_Tool_rev15_FULL_FINAL_3-16-15.xlsm is presented in this section.

6B.C.12.1 Background

The NMFS BO RPA II.2 sets forth a temperature requirement for the Lower American River at the Watt Avenue Bridge to not exceed 65^{0}F from May 15 to October 31.

In order to meet the NMFS BO temperature requirement, Reclamation manages Folsom Dam release temperatures based on temperature schedules set forth in Appendix 2-D of the NMFS BO. These schedules set monthly temperatures at Watt Avenue for Folsom Dam to operate to from May to October (temperature management season) based on forecasted Folsom storage and inflow. The initial temperature schedule for each year is determined based on an operations plan developed by Reclamation and approved by the American River Operations Group (ARG). However, these schedules are based on forecasted conditions. As conditions actually happen throughout the temperature management season, due to changes in Folsom Lake storage and inflow, current meteorological conditions, and/or the state of fisheries in the river, the Watt Avenue temperature target schedule is adjusted based on recommendations from the ARG.

It was possible to model the initial annual temperature target schedule for Folsom Lake to operate to for the year because storage and forecasted inflow are known quantities in CalSim II. However, modeling the dynamic adjustment of the Watt Avenue temperature target based on current storage and meteorological conditions was not going to be possible. Thus logic was developed to create a temperature target selection procedure that set a specific schedule for each year that remained unchanged. This logic is described in the following section.

6B.C.12.2 Temperature Target Spreadsheet Development

The development of the Sacramento River Temperature Targeting Spreadsheet AmerR_Temp_Sel_Tool_rev15_FULL_FINAL_3-16-15.xlsm is described in this section.

Folsom storage and inflow data from the CalSim II EIS No Action Alternative Q5 run dated January 27, 2015 was loaded into the spreadsheet. This CalSim II data remained unchanged throughout the temperature schedule development. May Folsom Storage plus June to September average inflow to Folsom (storage plus inflow) was calculated in the spreadsheet. This was a simplification of the forecasting approach that is used to set the actual temperature targets, as it only took into account June through September inflow.

Appendix 2-D of the NMFS BO lists 72 different temperature target schedules for May through October. Each schedule changed the temperature target for one month only. It was deemed unnecessary to incorporate all 72 schedules due to the simplified forecasting approach described above that only focused on June to September inflow. This reduced the 72 schedules to schedules that focused primarily on temperature management during June through September. Ultimately the 72 schedules were reduced to 22 schedules as these schedules were deemed to adequately represent the variance in temperature targets during June through September.

Then, using an initial set of storage plus inflow tiers assigned to each temperature schedule number, the schedule number for each year of the CalSim II period of record was calculated. Then the average storage plus inflow for each tier was calculated. For example, there were 8 years over the simulation period that had a schedule number of 11 and the average storage plus inflow was 1,415 TAF. The average storage plus inflow calculated for each tier was plotted versus the schedule number, as shown in Figure 6B.C.57.

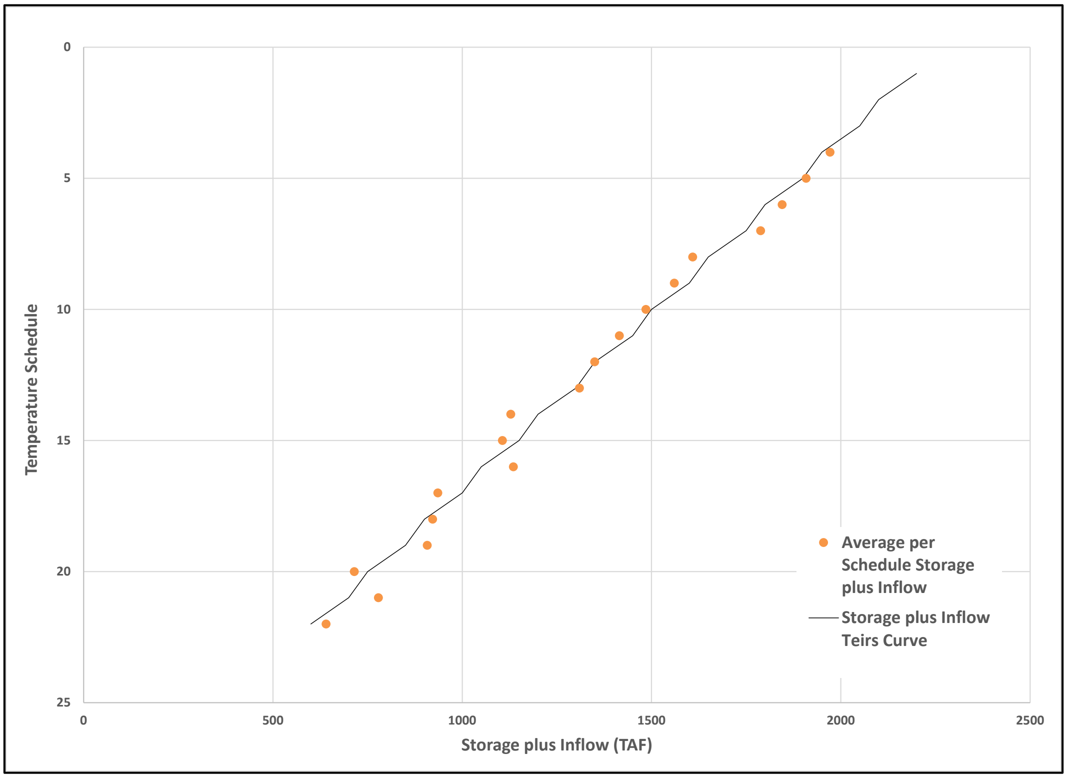


Figure 6B.C.57 Temperature Schedule Number and Average Folsom Lake Storage plus June-September Inflow for each Schedule Number

The schedule shown in the plot was used to calculate the final storage plus inflow tiers used in the spreadsheet.

Using the regression equation shown in Figure 6B.C.57, the final storage plus inflow tiers to be used for the spreadsheet were calculated (see Table 6B.C.27).

Table 6B.C.27 Final Watt Avenue Temperature Target Schedules (Yellow highlighted cells indicate a change from the previous schedule)

Schedule	Storage plus June-Sept. Inflow	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	56	56	56	63	61	61	62	62	61	57	56	56
2	600	56	56	56	63	62	62	62	62	62	58	56	56
3	700	56	56	56	63	62	62	63	63	62	59	57	56
4	750	56	56	56	63	63	63	63	63	63	60	57	56
5	850	56	56	56	63	63	63	64	64	63	60	58	56
6	900	56	56	56	63	64	64	64	64	64	60	58	56
7	1000	56	56	56	63	64	64	65	65	64	60	58	56
8	1050	56	56	56	63	65	65	65	65	65	60	58	56
9	1150	56	56	56	63	65	65	66	66	65	65	59	56
10	1200	56	56	56	63	66	66	66	66	66	65	59	56
11	1300	56	56	56	63	66	66	67	67	66	65	59	56
12	1350	56	56	56	63	67	67	67	67	67	65	59	56
13	1450	56	56	56	63	67	67	68	68	67	65	59	56
14	1500	56	56	56	63	68	68	68	68	68	65	59	56
15	1600	56	56	56	63	68	68	69	69	68	68	59	56
16	1650	56	56	56	63	69	69	69	69	69	68	59	56
17	1750	56	56	56	63	69	69	70	70	69	69	60	56
18	1800	56	56	56	63	70	70	70	70	70	69	60	56
19	1900	56	56	56	63	70	70	71	71	70	70	61	56
20	1950	56	56	56	63	71	71	71	71	71	70	61	56
21	2050	56	56	56	63	71	71	72	72	71	71	62	56
22	2100	56	56	56	63	72	72	72	72	72	71	62	56

January, February, March and December were given temperature targets of 56^{0}F for all temperature schedules as a default. During these months, temperature management is generally not an issue. April was given a temperature target of 63^{0}F to conserve cold water in the reservoir pool at the start of the temperature management season.

Establishing the temperature target schedule sets the temperature targets at Watt Avenue. However, Folsom Dam can only actually operate to release temperatures, with the goal that those release temperatures will ultimately meet the Watt Avenue temperature target after ambient warming occurs. To calculate the Folsom release temperatures, the following logic was developed.

- **Step 1:** The American River HEC-5Q Model was run using the January 13, 2015 version delivered to Reclamation, the CalSim II data described previously, and an initial Watt Avenue and Folsom Dam temperature target schedules. The temperature output from that HEC-5Q model run was loaded into the spreadsheet.

- **Step 2:** For each month individually, the difference (shift) between the modeled temperature at Watt Avenue and the modeled temperature below Folsom Dam was calculated for each year.
- **Step 3:** The annual shift calculated in Step 2 that represented a specified exceedance for each month was then calculated. This helped characterize the warming that occurred between Folsom release temperatures and Watt Avenue. For example, September was given a 50 percent exceedance. This exceedance says that 50 percent years had a September temperature shift higher than this shift value (e.g., 0.6^0F). Therefore, warming that occurred between Folsom Dam and Watt Avenue in September for the previous model run was 0.6^0F or lower for 95 percent of years.
- **Step 4:** The exceedance shift value calculated in step iii was then divided by the average annual June to September shift value. This calculated a shift factor that was used in the final temperature shift calculations.
- **Step 5:** The average June to September shift value for each schedule number was then calculated. For example, schedule number 11 was the schedule for eight years over the simulation period and the average June to September shift was 4.6^0F.
- **Step 6:** The average June to September shift value calculated in Step v was plotted versus its temperature schedule number, as shown in Figure 6B.C.58.
- **Step 7:** Average June to September shifts for each schedule number were then calculated using the regression equation in Figure 6B.C.58.
- **Step 8:** The shift values calculated in step vii were then multiplied by the shift factor calculated in step vii and was subtracted from the temperature target value in Table 6B.C.27. This created the Folsom Dam release temperature target schedules.
- **Step 9:** An iterative process where the Folsom Dam temperature target schedules developed using the initial temperature target schedules described in step 1 were then used in the next HEC5Q model run and then reloaded into the spreadsheet. The process was repeated until the Folsom Dam release temperature target schedules were deemed acceptable based on modeled temperature results. The final Folsom Dam release temperature target schedules are shown in Table 6B.C.28.

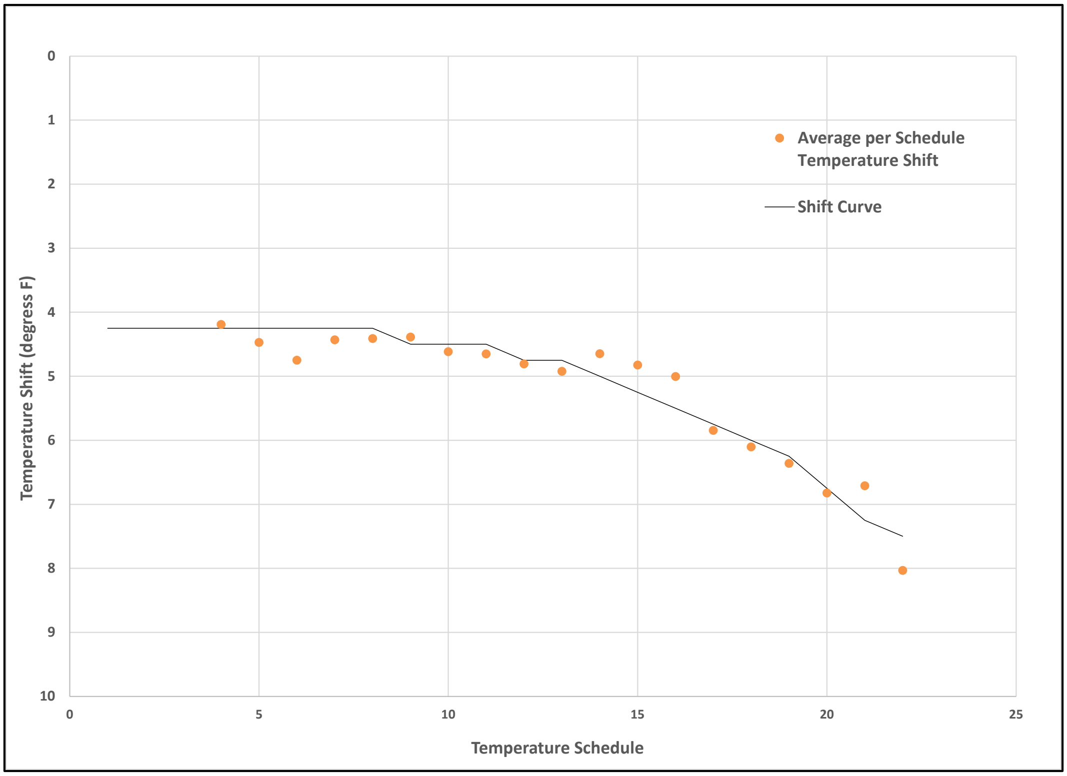


Figure 6B.C.58 Average Temperature Shift between Modeled Folsom Lake Release Temperatures and Watt Avenue Temperatures for each Schedule Number after Multiple Iterations

The shift curve shown in the plot was used to calculate the final temperature shifts used in the spreadsheet.

Table 6B.C.28 Final Folsom Dam Lake Release Temperature Targets in the Spreadsheet (Yellow highlighted cells indicate a change from the previous schedule)

						Shift Factors							
						0.7	0.8	0.8	1.2	0.6	0.4	0.2	0
Schedule	Storage plus Jun-Sep Inflow	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0	52	52	52	59	66.8	66.0	66.0	63.0	67.5	68.0	60.5	56
2	600	52	52	52	59	66.8	66.0	66.0	63.0	67.5	68.0	60.5	56
3	700	52	52	52	59	65.9	65.2	66.2	63.3	66.7	68.1	60.6	56
4	750	52	52	52	59	66.3	65.6	65.6	62.9	67.0	67.3	59.7	56
5	850	52	52	52	59	65.6	65.0	66.0	63.5	66.3	67.5	59.8	56
6	900	52	52	52	59	65.8	65.2	65.2	62.8	66.4	66.6	58.8	56
7	1000	52	52	52	59	65.0	64.4	65.4	63.1	65.6	66.7	58.9	56
8	1050	52	52	52	59	65.2	64.6	64.6	62.4	65.7	65.8	57.9	56
9	1150	52	52	52	59	64.3	63.8	64.8	62.7	64.9	65.9	58.0	56
10	1200	52	52	52	59	64.5	64.0	64.0	62.0	65.0	63.0	58.0	56
11	1300	52	52	52	59	63.7	63.2	64.2	62.3	64.2	63.1	58.1	56
12	1350	52	52	52	59	63.7	63.2	63.2	61.3	64.2	63.1	58.1	56

Schedule	Storage plus Jun-Sep Inflow	Jan	Feb	Mar	Apr	Shift Factors							
						0.7	0.8	0.8	1.2	0.6	0.4	0.2	0
						May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
13	1450	52	52	52	59	62.9	62.4	63.4	61.6	63.3	63.2	58.1	56
14	1500	52	52	52	59	62.9	62.4	62.4	60.6	63.3	63.2	58.1	56
15	1600	52	52	52	59	61.9	61.4	62.4	60.6	62.3	63.2	58.1	56
16	1650	52	52	52	59	62.0	61.6	61.6	59.9	62.5	58.3	57.2	56
17	1750	52	52	52	59	61.0	60.6	61.6	59.9	61.5	58.3	57.2	56
18	1800	52	52	52	59	61.0	60.6	60.6	58.9	61.5	58.3	57.2	56
19	1900	52	52	52	59	60.0	59.6	60.6	58.9	60.5	58.3	57.2	56
20	1950	52	52	52	59	60.0	59.6	59.6	57.9	60.5	58.3	56.2	56
21	2050	52	52	52	59	59.0	58.6	59.6	57.9	59.5	57.3	56.2	56
22	2100	52	52	52	59	59.0	58.6	58.6	56.9	59.5	56.3	55.2	56

January through April were not given shift factors and instead were given a constant 4^{0}F shift as a default for the same reason described for those months for the Watt Avenue temperature target schedules.

6B.C.12.3 Temperature Performance

Figure 6B.C.59 shows box and whisker plots of modeled temperatures at Watt Avenue in the completed spreadsheet.

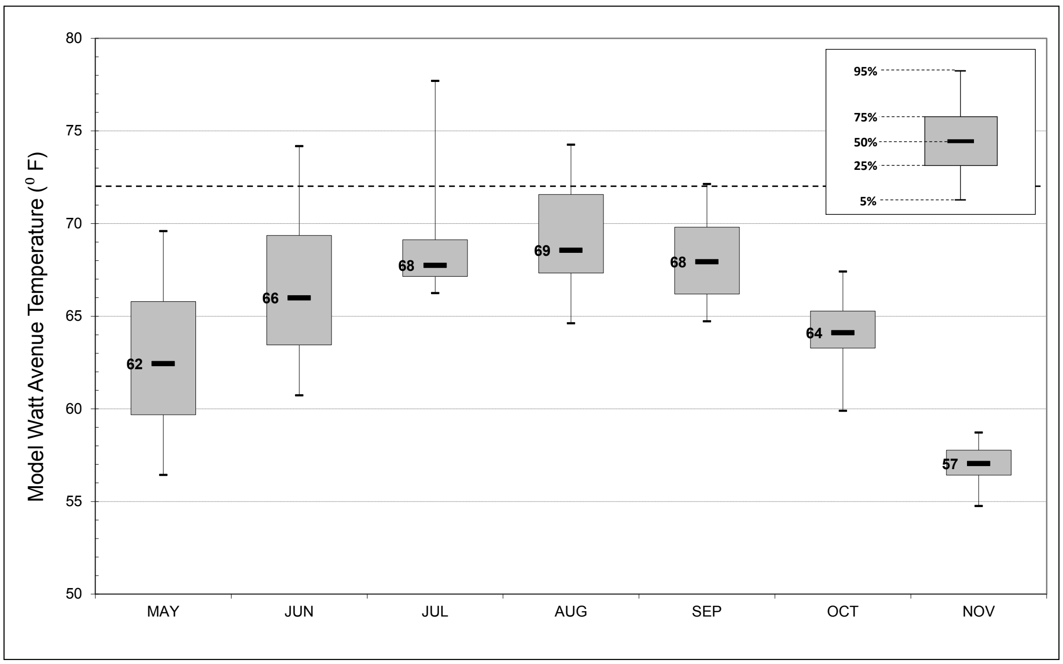


Figure 6B.C.59 Modeled Watt Avenue temperatures in Final Spreadsheet

The figure shows the expected pattern where temperatures are higher in the summer but the Watt Avenue target temperature for each month were met in majority of the years. The maximum temperature target (72^{0}F) was not exceeded in approximately 75 percent of years for all months. The years where the temperatures exceeded the maximum 72^{0}F target were during dry periods, when meeting the Watt Avenue temperature targets are not possible to meet due to low storage in Folsom Lake.

6B.C.13 References

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Appendix 6C

Methylmercury Model Documentation

This appendix provides information about the methods, modeling tools, and assumptions used for the Coordinated Long-term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis. It also provides information pertaining to the development of the analytical tools and the use of input data as well as model result processing and interpretation methods used for the impacts analysis and descriptions.

This appendix is organized into three main sections that are briefly described below:

- **Section 6C.1: Modeling Methodology.** The methylmercury impacts analysis used CalSim II, the Delta Simulation Model II (DSM2), and the Central Valley Regional Water Quality Control Board (Central Valley RWQCB) Total Maximum Daily Load (TMDL) model (RWQCB Model) to assess and quantify effects of the alternatives on the long-term operations of the CVP and SWP and on the environment. This section provides information about the overall analytical framework and how some of the model input information obtained from other models was processed through the use of analytical tools.
- **Section 6C.2: Modeling Simulations and Assumptions.** This section provides a brief description of the assumptions for the RWQCB Model simulations of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.
- **Section 6C.3: Modeling Results.** This section provides a description of the model simulation output formats used in the analysis and interpretation of modeling results for the alternatives impacts assessment.

6C.1 Modeling Methodology

This section summarizes the methylmercury modeling methodology used for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5. It describes the overall analytical framework and contains descriptions of the key analytical and numerical tools and approaches used in the quantitative evaluation of the alternatives. The alternatives include several major components that will have significant effects on SWP and CVP operations and minor effects on the water quality of the system.

6C.1.1 Overview of the Modeling Approach and Objectives

Modeling of physical and biological methylmercury processes in the Delta is necessary to evaluate changes related to the implementation of alternatives that could affect the health of humans and wildlife consuming fish in the Delta. It has been recognized that fish tissue concentrations are the best indicator of mercury contamination in the Delta as described in the RWQCB Model (Central Valley RWQCB 2011). The RWQCB Model, an empirical tissue concentration model, was based on the concentration averages of fish mercury and water concentrations of methylmercury over broad areas of the Delta (Wood 2010). The RWQCB Model is used to estimate fish tissue mercury concentrations from concentrations of dissolved methylmercury in water.

CalSim II, DSM2 (water), and the RWQCB Model (fish tissue) were used in sequence to estimate the effects of CVP and SWP operations on water and fish tissue quality in the Delta. CalSim II simulates flow in the waterways, and DSM2 simulates one-dimensional hydrodynamics in the Delta, as discussed in Chapter 5, Surface Water Resources and Water Supplies. One of the three DSM2 modules, QUAL, simulates one-dimensional source tracking in the Delta. Results from DSM2 proportioned by source area were multiplied by average source concentrations and added to determine annual average aqueous methylmercury concentrations in the Delta for all year types and dry years for specific model nodes. The RWQCB Model is based on a power curve that uses the DSM2 output to simulate aqueous methylmercury concentrations to estimate total mercury concentrations in the fish fillets of standard 350-mm-long Largemouth Bass.

Figure 6C.1 shows the modeling tools applied in the methylmercury impacts assessment and the relationship between these tools. Each model included in Figure 6C.1 provides information to the next "downstream" model in order to provide various results to support the impacts analysis.

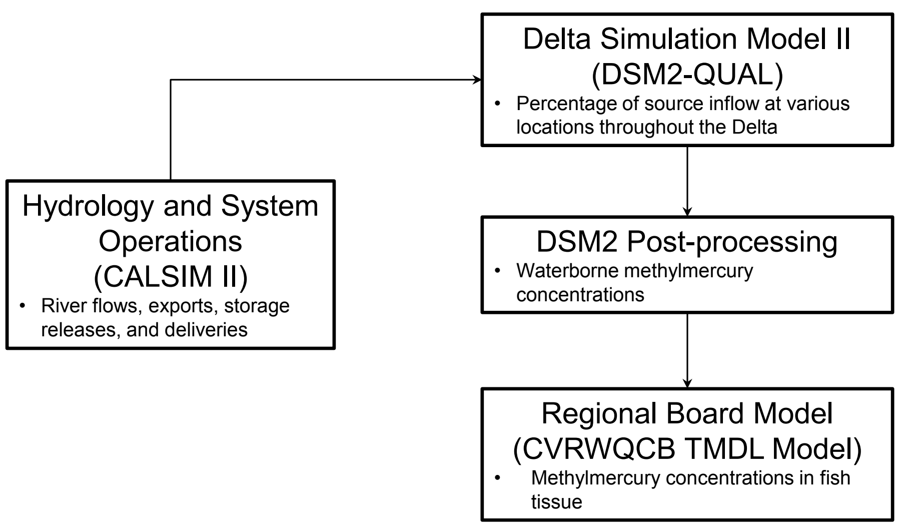

Figure 6C.1. Relationships among the Different Predictive Modeling Tools

6C.1.1.1 Modeling Objectives

Impacts on methylmercury resources in the Delta SWP and CVP Service Areas were evaluated for each alternative as part of the EIS development. Modeling objectives included the evaluation of the following:

- Percent changes in fish tissue mercury concentrations
- Exceedances of human and fish and wildlife thresholds

6C.1.2 Key Components of the Methylmercury Modeling

A calibrated regional flow model was used to provide a regional framework to be used for modeling of waterborne methylmercury concentrations. An additional model was used to translate waterborne methylmercury concentrations to total mercury concentrations in fish tissue.

6C.1.2.1 DSM2 Postprocessing

Dissolved methylmercury data were available for six inflow locations to the Delta (Table 6C.1):

- Sacramento River at Freeport (mainstem flow to Delta)
- San Joaquin River at Vernalis (mainstem flow to Delta)
- Mokelumne and Calaveras rivers (for Eastside tributaries)
- Various Delta locations (for Delta agriculture)
- Suisun Bay (for San Francisco Bay)

Table 6C.1. Modeled Methylmercury Concentrations in Water

Location	Period*	Period Average Concentration (ng/L)			
		No Action Alternative	Alternative 1	Alternative 3	Alternative 5
Delta Interior					
San Joaquin River at Stockton	All	0.16	0.16	0.16	0.16
	Drought	0.16	0.16	0.17	0.16
Turner Cut	All	0.15	0.15	0.15	0.15
	Drought	0.14	0.14	0.14	0.14
San Joaquin River at San Andreas Landing	All	0.12	0.11	0.11	0.12
	Drought	0.11	0.11	0.11	0.11
San Joaquin River at Jersey Point	All	0.11	0.11	0.11	0.11
	Drought	0.11	0.10	0.10	0.11
Victoria Canal	All	0.14	0.14	0.14	0.14
	Drought	0.14	0.13	0.14	0.14
Western Delta					
Sacramento River at Emmaton	All	0.10	0.10	0.10	0.10
	Drought	0.10	0.10	0.10	0.10
San Joaquin River at Antioch	All	0.10	0.10	0.10	0.10
	Drought	0.09	0.09	0.09	0.10

Location	Period*	Period Average Concentration (ng/L)			
		No Action Alternative	Alternative 1	Alternative 3	Alternative 5
Montezuma Slough at Hunter Cut/ Beldon's Landing	All	0.08	0.08	0.08	0.08
	Drought	0.07	0.07	0.07	0.07
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.11	0.11	0.11	0.11
	Drought	0.11	0.11	0.11	0.11
Contra Costa Pumping Plant #1	All	0.13	0.13	0.13	0.13
	Drought	0.12	0.12	0.12	0.13
Banks Pumping Plant	All	0.14	0.13	0.13	0.14
	Drought	0.13	0.13	0.13	0.13
Jones Pumping Plant	All	0.14	0.14	0.14	0.14
	Drought	0.14	0.13	0.14	0.14

Notes:

ng/L = nanogram per liter

* “All” water years 1922-2003 represent the 82-year period modeled using DSM2; “drought” represents a 5-consecutive-year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore model results for Second Basis of Comparison and Alternative 4 are not presented separately.

Model results for Alternative 2 and No Action Alternative are the same, therefore model results for Alternative 2 are not presented separately.

For DSM2 output locations, the geometric mean methylmercury concentrations from the inflow locations were combined with the modeled daily average percent inflow for each DSM2 output location to estimate waterborne methylmercury concentrations at those locations. The annual average mix of water from the six inflow sources (Table 6C.1) was calculated from daily percent inflows provided by the DSM2-QUAL model output. The daily waterborne methylmercury concentrations at DSM2 locations were calculated using the following equation:

$$C_{water\ quarterly} = [(I_1 * C_1)+(I_2 * C_2)+ (I_3 * C_3)+ (I_4 * C_4)+ (I_5 * C_5)+ (I_6 * C_6)]/100$$

Where:

- $C_{water\ daily}$ = daily average methylmercury concentration in water (micrograms/liter [µg/L]) at a DSM2 output location
- $I_{1\text{-}6}$ = modeled daily inflow from each of the six sources of water to the Delta for each DSM2 output location (percentage)
- $C_{1\text{-}6}$ = methylmercury concentration in water (µg/L) from each of the six inflow sources to the Delta (1-6)

The annual average waterborne methylmercury concentrations for the DSM2 output locations are shown in Table 6C.1.

6C.1.2.2 Regional Board Fish Tissue Model

The RWQCB Model predicts methylmercury concentration in 350-millimeter normalized Largemouth Bass fillet tissue from methylmercury in water. The Central Valley RWQCB developed an empirical power curve model based on measured Largemouth Bass fillet concentrations as averaged over large areas of the Delta compared to average methylmercury concentrations in water for those same areas and time periods (Central Valley RWQCB 2011):

Fish mercury (milligrams/kilogram, wet weight) = 20.365×(methylmercury in water, ng/L) $^{1.6374}$
(with r^2*=0.910, and P less than 0.05)*

The goal of the RWQCB Model was to establish the linkage between the 0.24 milligram per kilogram (mg/kg) tissue mercury TMDL target to a waterborne goal of 0.066 ng methylmercury/L. The RWQCB Model results are presented with the recognition of the imprecision of predicting fish tissue concentrations from estimates of methylmercury concentrations for specific Delta locations, but with the knowledge that Largemouth Bass are probably the best indicator of fish tissue contamination (see Section 6C.1.2.3). Results provide an estimated mean tissue concentration as would be expected by location and alternative. The model provides a Delta-specific, empirical estimate of the relationship between waterborne methylmercury and bioaccumulated fish tissue mercury.

The overall construction and calibration of the RWQCB Model were unchanged for this EIS analysis.

6C.1.2.3 Model Development

The RWQCB Model is based on unfiltered aqueous methylmercury data from March to October 2000 and Largemouth Bass fillet concentration data from September/October 2000. Largemouth Bass samples were chosen close in time and space to water collections. The paired samples, averaged over broad Delta areas, provided the framework for the nonlinear empirical model. Data were grouped by subareas of the Delta such as Sacramento River, Mokelumne River, Central Delta, San Joaquin River, and West Delta.

Largemouth Bass are excellent indicators of mercury contamination because they have a relatively high level of mercury compared to other species, are piscivorous, are abundantly distributed throughout the Delta, are popular gamefish, and have high site fidelity. Largemouth Bass are therefore representative of spatial patterns of tissue mercury concentrations throughout the aquatic food web, including exposure to humans.

The RWQCB Model was used to convert DSM2 estimated waterborne methylmercury concentrations to fish tissue mercury concentrations. The toxicity benchmark used to assess impacts of alternatives was the Central Valley RWQCB TMDL tissue concentration goal of 0.24 mg/kg wet weight (ww) of mercury for normalized 350-mm total length Largemouth Bass tissue (Central Valley RWQCB 2011).

6C.2 Modeling Simulations and Assumptions

This section describes the assumptions for the RWQCB Model simulations of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5. Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore model results for Second Basis of Comparison and 4 are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore model results for Alternative 2 are not presented separately. A description of DSM2 model assumptions is presented in Appendix 5A.

6C.2.1 Location Assumptions

The Central Valley RWQCB developed a nonlinear model based on Largemouth Bass as grouped in large regions of the Delta (rather than specific locations) compared to average methylmercury concentrations in water for those same, general regions (Central Valley RWQCB 2011). As such, the model provides a Delta-specific, general, long-term average relationship between co-located waterborne methylmercury concentrations and total mercury concentrations in Largemouth Bass fillets.

6C.2.2 Normalization and Tissue Type Assumptions

As discussed above, Largemouth Bass are excellent indicators of long-term average mercury exposure, risk, and the spatial pattern for both ecological and human health effects. A fish tissue mercury dataset was available for Largemouth Bass from locations across the Delta. However, the Largemouth Bass tissue mercury concentrations were presented as edible fillet concentrations for fish normalized to 350 mm in total length (SFEI 2010). It is important to standardize concentrations to the same length fish for establishment of the model and for model predictions because of the well-established positive relationship between fish length and age and tissue mercury concentrations (e.g., Alpers et al. 2008). This same normalization technique was used by the Regional Board for their model (Central Valley RWQCB 2011). The 350-mm size fish is an appropriate size representative of human health consumption and risk. The standardized size allows the best comparison among locations and alternatives. The fillet concentrations predicted by the model are expected to be slightly different from whole-body fish concentrations as consumed by wildlife, but comparisons among locations and alternatives and to the Regional Board benchmark will allow an evaluation of relative impacts to fish and wildlife as well as most accurately estimating impacts to human consumers.

6C.2.3 Model Application Methodology

To evaluate differences between the No Action Alternative, Second Basis of Comparison, and other alternatives for impact assessment, modeled methylmercury concentrations were compared directly (for percent change) and to the 0.24-mg/kg wet weight tissue threshold benchmark.

Results of comparisons to these benchmarks are expressed as exceedance quotients (EQs) in some of the tables and figures. Annual average methylmercury concentrations in water did not exceed the unfiltered aqueous methylmercury goal (0.06 µg/L) or the California Toxic Rule criterion for the consumption of water at the organism (0.050 µg/L) and of the organism only (0.051 µg/L), so no EQs were calculated for waterborne concentrations.

6C.2.3.1 No Action Alternative and Second Basis of Comparison Model Runs

The overall purpose of the models is to provide a set of conditions for the No Action Alternative and the Second Basis of Comparison to be used for comparison with the forecasts of the alternatives to determine whether the implementation of the alternatives is likely to result in substantial impacts to methylmercury, thereby affecting biological resources. Modeling for the No Action Alternative and the Second Basis of Comparison was completed for five Delta interior locations, three western Delta locations, and four locations near major water diversions. DSM2 postprocessing output provided estimates of the waterborne methylmercury concentration at each of those 12 locations (Table 6C.1). The RWQCB Model was then used to estimate methylmercury tissue concentrations in 350-mm Largemouth Bass. The modeled tissue methylmercury concentrations and the EQs (based on comparisons to thresholds) both served as a basis for comparison of other alternatives to identify potential impacts.

6C.2.3.2 Alternatives 1 through 5 Model Runs

For model simulations of Alternatives 1 through 5, the same procedure as described for the No Action Alternative and the Second Basis of Comparison was used with similar assumptions.

6C.3 Modeling Results

The postprocessing tool that presents the results from the RWQCB Model is an Excel-based spreadsheet tool. The general preprocessing and input files development are described in the modeling data assumptions sections above. This section focuses on data analysis and results interpretation for the impacts descriptions.

6C.3.1 Postprocessing and Results Analysis: Delta-wide Model

Output data resulting from the RWQCB Model simulations for each alternative were processed to provide a tabular depiction of potential impacts to methylmercury resources (Tables 6C.2 – 6C.4). As discussed previously, outputs from the RWQCB Model used in this analysis are annual average fish tissue mercury concentrations for all year types and separately presented for the subset of dry years.

All annual average concentrations exceed the TMDL target goal of 0.24 mg/kg tissue mercury at all locations modeled in the Delta for all years both as measured and modeled. Results are shown in Tables 6C.2 – 6C.4 and Figures 6C.2 and 6C.3. Table 6C.1 presents the period-average waterborne methylmercury concentrations by location and water year type as used to model fish tissue concentrations (Tables 6C.2 – 6C.4).

The differences in fish tissue mercury concentrations over long-term average conditions were reduced or similar (5 percent or less) under Alternatives 1 through 5 as compared to the No Action Alternative, and under the No Action Alterantive and Alternatives 1 through 4 as compared to the Second Basis of Comparison , as shown in Tables 6C.2 – 6C.4. Fish tissue mercury concentrations over long-term average conditions are greater than 5 percent under Alternative 5 as compared to the Second Basis of Comparison in the Suisun Marsh (Montezuma Slough at Hunter Cut/Beldon's Landing), and near Delta water intakes (San Joaquin River at Antioch, Contra Costa Pumping Plant Number 1, Banks Pumping Plant, and Jones Pumping Plant).

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore model results for Alternative 4 are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore model results for Alternative 2 are not presented separately.

6C.3.2 Model Limitations and Applicability

Although it is impossible to predict future hydrology, land use, and water use with certainty, the RWQCB Model and DSM2 were used to forecast impacts on fish that could result from implementation of the alternatives. Mathematical models like DSM2 can only approximate processes of physical systems. Models are inherently inexact because the mathematical description of the physical system is imperfect and the understanding of interrelated physical processes is incomplete. However, the RWQCB Model is a powerful tool that, when used carefully, can provide useful insight into processes of the physical system. Methylmercury concentrations for inflow sources to the Delta (e.g., agriculture in the Delta, Yolo Bypass, Eastside Tributaries) also caused uncertainty in the modeling because of limited data. For the Sacramento River and the San Joaquin River, about 90 data points (Chapter 6, Table 6.58; Table 6D.1) were used to estimate the mean methylmercury concentrations for these inflow sources, whereas the mean methylmercury concentrations for other inflow sources to the Delta had many fewer data points, ranging from 14 to no data points (concentrations for the Eastside Tributaries were assumed).

6C.4 References

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Wood, M., C. Foe, J. Cooke, and L. Stephen. 2010. *Sacramento–San Joaquin Delta Estuary TMDL for Methylmercury, Final Staff Report*. April. Prepared for California Regional Water Quality Control Board: Central Valley Region, Rancho Cordova, CA.

Table 6C.2. Summary Table for Methylmercury Concentrations in 350-mm Largemouth Bass Fillets for No Action Alternative, Second Basis of Comparison, and Alternative 1

Location	Period[a]	Estimated Concentrations of Methylmercury (mg/kg ww) No Action Alternative	Estimated Concentrations of Methylmercury (mg/kg ww) Second Basis of Comparison and Alternative 1	% Change In Methylmercury Concentrations[b] Alternative 1 compared to No Action Alternative	% Change In Methylmercury Concentrations[b] No Action Alternative compared to Second Basis of Comparison	Exceedance Quotients[c] No Action Alternative	Exceedance Quotients[c] Second Basis of Comparison and Alternative 1
Delta Interior							
San Joaquin River at Stockton	All	1.00	0.99	0	0	4.2	4.1
	Drought	1.06	1.06	0	0	4.4	4.4
Turner Cut	All	0.89	0.87	-3	3	3.7	3.6
	Drought	0.84	0.81	-4	4	3.5	3.4
San Joaquin River at San Andreas Landing	All	0.59	0.58	-3	3	2.5	2.4
	Drought	0.54	0.53	-3	3	2.3	2.2
San Joaquin River at Jersey Point	All	0.57	0.54	-4	5	2.4	2.3
	Drought	0.52	0.50	-4	4	2.2	2.1
Victoria Canal	All	0.85	0.82	-4	4	3.6	3.4
	Drought	0.82	0.76	-6	7	3.4	3.2
Western Delta							
Sacramento River at Emmaton	All	0.50	0.49	-2	2	2.1	2.0
	Drought	0.48	0.47	-2	2	2.0	2.0
San Joaquin River at Antioch	All	0.50	0.47	-6	7	2.1	2.0
	Drought	0.43	0.41	-5	5	1.8	1.7

Location	Period[a]	Estimated Concentrations of Methylmercury (mg/kg ww) No Action Alternative	Estimated Concentrations of Methylmercury (mg/kg ww) Second Basis of Comparison and Alternative 1	% Change In Methylmercury Concentrations[b] Alternative 1 compared to No Action Alternative	% Change In Methylmercury Concentrations[b] No Action Alternative compared to Second Basis of Comparison	Exceedance Quotients[c] No Action Alternative	Exceedance Quotients[c] Second Basis of Comparison and Alternative 1
Montezuma Slough at Hunter Cut/Beldon's Landing	All	0.35	0.32	-6	7	1.4	1.4
	Drought	0.28	0.26	-5	5	1.1	1.1
Major Diversions (Pumping Stations)							
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.56	0.56	-1	1	2.4	2.3
	Drought	0.59	0.57	-2	2	2.4	2.4
Contra Costa Pumping Plant #1	All	0.73	0.68	-6	6	3.0	2.8
	Drought	0.67	0.62	-7	8	2.8	2.6
Banks Pumping Plant	All	0.79	0.75	-5	5	3.3	3.1
	Drought	0.75	0.69	-7	8	3.1	2.9
Jones Pumping Plant	All	0.83	0.79	-4	4	3.5	3.3
	Drought	0.82	0.77	-6	7	3.4	3.2

Notes:

mg/kg = milligram per kilogram

ww = wet weight

a. “Al”: water years (1922-2003) represent the 82-year period modeled using DSM2. “Drought” Represents a 5-consecutive-year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. % change indicates a negative change (increased concentrations) relative to No Action Alternative or Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to No Action Alternative or Second Basis of Comparison when values are negative.

c. Concentrations greater than 0.24 mg/kg ww mercury exceed the TMDL guidance concentration.

1 **Table 6C.3 Summary Table for Methylmercury Concentrations in 350-mm Largemouth Bass Fillets for Alternative 3**

Location	Period[a]	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 3	% Change In Methylmercury Concentrations[b] No Action Alternative	% Change In Methylmercury Concentrations[b] Second Basis of Comparison	Exceedance Quotients[c] Alternative 3
Delta Interior					
San Joaquin River at Stockton	All	1.00	1	1	4.2
	Drought	1.07	1	1	4.5
Turner Cut	All	0.88	-2	1	3.7
	Drought	0.82	-3	1	3.4
San Joaquin River at San Andreas Landing	All	0.58	-3	0	2.4
	Drought	0.53	-2	1	2.2
San Joaquin River at Jersey Point	All	0.55	-4	1	2.3
	Drought	0.51	-2	2	2.1
Victoria Canal	All	0.83	-2	2	3.5
	Drought	0.79	-3	3	3.3
Western Delta					
Sacramento River at Emmaton	All	0.49	-2	0	2.0
	Drought	0.47	-1	0	2.0
San Joaquin River at Antioch	All	0.48	-6	1	2.0
	Drought	0.42	-3	2	1.7
Montezuma Slough at Hunter Cut/Beldon's Landing	All	0.33	-6	1	1.4
	Drought	0.27	-3	2	1.1

Location	Period[a]	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 3	% Change In Methylmercury Concentrations[b] No Action Alternative	% Change In Methylmercury Concentrations[b] Second Basis of Comparison	Exceedance Quotients[c] Alternative 3
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.56	-1	0	2.3
	Drought	0.58	-1	2	2.4
Contra Costa Pumping Plant #1	All	0.69	-5	1	2.9
	Drought	0.64	-4	4	2.7
Banks Pumping Plant	All	0.77	-3	2	3.2
	Drought	0.72	-4	4	3.0
Jones Pumping Plant	All	0.81	-3	2	3.4
	Drought	0.80	-3	4	3.3

Notes:

mg/kg = milligram per kilogram

ww = wet weight

a. "Al": water years (1922-2003) represent the 82-year period modeled using DSM2. "Drought" Represents a 5-consecutive-year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. % change indicates a negative change (increased concentrations) relative to No Action Alternative or Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to No Action Alternative or Second Basis of Comparison when values are negative.

c. Concentrations greater than 0.24 mg/kg ww mercury exceed the TMDL guidance concentration.

Table 6C.4. Summary Table for Methylmercury Concentrations in 350-mm Largemouth Bass Fillets for No Action Alternative, Second Basis of Comparison, and Alternative 5

Location	Period[a]	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 5	% Change In Methylmercury Concentrations[b] No Action Alternative	% Change In Methylmercury Concentrations[b] Second Basis of Comparison	Exceedance Quotients[c] Alternative 5
Delta Interior					
San Joaquin River at Stockton	All	1.00	0	0	4.1
	Drought	1.05	0	0	4.4
Turner Cut	All	0.89	0	3	3.7
	Drought	0.85	1	4	3.5
San Joaquin River at San Andreas Landing	All	0.60	1	4	2.5
	Drought	0.55	2	4	2.3
San Joaquin River at Jersey Point	All	0.57	1	5	2.4
	Drought	0.53	2	5	2.2
Victoria Canal	All	0.85	0	4	3.6
	Drought	0.82	0	7	3.4
Western Delta					
Sacramento River at Emmaton	All	0.50	0	3	2.1
	Drought	0.49	1	3	2.0
San Joaquin River at Antioch	All	0.51	1	7	2.1
	Drought	0.44	2	7	1.8
Montezuma Slough at Hunter Cut/Beldon's Landing	All	0.35	1	7	1.5
	Drought	0.28	1	7	1.2

Location	Period[a]	Estimated Concentrations of Methylmercury (mg/kg, ww) Alternative 5	% Change In Methylmercury Concentrations[b] No Action Alternative	% Change In Methylmercury Concentrations[b] Second Basis of Comparison	Exceedance Quotients[c] Alternative 5
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	All	0.56	0	1	2.4
	Drought	0.58	0	2	2.4
Contra Costa Pumping Plant #1	All	0.74	2	8	3.1
	Drought	0.70	5	13	2.9
Banks Pumping Plant	All	0.79	0	5	3.3
	Drought	0.74	-1	7	3.1
Jones Pumping Plant	All	0.83	0	5	3.5

Notes:

mg/kg = milligram per kilogram

ww = wet weight

a. “Al”: water years (1922-2003) represent the 82-year period modeled using DSM2. “Drought” Represents a 5-consecutive-year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. % change indicates a negative change (increased concentrations) relative to No Action Alternative or Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to No Action Alternative or Second Basis of Comparison when values are negative. Changes of 10% or more are shaded.

c. Concentrations greater than 0.24 mg/kg ww mercury exceed the TMDL guidance concentration.

Figure 6C.2 Level of Concern Exceedance Quotients for Mercury Concentrations in 350-mm Largemouth Bass Fillets for All Years

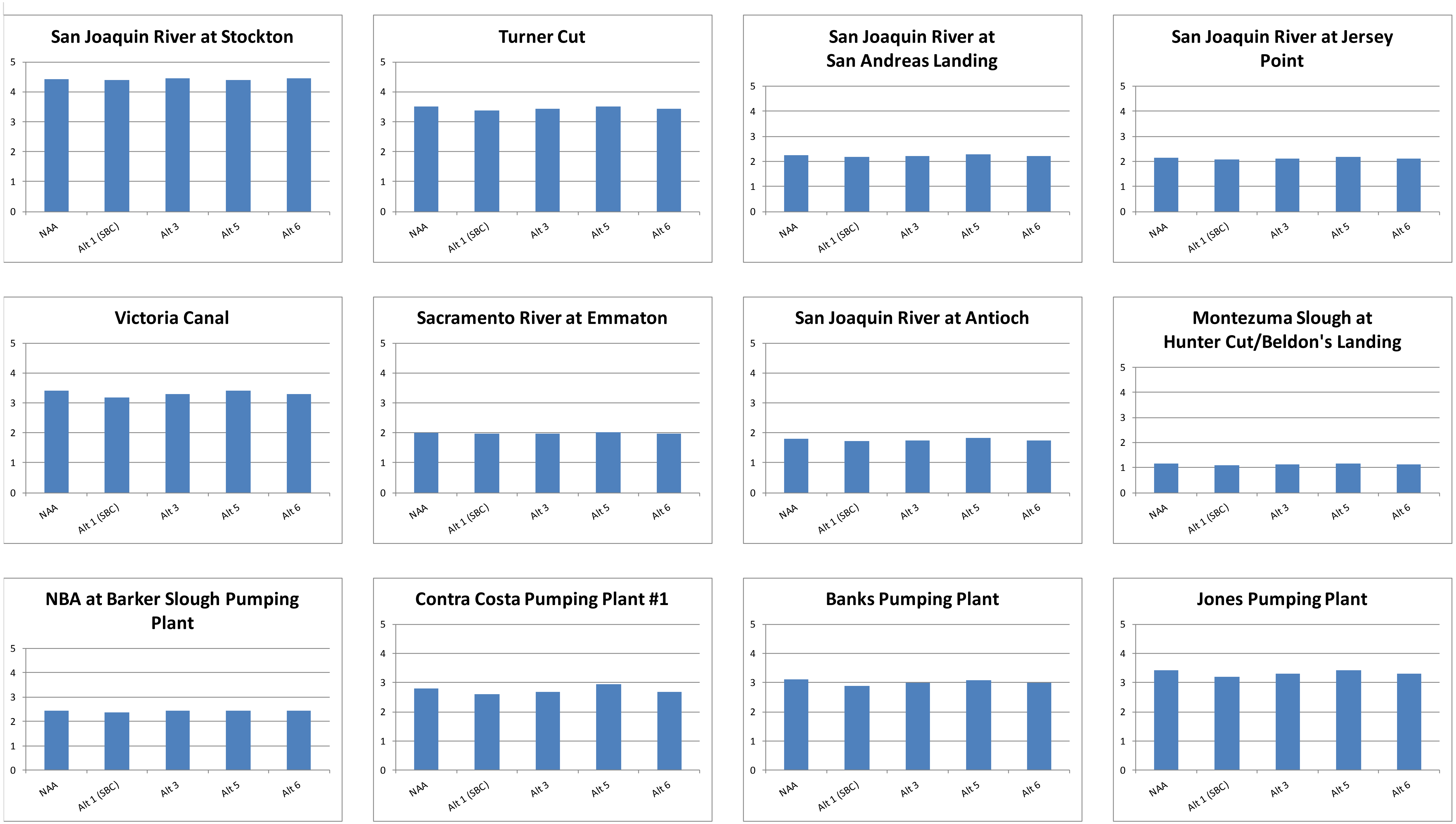

Figure 6C.3. Level of Concern Exceedance Quotients for Mercury Concentrations in 350-mm Largemouth Bass Fillets for Drought Years

Appendix 6D

Selenium Model Documentation

This appendix provides information about the methods, modeling tools, and assumptions used for the Coordinated Long Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis. This appendix also provides information pertaining to the development of the analytical tools and the use of input data as well as model result processing and interpretation methods used for the impacts analysis and descriptions.

This appendix is organized into three main sections:

- Section 6D.1: Modeling Methodology
  - The selenium impacts analysis uses CalSim II, the Delta Simulation Model II (DSM2), and Delta-specific selenium bioaccumulation modeling to assess and quantify effects of the alternatives on the long-term operation and the environment. This section provides information about the development and calibration of a Delta-wide bioaccumulation model for selenium in fish, use of outputs from that model to estimate bioaccumulation in bird eggs and fish fillets, and modeling of selenium bioaccumulation in sturgeon living in the western Delta using inputs from other models.
- Section 6D.2: Modeling Simulations and Assumptions
  - This section provides a brief description of the assumptions for the selenium model simulations of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.
- Section 6D.3: Modeling Results
  - This section provides a description of the model simulation output formats used in the analysis and interpretation of modeling results for the alternatives impacts assessment.

6D.1 Modeling Methodology

This section summarizes the selenium modeling methodology used for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5. It describes the overall analytical framework and development and use of bioaccumulation models. This section also contains descriptions of the key analytical and numerical tools and approaches used in the quantitative evaluation of the alternatives. The project alternatives include changes to CVP and SWP operation that would cause subsequent effects on the water quality of the system relative to selenium. Those changes in waterborne selenium concentrations would propagate to changes in selenium concentrations in fish and bird eggs throughout the Delta.

6D.1.1 Overview of the Modeling Approach and Objectives

Modeling of flows, hydrodynamics, and selenium bioaccumulation in the Delta is necessary to support the selenium impact analysis of alternatives. Impact analysis focuses on evaluation of changes to selenium concentrations in tissues that affect the health of fish as well as wildlife and humans consuming fish in the Delta.

CalSim II, DSM2, and bioaccumulation modeling were used in sequence to estimate the effects of CVP and SWP operations on water quality relative to selenium in the Delta. CalSim II, which simulates flow in California's waterways, and DSM2, which simulates one-dimensional hydrodynamics in California's Delta, are discussed in detail in Appendix 5A. One of the three DSM2 modules, QUAL, simulates one-dimensional source tracking in the Delta. Results from DSM2 were multiplied by source concentrations (shown in Table 6D.1) to determine annual average waterborne selenium concentrations in the Delta for all year types and drought years.

Operations-related changes in waterborne selenium concentrations in the Delta may result in increased selenium bioaccumulation or toxicity (or both) to aquatic and semi-aquatic receptors using the Delta. Historical fish tissue data from 2000, 2005, and 2007 (Foe 2010a) and measured (for Sacramento River below Knights Landing and for San Joaquin River at Vernalis) or DSM2-modeled (other locations) waterborne selenium concentrations for selected locations in 2000, 2005, and 2007 were used to model water-to-tissue relationships. This modeling generally followed procedures described by Presser and Luoma (2010a, 2010b). Implementation of the Grassland Bypass Project (GBP) has led to a 60 percent decrease in selenium loads from the Grassland Drainage Area compared to pre-project conditions (San Francisco Bay Regional Water Quality Control Board 2008). These changes are reflected in data for the San Joaquin River at Vernalis, where water quality is monitored frequently because the river is a primary source of selenium to the Delta. Vernalis water data for 2 years (1999-2000, 2004-2005, and 2006-2007) were used for each year when fish data were available because of the GBP-related changes and because the lag time for selenium bioaccumulation in the piscivorous Largemouth Bass (*Micropterus salmoides*, the species for which the Delta-wide bioaccumulation model was calibrated) may be more than 1 year (Beckon 2014).

Output from the DSM2-QUAL model (expressed as percentage of inflow from different sources) was used in combination with the available measured waterborne selenium concentrations (Table 6D.1) to model concentrations of selenium at locations throughout the Delta. These modeled waterborne selenium concentrations were used in the relationship model to estimate bioaccumulation of selenium in whole-body fish and in bird eggs. Selenium concentrations in fish fillets were then estimated from those in whole-body fish. The following sections provide detailed information about the modeling approach for selenium.

Table 6D.1 Selenium Concentrations in Water at Inflow Sources to the Delta

Delta Sources	Representative Inflow Site	GM Se Concentration in Water (µg/L)[a]	Years	Source
Delta Agriculture	Mildred Island, Center	0.11	2000	Lucas and Stewart 2007
East Delta Tributaries	Mokelumne, Calaveras, and Cosumnes Rivers	0.10[b]	None	None
Martinez/Suisun Bay	San Joaquin River near Mallard Island	0.10	02/2000–08/2008	SFEI 2014
Sacramento River	Sacramento River at Freeport	0.09	11/2007–07/2014	USGS 2014
San Joaquin River	San Joaquin River at Vernalis (Airport Way)	0.45 [c]	11/2007-08/2014	USGS 2014
San Joaquin River	San Joaquin River at Vernalis (Airport Way)	0.83 [d]	1999-2000	SWAMP 2009
		0.85	2004-2005	SWAMP 2009
		0.58	2006-2007	SWAMP 2009
Yolo Bypass	Sacramento River below Knights Landing	0.23[e]	2004, 2007, 2008	DWR 2009

Notes:
a. Selenium concentrations are in dissolved fraction unless otherwise noted.
b. Dissolved selenium concentration is assumed to be 0.1 µg/L due to lack of available data and lack of sources that would be expected to result in concentrations greater than 0.1 µg/L.
c. Data used to represent conditions for comparison of alternatives.
d. Not specified whether total or dissolved selenium; data for 1999-2000 used for bioaccumulation by bass in 2000; data for 2004-2005 for bass in 2005; and data for 2006-2007 for bass in 2007.
e. Total selenium concentration in water.

µg/L = microgram(s) per liter
GM = geometric mean
Se = selenium

In addition to the Delta-wide modeling for fish and birds (calibrated with data for Largemouth Bass), selenium uptake and food-chain transfer information from the ecosystem-scale selenium model for the San Francisco Bay-Delta Regional Ecosystem Restoration Implementation Plan (Presser and Luoma 2013) informed the selenium bioaccumulation model for the western Delta. The Largemouth Bass has lower selenium bioaccumulation rates than those observed for sturgeon (Green Sturgeon [*Acipenser medirostris]* and White Sturgeon, [*A. transmontanus]*) and is not an appropriate model species that would be protective of sturgeon. Sturgeon differ by feeding, in part, on Overbite Clams (*Corbula* [*Potamocorbula*] *amurensis*) in Suisun Bay and may do so in the western portion of the Delta under future conditions. Therefore, DSM2-modeled waterborne selenium concentrations from three western-most locations in the Delta (Sacramento River at Emmaton, San Joaquin River at Antioch, and

Montezuma Slough at Hunter Cut/Beldon's Landing) were used to model selenium bioaccumulation for sturgeon at those three locations to supplement the modeling done for Largemouth Bass.

The results from this suite of physical and biological models are used to inform the understanding of effects of each alternative considered in this EIS on selenium. Modeling objectives included evaluation of the following:

- Percent changes in waterborne selenium concentrations under the alternatives as compared to the No Action Alternative and the Second Basis of Comparison
- Exceedances of fish, wildlife, or human thresholds for selenium effects

6D.1.2 Key Components of the Selenium Modeling

To fulfill the objectives of the selenium modeling effort, DSM2 output data were used in combination with source water concentrations to estimate waterborne selenium concentrations at representative locations throughout the Delta (Tables 6D.2 through 6D.4, located at end of this appendix). Waterborne selenium concentrations were then used to estimate tissue selenium concentrations in Largemouth Bass (as a representative higher trophic-level fish) throughout the Delta and in sturgeon in the western Delta. Estimation of concentrations in Largemouth Bass throughout the Delta included the development and calibration of a bioaccumulation model using measured concentrations in bass (Foe 2010a). In contrast, modeling for sturgeon in the western Delta relied on literature-based model parameters (Presser and Luoma 2013), because data were not available to further calibrate the model.

6D.1.2.1 DSM2 Post-processing

Dissolved or total selenium data were available for six inflow locations to the Delta (Table 6D.1):

- Sacramento River below Knights Landing (just upstream of Yolo Bypass, representing the Bypass source)
- Sacramento River at Freeport (mainstem flow to Delta)
- San Joaquin River at Vernalis (Airport Way) (mainstem flow to Delta)
- Mokelumne, Calaveras, and Cosumnes Rivers (for East Delta tributaries)
- Mildred Island, Center (for Delta Agriculture)
- San Joaquin River near Mallard Island (for Martinez/Suisun Bay)

Both dissolved and total selenium data were considered suitable for purposes of the modeling conducted for the Delta, because they typically do not differ greatly. Statements related to waterborne selenium concentrations in this appendix would be applicable to either dissolved or total concentrations.

Whole-body Largemouth Bass data for selenium were available from the following DSM2 output locations:

- Big Break
- Cache Slough Ryer
- Franks Tract
- Middle River Bullfrog
- Old River Near Paradise Cut
- Sacramento River Mile (RM) 44
- San Joaquin River Potato Slough

Largemouth Bass data also were available from the Veterans Bridge on the Sacramento River and from Vernalis on the San Joaquin River, but DSM2 data were not available for those locations; therefore, historical data for selenium concentrations in water collected nearby (Table 6D.1) were used to represent quarterly averages. The geometric mean of total selenium concentrations in water collected from the Sacramento River below Knights Landing in 2004, 2007, and 2008 (DWR 2009) were used to represent quarterly averages of selenium concentrations in water for Veterans Bridge in all years. The geometric means of selenium concentrations (total or dissolved was not specified) in water collected from 1999–2000, 2004-2005, and 2006-2007 (SWAMP 2009) were used to represent quarterly averages for selenium concentrations in water at Vernalis during 2000, 2005, and 2007, respectively.

For DSM2 output locations, the geometric mean selenium concentrations from the inflow locations were combined with the modeled quarterly average percent inflow for each DSM2 output location to estimate waterborne selenium concentrations at those locations. The quarterly average mix of water from the six inflow sources (Table 6D.1) was calculated from daily percent inflows provided by the DSM2 model output for the DSM2 output locations for which fish data were available. The quarterly waterborne selenium concentrations at DSM2 locations were calculated using Equation 1:

$$C_{water\ quarterly} = ([I_1*C_1] + [I_2*C_2] + [I_3*C_3] + [I_4*C_4] + [I_5*C_5] + [I_6*C_6])/100$$

Where:

- $C_{water\ quarterly}$ = quarterly average selenium concentration in water (micrograms/liter [µg/L]) at a DSM2 output location
- $I_{1\text{-}6}$ = modeled quarterly inflow from each of the six sources of water to the Delta for each DSM2 output location (percentage)
- $C_{1\text{-}6}$ = selenium concentration in water (µg/L) from each of the six inflow sources to the Delta (1-6)

Example Calculation: Modeled Selenium Concentration at Franks Tract Year 2000, First Quarter:

(43.94 [% inflow from Sacramento River water source at Franks Tract] × 0.09 µg/L [selenium concentration at Sacramento River at Freeport]) + (11.56 [% inflow from East Delta Tributaries water source at Franks Tract] × 0.10 µg/L [selenium concentration at Mokelumne, Calaveras, and Cosumnes Rivers]) + (15.79 [% inflow from San Joaquin River water source at Franks Tract] × 0.83 µg/L [selenium concentration at San Joaquin River at Vernalis]) + (0.02 [% inflow from Martinez/Suisun Bay water source at Franks Tract] × 0.10 µg/L [selenium concentration at San Joaquin River near Mallard Island]) + (0.32 [% inflow from Yolo Bypass water source at Franks Tract] × 0.23 µg/L [selenium concentration at Sacramento River below Knights Landing]) + (5.06 [% inflow from Delta Agriculture water source at Franks Tract] × 0.11 µg/L [selenium concentration at Mildred Island, Center])/100 = 0.19 µg/L

The quarterly and average annual waterborne selenium concentrations for the DSM2 output locations are shown in Table 6D.2 (Year 2000), Table 6D.3 (Year 2005), and Table 6D.4 (Year 2007).

6D.1.2.2 Delta-wide Selenium Model Development

Selenium concentrations in whole-body fish and in bird eggs were calculated using ecosystem-scale models developed by Presser and Luoma (2010a, 2010b, 2013). The models were based on biogeochemical and physiological factors from laboratory and field studies; loading rates, chemical speciation, and transformation to particulate material; bioavailability; bioaccumulation in invertebrates; and trophic transfer to predators. Important components of the methodology included (1) empirically determined environmental partitioning factors between water and particulate material that quantify the effects of dissolved speciation and phase transformation; (2) concentrations of selenium in living and non-living particulates at the base of the food web that determine selenium bioavailability to invertebrates; and (3) selenium biodynamic food web transfer factors that quantify the physiological potential for bioaccumulation from particulate matter to consumer organisms and from prey to their predators.

6D.1.2.2.1 Selenium Concentration in Particulates

Phase transformation reactions from dissolved to particulate selenium are the primary form by which selenium enters the food web. Presser and Luoma (2010a, 2010b, 2013) used field observations to quantify the relationship between particulate material and dissolved selenium as indicated in Equation 2.

$$C_{particulate} = K_d * C_{water\ column}$$

Where:

- $C_{particulate}$ = selenium concentration in particulate material (micrograms/kilogram, dry weight [µg/kg dw])
- K_d = particulate/water ratio
- $C_{water\ column}$ = selenium concentration in water column (µg/L)

The K_d (also called an "enrichment factor") describes the particulate/water ratio at the moment the sample was taken and should not be interpreted as an equilibrium constant (as it sometimes is mistaken to be). It can vary widely among hydrologic environments and potentially among seasons (Presser and Luoma 2010a, 2010b, 2013; Young et al. 2010). In addition, other factors such as selenium speciation, water residence time, and particle type affect K_d. Selenium typically enters a stream primarily as selenate. If the stream flows into a wetland and the water is retained there with sufficient residence time, recycling of selenium may occur. This results in generation of particulate selenium and conversion to more bioaccumulative selenite and organo-selenium from the less-bioaccumulative dissolved selenate. Residence time of water containing selenium is usually the most influential factor on the conditions in the receiving aquatic environment. Short water residence times (such as in streams and rivers) limit partitioning of selenium into particulate material. Conversely, longer residence times (such as in sloughs, lakes, and estuaries) allow greater uptake by plants, algae, and microorganisms. Furthermore, environments in downstream portions of a watershed can receive cumulative contributions of upstream recycling in a hydrologic system. Because of its high variability, K_d is a large source of uncertainty in any selenium model where extrapolations from selenium concentrations in the water column to those in aquatic organism tissues, or from tissue to waterborne concentrations, are necessary.

In developing the Delta-wide bioaccumulation model for bass, the particulate selenium concentration initially was estimated using Equation 2 and a default K_d of 1,000 (Presser and Luoma 2010a). Because the K_d is typically much more variable than other steps in the bioaccumulation model, the K_d was then adjusted to calibrate the model so that the modeled concentrations for fish approximated the measured concentrations in bass for normal and wet years (2000 and 2005) and for drought years (2007), as described in more detail in Section 6D.1.2.3.

6D.1.2.2.2 Selenium Concentrations in Invertebrates

Trophic transfer factors (TTFs) for transfer of selenium from particulates to prey and to predators were developed using data from laboratory experiments and field studies (Presser and Luoma 2010a, 2010b, 2013). TTFs are species-specific, but the range of TTFs for freshwater invertebrates was found to be similar to TTFs for marine invertebrates determined in laboratory experiments.

TTFs for estimating selenium concentrations in invertebrates were calculated using Equation 3:

$$TTF_{invertebrate} = (C_{invertebrate})/(C_{particulate})$$

Where:

- $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- $C_{invertebrate}$ = concentration of selenium in invertebrate (µg/g dw)
- $C_{particulate}$ = concentration of selenium in particulate material (µg/g dw)

An average aquatic insect TTF was calculated from TTFs for aquatic insect species with similar bioaccumulative potential, including Mayfly (*Baetidae; Heptageniidae; Ephemerellidae*), Caddisfly (*Rhyacophilidae; Hydropsychidae*), Crane Fly (*Tipulidae*), Stonefly (*Perlodidae*/*Perlidae*; *Chloroperlidae*), Damselfly (*Coenagrionidae*), Corixid (*Cenocorixa* sp.), and Chironomid (*Chironomus* sp.) aquatic life stages. Species-specific TTFs ranged from 2.1 to 3.2; the average TTF of 2.8 was used in the Delta-wide model.

6D.1.2.2.3 Selenium Concentrations in Whole-body Fish

The mechanistic equation for modeling of selenium bioaccumulation in fish tissue is similar to that for invertebrates if whole-body concentrations are the endpoint (Presser and Luoma 2010a, 2010b, 2013), as shown in Equation 4:

$$TTF_{fish} = C_{fish} / C_{invertebrate}$$

where:

$$C_{invertebrate} = C_{particulate} * TTF_{invertebrate}$$

therefore:

$$C_{fish} = C_{particulate} * TTF_{invertebrate} * TTF_{fish}$$

Where:

- C_{fish} = concentration of selenium in fish (µg/g dw)
- $C_{particulate}$ = concentration of selenium in particulate material (µg/g dw)
- $C_{invertebrate}$ = *concentration of selenium in invertebrate (µg/g dw)*
- $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- TTF_{fish} = trophic transfer factor from invertebrate to fish

Modeling selenium bioaccumulation into a particular fish species considers organism physiology and its preferred foods. However, variability in fish tissue selenium concentrations for present modeling purposes is driven more by dietary choices and their respective levels of bioaccumulation (that is, TTFinvertebrate) than by differences in fish physiology or the dietary transfer to the fish (TTFfish). A diet of mixed prey (including invertebrates or other fish) can be modeled as shown in Equation 5:

$$C_{fish} = TTF_{fish} * ([C_1 * F_1] + [C_2 * F_2] + [C_3 * F_3])$$

Where:

- C_{fish} = concentration of selenium in fish (µg/g dw)
- TTF_{fish} = trophic transfer factor for fish species
- $C_{1\text{-}3}$ = concentration of selenium in invertebrate or fish prey items 1, 2, and 3 (µg/g dw)
- $F_{1\text{-}3}$ = fraction of diet composed of prey items 1, 2, and 3

Modeling of selenium concentrations in longer food webs with higher trophic levels (for example, predator fish such as bass consuming forage fish) can be completed by incorporating additional TTFs, as shown in Equation 6:

$$C_{predatorfish} = C_{particulate} * TTF_{invertebrate} * TTF_{foragefish} * TTF_{predatorfish}$$

Where:

- $C_{predatorfish}$ = concentration of selenium in fish (µg/g dw)
- $C_{particulate}$ = concentration of selenium in particulate material (µg/g dw)
- $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- $TTF_{foragefish}$ = trophic transfer factor for invertebrates to foraging fish species
- $TTF_{predatorfish}$ = trophic transfer factor for forage fish to predator species

The fish TTFs reported in Presser and Luoma (2010a) ranged from 0.5 to 1.6, so the average fish TTF of 1.1 was used for all trophic levels of fish in the Delta-wide model.

Modeled selenium concentrations in whole-body fish were used to estimate selenium concentrations in fish fillets, as described in Section 6D.1.2.2.5.

6D.1.2.2.4 Selenium Concentrations in Bird Eggs

Selenium concentrations in bird tissues can be estimated, but the transfer of selenium into bird eggs is more meaningful for evaluating reproductive endpoints (Presser and Luoma 2010a; Ohlendorf and Heinz 2011). Examples of models for selenium transfer to bird eggs are as shown in Equations 7 and 8:

$$C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{birdegg}$$

(this equation is based on birds, such as shorebirds, eating invertebrates)

or:

$$C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{fish} * TTF_{birdegg}$$

(this equation is based on birds, such as herons or terns, feeding on small fish)

Where:

- $C_{birdegg}$ = concentration of selenium in bird egg (µg/g dw)
- $C_{particulate}$ = concentration of selenium in particulate material (µg/g dw)
- $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- TTF_{fish} = trophic transfer factor from invertebrate to fish
- $TTF_{birdegg}$ = trophic transfer factor from invertebrate or fish (depending on diet) to bird egg

Presser and Luoma (2010b, 2013) reviewed the available data for selenium bioaccumulation from diet to bird eggs and concluded that the mean $TTF_{birdegg}$ = 2.6 was most appropriate for modeling. This TTF was based on laboratory studies in which Mallards (*Anas platyrhynchos*) were fed selenium-fortified diets to evaluate reproductive effects. Mallards are considered a sensitive species to selenium based on reproductive endpoints. In their previous evaluation of those data, Presser and Luoma (2010a) concluded that a $TTF_{birdegg}$ = 1.8 was appropriate. The form of selenium included in the Mallard diet (selenomethionine) has been used as a surrogate in many laboratory studies to represent exposure of fish and birds under field conditions. Other laboratory studies were conducted with Black-crowned Night-herons (*Nycticorax*

nycticorax) by Smith et al (1988), for Eastern Screech-owls (*Otus asio)* by Wiemeyer and Hoffman (1996), and for American Kestrels (*Falco sparverius)* by Santolo et al. (1999). In each of these studies, the experimental groups also received supplemental selenium in the form of selenomethionine. Transfer factors for the selenium-supplemented birds varied from approximately 1.0 to 2.2, with a mean of 1.5.

In field studies conducted at Kesterson Reservoir and the Volta Wildlife Area reference site, extensive sampling of food-chain biota and bird eggs was conducted from 1983 through 1985, and birds were collected to determine qualitatively the kinds of aquatic organisms they had eaten (Saiki and Lowe 1987; Hothem and Ohlendorf 1989; Schuler et al. 1990; Ohlendorf and Hothem 1995). Based on the kinds of food items found in each of the sampled species and the mean selenium concentrations in those kinds of organisms, a mean selenium concentration was estimated for each species at each site during each nesting season. In contrast to the findings with selenomethionine-supplemented diets in the laboratory, TTFs from diet to eggs were almost always less than 2.0. At the Volta Wildlife Area, where diet and egg selenium concentrations were representative of "background" conditions, transfer factors ranged from 0.63 to 2.0, with a mean of 1.35. At Kesterson, the transfer factors ranged from less than 0.2 to 0.48.

Because selenomethionine in the Mallard diet is probably more readily transferred to eggs than are the selenium forms in field-collected food-chain biota, the $TTF_{birdegg}$ = 1.8 value from Presser and Luoma (2010a) was used in the bioaccumulation model.

6D.1.2.2.5 Selenium Concentrations in Fish Fillets

Selenium concentrations in whole-body fish from the bioaccumulation model were converted to selenium concentrations in skinless fish fillets for evaluation of potential human health effects. The regression equation provided in Saiki et al. (1991) for Largemouth Bass from the San Joaquin River system was considered to be the most representative of fish in the Delta and was used for the conversion of these selenium concentrations as shown in Equation 9:

$$SF = (-0.388) + (1.322 * WB)$$

Where:

- SF = selenium concentration in skinless fish fillet (µg/g dw)
- WB = selenium concentration in whole-body fish (µg/g dw)

For the impact assessment in this EIS, fish fillet data were compared to the Advisory Tissue Level (2.5 micrograms per gram [µg/g]) in wet weight (ww) (OEHHA 2008); therefore, wet-weight concentrations were estimated from dry-weight concentrations using the equation provided by Saiki et al. (1991) as shown in Equation 10:

$$WW = DW * (100 – Moist)/100$$

Where:

- *WW* = selenium concentration in wet weight (µg/g ww)
- *DW* = selenium concentration in dry weight (µg/g dw)
- *Moist* = mean moisture content of the species

Because moisture content in fish varies among species, sample handling, and locations, the mean moisture content of 70 percent used by Foe (2010b) was used as an assumed approximation for fish in the Delta. The final equation used to estimate selenium concentration in skinless fish fillets (wet weight) from selenium concentration in whole-body fish (dry weight) is as shown in Equation 11:

$$SF = ([-0.388] + [1.322 * WB]) * 0.3$$

Where:

- *SF* = selenium concentrations in skinless fish fillet (µg/g ww)
- *WB* = selenium concentration in whole-body fish (µg/g dw)

6D.1.2.3 Delta-wide Selenium Model Calibration

Several models were evaluated and refined to estimate selenium uptake in fish and in bird eggs from waters in the Delta. Input parameters to the model (K_ds and the number of trophic levels) were varied among the models as refinements were made. Data for Largemouth Bass collected in the Delta from areas near DSM2 output locations were used to calculate the geometric mean selenium concentration in whole-body fish (Foe 2010a). The ratio of the estimated (modeled) selenium concentration in fish to measured selenium in whole-body bass was used to evaluate each fish model and to focus refinements of the model. These Delta-wide models are presented in the following subsections.

Characteristics of water flow in the Delta affect selenium bioaccumulation and the model refinements, because longer residence time for the water can be expected to increase bioaccumulation by increasing K_d. Foe (2010a) reported the water year type for 2000 as “above normal” for both the Sacramento River and San Joaquin River watersheds. It came after “wet” water years and was followed by “dry” water years. Year 2005 was wetter than 2000, was reported as “above normal” for the Sacramento River watershed and “wet” for the San Joaquin River watershed. Year 2005 occurred between periods of wet water years. Water Year 2007 was reported as “dry” (Sacramento River watershed) and “critically dry” (San Joaquin River watershed). It came after wet water years and was followed by critically dry water years.

There was no difference in bass selenium concentrations in the Sacramento River at Rio Vista in comparison to the San Joaquin River at Vernalis in 2000, 2005, and 2007 (Foe 2010a). The lack of a difference in bioaccumulated selenium between the two river systems was unexpected because the San Joaquin River is considered a significant source of selenium to the Delta. There were differences among years, however, that were related to hydrology and water flow through the Delta. Year 2005 selenium concentrations in bass were comparatively lower than those estimated for Year 2000. As expected in a wet water year, the water residence time was shorter, resulting in less selenium recycling, lower K_d values, and lower concentrations of selenium entering the food web. The dry water year (2007) resulted in a longer water residence time, higher K_d values, greater selenium recycling, and higher concentrations of bioavailable selenium entering the food web. These differences among years were considered when refining the selenium bioaccumulation model.

6D.1.2.3.1 Bioaccumulation in Whole-body Fish

Models estimating whole-body selenium concentrations in fish were refined by modifying dietary composition and input parameters to closely represent measured conditions in the Delta. Each model is described in this section.

Model 1 was a basic representative of uptake by a forage fish, while Model 2 calculated sequential bioaccumulation in a more complex food web that included predatory fish eating forage fish, as shown below:

Model 1: Trophic level 3 (TL-3) fish eating invertebrates (Equation 12):

$$C_{fish} = C_{particulate} * TTF_{invertebrate} * TTF_{fish}$$

Model 2: Trophic level 4 (TL-4) fish eating TL-3 fish (Equation 13):

$$C_{predatorfish} = C_{particulate} * TTF_{invertebrate} * TTF_{foragefish} * TTF_{predatorfish}$$

Where:

- C_{fish} = concentration of selenium in fish (µg/g dw)
- $C_{particulate}$ = concentration of selenium in particulate material (µg/g dw)
- $TTF_{invertebrate}$ = Trophic transfer factor from particulate material to invertebrate
- TTF_{fish} = Trophic transfer factor from invertebrate to forage fish or forage fish to predator fish

Equation 12 is the same as Equation 4 and Equation 13 is the same as Equation 6 that were described previously for the generalized model. In both Models 1 and 2, the particulate selenium concentration was estimated using Equation 2 and a default K_d of 1,000. The average TTFs for invertebrates (2.8) and fish (1.1) were used in each model. The outputs of estimated selenium concentrations and the ratios of predicted-to-observed bass selenium concentrations for Models 1 and 2 are presented in Table 6D.5 and Figure 6D.1 (all figures are provided at the end of this appendix).

Models 1 and 2 tended to substantially underestimate the whole-body selenium concentrations in fish compared to bass data reported in Foe (2010a). This was partly because Model 1 was estimating selenium concentration in a forage fish (TL-3), whereas bass are a predatory fish with expected higher dietary exposure. Consequently, Model 1 was not further developed as the selenium bioaccumulation model to represent fish in the Delta.

Model 2 is representative of predatory fish, but Model 2 was very similar to Model 1 in distribution of data and in underestimating bass data, even though an additional trophic-level transfer was included in the model. As noted in Section 6D.1.2.2.1 and described in much greater detail by Presser and Luoma (2010a, 2010b, 2013), the K_d values for uptake from water are far more variable than the

TTFs for invertebrates or fish. Models 1 and 2 also apparently reflect the tendency of selenium (as an essential nutrient) to be more bioaccumulative when waterborne concentrations are low (as described by Stewart et al. [2010]), which they were for the DSM2-modeled concentrations (that is, 0.09 to 0.85 µg/L). Available K_d values from various sampling efforts in the Delta provided by Presser and Luoma (2010b) were reviewed for potential applicability in the modeling effort. Those values varied on the basis of locations within the Delta and Suisun Bay and also by water year and flow characteristics (often greater than 5,000 and sometimes exceeding 10,000). However, efforts to incorporate various selected K_d values (for example, 2,000 or 3,000) into the model uniformly for different DSM2 locations failed to produce ratios of modeled-to-measured fish selenium concentrations that approximated 1 (they either over- or underestimated fish selenium concentrations because of variability in site conditions).

The available bass data and the assumed TTFs for invertebrates (2.8) and fish (1.1) were used to back-calculate a location and sample-specific K_d. It is recognized that some of the variability in bioaccumulation may be associated with the TTFs, but there were no reasonable assumptions for selection of alternative values to plug into the model.

When TTFs were held constant, back-calculation of K_d values revealed a concentration-related influence on the values. For waterborne selenium concentrations in the range of 0.09 to 0.13 µg/L (N = 50), the median was 5,575; when waterborne selenium concentrations were in the range of 0.14 to 0.40 µg/L (N = 19), the median K_d was 2,431; for waterborne selenium concentrations in the range of 0.41 to 0.85 µg/L (N = 19), the median K_d was 748. These observations are consistent with an inverse relationship between waterborne selenium concentrations and bioaccumulation in aquatic organisms (Stewart et al. 2010).

Figure 6D.2 shows the log-log regression relation of K_d to waterborne selenium concentration when all years are included and the TTFs are held constant, while Figure 6D.3 shows the relationship for normal/wet years (2000 and 2005) and Figure 6D.4 shows the regression for dry years (2007), when the K_ds were generally higher.

Model 3 is based on Model 2 (with TTFs as described previously) but includes the K_d estimated from the log-log regression relation for all years (Figure 6D.2). This produced a median ratio of predicted-to-observed whole-body selenium in bass that slightly exceeded 1 (Figure 6D.1); details are provided in Table 6D.6. Because of the noticeable differences between 2007 (the dry year) and the other 2 years, the next step in modeling was to evaluate 2007 separately from 2000 and 2005.

Model 4 was developed using the log-log relationship between K_d and water selenium concentrations for 2000 and 2005 (Figure 6D.3). Model 5 was developed using log-log relationship between K_d and water selenium concentrations for 2007 (Figure 6D.4 and Table 6D.7). These two models produced ratios of predicted-to-observed whole-body selenium in bass approximating 1, as shown in Figure 6D.1.

As expected in a large, complex, and diverse ecological habitat such as the Delta, variations in the data distribution and in the outputs of the models are not surprising. However, it should be noted that the estimated K_d values for Model 3 (674-6,060; Table 6D.6), Model 4 (651-4,997; Table 6D.7), and Model 5 (1,206-8,064; Table 6D.7) are consistent with those summarized by Presser and Luoma (2010b) for the Delta.

Figures 6D.5 and 6D.6 illustrate the distribution of data for selenium concentrations in Largemouth Bass (Foe 2010a) relative to the measured or DSM2-modeled waterborne selenium concentrations (Tables 6D.1 through 6D.4) and Models 3, 4, and 5 to complement the boxplots shown in Figure 6D.1. There is notably more variability in selenium concentrations in bass between 0.09 and 0.13 µg/L than at higher waterborne selenium concentrations (as shown in both Figures 6D.5 and 6D.6); most of the higher values are from 2007 and most of the lower ones are from 2005.

Figure 6D.5 shows the available data for 2000, 2005, and 2007 plotted with the Model 3 prediction of selenium concentrations. As noted previously in text and in Figure 6D.1, the model slightly over-predicts the median concentrations in fish on the basis of waterborne selenium concentrations. This effect is reflected in Figure 6D.1 by the outliers above the 90th percentile bar (that is, the higher over-predictions for fish, which are those from 2000 and 2005). However, overall, the model is within 1 µg/g for all values less than the prediction, and within approximately 1.2 µg/g for the values greater than the prediction (Figure 6D.5).

Because of the notable differences between data for 2007 compared to combined 2000 and 2005 data, Model 4 was developed for 2000 and 2005 and Model 5 was developed for 2007, Figure 6D.6 shows those model predictions compared to the data. These two models improved the predictions; although the figure shows more differences between data and the models at the lower waterborne concentrations (that is, less than 0.30 µg/L) than at higher ones, the divergence is generally less than 0.5 µg/g at the higher waterborne concentrations. The outliers for Model 4 are mostly above the 90th percentile (that is, over-predicting concentrations in fish), rather than below, as shown in Figure 6D.1. For Model 5, the predictions are "tighter" with just a few outliers above or below the 90th percentile.

Evaluation of water-year effects on selenium concentration in bass concluded that Model 4 was relatively predictive of selenium concentration in whole-body bass during normal to wet water years. Model 5 was considered predictive for dry water years (such as 2007). Model 3 incorporates the varying bioaccumulation when all years are considered (that is, 2000, 2005, and 2007). Although Model 3 tends to slightly overestimate selenium bioaccumulation (Table 6D.6 and Figure 6D.1), it was used for estimating selenium concentrations in whole-body fish in the impact assessment for "All" years, and Model 5 was used for "Drought" years.

6D.1.2.3.2 Selenium Bioaccumulation in Bird Eggs

The K_d, invertebrate TTF, and fish TTFs developed for use in fish bioaccumulation Models 4 and 5 were also used to estimate selenium uptake into bird eggs using the following two bird egg models (Table 6D.8):

Bird Egg: Uptake from invertebrates (Equation 14):

$$C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{birdegg}$$

where:

$$C_{particulate} = K_d * C_{water}$$

Bird Egg: Uptake from fish (Equation 15):

$$C_{birdegg} = C_{particulate} * TTF_{invertebrate} * TTF_{fish} * TTF_{fish} * TTF_{birdegg}$$

where:

$$C_{particulate} = K_d * C_{water}$$

Where:

- $C_{birdegg}$ = concentration of selenium in bird egg (µg/g dw)
- $C_{particulate}$ = concentration of selenium in particulate material (µg/g dw)
- C_{water} = selenium concentration in water column (µg/L)
- K_d = particulate/water ratio
- $TTF_{invertebrate}$ = trophic transfer factor from particulate material to invertebrate
- TTF_{fish} = trophic transfer factor from invertebrate or fish to fish
- $TTF_{birdegg}$ = trophic transfer factor from invertebrate or fish (depending on diet) to bird egg

Equation 14 is the same as Equation 7, but Equation 15 differs from Equation 8 in that it assumes birds are eating larger predatory fish such as bass.

6D.1.2.4 Western Delta Sturgeon Model

Presser and Luoma (2013) determined K_d values for San Francisco Bay (including Carquinez Strait – Suisun Bay) during “low flow” conditions (5,986) and “average” conditions (3,317). These values were used to model selenium concentrations in particulates in bioaccumulation modeling for sturgeon under “Drought” and “All” year conditions at the three locations in the western Delta. (By comparison, calibration of the Delta-wide model for two western-most location from which bass had been collected [Big Break] resulted in an average K_d = 3,736 for 2000/2005 [Model 4, normal/wet years] and average K_d = 7,166 for 2007 [Model 5, dry year].)

Sturgeon in the western Delta, Carquinez Strait, and Suisun Bay typically prey on a mix of clams including *Corbula amurensis*, which is known to be an efficient bioaccumulator of selenium (Stewart et al. 2010) and crustaceans. Presser and Luoma (2013) assumed a sturgeon diet of 50 percent clams and 50 percent amphipods and other crustaceans in their model. Based on this diet, the authors reported a TTF of 9.2 (identified as TTF_{prey} in Table 1 of Presser and Luoma [2013]). This TTF was used to calculate concentrations in sturgeon invertebrate prey for the Sacramento River at Emmaton, San Joaquin River at Antioch, and Montezuma Slough at Hunter Cut/Beldon's Landing locations under the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

A TTF of 1.3 from diet to fish (identified as $TTF_{predator}$) was reported for sturgeon in Presser and Luoma (2013) and was used to calculate concentrations of selenium in sturgeon for the three western Delta locations.

Modeling for sturgeon at the three western Delta locations did not require refinement because it relied on recent data provided by Presser and Luoma [2013]) and because data to refine the model were not available.

6D.2 Modeling Simulations and Assumptions

As described in Section 6D.1, selenium modeling was performed for evaluation of the alternatives. This section describes the assumptions for the selenium model simulations of the No Action Alternative, Second Basis of Comparison, and other alternatives. A description of DSM2 model assumptions is in Appendix 5A.

The following model simulations were used as the basis of evaluating the impacts of Alternatives 1 through 5 as compared to the No Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison:

- No Action Alternative
- Second Basis of Comparison

The following selenium model simulations of other alternatives were performed:

- Alternative 1 – for selenium simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for selenium simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for selenium simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

The general selenium modeling assumptions described in the following subsection pertain to all the model runs.

6D.2.1 Delta-wide Assumptions

The calibrated Delta-wide selenium bioaccumulation models (Models 3, 4, and 5) are considered representative of conditions in the Delta under current and likely future conditions, because they incorporate realistic concentrations of waterborne selenium and they predict selenium concentrations in predatory fish that approximate measured concentrations in Largemouth Bass. The calibrated models take into account the variable nature of selenium bioaccumulation in relation to waterborne concentrations, which is reflected in the generally inverse relationship between the K_d and waterborne selenium concentration.

Models are not available to quantitatively estimate the level of changes in selenium bioaccumulation as related to residence time, but the effects of residence time are incorporated in the bioaccumulation modeling for selenium that was based on higher K_d values for drought years in comparison to wet, normal, or all years. If increases in fish tissue or bird egg selenium were to occur, the increases would likely be of concern only where fish tissues or bird eggs are already elevated in selenium to near or above thresholds of concern. That is, where biota concentrations are currently low and not approaching thresholds of concern (which is the case throughout the Delta, except for sturgeon in the western Delta), changes in residence time alone would not be expected to cause them to then approach or exceed thresholds of concern. In consideration of this factor, although the Delta as a whole is a Clean Water Act (CWA) Section 303(d)-listed waterbody for selenium (SWRCB 2011), and although monitoring data of fish tissue or bird eggs in the Delta are sparse, the most likely areas in which biota tissue selenium concentrations would be high enough that additional bioaccumulation due to increased residence time from restoration areas would be a concern are the western Delta and Suisun Bay (discussed below for sturgeon), and the south Delta in areas that receive San Joaquin River water.

The South Delta receives elevated selenium loads from the San Joaquin River. In contrast to Suisun Bay and possibly the western Delta in the future, the south Delta lacks the Overbite Clam (*Corbula* [*Potamocorbula*] *amurensis*), which is considered a key driver of selenium bioaccumulation in Suisun Bay because of its high bioaccumulation of selenium and its role in the benthic food web that includes long-lived sturgeon. The south Delta does have *Corbicula fluminea*, another bivalve that bioaccumulates selenium, but it is not as invasive as the Overbite Clam and thus likely makes up a smaller fraction of sturgeon diet. Also, nonpoint sources of selenium in the San Joaquin Valley that contribute selenium to the Delta will be controlled through a Total Maximum Daily Load (TMDL) developed by the Central Valley Regional Water Quality Control Board (Central ValleyRWQCB) for the lower San Joaquin River, established limits for the Grassland Bypass Project, and Basin Plan objectives (Central Valley RWQCB 2001, 2010; SWRCB 2010a, 2010b) that are expected to result in decreasing discharges of selenium from the San Joaquin River to the Delta. Further, if selenium levels in the San Joaquin River are not sufficiently reduced by these efforts, it is expected that the SWRCB and Central Valley RWQCB would initiate additional TMDLs to further control nonpoint sources of selenium.

6D.2.2 Western Delta Sturgeon Assumptions

Modeling for selenium bioaccumulation by sturgeon in the western Delta is considered to be based on the most appropriate uptake factors available, which were published recently by Presser and Luoma (2013) specifically for sturgeon in northern San Francisco Bay estuary. The disparity between larger estimated changes for sturgeon and smaller changes for other biota (that is, whole-body fish, bird eggs, and fish fillets) is attributable largely to differences in modeling approaches, as described previously. The model for most biota was calibrated to encompass the varying concentration-dependent uptake from waterborne selenium concentrations (expressed as the K_d, which is the ratio of selenium concentrations in particulates [as the lowest level of the food chain] relative to the waterborne concentration) that was exhibited in data for Largemouth Bass in 2000, 2005, and 2007 at various locations across the Delta. In contrast, the modeling for sturgeon could not be similarly calibrated at the three western Delta locations and used literature-derived uptake factors and TTFs for the estuary from Presser and Luoma (2013). There was a significant negative log-log relationship of K_d to waterborne selenium concentration that reflected the greater bioaccumulation rates for bass at low waterborne selenium than at higher concentrations. There was no difference in bass selenium concentrations in the Sacramento River at Rio Vista compared to the San Joaquin River at Vernalis in 2000, 2005, and 2007 (Foe 2010a), despite a nearly 10-fold difference in waterborne selenium concentrations. It is unknown whether this might also occur in the sturgeon food web. Thus, there is more confidence in the site-specific modeling based on the Delta-wide model that was calibrated for bass data than in the estimates for sturgeon based on "fixed" K_d values for all years and for drought years without regard to waterborne selenium concentration at the three locations in different time periods.

The western Delta and Suisun Bay receive elevated selenium loads from North San Francisco Bay (including San Pablo Bay, Carquinez Strait, and Suisun Bay) and from the San Joaquin River. Point sources of selenium in North San Francisco Bay (that is, refineries) that contribute selenium to Suisun Bay are expected to be reduced through a TMDL under development by the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB 2012) that is expected to result in decreasing discharges of selenium. Nonpoint sources of selenium in the San Joaquin Valley that contribute selenium to the San Joaquin River, and thus the Delta and Suisun Bay, will be controlled through a TMDL developed by the Central Valley RWQCB (2001) for the lower San Joaquin River, established limits for the GBP, and Basin Plan objectives (Central Valley RWQCB 2010; SWRCB 2010a, 2010b) that are expected to result in decreasing discharges of selenium from the San Joaquin River to the Delta. If selenium levels are not sufficiently reduced via these efforts, it is expected that the SWRCB and the San Francisco Bay and Central Valley regional Water Quality Control Boards would initiate additional actions to further control sources of selenium.

6D.2.3 Model Application Methodology

To evaluate differences in the impact assessment, modeled whole-body fish, bird egg or fish fillet data were compared directly (for percent change) and to the following threshold effect benchmarks:

- Whole-body fish for the Delta-wide model were compared to the Level of Concern (4 milligrams per kilogram [mg/kg] dw; Beckon et al. 2008) and the Toxicity Level (8.1 mg/kg dw; USEPA 2014) for fish tissue.

- Modeled bird egg selenium concentrations were compared to Level of Concern (6 mg/kg dw) and Toxicity Level (10 mg/kg dw) values from Beckon et al. (2008).
- Fish fillet data were compared to the Advisory Tissue Level (2.5 µg/g ww) for human consumption of fish (OEHHA 2008).
- Whole-body selenium concentrations in sturgeon were compared to Low Effect (5 mg/kg dw) and High Effect (8 mg/kg dw) guidelines from Presser and Luoma (2013).

Results of comparisons to these benchmarks are expressed as Exceedance Quotients (EQs) in some of the tables and figures. Annual average selenium concentrations in water did not exceed the 5.0 µg/L(4-day average) or 20 µg/L (1-hour average) criterion, so no EQs were calculated.

6D.2.3.1 No Action Alternative and Second Basis of Comparison Models

The purpose of the No Action Alternative and the Second Basis of Comparison for comparison with the forecasts of the alternative models was to determine whether the implementation of the proposed alternatives is likely to result in substantial impacts to selenium, thereby affecting biological resources. The No Action Alternative and the Second Basis of Comparison models were completed for five Delta interior, three western Delta, and four major Delta diversion locations. DSM2 post-processing output provided estimates of the waterborne selenium concentration at each of those 12 locations (Table 6D.9). The Delta-specific selenium bioaccumulation model that was calibrated using Largemouth Bass data from the Delta was then used to estimate selenium concentrations in whole-body fish and then in bird eggs and fish fillets. Selenium concentrations in sturgeon inhabiting the western Delta (represented by three locations) were estimated using recently published literature parameters. Modeled selenium concentrations in whole-body fish (predatory fish throughout the Delta or sturgeon in the western Delta), bird egg or fish fillet data were compared to the threshold effect benchmarks listed previously. The modeled tissue selenium concentrations themselves and the EQs (based on comparisons to thresholds) both served as a basis for comparison of other alternatives to identify potential impacts.

6D.2.3.2 Alternative Models

For each of the alternative model simulations, the same procedure as described for the No Action Alternative and the Second Basis of Comparison models was used, with similar assumptions, to estimate waterborne selenium concentrations and selenium concentrations in fish and bird eggs. Each alternative model simulation for each type of biota (whole-body fish [either using the Delta-wide model for bass or the western Delta sturgeon model], bird eggs, or fish fillets) was compared to both the No Action Alternative and the Second Basis of Comparison to determine potentially significant impacts.

6D.3 Modeling Results

The post-processing tool is Excel-based. The general pre-processing and input files development are described in the modeling data assumptions sections above. This section focuses on data analysis and results interpretation for the impact assessment.

6D.3.1 Post-processing and Results Analysis: Delta-wide Model

Output data resulting from the model simulations for each alternative are processed to provide a tabular depiction of potential impacts to fish and wildlife (Tables 6D.13 through 6D.15). As discussed previously, outputs from the post-processing model used in this analysis are annual average selenium fish tissue concentrations for all year types and separately presented for the subset of drought years.

The variation in concentrations between the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 was less than 5 percent (Tables 6D.13 through 6D.15). Annual average concentrations do not exceed the selenium thresholds at all locations modeled in the Delta for all years and drought years both as measured and as modeled. Results are shown in Tables 6D.9 through 6D.15 and Figures 6D.7 through 6D.10. Table 6D.9 presents the period-average waterborne selenium concentrations by location and water year type that were used to model fish tissue (whole-body and fillet) and bird egg concentrations (Tables 6D.10 through 6D.12).

All estimated selenium concentrations in water and biota (whole-body fish, bird eggs, and fish fillets) were below the benchmarks used for evaluation (presented in Section 6D.2.4). The highest estimated selenium concentrations were for Alternative 1 in the San Joaquin River at San Andreas Landing and Sacramento River at Emmaton, and Alternative 3 in the North Bay Aqueduct at Barker Slough in drought years (Tables 6D.10 through 6D.12). Changes in estimated selenium concentrations for Alternatives 3 and 5 compared to the No Action Alternative and Alternative 1 were less than 4 percent (Tables 6D.14 and 6D.15).

6D.3.2 Post-processing and Results Analysis: Western Delta Sturgeon Model

Output data resulting from the sturgeon model simulations for each alternative at the three western Delta locations were processed to provide a tabular depiction of potential impacts to sturgeon. Table 6D.16 presents the period-average waterborne selenium concentrations by location and water year type that were used to model fish tissue concentrations (Table 6D.17). As discussed previously, outputs from the post-processing model used in this analysis are annual average selenium concentrations in whole-body sturgeon for all year types and separately presented for the subset of drought years.

The expected variations in whole-body sturgeon selenium concentrations between the No Action Alternative, the Second Basis of Comparison, and Alternatives 1 through 5 were less than 1 mg/kg dw (Table 6D.17). The highest estimated selenium concentrations were for drought years at all three locations with little difference among alternatives. Annual average sturgeon concentrations slightly exceeded the low selenium thresholds for all locations and alternatives for drought years, but not for all years. Results of comparisons to the thresholds are shown in Table 6D.18 and Figure 6D.11. Estimated selenium concentrations did not exceed high thresholds.

Changes in estimated selenium concentrations compared to the No Action Alternative and Second Basis of Comparison are less than 5 percent for all years and for drought years (Table 6D.19). The largest predicted changes were a small decrease under Alternative 3 relative to the No Action Alternative for the San Joaquin River at Antioch in all years and a small increase predicted for Alternative 5 relative to Second Basis of Comparison at that location in all years. Both of these predicted changes were less than 5 percent. However, as noted previously, even the expected changes for the San Joaquin River at Antioch for Alternatives 3 and 5 as compared to the No Action Alternative or the Second Basis of Comparison were less than 1 mg/kg dw. It is not likely that such small changes in whole-body selenium concentrations would be detectable under field conditions.

6D.3.3 Model Limitations and Applicability

Although it is impossible to predict future hydrology, land use, and water use with certainty, the selenium model and DSM2 were used to forecast impacts to fish and wildlife that could result from implementation of the alternatives. The selenium model for sturgeon has greater uncertainty than the selenium model for bass because the sturgeon model was not as finely calibrated for varying K_d relative to waterborne selenium concentrations throughout the Delta, as discussed in Section 6D.2.2. Mathematical models like DSM2 can only approximate processes of physical systems. Models are inherently inexact because the mathematical description of the physical system is imperfect and the understanding of interrelated physical processes is incomplete. However, the selenium models are powerful tools that, when used carefully, can provide useful insight into processes of the physical system. Selenium concentrations for inflow sources to the Delta (for example, agriculture in the Delta, Yolo Bypass, Eastside Tributaries) also caused uncertainty in the modeling because of limited data. For the Sacramento River and the San Joaquin River, approximately 90 data points (Chapter 6, Table 6.58; Table 6D.1) were used to estimate the mean selenium concentrations for these inflow sources, whereas the mean selenium concentrations for other inflow sources to the Delta had many fewer (0 to 14) data points (concentrations for the Eastside Tributaries were assumed).

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Table 6D.2 Calculation of Quarterly Average Selenium Concentrations for DSM2 Output Locations Based on Percentage of Flow at Each Location from Different Sources: Year 2000

		First Quarter Inflow Percentage						Second Quarter Inflow Percentage						Third Quarter Inflow Percentage						Fourth Quarter Inflow Percentage						Estimated Waterborne Selenium Concentrations (µg/L)				
	Inflow Source →	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass					
	Inflow Location →	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual
DSM2 Output	**Selenium (µg/L) →**	0.11	0.10	0.09	0.83	0.10	0.23	0.11	0.10	0.09	0.83	0.10	0.23	0.11	0.10	0.09	0.83	0.10	0.23	0.11	0.10	0.09	0.83	0.10	0.23					
Water Location	**Location ID**																													
Big Break	BIGBRK_MID	2.94	6.88	53.15	6.59	0.18	5.70	2.95	6.37	73.59	13.55	0.27	3.12	3.13	0.45	85.63	0.44	4.15	6.12	2.13	0.20	84.85	0.02	8.76	3.96	0.13	0.20	0.10	0.10	0.13
Cache Slough	CACHS_LEN	1.46	0	53.38	0	0	31.91	1.24	1.5E-05	85.07	2.5E-05	0	13.25	1.66	4.7E-07	85.95	4.3E-07	5.9E-07	12.23	1.32	2.8E-06	89.83	1.1E-07	2.3E-05	8.67	0.12	0.11	0.11	0.10	0.11
Cache Slough Ryer	CACHSR_MID	2.88	0	54.86	0	0	20.48	3.36	9.8E-07	79.75	1.9E-06	0	16.25	1.90	9.3E-08	84.53	1.8E-07	9.2E-12	13.38	1.81	1.0E-07	89.45	6.2E-10	3.0E-06	8.54	0.10	0.11	0.11	0.10	0.11
Cosumnes R.	COSR_LEN	8.1E-06	98.82	0	0	0	0	0	100.00	0	0	0	0	0	100.00	0	0	0	0	0	100.00	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Franks Tract	FRANKST_MID	5.06	11.56	43.94	15.79	0.02	0.32	4.17	9.42	61.16	23.89	0.01	1.22	4.04	0.57	90.34	0.41	0.80	3.78	2.76	0.62	91.38	0.12	2.42	2.64	0.19	0.27	0.10	0.10	0.16
Little Holland Tract	LHOLND_L0	72.35	0	5.06	0	0	6.50	23.38	8.2E-07	63.10	1.6E-06	0	13.03	18.48	2.2E-07	68.67	4.2E-07	7.2E-13	12.68	19.63	2.6E-09	72.79	0	0	7.42	0.10	0.11	0.11	0.10	0.11
Middle R Bullfrog	MIDRBULFRG_LEN	10.54	13.07	18.37	32.20	1.9E-03	3.2E-03	5.49	9.19	14.96	70.17	4.2E-04	0.10	7.81	6.43	69.63	14.94	0.12	1.02	4.86	6.31	59.79	27.84	1	0.68	0.31	0.61	0.20	0.30	0.36
Mildred Island	MILDDRISL_MID	7.47	14.31	22.79	30.23	2.4E-03	1.8E-03	4.77	10.05	18.48	66.48	6.7E-04	0.13	6.57	4.57	83.28	4.14	0.15	1.25	4.50	6.63	71.28	16.13	0.61	0.82	0.29	0.58	0.12	0.21	0.30
Mok. R. below Cosum.	MOKBCOS_LEN	2.07	96.19	0	0	0	0	1.65	98.35	0	0	0	0	7.23	92.77	4.7E-09	0	0	0	2.47	97.53	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Mok. R. downstream Cosum.	MOKDCOS_MID	2.07	96.43	0	0	0	0	1.68	98.32	0	0	0	0	7.08	92.92	0	0	0	0	2.34	97.66	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Old R near Paradise Cut	OLDRNPARADSEC_MID	6.24	0	0	87.26	0	0	14.40	1.67	5.21	78.66	1.2E-05	0.04	10.56	3.9E-05	1.3E-04	89.44	8.8E-28	3.0E-07	2.50	1.1E-04	3.5E-04	97.50	2.8E-20	1.7E-07	0.73	0.68	0.75	0.81	0.74
Paradise Cut	PARADSECUT_LEN	4.69	0	0	91.37	0	0	2.62	0.06	0.15	97.16	1.5E-07	1.1E-03	3.43	0	0	96.57	0	0	0.96	0	0	99.04	0	0	0.76	0.81	0.81	0.82	0.80
Port of Stockton	PORTOSTOCK_L0	1.67	0	0	18.85	0	0	2.22	0	0	60.73	0	0	3.09	0	0	81.32	0	0	2.70	0	0	89.89	0	0	0.16	0.51	0.68	0.75	0.52
Sac. R. at Isleton	SACRISLTON_L0	0.33	0	95.77	0	0	0	0.31	0.00	99.60	0	0	5.5E-05	0.44	0	99.55	0	0	1.3E-05	0.28	0	99.72	0	0	1.1E-03	0.09	0.09	0.09	0.09	0.09
Sac River RM 44	SACR44_L0	0.14	0	97.93	0	0	0	0.11	0	99.81	0	0	0	0.13	0	99.86	0	0	0	0.05	0	99.94	0	0	0	0.09	0.09	0.09	0.09	0.09
Sandmound Sl.	SANDMND_MID	6.36	10.51	43.82	12.90	0.03	0.57	5.22	8.81	63.78	20.40	0.03	1.63	5.24	0.61	87.78	0.49	1.22	4.59	3.31	0.43	89.58	0.06	3.44	3.11	0.17	0.25	0.10	0.10	0.15
Sherman Island	SHERMNILND_L0	1.64	3.45	52.71	3.93	0.60	12.10	2.48	4.95	76.80	10.96	0.96	3.67	2.60	0.40	81.69	0.46	8.21	6.56	1.77	0.11	77.64	0.01	16.46	3.94	0.11	0.18	0.10	0.10	0.12
SJR Bowman	SJRBOWMN_MID	1.40	0	0	94.03	0	0	1.52	0	0	98.48	0	0	3.00	0	0	97.00	0	0	0.33	0	0	99.67	0	0	0.78	0.82	0.81	0.83	0.81
SJR N Hwy4	SJRNHWY4_MID	3.49	0	0	89.96	0	0	1.87	0	0	98.13	0	0	3.91	0	0	96.09	0	0	0.72	0	0	99.28	0	0	0.75	0.82	0.80	0.82	0.80
SJR Naval st	SJRNAVLST_L0	8.89	12.70	0.00	65.44	0	0	2.69	6.26	0	90.94	0	0	5.98	10.89	0	83.00	0	0	2.02	3.10	0.00	94.84	0	0	0.57	0.76	0.71	0.79	0.71
SJR Potato Slough	SJRPOTSL_MID	3.15	12.62	55.38	12.40	0.01	0.06	3.05	10.32	65.93	19.73	0.01	0.86	2.63	0.35	93.54	0.20	0.45	2.79	2.06	0.80	93.46	0.06	1.47	2.11	0.17	0.24	0.10	0.09	0.15
SJR Turner	SJRTURNR_MID	8.81	9.28	2.55	56.31	5.3E-05	1.0E-05	3.33	5.77	0.41	90.39	6.3E-06	2.4E-03	8.69	13.75	17.87	59.41	0.01	0.16	3.23	4.83	7.34	84.49	0.03	0.05	0.49	0.76	0.53	0.72	0.62
SJR/Pt. Antioch/fish pier	ASRANTFSH_MID	1.92	4.35	55.13	4.50	0.44	10.23	2.45	4.72	77.70	10.28	0.76	3.91	2.64	0.35	83.38	0.38	6.66	6.52	1.82	0.12	80.54	0.01	13.33	4.11	0.12	0.17	0.10	0.10	0.12
Suisun Bay	SUISNB_LEN	0.81	1.22	45.93	1.24	16.49	15.94	0.92	1.66	49.51	3.61	41.10	2.95	0.80	0.23	27.56	0.40	68.55	2.42	0.60	0.03	28.62	0.01	69.16	1.54	0.11	0.13	0.10	0.10	0.11
Sycamore Slough	SYCAMOR_MID	6.50	50.69	15.18	0	0	0	5.89	76.86	16.89	2.8E-07	0	0	5.04	14.29	80.66	1.2E-31	0	0	4.23	31.10	64.66	0	0	0	0.07	0.10	0.09	0.09	0.09
White Slough	WHITESL_L0	22.32	11.88	17.97	25.51	1.7E-08	6.0E-11	16.54	12.10	16.87	54.46	3.7E-09	6.1E-05	9.89	7.76	82.34	3.8E-03	3.0E-05	5.3E-04	11.19	12.92	75.64	0.24	4.2E-04	6.4E-04	0.26	0.50	0.09	0.10	0.24
White Slough DS Disappointment Sl.	WHTSLDISPONT_LEN	14.83	22.63	29.02	22.45	5.4E-08	0	12.45	13.97	21.21	52.32	2.2E-09	2.3E-04	8.74	7.78	83.47	2.4E-03	4.0E-05	5.6E-04	5.28	14.84	79.82	0.05	5.0E-04	7.3E-04	0.25	0.48	0.09	0.09	0.23

Table 6D.3 Calculation of Quarterly Average Selenium Concentrations for DSM2 Output Locations Based on Percentage of Flow at Each Location from Different Sources: Year 2005

		First Quarter Inflow Percentage						Second Quarter Inflow Percentage						Third Quarter Inflow Percentage						Fourth Quarter Inflow Percentage						Estimated Waterborne Selenium Concentrations (µg/L)				
	Inflow Source →	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass					
	Inflow Location →	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual
DSM2 Output	Selenium (µg/L) →	0.11	0.10	0.09	0.85	0.10	0.23	0.11	0.10	0.09	0.85	0.10	0.23	0.11	0.10	0.09	0.85	0.10	0.23	0.11	0.10	0.09	0.85	0.10	0.23					
Water Location	**Location ID**																													
Big Break	BIGBRK_MID	5.87	7.57	83.73	2.41	0.24	0.18	2.90	17.21	52.77	26.69	1.6E-03	0.43	3.31	2.21	88.77	1.70	3.98	0.03	2.39	0.24	90.17	0.01	6.48	0.70	0.11	0.30	0.10	0.09	0.15
Cache Slough	CACHS_LEN	4.89	2.2E-07	93.64	8.E-07	3.8E-07	1.47	1.48	7.1E-07	94.13	8.0E-07	1.1E-08	4.38	1.94	1.7E-05	98.02	1.0E-05	1.6E-06	0.05	2.30	1.2E-05	92.72	4.6E-07	0.00	4.98	0.09	0.10	0.09	0.10	0.09
Cache Slough Ryer	CACHSR_MID	8.13	3.0E-07	91.14	1.2E-06	1.3E-06	0.73	3.74	2.5E-08	91.89	1.0E-07	2.9E-08	4.38	2.15	5.6E-07	97.77	2.6E-07	4.5E-09	0.08	2.66	8.8E-07	96.37	1.9E-08	7.6E-06	0.97	0.09	0.10	0.09	0.09	0.09
Cosumnes R.	COSR_LEN	0	100.00	0	0	0	0	0.00	100.00	0.00	0	0	0	0	100	0	0	0	0	1.2E-04	100.00	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Franks Tract	FRANKST_MID	8.65	11.65	72.50	7.E+00	0.19	0.05	4.63	16.63	26.97	51.74	1.1E-04	0.03	4.27	3.20	89.93	1.81	0.77	0.02	3.17	0.81	94.16	0.06	1.74	0.05	0.15	0.49	0.11	0.09	0.21
Little Holland Tract	LHOLND_L0	97.11	3.2E-09	2.88	9.E-09	3.9E-09	0.01	44.12	6.5E-09	53.25	2E-08	1.2E-08	2.63	18.61	5.6E-07	81.24	0.00	0.00	0.16	46.22	6.1E-08	53.77	2.8E-08	2.6E-09	0.01	0.11	0.10	0.09	0.10	0.10
Middle R Bullfrog	MIDRBULFRG_LEN	13.67	9.76	28.26	48.24	0.08	0.01	5.55	5.64	2.70	86.11	7.1E-05	8.4E-04	7.43	12.50	53.07	26.88	0.12	3.1E-03	5.54	8.75	65.65	19.67	0.39	1.1E-03	0.46	0.75	0.30	0.24	0.44
Mildred Island	MILDDRISL_MID	12.36	11.39	32.28	43.87	8.4E-02	0.01	4.81	6.98	2.78	85.43	3.6E-05	6.7E-04	6.73	12.68	65.46	14.98	0.15	3.9E-03	4.81	7.16	77.85	9.71	0.47	1.8E-03	0.43	0.74	0.21	0.17	0.38
Mok. R. below Cosum.	MOKBCOS_LEN	2.18	97.82	0	0.00	0	0	0.53	99.47	0	0	0	0	3.05	96.95	0	0	0	0	3.00	97.00	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Mok. R. downstream Cosum.	MOKDCOS_MID	2.22	97.78	0	0.00	0	0	0.53	99.47	0	0	0	0	3.05	96.95	0	0	0	0	2.93	97.07	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Old R near Paradise Cut	OLDRNPARADSEC_MID	8.95	4.7E-05	1.5E-03	91.05	1.4E-05	1.4E-06	1.43	1.7E-07	1.6E-05	98.57	1.7E-08	3.5E-10	6.64	0	5.E-09	93.36	0	0	14.49	0.24	3.16	82.09	0.02	8.1E-05	0.78	0.84	0.80	0.72	0.79
Paradise Cut	PARADSECUT_LEN	10.28	1.6E-07	6.8E-07	89.72	1.6E-11	1.7E-08	0.82	0	0	99.18	0	0	2.39	0	0	97.61	0	0	1.08	0	0	98.92	0	0	0.77	0.84	0.83	0.84	0.82
Port of Stockton	PORTOSTOCK_L0	4.70	0	0	95.30	0	0	2.83	0	0	97.16	0	0	2.20	0	0	97.80	0	0	2.20	0	0	97.79	0	0	0.82	0.83	0.83	0.83	0.83
Sac. R. at Isleton	SACRISLTON_L0	0.55	0	99.45	0.00	0	0	0.18	0	99.82	0.00	0	0	0.45	0	99.55	0.00	0	0	0.41	0	99.59	0	0	8.2E-08	0.09	0.09	0.09	0.09	0.09
Sac River RM 44	SACR44_L0	0.21	0	99.79	0.00	0	0	0.07	0	99.93	0.00	0	0	0.14	0	99.86	0.00	0	0	0.17	0	99.83	0	0	0	0.09	0.09	0.09	0.09	0.09
Sandmound Sl.	SANDMND_MID	10.51	10.17	74.35	4.65	0.25	0.07	5.35	18.03	32.15	44.41	1.5E-04	0.06	5.61	3.13	87.97	2.10	1.17	0.02	3.93	0.55	92.97	0.03	2.45	0.07	0.13	0.43	0.11	0.09	0.19
Sherman Island	SHERMNILND_L0	4.89	5.04	87.74	1.52	0.56	0.23	2.43	14.17	61.17	21.31	0.03	0.89	2.76	1.84	86.03	1.72	7.62	0.04	1.95	0.11	84.69	0.01	11.76	1.48	0.10	0.26	0.10	0.09	0.14
SJR Bowman	SJRBOWMN_MID	1.10	0	0.00	98.90	0	0	0.45	0	0	99.55	0	0	2.06	0	0	97.94	0	0	0.80	0	0	99.20	0	0	0.84	0.85	0.83	0.84	0.84
SJR N Hwy4	SJRNHWY4_MID	1.89	0	0.00	98.11	0	0	0.59	0	0	99.41	0	0	2.64	0	0	97.36	0	0	1.94	0.00	0	98.06	0	0	0.84	0.85	0.83	0.84	0.84
SJR Naval st	SJRNAVLST_L0	4.70	5.45	0.00	89.85	0	0	1.06	5.10	0	93.84	0	0	4.11	9.43	0	86.46	0	0	4.97	12.46	0	82.57	0	0	0.77	0.80	0.75	0.72	0.76
SJR Potato Slough	SJRPOTSL_MID	6.24	16.03	71.18	6.45	0.07	0.03	2.65	23.15	38.61	35.59	1.1E-05	0.01	2.75	2.58	93.40	0.83	0.42	0.01	2.16	1.30	95.35	0.02	1.04	0.13	0.14	0.36	0.10	0.09	0.17
SJR Turner	SJRTURNR_MID	6.75	4.55	1.37	87.31	0.01	0	1.49	3.20	0.00	95.31	0	0	6.05	11.77	4.90	77.27	0.01	8.4E-05	5.55	16.96	10.99	66.44	0.06	7.4E-05	0.76	0.81	0.68	0.60	0.71
SJR/Pt. Antioch/fish pier	ASRANTFSH_MID	4.87	5.29	87.53	1.67	0.37	0.27	2.37	13.56	62.61	20.61	0.02	0.84	2.82	1.68	87.76	1.46	6.24	0.03	2.05	0.14	86.70	0.01	9.68	1.42	0.10	0.25	0.10	0.09	0.14
Suisun Bay	SUISNB_LEN	2.63	1.36	66.87	0.33	28.58	0.23	1.35	6.21	59.91	8.33	22.38	1.82	0.83	0.82	31.47	1.16	65.65	0.07	0.68	0.05	32.01	0.03	66.56	0.68	0.10	0.16	0.11	0.10	0.11
Sycamore Slough	SYCAMOR_MID	14.41	68.02	17.57	8.8E-17	0	3.5E-29	3.66	95.02	1.31	1.E-18	0	3.9E-33	4.79	40.41	54.81	2.9E-20	0	1.1E-32	5.24	32.04	62.72	2.6E-18	7.7E-14	1.0E-30	0.10	0.10	0.09	0.09	0.10
White Slough	WHITESL_L0	47.62	12.39	33.06	6.93	8.2E-04	2.7E-06	15.95	8.06	2.95	73.04	1.4E-05	1.5E-07	10.03	26.20	63.17	0.61	3.0E-05	8.1E-08	9.32	12.33	78.34	0.01	4.6E-04	4.6E-08	0.15	0.65	0.10	0.09	0.25
White Slough DS Disappointment Sl.	WHTSLDISPONT_LEN	20.77	29.09	44.03	6.11	2.4E-04	3.6E-06	14.40	8.89	3.00	73.72	7.9E-06	0	9.10	26.19	64.27	0.45	3.1E-05	0	6.26	14.39	79.35	1.9E-03	6.8E-04	0	0.14	0.65	0.10	0.09	0.25

Table 6D.4 Calculation of Quarterly Average Selenium Concentrations for DSM2 Output Locations Based on Percentage of Flow at Each Location from Different Sources: Year 2007

		First Quarter Inflow Percentage						Second Quarter Inflow Percentage						Third Quarter Inflow Percentage						Fourth Quarter Inflow Percentage						Estimated Waterborne Selenium Concentrations (µg/L)				
	Inflow Source →	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass	Delta Ag.	East Delta Tributaries	Sac. R.	San Joaq. R.	Martinez/ Suisun Bay	Yolo Bypass					
	Inflow Location →	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*	*Mildred Island, Center*	*Mokelumne Calaveras Cosumnes Rivers*	*Freeport*	*Vernalis*	*San Joaq. R. near Mallard Island*	*Sac. R. below Knights Landing*					
	Selenium (µg/L) →	0.11	0.10	0.09	0.58	0.10	0.23	0.11	0.10	0.09	0.58	0.10	0.23	0.11	0.10	0.09	0.58	0.10	0.23	0.11	0.10	0.09	0.58	0.10	0.23	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual
DSM2 Output Water Location	Location ID																													
Big Break	BIGBRK_MID	2.66	1.75	93.01	0.07	2.30	0.21	4.40	3.10	84.13	4.24	1.24	2.89	3.58	0.32	81.60	0.79	9.45	4.27	2.60	0.11	84.06	0.04	8.53	4.65	0.09	0.12	0.10	0.10	0.10
Cache Slough	CACHS_LEN	1.86	1.4E-05	97.14	2.2E-07	2.8E-05	1.01	1.99	5.1E-04	88.84	8.8E-04	1.6E-05	9.17	1.92	9.1E-06	89.20	1.9E-05	1.6E-06	8.88	1.64	1.9E-05	91.73	8.5E-06	5.1E-04	6.62	0.09	0.10	0.10	0.10	0.10
Cache Slough Ryer	CACHSR_MID	2.85	1.8E-06	96.46	4.7E-08	1.5E-05	0.68	2.66	1.2E-04	88.76	1.8E-04	1.4E-06	8.58	2.16	1.5E-05	88.35	3.1E-05	3.1E-07	9.49	1.96	4.5E-06	90.83	2.8E-06	1.9E-04	7.21	0.09	0.10	0.10	0.10	0.10
Cosumnes R.	COSR_LEN	0.00	100.00	0	0	0	0.00	0.01	99.99	0	0	0	0	0.09	99.91	0	0	0	0	0	100.00	0	0	0	0.00	0.10	0.10	0.10	0.10	0.10
Franks Tract	FRANKST_MID	3.85	4.08	90.69	0.32	0.94	0.11	6.16	5.35	77.86	9.10	0.16	1.38	4.86	0.34	88.03	0.84	2.96	2.98	3.19	0.32	91.15	0.17	2.23	2.95	0.09	0.14	0.10	0.10	0.11
Little Holland Tract	LHOLND_L0	29.80	0.00	69.38	1.2E-07	5.3E-05	0.81	22.80	8.0E-05	71.18	1.1E-04	5.2E-06	6.02	18.52	2.4E-05	73.18	0.00	4.9E-07	8.30	21.64	5.2E-07	71.72	1.4E-06	4.9E-05	6.64	0.10	0.10	0.11	0.10	0.10
Middle R Bullfrog	MIDRBULFRG_LEN	8.32	10.69	59.08	21.39	0.48	0.04	9.69	10.67	38.75	40.64	0.03	0.22	8.41	3.92	81.16	4.51	0.87	1.14	5.81	4.90	72.42	15.36	0.57	0.94	0.20	0.29	0.12	0.17	0.19
Mildred Island	MILDDRISL_MID	7.42	11.13	68.24	12.63	0.54	0.04	8.53	10.39	42.57	38.23	0.03	0.25	6.49	1.12	88.25	1.83	1.00	1.30	4.91	4.55	80.81	7.99	0.66	1.08	0.15	0.28	0.10	0.13	0.17
Mok. R. below Cosum.	MOKBCOS_LEN	1.46	98.54	0	0	0	0	6.32	93.68	6.5E-04	0	0	0	15.09	84.81	0.10	6.2E-35	0	0	2.30	97.70	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Mok. R. downstream Cosum.	MOKDCOS_MID	1.46	98.54	0	0	0	0	6.42	93.58	0	0	0	0	15.19	84.81	3.2E-04	0	0	0	2.27	97.73	0	0	0	0	0.10	0.10	0.10	0.10	0.10
Old R near Paradise Cut	OLDRNPARADSEC_MID	3.95	5E-12	3E-06	96.05	1.7E-16	2.5E-17	15.73	1.81	12.66	69.68	0.02	0.10	10.18	1.9E-05	1.6E-04	89.82	6.9E-08	6.5E-07	2.31	9.2E-04	0.01	97.68	0	9.7E-05	0.56	0.43	0.53	0.57	0.52
Paradise Cut	PARADSECUT_LEN	1.91	0	0	98.09	0	0	4.98	0.11	0.61	94.29	6.7E-04	3.7E-03	7.14	0	0	92.86	0	0	1.24	4.1E-03	0.05	98.71	4.1E-04	4.5E-04	0.57	0.55	0.55	0.57	0.56
Port of Stockton	PORTOSTOCK_L0	1.48	0	0	98.52	0	0	2.29	0	0	97.71	0	0	6.32	0.04	0	93.64	0	0	7.16	0.05	0	92.78	0	0	0.57	0.57	0.55	0.55	0.56
Sac. R. at Isleton	SACRISLTON_L0	0.45	0	99.55	0	0	2.1E-06	0.63	8.8E-05	99.36	5.7E-08	0	0.01	0.49	0	99.51	0	0	2.9E-04	0.39	1.0E-08	99.61	0	6.7E-07	0.01	0.09	0.09	0.09	0.09	0.09
Sac River RM 44	SACR44_L0	0.20	0	99.80	0	0	0	0.30	0	99.70	0	0	0	0.15	0	99.85	0	0	0	0.11	0	99.89	0	0	0	0.09	0.09	0.09	0.09	0.09
Sandmound Sl.	SANDMND_MID	4.47	3.23	90.83	0.17	1.17	0.13	7.20	4.64	79.23	6.98	0.23	1.71	6.15	0.39	84.96	0.98	4.06	3.46	3.79	0.22	89.26	0.10	3.11	3.51	0.09	0.13	0.10	0.10	0.10
Sherman Island	SHERMNILND_L0	2.14	0.95	92.16	0.04	4.49	0.23	3.69	2.31	83.94	2.94	4.01	3.11	2.99	0.32	77.36	0.77	14.22	4.34	2.22	0.06	75.89	0.03	17.11	4.68	0.09	0.11	0.10	0.10	0.10
SJR Bowman	SJRBOWMN_MID	0.88	0	0	99.12	0	0	3.52	0	0	96.48	0	0	8.49	2.5E-04	0	91.51	0	0	0.91	0	0	99.09	0	0	0.58	0.56	0.54	0.58	0.56
SJR N Hwy4	SJRNHWY4_MID	1.82	2.8E-08	0	98.18	0	0	4.35	1.4E-07	0	95.65	0	0	12.54	0.08	4.0E-26	87.39	0	0	1.89	1.3E-04	0	98.11	0	0	0.57	0.56	0.52	0.57	0.56
SJR Naval st	SJRNAVLST_L0	4.83	6.83	0	88.35	0	0	5.86	11.12	1.3E-06	83.02	0	0	12.06	40.15	3.4E-03	47.78	6.2E-07	6.3E-06	4.73	6.37	2.5E-04	88.90	5.4E-09	7.0E-09	0.52	0.50	0.33	0.53	0.47
SJR Potato Slough	SJRPOTSL_MID	2.91	5.22	91.00	0.15	0.61	0.10	4.89	5.67	79.70	8.49	0.10	1.16	3.16	0.19	91.86	0.46	1.88	2.44	2.37	0.33	93.43	0.10	1.44	2.33	0.09	0.13	0.10	0.09	0.10
SJR Turner	SJRTURNR_MID	7.22	10.11	10.82	71.76	0.08	0.01	7.49	11.95	7.23	73.31	2.9E-03	0.02	11.09	11.29	65.50	11.02	0.46	0.63	6.16	6.57	36.18	50.55	0.19	0.35	0.44	0.45	0.15	0.34	0.35
SJR/Pt. Antioch/fish pier	ASRANTFSH_MID	2.17	1.01	92.90	0.04	3.62	0.26	3.74	2.30	84.37	3.04	3.24	3.31	3.00	0.27	79.62	0.65	12.05	4.40	2.27	0.07	78.73	0.03	14.08	4.82	0.09	0.11	0.10	0.10	0.10
Suisun Bay	SUISNB_LEN	0.87	0.23	46.77	0.01	51.97	0.14	0.94	0.51	31.58	0.43	65.55	0.98	0.84	0.16	21.30	0.36	76.08	1.25	0.59	0.02	21.39	0.01	76.63	1.36	0.10	0.10	0.10	0.10	0.10
Sycamore Slough	SYCAMOR_MID	10.20	72.58	17.22	5.1E-10	9.7E-14	4.3E-29	13.62	50.90	35.47	0.01	4.0E-09	1.1E-07	5.33	3.90	90.77	1.9E-16	3.8E-25	1.1E-22	3.69	20.36	75.95	6.0E-19	1.1E-37	2.4E-31	0.10	0.10	0.09	0.09	0.10
White Slough	WHITESL_L0	20.35	16.73	61.67	1.25	4.8E-03	2.4E-04	33.31	13.41	23.49	29.78	3.9E-04	3.2E-03	15.53	1.33	83.05	0.09	1.2E-03	2.0E-03	9.35	8.62	81.98	0.04	3.7E-04	7.1E-04	0.10	0.24	0.09	0.09	0.13
White Slough DS Disappointment Sl.	WHTSLDISPONT_LEN	10.09	24.12	65.07	0.71	4.1E-03	1.9E-04	17.00	13.60	32.29	37.10	1.4E-03	0.01	7.70	1.46	90.83	1.5E-03	1.3E-03	2.2E-03	5.21	9.69	85.06	0.03	9.7E-04	2.1E-03	0.10	0.28	0.09	0.09	0.14

Table 6D.5 Selenium Bioaccumulation from Water (µg/L) to Particulates and Fish (µg/g, dw) Using Models 1 and 2

	Year 2000								Year 2005								Year 2007							
	Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio		Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio		Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	
DSM2 Delta Water Location	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2
	First Quarter								First Quarter								First Quarter							
Sacramento River RM 44	0.09	0.09	0.25	0.27	0.30	2.6	0.10	0.11	0.09	0.09	0.25	0.28	0.31	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.31	1.8	0.15	0.17
Cache Slough Ryer[b]	0.10	0.10	0.28	0.31	0.34	1.5	0.21	0.23	0.09	0.09	0.26	0.29	0.31	1.7	0.17	0.18	0.09	0.09	0.26	0.28	0.31	2.5	0.11	0.12
San Joaquin River Potato Slough	0.17	0.17	0.47	0.52	0.57	1.4	0.38	0.42	0.14	0.14	0.40	0.44	0.48	1.3	0.33	0.37	0.09	0.09	0.26	0.28	0.31	2.5	0.11	0.13
Franks Tract	0.19	0.19	0.53	0.58	0.64	1.6	0.35	0.39	0.15	0.15	0.41	0.45	0.49	1.1	0.39	0.43	0.09	0.09	0.26	0.29	0.32	3.0	0.10	0.11
Big Break	0.13	0.13	0.35	0.39	0.43	1.6	0.25	0.28	0.11	0.11	0.31	0.34	0.37	1.0	0.33	0.37	0.09	0.09	0.26	0.28	0.31	2.8	0.10	0.11
Middle River Bullfrog	0.31	0.31	0.86	0.95	1.05	NA	NA	NA	0.46	0.46	1.29	1.42	1.56	1.9	0.7	0.8	0.20	0.20	0.55	0.61	0.67	2.1	0.3	0.3
Old River near Paradise Cut[c]	0.73	0.73	2.05	2.25	2.48	NA	NA	NA	0.78	0.78	2.19	2.41	2.66	2.4	1.0	1.1	0.56	0.56	1.57	1.73	1.90	NA	NA	NA
Knights Landing[d]	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis[e]	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82
	Second Quarter								Second Quarter								Second Quarter							
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	2.6	0.11	0.12	0.09	0.09	0.25	0.28	0.30	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.31	1.8	0.15	0.17
Cache Slough Ryer[b]	0.11	0.11	0.32	0.35	0.38	1.5	0.23	0.26	0.10	0.10	0.27	0.30	0.33	1.7	0.17	0.19	0.10	0.10	0.29	0.32	0.35	2.5	0.12	0.14
San Joaquin River Potato Slough	0.24	0.24	0.67	0.74	0.81	1.4	0.54	0.60	0.36	0.36	1.02	1.12	1.23	1.3	0.86	0.94	0.13	0.13	0.38	0.42	0.46	2.5	0.17	0.18
Franks Tract	0.27	0.27	0.76	0.83	0.92	1.6	0.51	0.56	0.49	0.49	1.36	1.50	1.65	1.1	1.31	1.44	0.14	0.14	0.39	0.43	0.47	3.0	0.14	0.16
Big Break	0.20	0.20	0.55	0.60	0.66	1.6	0.39	0.43	0.30	0.30	0.83	0.91	1.00	1.0	0.89	0.98	0.12	0.12	0.33	0.36	0.39	2.8	0.13	0.14
Middle River Bullfrog	0.61	0.61	1.71	1.88	2.07	NA	NA	NA	0.75	0.75	2.09	2.30	2.53	1.9	1.2	1.3	0.29	0.29	0.82	0.90	0.99	2.1	0.4	0.5
Old River near Paradise Cut[c]	0.68	0.68	1.89	2.08	2.29	NA	NA	NA	0.84	0.84	2.35	2.59	2.84	2.4	1.1	1.2	0.43	0.43	1.22	1.34	1.47	NA	NA	NA
Knights Landing[d]	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis[e]	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82
	Third Quarter								Third Quarter								Third Quarter							
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	2.6	0.11	0.12	0.09	0.09	0.25	0.28	0.31	1.5	0.19	0.21	0.09	0.09	0.25	0.28	0.31	1.8	0.15	0.17
Cache Slough Ryer[b]	0.11	0.11	0.31	0.34	0.37	1.5	0.22	0.25	0.09	0.09	0.25	0.28	0.31	1.7	0.16	0.18	0.10	0.10	0.29	0.32	0.35	2.5	0.13	0.14
San Joaquin River Potato Slough	0.10	0.10	0.27	0.30	0.32	1.4	0.22	0.24	0.10	0.10	0.27	0.30	0.33	1.3	0.23	0.25	0.10	0.10	0.27	0.30	0.33	2.5	0.12	0.13
Franks Tract	0.10	0.10	0.28	0.31	0.34	1.6	0.19	0.20	0.11	0.11	0.29	0.32	0.36	1.1	0.28	0.31	0.10	0.10	0.28	0.31	0.34	3.0	0.10	0.11
Big Break	0.10	0.10	0.29	0.32	0.35	1.6	0.20	0.22	0.10	0.10	0.29	0.32	0.35	1.0	0.31	0.35	0.10	0.10	0.28	0.31	0.34	2.8	0.11	0.12
Middle River Bullfrog	0.20	0.20	0.57	0.63	0.69	NA	NA	NA	0.30	0.30	0.83	0.91	1.01	1.9	0.5	0.5	0.12	0.12	0.32	0.36	0.39	2.1	0.2	0.2
Old River near Paradise Cut[c]	0.75	0.75	2.11	2.32	2.55	NA	NA	NA	0.80	0.80	2.24	2.47	2.71	2.4	1.0	1.1	0.53	0.53	1.49	1.64	1.80	NA	NA	NA
Knights Landing[d]	0.23	0.23	0.64	0.71	0.78	NA	NA	NA	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis[e]	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82

DSM2 Delta Water Location	Year 2000							
	Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2
	Fourth Quarter							
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	2.6	0.11	0.12
Cache Slough Ryer[b]	0.10	0.10	0.29	0.31	0.35	1.5	0.21	0.23
San Joaquin River Potato Slough	0.09	0.09	0.26	0.29	0.32	1.4	0.21	0.23
Franks Tract	0.10	0.10	0.27	0.29	0.32	1.6	0.18	0.20
Big Break	0.10	0.10	0.27	0.30	0.33	1.6	0.19	0.21
Middle River Bullfrog	0.30	0.30	0.84	0.92	1.01	NA	NA	NA
Old River near Paradise Cut[c]	0.81	0.81	2.27	2.50	2.75	NA	NA	NA
Knights Landing[d]	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis[e]	0.83	0.83	2.32	2.56	2.81	1.7	1.50	1.65

DSM2 Delta Water Location	Year 2005							
	Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2
	Fourth Quarter							
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.31	1.5	0.19	0.21
Cache Slough Ryer[b]	0.09	0.09	0.26	0.28	0.31	1.7	0.16	0.18
San Joaquin River Potato Slough	0.09	0.09	0.25	0.28	0.31	1.3	0.21	0.24
Franks Tract	0.09	0.09	0.26	0.28	0.31	1.1	0.25	0.27
Big Break	0.09	0.09	0.26	0.28	0.31	1.0	0.28	0.31
Middle River Bullfrog	0.24	0.24	0.68	0.74	0.82	1.9	0.4	0.4
Old River near Paradise Cut[c]	0.72	0.72	2.01	2.21	2.43	2.4	0.9	1.0
Knights Landing[d]	0.23	0.23	0.64	0.71	0.78	2.2	0.3	0.4
Vernalis[e]	0.85	0.85	2.38	2.62	2.88	1.9	1.38	1.52

DSM2 Delta Water Location	Year 2007							
	Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 1 Fish	Model 2 Fish		Model 1	Model 2
	Fourth Quarter							
Sacramento River RM 44	0.09	0.09	0.25	0.28	0.30	1.8	0.15	0.17
Cache Slough Ryer[b]	0.10	0.10	0.28	0.31	0.34	2.5	0.12	0.13
San Joaquin River Potato Slough	0.09	0.09	0.26	0.29	0.32	2.5	0.12	0.13
Franks Tract	0.10	0.10	0.27	0.30	0.32	3.0	0.10	0.11
Big Break	0.10	0.10	0.27	0.30	0.33	2.8	0.11	0.12
Middle River Bullfrog	0.17	0.17	0.47	0.52	0.57	2.1	0.2	0.3
Old River near Paradise Cut[c]	0.57	0.57	1.59	1.75	1.93	NA	NA	NA
Knights Landing[d]	0.23	0.23	0.64	0.71	0.78	NA	NA	NA
Vernalis[e]	0.58	0.58	1.62	1.79	1.97	2.4	0.74	0.82

Notes:

Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Models 1 and 2 used the default K_d (1000) and the average selenium trophic transfer factors to aquatic insects (2.8) and fish (1.1 for all trophic levels).

Model 1 = TL-3 Fish Eating Invertebrates

Model 2 = TL-4 Fish Eating TL-3 Fish

Invert. = invertebrate

K_d = particulate concentration/water concentration ratio

µg/g, dw = micrograms per gram, dry weight

NA = not available; bass not collected here

RM = river mile

TL = trophic level

a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).

b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calcula mean whole-body largemouth bass and ratios.

e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1999–2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available); years 2004-2005 were used for Year 2005 estimates; and ye 2007 were used for Year 2007 estimates.

Table 6D.6 Selenium Bioaccumulation from Water (µg/L) to Particulates and Fish (µg/g, dw) Using Model 2 with Estimated K_d from All Years Regression for Model 3

	Year 2000							Year 2005							Year 2007						
	Concentration						Fish-to-Bass Ratio	Concentration						Fish-to-Bass Ratio	Concentration						Fish-to-Bass Ratio
DSM2 Delta Water Location	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish	K_d	Whole-body Bass[a]	Model 3	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish	K_d	Whole-body Bass[a]	Model 3	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish	K_d	Whole-body Bass[a]	Model 3
	First Quarter							First Quarter							First Quarter						
Sacramento River RM 44	0.09	0.54	1.50	1.81	6060	2.6	0.69	0.09	0.54	1.50	1.81	5945	1.5	1.25	0.09	0.54	1.50	1.81	5946	1.8	0.98
Cache Slough Ryer[b]	0.10	0.54	1.50	1.82	5389	1.5	1.22	0.09	0.54	1.50	1.82	5783	1.7	1.05	0.09	0.54	1.50	1.81	5852	2.5	0.71
San Joaquin River Potato Slough	0.17	0.55	1.53	1.85	3229	1.4	1.36	0.14	0.54	1.52	1.84	3824	1.3	1.41	0.09	0.54	1.50	1.81	5819	2.5	0.73
Franks Tract	0.19	0.55	1.53	1.85	2904	1.6	1.13	0.15	0.54	1.52	1.84	3724	1.1	1.61	0.09	0.54	1.50	1.82	5762	3.0	0.61
Big Break	0.13	0.54	1.51	1.83	4295	1.6	1.18	0.11	0.54	1.51	1.82	4873	1.0	1.79	0.09	0.54	1.50	1.81	5850	2.8	0.64
Middle River Bullfrog	0.31	0.56	1.56	1.88	1801	NA	NA	0.46	0.56	1.57	1.90	1221	1.9	1.0	0.20	0.55	1.53	1.86	2773	2.1	0.87
Old River near Paradise Cut[c]	0.73	0.57	1.60	1.93	780	NA	NA	0.78	0.57	1.60	1.94	729	2.4	0.8	0.56	0.57	1.58	1.92	1007	NA	NA
Knights Landing[d]	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis[e]	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80
	Second Quarter							Second Quarter							Second Quarter						
Sacramento River RM 44	0.09	0.54	1.50	1.81	5952	2.6	0.69	0.09	0.54	1.50	1.81	5947	1.5	1.25	0.09	0.54	1.50	1.81	5944	1.8	0.98
Cache Slough Ryer[b]	0.11	0.54	1.51	1.83	4777	1.5	1.22	0.10	0.54	1.50	1.82	5538	1.7	1.05	0.10	0.54	1.50	1.82	5241	2.5	0.72
San Joaquin River Potato Slough	0.24	0.55	1.54	1.87	2309	1.4	1.38	0.36	0.56	1.56	1.89	1537	1.3	1.45	0.13	0.54	1.52	1.84	4020	2.5	0.74
Franks Tract	0.27	0.55	1.55	1.87	2048	1.6	1.14	0.49	0.56	1.58	1.91	1159	1.1	1.67	0.14	0.54	1.52	1.84	3921	3.0	0.61
Big Break	0.20	0.55	1.53	1.86	2800	1.6	1.20	0.30	0.55	1.55	1.88	1876	1.0	1.84	0.12	0.54	1.51	1.83	4645	2.8	0.64
Middle River Bullfrog	0.61	0.57	1.59	1.92	928	NA	NA	0.75	0.57	1.60	1.93	764	1.9	1.0	0.29	0.55	1.55	1.88	1896	2.1	0.9
Old River near Paradise Cut[c]	0.68	0.57	1.59	1.93	842	NA	NA	0.84	0.57	1.60	1.94	682	2.4	0.8	0.43	0.56	1.57	1.90	1291	NA	NA
Knights Landing[d]	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis[e]	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80
	Third Quarter							Third Quarter							Third Quarter						
Sacramento River RM 44	0.09	0.54	1.50	1.81	5947	2.6	0.69	0.09	0.54	1.50	1.81	5946	1.5	1.25	0.09	0.54	1.50	1.81	5946	1.8	0.98
Cache Slough Ryer[b]	0.11	0.54	1.51	1.82	4942	1.5	1.22	0.09	0.54	1.50	1.81	5914	1.7	1.05	0.10	0.54	1.51	1.82	5184	2.5	0.72
San Joaquin River Potato Slough	0.10	0.54	1.50	1.82	5592	1.4	1.34	0.10	0.54	1.50	1.82	5523	1.3	1.39	0.10	0.54	1.50	1.82	5557	2.5	0.73
Franks Tract	0.10	0.54	1.50	1.82	5412	1.6	1.10	0.11	0.54	1.51	1.82	5121	1.1	1.59	0.10	0.54	1.50	1.82	5393	3.0	0.61
Big Break	0.10	0.54	1.50	1.82	5227	1.6	1.17	0.10	0.54	1.51	1.82	5159	1.0	1.79	0.10	0.54	1.50	1.82	5291	2.8	0.64
Middle River Bullfrog	0.20	0.55	1.54	1.86	2688	NA	NA	0.30	0.55	1.55	1.88	1868	1.9	1.0	0.12	0.54	1.51	1.83	4656	2.1	0.86
Old River near Paradise Cut[c]	0.75	0.57	1.60	1.93	757	NA	NA	0.80	0.57	1.60	1.94	714	2.4	0.8	0.53	0.56	1.58	1.91	1061	NA	NA
Knights Landing[d]	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis[e]	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80

DSM2 Delta Water Location	Year 2000							Year 2005							Year 2007						
	Concentration						Fish-to-Bass Ratio	Concentration						Fish-to-Bass Ratio	Concentration						Fish-to-Bass Ratio
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish	K_d	Whole-body Bass[a]	Model 3	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish	K_d	Whole-body Bass[a]	Model 3	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 3 Fish	K_d	Whole-body Bass[a]	Model 3
	Fourth Quarter							Fourth Quarter							Fourth Quarter						
Sacramento River RM 44	0.09	0.54	1.50	1.81	5948	2.6	0.69	0.09	0.54	1.50	1.81	5946	1.5	1.25	0.09	0.54	1.50	1.81	5947	1.8	0.98
Cache Slough Ryer[b]	0.10	0.54	1.50	1.82	5261	1.5	1.22	0.09	0.54	1.50	1.81	5830	1.7	1.05	0.10	0.54	1.50	1.82	5345	2.5	0.71
San Joaquin River Potato Slough	0.09	0.54	1.50	1.82	5704	1.4	1.34	0.09	0.54	1.50	1.81	5885	1.3	1.39	0.09	0.54	1.50	1.82	5678	2.5	0.73
Franks Tract	0.10	0.54	1.50	1.82	5621	1.6	1.10	0.09	0.54	1.50	1.81	5859	1.1	1.59	0.10	0.54	1.50	1.82	5596	3.0	0.61
Big Break	0.10	0.54	1.50	1.82	5534	1.6	1.17	0.09	0.54	1.50	1.82	5809	1.0	1.78	0.10	0.54	1.50	1.82	5470	2.8	0.64
Middle River Bullfrog	0.30	0.55	1.55	1.88	1859	NA	NA	0.24	0.55	1.54	1.87	2283	1.9	1.0	0.17	0.55	1.53	1.85	3241	2.1	0.87
Old River near Paradise Cut[c]	0.81	0.57	1.60	1.94	704	NA	NA	0.72	0.57	1.60	1.93	795	2.4	0.8	0.57	0.57	1.58	1.92	994	NA	NA
Knights Landing[d]	0.23	0.55	1.54	1.87	2394	NA	NA	0.23	0.55	1.54	1.87	2394	2.2	0.8	0.23	0.55	1.54	1.87	2394	NA	NA
Vernalis[e]	0.83	0.57	1.60	1.94	689	1.7	1.14	0.85	0.57	1.60	1.94	674	1.9	1.02	0.58	0.57	1.59	1.92	976	2.4	0.80

Notes:

Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Model 3 used the average selenium trophic transfer factors to aquatic insects (2.8) and fish (1.1 for all trophic levels).

Model 3 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K_d estimated using all years regression (log K_d = 2.76-0.97(logDSM2))

Invert. = invertebrate

K_d = particulate concentration/water concentration ratio

µg/g, dw = micrograms per gram, dry weight

NA = not available; bass not collected here

RM = river mile

TL = trophic level

a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).

b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calc geometric mean whole-body largemouth bass and ratios.

e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1999-2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available); years 2004-2005 were used for Year 2005 estimates; and years 200 2007 were used for Year 2007 estimates.

Table 6D.7 Selenium Bioaccumulation from Water (µg/L) to Particulates and Fish (µg/g, dw) Using Model 2 with Estimated K_d from Normal/Wet Years Regression for Model 4 and Dry Years Regression for Model 5

DSM2 Delta Water Location	Year 2000 Concentration: DSM2 Water	Year 2000 Concentration: Particulate from Water	Year 2000 Concentration: Invert. from Particulate	Year 2000 Concentration: Model 4 Fish	Year 2000 K_d	Year 2000 Whole-body Bass[a]	Year 2000 Fish-to-Bass Ratio: Model 4	Year 2005 Concentration: DSM2 Water	Year 2005 Concentration: Particulate from Water	Year 2005 Concentration: Invert. from Particulate	Year 2005 Concentration: Model 4 Fish	Year 2005 K_d	Year 2005 Whole-body Bass[a]	Year 2005 Fish-to-Bass Ratio: Model 4	Year 2007 Concentration: DSM2 Water	Year 2007 Concentration: Particulate from Water	Year 2007 Concentration: Invert. from Particulate	Year 2007 Concentration: Model 5 Fish	Year 2007 K_d	Year 2007 Whole-body Bass[a]	Year 2007 Fish-to-Bass Ratio: Model 5
	First Quarter							**First Quarter**							**First Quarter**						
Sacramento River RM 44	0.09	0.44	1.24	1.49	4997	2.6	0.57	0.09	0.44	1.24	1.50	4909	1.5	1.03	0.09	0.73	2.03	2.46	8063	1.8	1.33
Cache Slough Ryer[b]	0.10	0.45	1.25	1.51	4481	1.5	1.01	0.09	0.44	1.24	1.50	4784	1.7	0.87	0.09	0.73	2.03	2.46	7929	2.5	0.97
San Joaquin River Potato Slough	0.17	0.47	1.32	1.59	2786	1.4	1.17	0.14	0.46	1.30	1.57	3260	1.3	1.20	0.09	0.73	2.03	2.46	7883	2.5	0.99
Franks Tract	0.19	0.48	1.33	1.61	2525	1.6	0.98	0.15	0.46	1.30	1.57	3181	1.1	1.37	0.09	0.73	2.03	2.46	7802	3.0	0.82
Big Break	0.13	0.46	1.28	1.55	3630	1.6	1.00	0.11	0.45	1.26	1.53	4082	1.0	1.50	0.09	0.73	2.03	2.46	7926	2.8	0.87
Middle River Bullfrog	0.31	0.50	1.40	1.69	1621	NA	NA	0.46	0.52	1.46	1.76	1130	1.9	0.9	0.20	0.71	2.00	2.42	3616	2.1	1.14
Old River near Paradise Cut[c]	0.73	0.55	1.53	1.85	745	NA	NA	0.78	0.55	1.54	1.86	700	2.4	0.8	0.56	0.70	1.96	2.37	1247	NA	NA
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99
	Second Quarter							**Second Quarter**							**Second Quarter**						
Sacramento River RM 44	0.09	0.44	1.24	1.50	4914	2.6	0.57	0.09	0.44	1.24	1.50	4910	1.5	1.03	0.09	0.73	2.03	2.46	8061	1.8	1.33
Cache Slough Ryer[b]	0.11	0.45	1.27	1.53	4007	1.5	1.03	0.10	0.45	1.25	1.51	4596	1.7	0.87	0.10	0.72	2.03	2.45	7061	2.5	0.96
San Joaquin River Potato Slough	0.24	0.49	1.36	1.65	2041	1.4	1.22	0.36	0.51	1.42	1.72	1399	1.3	1.32	0.13	0.72	2.02	2.44	5343	2.5	0.98
Franks Tract	0.27	0.49	1.38	1.67	1826	1.6	1.02	0.49	0.52	1.46	1.77	1077	1.1	1.55	0.14	0.72	2.02	2.44	5204	3.0	0.82
Big Break	0.20	0.48	1.34	1.62	2441	1.6	1.04	0.30	0.50	1.39	1.69	1683	1.0	1.65	0.12	0.72	2.02	2.45	6220	2.8	0.86
Middle River Bullfrog	0.61	0.54	1.50	1.81	876	NA	NA	0.75	0.55	1.53	1.85	732	1.9	1.0	0.29	0.71	1.99	2.40	2424	2.1	1.1
Old River near Paradise Cut[c]	0.68	0.54	1.51	1.83	801	NA	NA	0.84	0.55	1.55	1.87	658	2.4	0.8	0.43	0.70	1.97	2.38	1617	NA	NA
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99
	Third Quarter							**Third Quarter**							**Third Quarter**						
Sacramento River RM 44	0.09	0.44	1.24	1.50	4910	2.6	0.57	0.09	0.44	1.24	1.50	4910	1.5	1.03	0.09	0.73	2.03	2.46	8064	1.8	1.33
Cache Slough Ryer[b]	0.11	0.45	1.26	1.53	4135	1.5	1.02	0.09	0.44	1.24	1.50	4885	1.7	0.87	0.10	0.72	2.03	2.45	6980	2.5	0.96
San Joaquin River Potato Slough	0.10	0.44	1.25	1.51	4637	1.4	1.11	0.10	0.45	1.25	1.51	4584	1.3	1.15	0.10	0.72	2.03	2.46	7510	2.5	0.99
Franks Tract	0.10	0.45	1.25	1.51	4499	1.6	0.92	0.11	0.45	1.26	1.52	4274	1.1	1.33	0.10	0.72	2.03	2.45	7276	3.0	0.82
Big Break	0.10	0.45	1.25	1.52	4356	1.6	0.98	0.10	0.45	1.26	1.52	4304	1.0	1.49	0.10	0.72	2.03	2.45	7131	2.8	0.87
Middle River Bullfrog	0.20	0.48	1.34	1.63	2350	NA	NA	0.30	0.50	1.39	1.69	1677	1.9	0.9	0.12	0.72	2.02	2.45	6235	2.1	1.15
Old River near Paradise Cut[c]	0.75	0.55	1.53	1.85	725	NA	NA	0.80	0.55	1.54	1.86	687	2.4	0.8	0.53	0.70	1.96	2.37	1317	NA	NA
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99

DSM2 Delta Water Location	Year 2000							Year 2005							Year 2007						
	Concentration				K_d	Whole-body Bass[a]	Fish-to-Bass Ratio	Concentration				K_d	Whole-body Bass[a]	Fish-to-Bass Ratio	Concentration				K_d	Whole-body Bass[a]	Fish-to-Bass Ratio
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish			Model 4	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish			Model 4	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish			Model 5
	Fourth Quarter							Fourth Quarter							Fourth Quarter						
Sacramento River RM 44	0.09	0.44	1.24	1.50	4911	2.6	0.57	0.09	0.44	1.24	1.50	4909	1.5	1.03	0.09	0.73	2.03	2.46	8064	1.8	1.33
Cache Slough Ryer[b]	0.10	0.45	1.25	1.52	4383	1.5	1.02	0.09	0.44	1.24	1.50	4820	1.7	0.87	0.10	0.72	2.03	2.45	7209	2.5	0.96
San Joaquin River Potato Slough	0.09	0.44	1.24	1.50	4723	1.4	1.11	0.09	0.44	1.24	1.50	4862	1.3	1.15	0.09	0.73	2.03	2.46	7682	2.5	0.99
Franks Tract	0.10	0.44	1.24	1.51	4660	1.6	0.91	0.09	0.44	1.24	1.50	4843	1.1	1.31	0.10	0.73	2.03	2.46	7564	3.0	0.82
Big Break	0.10	0.45	1.25	1.51	4593	1.6	0.97	0.09	0.44	1.24	1.50	4804	1.0	1.47	0.10	0.72	2.03	2.46	7386	2.8	0.87
Middle River Bullfrog	0.30	0.50	1.40	1.69	1669	NA	NA	0.24	0.49	1.37	1.65	2020	1.9	0.9	0.17	0.72	2.01	2.43	4260	2.1	1.14
Old River near Paradise Cut[c]	0.81	0.55	1.54	1.87	678	NA	NA	0.72	0.54	1.52	1.84	759	2.4	0.8	0.57	0.70	1.96	2.37	1229	NA	NA
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	0.23	0.49	1.36	1.64	2111	2.2	0.7	0.23	0.71	1.99	2.41	3098	NA	NA
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	0.85	0.55	1.55	1.87	651	1.9	0.99	0.58	0.70	1.96	2.37	1206	2.4	0.99

Notes:

Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Models 4 and 5 used the average selenium trophic transfer factors to aquatic insects (2.8) and fish (1.1 for all trophic levels).

Model 4 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K_d estimated using normal/wet years regression (log K_d = 2.75-0.90(logDSM2))

Model 5 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K_d estimated using dry years (2007) regression (log K_d = 2.84-1.02(logDSM2))

Invert. = invertebrate

K_d = particulate concentration/water concentration ratio

µg/g, dw = micrograms per gram, dry weight

NA = not available; bass not collected here

RM = river mile

TL = trophic level

a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).

b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calc geometric mean whole-body largemouth bass and ratios.

e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1999-2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available); years 2004-2005 were used for Year 2005 estimates; and years 200 2007 were used for Year 2007 estimates.

Table 6D.8 Selenium Bioaccumulation from Water (µg/L) to Particulates, Whole-body Fish (µg/g, dw), and Bird Eggs (µg/g, dw) Using Model 2 with Estimated K_d from Normal/Wet Years Regression for Model 4 and Dry Years Regression for Model 5

	Year 2000									Year 2005									Year 2007								
	Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	Bird Eggs		Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	Bird Eggs		Concentration					Whole-body Bass[a]	Fish-to-Bass Ratio	Bird Eggs	
DSM2 Delta Water Location	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish	K_d		Model 4	From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish	K_d		Model 4	From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish	K_d		Model 5	From Invert.	From Fish
	First Quarter									First Quarter									First Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.49	4997	2.6	0.57	2.22	2.69	0.09	0.44	1.24	1.50	4909	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8063	1.8	1.33	3.66	4.43
Cache Slough Ryer[b]	0.10	0.45	1.25	1.51	4481	1.5	1.01	2.25	2.72	0.09	0.44	1.24	1.50	4784	1.7	0.87	2.23	2.70	0.09	0.73	2.03	2.46	7929	2.5	0.97	3.66	4.43
San Joaquin River Potato Slough	0.17	0.47	1.32	1.59	2786	1.4	1.17	2.37	2.87	0.14	0.46	1.30	1.57	3260	1.3	1.20	2.33	2.82	0.09	0.73	2.03	2.46	7883	2.5	0.99	3.66	4.43
Franks Tract	0.19	0.48	1.33	1.61	2525	1.6	0.98	2.40	2.90	0.15	0.46	1.30	1.57	3181	1.1	1.37	2.34	2.83	0.09	0.73	2.03	2.46	7802	3.0	0.82	3.66	4.42
Big Break	0.13	0.46	1.28	1.55	3630	1.6	1.00	2.30	2.79	0.11	0.45	1.26	1.53	4082	1.0	1.50	2.27	2.75	0.09	0.73	2.03	2.46	7926	2.8	0.87	3.66	4.43
Middle River Bullfrog	0.31	0.50	1.40	1.69	1621	NA	NA	2.52	3.05	0.46	0.52	1.46	1.76	1130	1.9	0.9	2.62	3.17	0.20	0.71	2.00	2.42	3616	2.1	1.14	3.60	4.36
Old River near Paradise Cut[c]	0.73	0.55	1.53	1.85	745	NA	NA	2.75	3.32	0.78	0.55	1.54	1.86	700	2.4	0.8	2.77	3.35	0.56	0.70	1.96	2.37	1247	NA	NA	3.53	4.27
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27
	Second Quarter									Second Quarter									Second Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.50	4914	2.6	0.57	2.23	2.70	0.09	0.44	1.24	1.50	4910	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8061	1.8	1.33	3.66	4.43
Cache Slough Ryer[b]	0.11	0.45	1.27	1.53	4007	1.5	1.03	2.28	2.76	0.10	0.45	1.25	1.51	4596	1.7	0.87	2.24	2.72	0.10	0.72	2.03	2.45	7061	2.5	0.96	3.65	4.42
San Joaquin River Potato Slough	0.24	0.49	1.36	1.65	2041	1.4	1.22	2.46	2.97	0.36	0.51	1.42	1.72	1399	1.3	1.32	2.56	3.10	0.13	0.72	2.02	2.44	5343	2.5	0.98	3.63	4.39
Franks Tract	0.27	0.49	1.38	1.67	1826	1.6	1.02	2.49	3.01	0.49	0.52	1.46	1.77	1077	1.1	1.55	2.64	3.19	0.14	0.72	2.02	2.44	5204	3.0	0.82	3.63	4.39
Big Break	0.20	0.48	1.34	1.62	2441	1.6	1.04	2.41	2.91	0.30	0.50	1.39	1.69	1683	1.0	1.65	2.51	3.04	0.12	0.72	2.02	2.45	6220	2.8	0.86	3.64	4.40
Middle River Bullfrog	0.61	0.54	1.50	1.81	876	NA	NA	2.70	3.26	0.75	0.55	1.53	1.85	732	1.9	1.0	2.75	3.33	0.29	0.71	1.99	2.40	2424	2.1	1.1	3.57	4.32
Old River near Paradise Cut[c]	0.68	0.54	1.51	1.83	801	NA	NA	2.73	3.30	0.84	0.55	1.55	1.87	658	2.4	0.8	2.79	3.37	0.43	0.70	1.97	2.38	1617	NA	NA	3.55	4.29
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27
	Third Quarter									Third Quarter									Third Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.50	4910	2.6	0.57	2.23	2.70	0.09	0.44	1.24	1.50	4910	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8064	1.8	1.33	3.66	4.43
Cache Slough Ryer[b]	0.11	0.45	1.26	1.53	4135	1.5	1.02	2.27	2.75	0.09	0.44	1.24	1.50	4885	1.7	0.87	2.23	2.70	0.10	0.72	2.03	2.45	6980	2.5	0.96	3.65	4.41
San Joaquin River Potato Slough	0.10	0.44	1.25	1.51	4637	1.4	1.11	2.24	2.71	0.10	0.45	1.25	1.51	4584	1.3	1.15	2.24	2.72	0.10	0.72	2.03	2.46	7510	2.5	0.99	3.65	4.42
Franks Tract	0.10	0.45	1.25	1.51	4499	1.6	0.92	2.25	2.72	0.11	0.45	1.26	1.52	4274	1.1	1.33	2.26	2.74	0.10	0.72	2.03	2.45	7276	3.0	0.82	3.65	4.42
Big Break	0.10	0.45	1.25	1.52	4356	1.6	0.98	2.26	2.73	0.10	0.45	1.26	1.52	4304	1.0	1.49	2.26	2.74	0.10	0.72	2.03	2.45	7131	2.8	0.87	3.65	4.42
Middle River Bullfrog	0.20	0.48	1.34	1.63	2350	NA	NA	2.42	2.93	0.30	0.50	1.39	1.69	1677	1.9	0.9	2.51	3.04	0.12	0.72	2.02	2.45	6235	2.1	1.15	3.64	4.40
Old River near Paradise Cut[c]	0.75	0.55	1.53	1.85	725	NA	NA	2.76	3.33	0.80	0.55	1.54	1.86	687	2.4	0.8	2.77	3.35	0.53	0.70	1.96	2.37	1317	NA	NA	3.53	4.27
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27

DSM2 Delta Water Location	Year 2000									Year 2005									Year 2007								
	Concentration					Whole-body	Fish-to-Bass Ratio	Bird Eggs		Concentration					Whole-body	Fish-to-Bass Ratio	Bird Eggs		Concentration					Whole-body	Fish-to-Bass Ratio	Bird Eggs	
	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish	K_d	Bass[a]	Model 4	From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 4 Fish	K_d	Bass[a]	Model 4	From Invert.	From Fish	DSM2 Water	Particulate from Water	Invert. from Particulate	Model 5 Fish	K_d	Bass[a]	Model 5	From Invert.	From Fish
	Fourth Quarter									Fourth Quarter									Fourth Quarter								
Sacramento River RM 44	0.09	0.44	1.24	1.50	4911	2.6	0.57	2.23	2.70	0.09	0.44	1.24	1.50	4909	1.5	1.03	2.23	2.70	0.09	0.73	2.03	2.46	8064	1.8	1.33	3.66	4.43
Cache Slough Ryer[b]	0.10	0.45	1.25	1.52	4383	1.5	1.02	2.26	2.73	0.09	0.44	1.24	1.50	4820	1.7	0.87	2.23	2.70	0.10	0.72	2.03	2.45	7209	2.5	0.96	3.65	4.42
San Joaquin River Potato Slough	0.09	0.44	1.24	1.50	4723	1.4	1.11	2.24	2.71	0.09	0.44	1.24	1.50	4862	1.3	1.15	2.23	2.70	0.09	0.73	2.03	2.46	7682	2.5	0.99	3.66	4.42
Franks Tract	0.10	0.44	1.24	1.51	4660	1.6	0.91	2.24	2.71	0.09	0.44	1.24	1.50	4843	1.1	1.31	2.23	2.70	0.10	0.73	2.03	2.46	7564	3.0	0.82	3.65	4.42
Big Break	0.10	0.45	1.25	1.51	4593	1.6	0.97	2.24	2.72	0.09	0.44	1.24	1.50	4804	1.0	1.47	2.23	2.70	0.10	0.72	2.03	2.46	7386	2.8	0.87	3.65	4.42
Middle River Bullfrog	0.30	0.50	1.40	1.69	1669	NA	NA	2.51	3.04	0.24	0.49	1.37	1.65	2020	1.9	0.9	2.46	2.98	0.17	0.72	2.01	2.43	4260	2.1	1.14	3.61	4.37
Old River near Paradise Cut[c]	0.81	0.55	1.54	1.87	678	NA	NA	2.78	3.36	0.72	0.54	1.52	1.84	759	2.4	0.8	2.74	3.32	0.57	0.70	1.96	2.37	1229	NA	NA	3.53	4.27
Knights Landing[d]	0.23	0.49	1.36	1.64	2111	NA	NA	2.45	2.96	0.23	0.49	1.36	1.64	2111	2.2	0.7	2.45	2.96	0.23	0.71	1.99	2.41	3098	NA	NA	3.59	4.34
Vernalis[e]	0.83	0.55	1.55	1.87	665	1.7	1.10	2.78	3.37	0.85	0.55	1.55	1.87	651	1.9	0.99	2.79	3.37	0.58	0.70	1.96	2.37	1206	2.4	0.99	3.53	4.27

Notes:

Equations from Presser and Luoma (2010a, 2010b) were used to calculate selenium concentrations for fish. Models 4 and 5 used the average selenium trophic transfer factors to aquatic insects (2.8), fish (1.1 for all trophic levels) and bird eggs (1.8).

Model 4 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K_d estimated using normal/wet years regression (log K_d = 2.75-0.90(logDSM2))

Model 5 = Model 2 (TL-4 Fish Eating TL-3 Fish) with K_d estimated using dry years (2007) regression (log K_d = 2.84-1.02(logDSM2))

Invert. = invertebrate

K_d = particulate concentration/water concentration ratio

µg/g, dw = micrograms per gram, dry weight

NA = not available; bass not collected here

RM = river mile

TL = trophic level

a. Geometric mean calculated from whole-body largemouth bass data presented in Foe (2010a).

b. Fish data collected at Rio Vista (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

c. Fish data collected at Old River near Tracy (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

d. Geometric mean of total selenium concentrations in water collected from years 2004, 2007, and 2008 (DWR Website 2009) was used to estimate selenium concentrations in particulates and biota (DSM2 data were not available). Fish data collected from Sacramento River at Veterans Bridge (Foe 2010a) were used to calculate geometric mean whole-body largemouth bass and ratios.

e. Geometric mean of selenium concentrations (total or dissolved was not specified) in water collected from years 1999-2000 (SWAMP Website 2009) was used to estimate Year 2000 selenium concentrations in particulates and biota (DSM2 data were not available); years 2004-2005 were used for Year 2005 estimates; and years 2006-2007 were used for Year 2007 estimates.

Table 6D.9 Modeled Annual Average Selenium Concentrations in Water for No Action Alternative and Alternatives 1 (Second Basis of Comparison), 3, and 5

Location	Period *	Period Average Concentration (µg/L) No Action Alternative	Period Average Concentration (µg/L) Second Basis of Comparison	Period Average Concentration (µg/L) Alternative 3	Period Average Concentration (µg/L) Alternative 5
Delta Interior					
San Joaquin River at Stockton	ALL	0.42	0.42	0.42	0.42
	DROUGHT	0.40	0.40	0.39	0.39
Turner Cut	ALL	0.28	0.27	0.27	0.29
	DROUGHT	0.22	0.21	0.21	0.24
San Joaquin River at San Andreas Landing	ALL	0.11	0.10	0.10	0.11
	DROUGHT	0.10	0.09	0.09	0.10
San Joaquin River at Jersey Point	ALL	0.12	0.11	0.11	0.12
	DROUGHT	0.10	0.10	0.10	0.10
Victoria Canal	ALL	0.23	0.22	0.21	0.24
	DROUGHT	0.17	0.16	0.16	0.21
Western Delta					
Sacramento River at Emmaton	ALL	0.10	0.10	0.10	0.11
	DROUGHT	0.10	0.10	0.10	0.10
San Joaquin River at Antioch	ALL	0.11	0.11	0.11	0.12
	DROUGHT	0.10	0.10	0.10	0.10
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	0.11	0.11	0.11	0.11
	DROUGHT	0.10	0.10	0.10	0.10
Major Diversions (Pumping Stations)					
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	0.11	0.11	0.11	0.11
	DROUGHT	0.10	0.10	0.10	0.10
Contra Costa Pumping Plant #1	ALL	0.14	0.13	0.13	0.15
	DROUGHT	0.11	0.10	0.10	0.13
Banks Pumping Plant	ALL	0.21	0.19	0.19	0.22
	DROUGHT	0.16	0.14	0.15	0.18
Jones Pumping Plant	ALL	0.28	0.25	0.27	0.29
	DROUGHT	0.26	0.21	0.24	0.26

Notes:
* All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index)
µg/L = microgram per liter

1 **Table 6D.10 Summary Table for Annual Average Selenium Concentrations in Biota for No Action Alternative and Second Basis of Comparison**

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])							
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)
Delta Interior									
San Joaquin River at Stockton	ALL	1.90	1.90	2.83	2.83	3.42	3.42	0.64	0.64
	DROUGHT	2.39	2.39	3.55	3.55	4.30	4.30	0.83	0.83
Turner Cut	ALL	1.88	1.87	2.79	2.79	3.38	3.37	0.63	0.63
	DROUGHT	2.42	2.42	3.59	3.60	4.35	4.35	0.84	0.84
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.66	4.42	4.42	0.86	0.86
San Joaquin River at Jersey Point	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86
Victoria Canal	ALL	1.87	1.86	2.78	2.77	3.36	3.35	0.62	0.62
	DROUGHT	2.43	2.43	3.61	3.62	4.37	4.38	0.85	0.85
Western Delta									
Sacramento River at Emmaton	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86
San Joaquin River at Antioch	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86
Major Diversions (Pumping Stations)									
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86
Contra Costa Pumping Plant #1	ALL	1.84	1.83	2.74	2.73	3.31	3.30	0.61	0.61
	DROUGHT	2.45	2.45	3.64	3.65	4.41	4.42	0.85	0.86
Banks Pumping Plant	ALL	1.86	1.86	2.77	2.76	3.35	3.34	0.62	0.62
	DROUGHT	2.43	2.44	3.62	3.63	4.38	4.39	0.85	0.85

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])							
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)
Jones Pumping Plant	ALL	1.88	1.87	2.79	2.78	3.38	3.37	0.63	0.63
	DROUGHT	2.41	2.42	3.58	3.60	4.33	4.35	0.84	0.84

Notes:
a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index)
b. Dry weight, except as noted for fish fillets

Alt. = alternative
dw = dry weight
mg/kg = milligram per kilogram
NAA = No Action Alternative
SBC = Second Basis of Comparison
“Alt. 1 (SBC)” is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.
ww = wet weight

Table 6D.11 Summary Table for Annual Average Selenium Concentrations in Biota for No Action Alternative, Second Basis of Comparison, and Alternative 3

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 3	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 3	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 3	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 3
Delta Interior													
San Joaquin River at Stockton	ALL	1.90	1.90	1.90	2.83	2.83	2.83	3.42	3.42	3.42	0.64	0.64	0.64
	DROUGHT	2.39	2.39	2.39	3.55	3.55	3.55	4.30	4.30	4.30	0.83	0.83	0.83
Turner Cut	ALL	1.88	1.87	1.87	2.79	2.79	2.79	3.38	3.37	3.37	0.63	0.63	0.63
	DROUGHT	2.42	2.42	2.42	3.59	3.60	3.60	4.35	4.35	4.35	0.84	0.84	0.84
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.46	3.65	3.66	3.66	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Jersey Point	ALL	1.83	1.83	1.82	2.72	2.72	2.77	3.29	3.29	3.35	0.61	0.61	0.62
	DROUGHT	2.46	2.46	2.46	3.65	3.65	3.62	4.42	4.42	4.38	0.86	0.86	0.85
Victoria Canal	ALL	1.87	1.86	1.86	2.78	2.77	2.77	3.36	3.35	3.35	0.62	0.62	0.62
	DROUGHT	2.43	2.43	2.43	3.61	3.62	3.62	4.37	4.38	4.38	0.85	0.85	0.85
Western Delta													
Sacramento River at Emmaton	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.46	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Antioch	ALL	1.83	1.83	1.82	2.72	2.72	2.71	3.29	3.29	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.46	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.46	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Major Diversions (Pumping Stations)													
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Contra Costa Pumping Plant #1	ALL	1.84	1.83	1.83	2.74	2.73	2.72	3.31	3.30	3.30	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.64	3.65	3.65	4.41	4.42	4.41	0.85	0.86	0.86

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 3	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 3	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 3	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 3
Banks Pumping Plant	ALL	1.86	1.86	1.86	2.77	2.76	2.76	3.35	3.34	3.34	0.62	0.62	0.62
	DROUGHT	2.43	2.44	2.44	3.62	3.63	3.62	4.38	4.39	4.39	0.85	0.85	0.85
Jones Pumping Plant	ALL	1.88	1.87	1.87	2.79	2.78	2.79	3.38	3.37	3.37	0.63	0.63	0.63
	DROUGHT	2.41	2.42	2.41	3.58	3.60	3.59	4.33	4.35	4.34	0.84	0.84	0.84

Notes:
a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index)
b. Dry weight, except as noted for fish fillets
Alt. = alternative
dw = dry weight
mg/kg = milligram per kilogram
NAA = No Action Alternative
SBC = Second Basis of Comparison
“Alt. 1 (SBC)” is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
ww = wet weight

Table 6D.12 Summary Table for Annual Average Selenium Concentrations in Biota for No Action Alternative, Second Basis of Comparison, and Alternative 5

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 5	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 5	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 5	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 5
Delta Interior													
San Joaquin River at Stockton	ALL	1.90	1.90	1.90	2.83	2.83	2.83	3.42	3.42	3.42	0.64	0.64	0.64
	DROUGHT	2.39	2.39	2.39	3.55	3.55	3.55	4.30	4.30	4.30	0.83	0.83	0.83
Turner Cut	ALL	1.88	1.87	1.88	2.79	2.79	2.79	3.38	3.37	3.38	0.63	0.63	0.63
	DROUGHT	2.42	2.42	2.41	3.59	3.60	3.59	4.35	4.35	4.34	0.84	0.84	0.84
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.45	3.65	3.66	3.65	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Jersey Point	ALL	1.83	1.83	1.83	2.72	2.72	2.78	3.29	3.29	3.36	0.61	0.61	0.62
	DROUGHT	2.46	2.46	2.45	3.65	3.65	3.60	4.42	4.42	4.35	0.86	0.86	0.84
Victoria Canal	ALL	1.87	1.86	1.87	2.78	2.77	2.78	3.36	3.35	3.36	0.62	0.62	0.62
	DROUGHT	2.43	2.43	2.42	3.61	3.62	3.60	4.37	4.38	4.35	0.85	0.85	0.84
Western Delta													
Sacramento River at Emmaton	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
San Joaquin River at Antioch	ALL	1.83	1.83	1.83	2.72	2.72	2.72	3.29	3.29	3.29	0.61	0.61	0.61
	DROUGHT	2.46	2.46	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Major Diversions (Pumping Stations)													
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	1.82	2.71	2.71	2.71	3.28	3.28	3.28	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.45	3.65	3.65	3.65	4.42	4.42	4.42	0.86	0.86	0.86
Contra Costa Pumping Plant #1	ALL	1.84	1.83	1.84	2.74	2.73	2.74	3.31	3.30	3.32	0.61	0.61	0.61
	DROUGHT	2.45	2.45	2.44	3.64	3.65	3.63	4.41	4.42	4.39	0.85	0.86	0.85
Banks Pumping Plant	ALL	1.86	1.86	1.86	2.77	2.76	2.77	3.35	3.34	3.35	0.62	0.62	0.62
	DROUGHT	2.43	2.44	2.43	3.62	3.63	3.61	4.38	4.39	4.37	0.85	0.85	0.85

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])											
		Whole-body Fish NAA	Whole-body Fish Alt. 1 (SBC)	Whole-body Fish Alt. 5	Bird Eggs (Invertebrate Diet) NAA	Bird Eggs (Invertebrate Diet) Alt. 1 (SBC)	Bird Eggs (Invertebrate Diet) Alt. 5	Bird Eggs (Fish Diet) NAA	Bird Eggs (Fish Diet) Alt. 1 (SBC)	Bird Eggs (Fish Diet) Alt. 5	Fish Fillets (ww) NAA	Fish Fillets (ww) Alt. 1 (SBC)	Fish Fillets (ww) Alt. 5
Jones Pumping Plant	ALL	1.88	1.87	1.88	2.79	2.78	2.79	3.38	3.37	3.38	0.63	0.63	0.63
	DROUGHT	2.41	2.42	2.41	3.58	3.60	3.58	4.33	4.35	4.33	0.84	0.84	0.84

Notes:
a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index)
b. Dry weight, except as noted for fish fillets

Alt. = alternative
dw = dry weight
mg/kg = milligram per kilogram
NAA = No Action Alternative
SBC = Second Basis of Comparison
"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
ww = wet weight

Table 6D.13 Summary Table for Selenium Concentrations in Biota, and Comparisons for No Action Alternative and Second Basis of Comparison to Benchmarks

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])								Exceedance Quotients[c]													
		Whole-body Fish		Bird Eggs (Invertebrate Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		Whole-body Fish				Bird Eggs (Invertebrate Diet)				Bird Eggs (Fish Diet)				Fish Fillets (ww)	
										Level of Concern[d]		Toxicity Level[e]		Level of Concern[f]		Toxicity Level[g]		Level of Concern[f]		Toxicity Level[g]		Advisory Tissue Level[h]	
		NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)
Delta Interior																							
San Joaquin River at Stockton	ALL	1.90	1.90	2.83	2.83	3.42	3.42	0.64	0.64	0.47	0.47	0.23	0.23	0.47	0.47	0.28	0.28	0.57	0.57	0.34	0.34	0.25	0.25
	DROUGHT	2.39	2.39	3.55	3.55	4.30	4.30	0.83	0.83	0.60	0.60	0.29	0.29	0.59	0.59	0.36	0.36	0.72	0.72	0.43	0.43	0.33	0.33
Turner Cut	ALL	1.88	1.87	2.79	2.79	3.38	3.37	0.63	0.63	0.47	0.47	0.23	0.23	0.47	0.46	0.28	0.28	0.56	0.56	0.34	0.34	0.25	0.25
	DROUGHT	2.42	2.42	3.59	3.60	4.35	4.35	0.84	0.84	0.60	0.60	0.30	0.30	0.60	0.60	0.36	0.36	0.72	0.73	0.43	0.44	0.34	0.34
San Joaquin River at San Andreas Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.23	0.22	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.66	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
San Joaquin River at Jersey Point	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Victoria Canal	ALL	1.87	1.86	2.78	2.77	3.36	3.35	0.62	0.62	0.47	0.47	0.23	0.23	0.46	0.46	0.28	0.28	0.56	0.56	0.34	0.34	0.25	0.25
	DROUGHT	2.43	2.43	3.61	3.62	4.37	4.38	0.85	0.85	0.61	0.61	0.30	0.30	0.60	0.60	0.36	0.36	0.73	0.73	0.44	0.44	0.34	0.34
Western Delta																							
Sacramento River at Emmaton	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.22	0.22	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
San Joaquin River at Antioch	ALL	1.83	1.83	2.72	2.72	3.29	3.29	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.46	2.46	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Major Diversions (Pumping Stations)																							
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	1.82	2.71	2.71	3.28	3.28	0.61	0.61	0.46	0.46	0.23	0.23	0.45	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.24	0.24
	DROUGHT	2.45	2.45	3.65	3.65	4.42	4.42	0.86	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.37	0.37	0.74	0.74	0.44	0.44	0.34	0.34
Contra Costa Pumping Plant #1	ALL	1.84	1.83	2.74	2.73	3.31	3.30	0.61	0.61	0.46	0.46	0.23	0.23	0.46	0.45	0.27	0.27	0.55	0.55	0.33	0.33	0.25	0.24
	DROUGHT	2.45	2.45	3.64	3.65	4.41	4.42	0.85	0.86	0.61	0.61	0.30	0.30	0.61	0.61	0.36	0.36	0.73	0.74	0.44	0.44	0.34	0.34
Banks Pumping Plant	ALL	1.86	1.86	2.77	2.76	3.35	3.34	0.62	0.62	0.47	0.46	0.23	0.23	0.46	0.46	0.28	0.28	0.56	0.56	0.33	0.33	0.25	0.25
	DROUGHT	2.43	2.44	3.62	3.63	4.38	4.39	0.85	0.85	0.61	0.61	0.30	0.30	0.60	0.60	0.36	0.36	0.73	0.73	0.44	0.44	0.34	0.34
Jones Pumping Plant	ALL	1.88	1.87	2.79	2.78	3.38	3.37	0.63	0.63	0.47	0.47	0.23	0.23	0.47	0.46	0.28	0.28	0.56	0.56	0.34	0.34	0.25	0.25
	DROUGHT	2.41	2.42	3.58	3.60	4.33	4.35	0.84	0.84	0.60	0.60	0.30	0.30	0.60	0.60	0.36	0.36	0.72	0.73	0.43	0.44	0.34	0.34

Notes:

a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. Dry weight, except as noted for fish fillets.

c. Exceedance Quotient = tissue concentration/benchmark

d. Level of Concern for fish tissue (lower end of range) = 4 mg/kg dw (Beckon et al. 2008)

e. Toxicity Level for fish tissue = 8.1 mg/kg dw (USEPA 2014)

f. Level of Concern for bird eggs (lower end of range) = 6 mg/kg dw (Beckon et al. 2008)

g. Toxicity Level for bird eggs = 10 mg/kg dw (Beckon et al. 2008)

h. Advisory Tissue Level = 2.5 mg/kg ww (OEHHA 2008)

Alt. = Alternative

dw = dry weight

mg/kg = milligram per kilogram

NAA = No Action Alternative

SBC = Second Basis of Comparison

“Alt. 1 (SBC)” is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

ww = wet weight

Table 6D.14 Summary Table for Selenium Concentrations in Biota, and Comparisons for Alternative 3 to No Action Altenative and Second Basis of Comparison Conditions and Benchmarks

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])				% Change In Selenium Concentrations Compared to NAA and Alternative 1 (Second Basis of Comparison)[c]								Exceedance Quotients[d]						
		Whole-body Fish	Bird Eggs (Invert. Diet)	Bird Eggs (Fish Diet)	Fish Fillets (ww)	Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)
		Alt. 3	Alt. 3	Alt. 3	Alt. 3	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	LOC[e]	TL[f]	LOC[g]	TL[h]	LOC[g]	TL[h]	ATL[i]
Delta Interior																				
San Joaquin River at Stockton	ALL	1.90	2.83	3.42	0.64	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.57	0.34	0.25
	DROUGHT	2.39	3.55	4.30	0.83	0	0	0	0	0	0	0	0	0.60	0.29	0.59	0.36	0.72	0.43	0.33
Turner Cut	ALL	1.87	2.79	3.37	0.63	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.42	3.60	4.35	0.84	0	0	0	0	0	0	0	0	0.60	0.30	0.60	0.36	0.73	0.44	0.34
San Joaquin River at San Andreas Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.22	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.66	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Jersey Point	ALL	1.82	2.77	3.35	0.62	0	0	2	2	2	2	2	2	0.46	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.46	3.62	4.38	0.85	0	0	-1	-1	-1	-1	-1	-1	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Victoria Canal	ALL	1.86	2.77	3.35	0.62	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.43	3.62	4.38	0.85	0	0	0	0	0	0	0	0	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Western Delta																				
Sacramento River at Emmaton	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.22	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Antioch	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.46	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Major Diversions (Pumping Stations)																				
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Contra Costa Pumping Plant #1	ALL	1.83	2.72	3.30	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.41	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.36	0.74	0.44	0.34
Banks Pumping Plant	ALL	1.86	2.76	3.34	0.62	0	0	0	0	0	0	0	0	0.46	0.23	0.46	0.28	0.56	0.33	0.25
	DROUGHT	2.44	3.62	4.39	0.85	0	0	0	0	0	0	0	0	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Jones Pumping Plant	ALL	1.87	2.79	3.37	0.63	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.41	3.59	4.34	0.84	0	0	0	0	0	0	0	0	0.60	0.30	0.60	0.36	0.72	0.43	0.34

Notes:

a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. Dry weight, except as noted for fish fillets.

c. % change indicates a negative change (increased concentrations) relative to the No Action Alternative and Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to the No Action Alternative and Second Basis of Comparison when values are negative.

d. Exceedance Quotient = tissue concentration/benchmark

e. Level of Concern for fish tissue (lower end of range) = 4 mg/kg dw (Beckon et al. 2008)

f. Toxicity Level for fish tissue = 8.1 mg/kg dw (USEPA 2014)

g. Level of Concern for bird eggs (lower end of range) = 6 mg/kg dw (Beckon et al. 2008)

h. Toxicity Level for bird eggs = 10 mg/kg dw (Beckon et al. 2008)

i. Advisory Tissue Level = 2.5 mg/kg ww (OEHHA 2008)

Notes (continued):
Alt. = alternative
dw = dry weight
Invert. = invertebrate
mg/kg = milligram per kilogram
NAA = No Action Alternative
SBC = Second Basis of Comparison
"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
ww = wet weight

Table 6D.15 Summary Table for Selenium Concentrations in Biota, and Comparisons for Alternative 5 to No Action Alternative and Second Basis of Comparison Conditions and Benchmarks

Location	Period [a]	Estimated Concentrations of Selenium (mg/kg, dw[b])				% Change In Selenium Concentrations Compared to NAA and Alternative 1 (Second Basis of Comparison)[c]								Exceedance Quotients[d]						
		Whole-body Fish	Bird Eggs (Invert. Diet)	Bird Eggs (Fish Diet)	Fish Fillets (ww)	Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)		Whole-body Fish		Bird Eggs (Invert. Diet)		Bird Eggs (Fish Diet)		Fish Fillets (ww)
		Alt. 5	Alt. 5	Alt. 5	Alt. 5	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	NAA	Alt. 1 (SBC)	LOC[e]	TL[f]	LOC[g]	TL[h]	LOC[g]	TL[h]	ATL[i]
Delta Interior																				
San Joaquin River at Stockton	ALL	1.90	2.83	3.42	0.64	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.57	0.34	0.25
	DROUGHT	2.39	3.55	4.30	0.83	0	0	0	0	0	0	0	0	0.60	0.29	0.59	0.36	0.72	0.43	0.33
Turner Cut	ALL	1.88	2.79	3.38	0.63	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.56	0.34	0.25
	DROUGHT	2.41	3.59	4.34	0.84	0	0	0	0	0	0	0	0	0.60	0.30	0.60	0.36	0.72	0.43	0.34
San Joaquin River at San Andreas Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Jersey Point	ALL	1.83	2.78	3.36	0.62	0	0	2	2	2	2	3	3	0.46	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.45	3.60	4.35	0.84	0	0	-1	-2	-1	-2	-2	-2	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Victoria Canal	ALL	1.87	2.78	3.36	0.62	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.42	3.60	4.35	0.84	0	0	0	0	0	0	0	-1	0.60	0.30	0.60	0.36	0.73	0.44	0.34
Western Delta																				
Sacramento River at Emmaton	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
San Joaquin River at Antioch	ALL	1.83	2.72	3.29	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Major Diversions (Pumping Stations)																				
North Bay Aqueduct at Barker Slough Pumping Plant	ALL	1.82	2.71	3.28	0.61	0	0	0	0	0	0	0	0	0.46	0.23	0.45	0.27	0.55	0.33	0.24
	DROUGHT	2.45	3.65	4.42	0.86	0	0	0	0	0	0	0	0	0.61	0.30	0.61	0.37	0.74	0.44	0.34
Contra Costa Pumping Plant #1	ALL	1.84	2.74	3.32	0.61	0	1	0	1	0	1	0	1	0.46	0.23	0.46	0.27	0.55	0.33	0.25
	DROUGHT	2.44	3.63	4.39	0.85	0	-1	0	-1	0	-1	0	-1	0.61	0.30	0.61	0.36	0.73	0.44	0.34
Banks Pumping Plant	ALL	1.86	2.77	3.35	0.62	0	0	0	0	0	0	0	0	0.47	0.23	0.46	0.28	0.56	0.34	0.25
	DROUGHT	2.43	3.61	4.37	0.85	0	0	0	0	0	0	0	-1	0.61	0.30	0.60	0.36	0.73	0.44	0.34
Jones Pumping Plant	ALL	1.88	2.79	3.38	0.63	0	0	0	0	0	0	0	0	0.47	0.23	0.47	0.28	0.56	0.34	0.25
	DROUGHT	2.41	3.58	4.33	0.84	0	0	0	0	0	0	0	-1	0.60	0.30	0.60	0.36	0.72	0.43	0.34

Notes:

a. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

b. Dry weight, except as noted for fish fillets.

c. % change indicates a negative change (increased concentrations) relative to the No Action Alternative and Second Basis of Comparison when values are positive and a positive change (lowered concentrations) relative to the No Action Alternative and Second Basis of Comparison when values are negative.

d. Exceedance Quotient = tissue concentration/benchmark

e. Level of Concern for fish tissue (lower end of range) = 4 mg/kg dw (Beckon et al. 2008)

f. Toxicity Level for fish tissue = 8.1 mg/kg dw (USEPA 2014)

g. Level of Concern for bird eggs (lower end of range) = 6 mg/kg dw (Beckon et al. 2008)

h. Toxicity Level for bird eggs = 10 mg/kg dw (Beckon et al. 2008)

i. Advisory Tissue Level = 2.5 mg/kg ww (OEHHA 2008)

Notes (continued):
Alt. = alternative
dw = dry weight
Invert. = invertebrate
mg/kg = milligram per kilogram
NAA = No Action Alternative
SBC = Second Basis of Comparison
"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
ww = wet weight

Table 6D.16 Modeled Selenium Concentrations in Water for No Action Alternative and Alternatives 1 (Second Basis of Comparison), 3, and 5

Location	Period *	Period Average Concentration (µg/L) No Action Alternative	Period Average Concentration (µg/L) Alternative 1 (SBC)	Period Average Concentration (µg/L) Alternative 3	Period Average Concentration (µg/L) Alternative 5
Sacramento River at Emmaton	ALL	0.10	0.10	0.10	0.11
	DROUGHT	0.10	0.10	0.10	0.10
San Joaquin River at Antioch	ALL	0.11	0.11	0.11	0.12
	DROUGHT	0.10	0.10	0.10	0.10
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	0.11	0.11	0.11	0.11
	DROUGHT	0.10	0.10	0.10	0.10

Notes:

* All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years 1987-1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

“Alt. 1 (SBC)” is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

µg/L = microgram per liter

SBC = Second Basis of Comparison

Table 6D.17 Summary of Annual Average Selenium Concentrations in Whole-body Sturgeon

Location	Period *	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) No Action Alternative	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) Alternative 1 (SBC)	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) Alternative 3	Estimated Concentrations of Selenium in Whole-body Sturgeon (mg/kg, dw) Alternative 5
Sacramento River at Emmaton	ALL	4.16	4.11	4.08	4.20
	DROUGHT	6.96	6.92	6.91	7.09
San Joaquin River at Antioch	ALL	4.56	4.40	4.34	4.61
	DROUGHT	7.06	6.99	6.97	7.23
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	4.33	4.27	4.24	4.35
	DROUGHT	7.10	7.07	7.06	7.16

Notes:
* All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years 1987-1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.
dw = dry weight
mg/kg = milligram per kilogram
SBC = Second Basis of Comparison

Table 6D.18 Comparison of Annual Average Selenium Concentrations in Whole-body Sturgeon to Toxicity Thresholds[a]

Location	Period [b]	No Action Alternative Low	No Action Alternative High	Second Basis of Comparison Low	Second Basis of Comparison High	Alternative 3 Low	Alternative 3 High	Alternative 5 Low	Alternative 5 High
Sacramento River at Emmaton	ALL	0.83	0.52	0.8	0.51	0.8	0.51	0.8	0.52
	DROUGHT	1.4	0.87	1.4	0.86	1.4	0.86	1.4	0.9
San Joaquin River at Antioch	ALL	0.9	0.57	0.9	0.55	0.9	0.54	0.9	0.6
	DROUGHT	1.4	0.88	1.4	0.87	1.4	0.87	1.4	0.9
Montezuma Slough at Hunter Cut/ Beldon's Landing	ALL	0.87	0.54	0.85	0.53	0.85	0.53	0.9	0.54
	DROUGHT	1.4	0.89	1.4	0.88	1.4	0.88	1.4	0.9

Notes:
a. Toxicity thresholds are those reported in Presser and Luoma (2013): Low = 5 mg/kg, dw and High = 8 mg/kg, dw
b. All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years 1987-1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

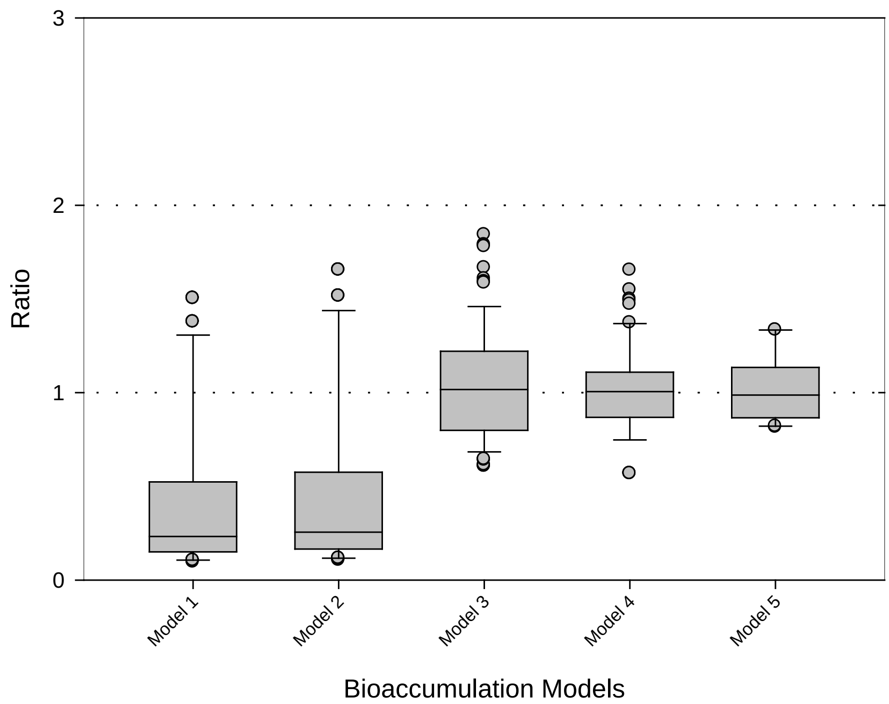
Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.
dw = dry weight
mg/kg = milligram per kilogram
SBC = Second Basis of Comparison

Table 6D.19 Percent Change in Selenium Concentrations Relative to No Action Alternative and Second Basis of Comparison

Location	Period *	Alternative 3 NAA	Alternative 3 Alt1 (SBC)	Alternative 5 NAA	Alternative 5 Alt 1 (SBC)
Sacramento River at Emmaton	ALL	-2.0	-0.7	0.9	2.2
	DROUGHT	-0.8	-0.1	1.8	2.5
San Joaquin River at Antioch	ALL	-4.7	-1.3	1.2	4.8
	DROUGHT	-1.2	-0.2	2.5	3.5
Montezuma Slough at Hunter Cut/Beldon's Landing	ALL	-2.2	-0.7	0.5	2.1
	DROUGHT	-0.5	-0.1	0.8	1.2

Notes:
* All: Water years 1922-2003 represent the 82-year period modeled using DSM2. Drought: Represents a 5-consecutive-year (Water Years 1987-1991) drought period consisting of dry and critical water-year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.
dw = dry weight
mg/kg = milligram per kilogram
SBC = Second Basis of Comparison



For Models 1 and 2, default values (K_d = 1000, TTF_{invert} = 2.8, TTF_{fish} = 1.1) were used in calculations as follows:

Model 1=Trophic level 3 (TL-3) fish eating invertebrates

Model 2= TL-4 fish eating TL-3 fish

Model 3=Model 2 with K_d estimated using all years regression (log Kd = 2.76-0.97(logDSM2))

Model 4=Model 2 with K_d estimated using normal/wet years (2000/2005) regression (log Kd = 2.75-0.90(logDSM2))

Model 5=Model 2 with K_d estimated using dry years (2007) regression (logKd = 2.84-1.02(logDSM2))

Figure 6D.1 Ratios of Predicted Selenium Concentrations in Fish Models 1 through 5 to Observed Selenium Concentrations in Largemouth Bass

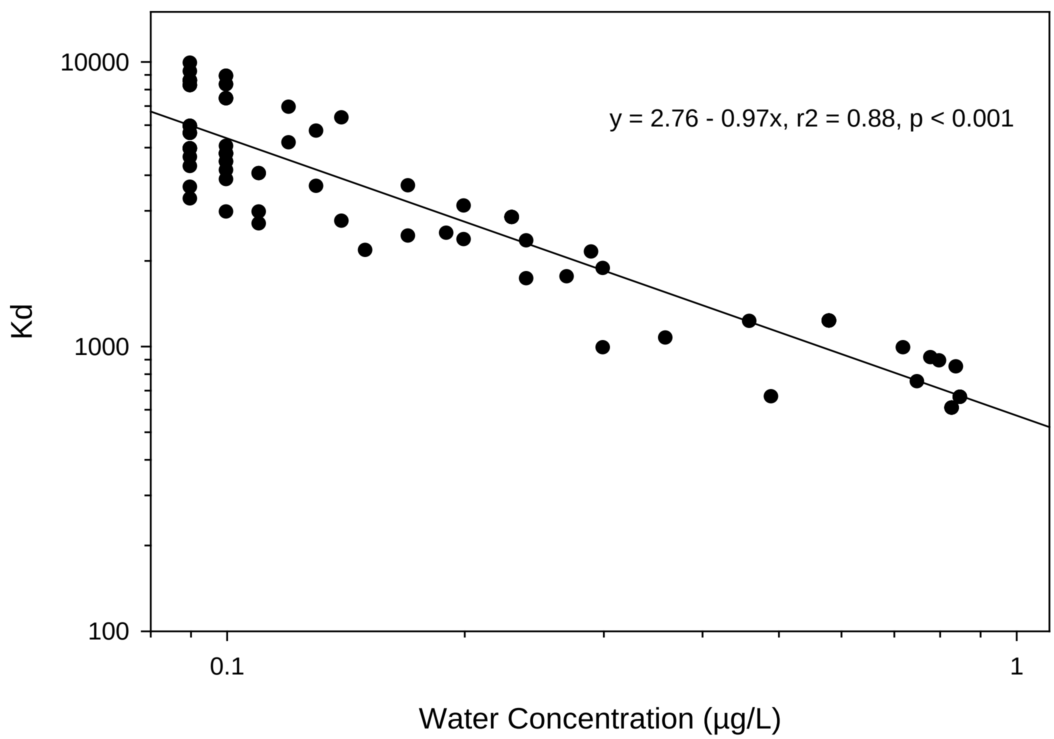


Figure 6D.2 Log-log Regression Relation of Estimated K_d to Waterborne Selenium Concentration for Model 3 in All Years (Based on Years 2000, 2005, and 2007)

To predict the K_d (y) from water concentrations using the regression equation, take the log of the water concentration (x), multiply it by the slope (-0.97), which gives a positive number for x<1 (i.e., waterborne selenium concentrations less than 1 µg/L); then add this number to the intercept (2.76) and take the antilog.

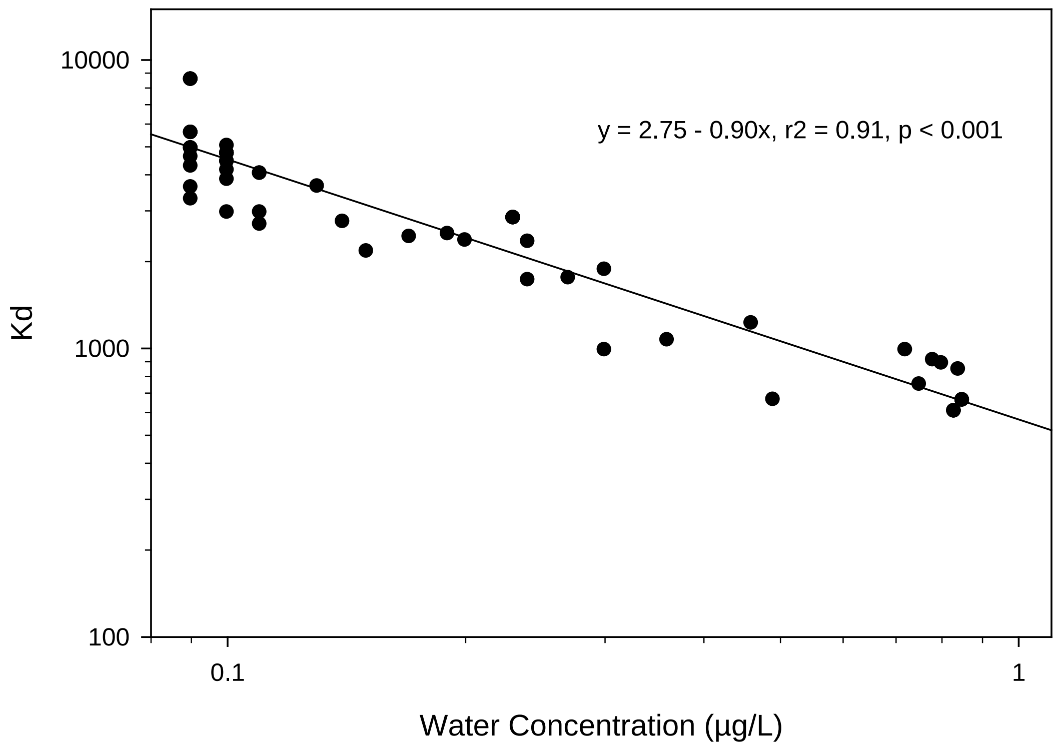


Figure 6D.3 Log-log Regression Relation of Estimated K_d to Waterborne Selenium Concentration for Model 4 in Normal/Wet Years (Based on Years 2000 and 2005)

To predict the K_d (y) from water concentrations using the regression equation, take the log of the water concentration (x), multiply it by the slope (-0.90), which gives a positive number for $x<1$ (i.e., waterborne selenium concentrations less than 1 µg/L); then add this number to the intercept (2.75) and take the antilog.

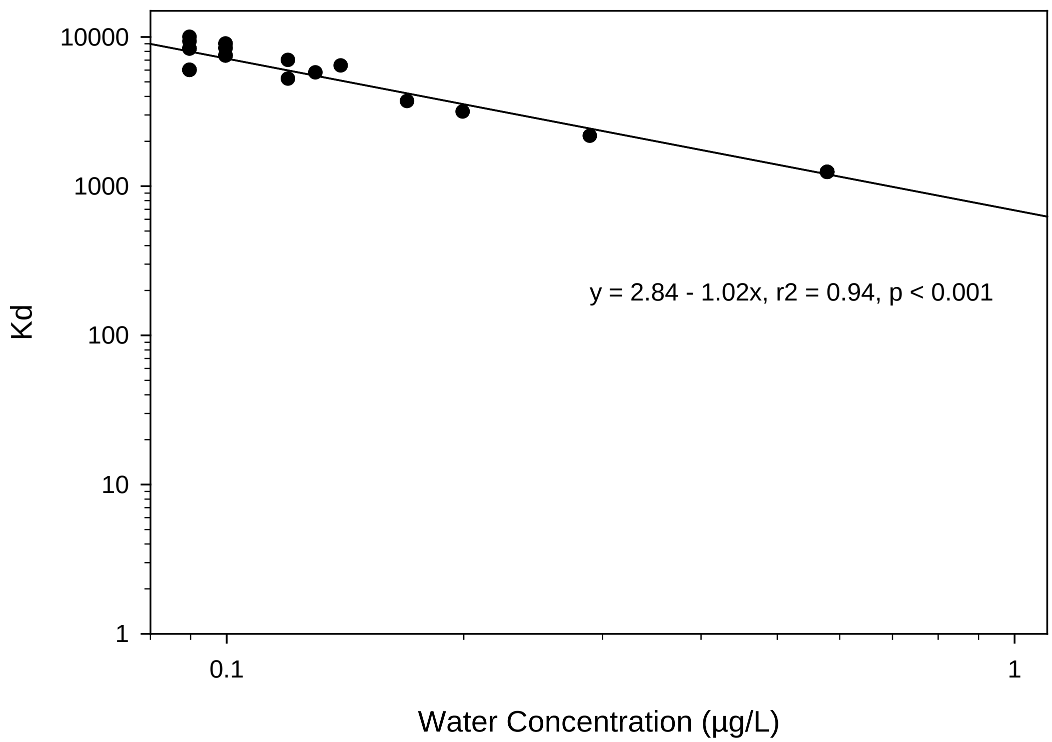


Figure 6D.4 Log-log Regression Relation of Estimated K_d to Waterborne Selenium Concentration for Model 5 in Dry Years (Based on Year 2007)

To predict the K_d (y) from water concentrations using the regression equation, take the log of the water concentration (x), multiply it by the slope (-1.02), which gives a positive number for x<1 (i.e., waterborne selenium concentrations less than 1 µg/L); then add this number to the intercept (2.84) and take the antilog.

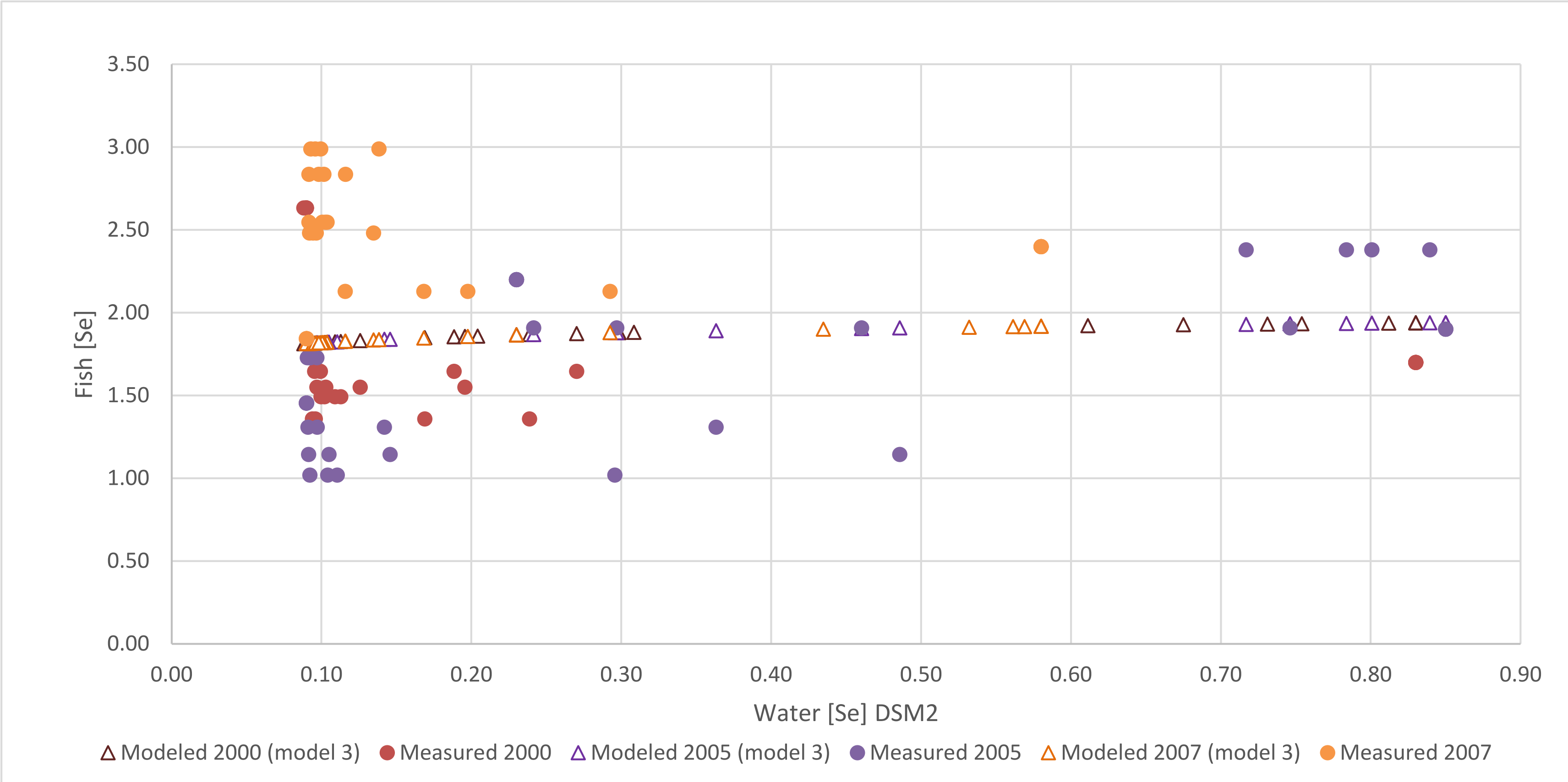


Figure 6D.5 Distribution of Data for Selenium Concentrations in Largemouth Bass Relative to Waterborne Selenium for Model 3

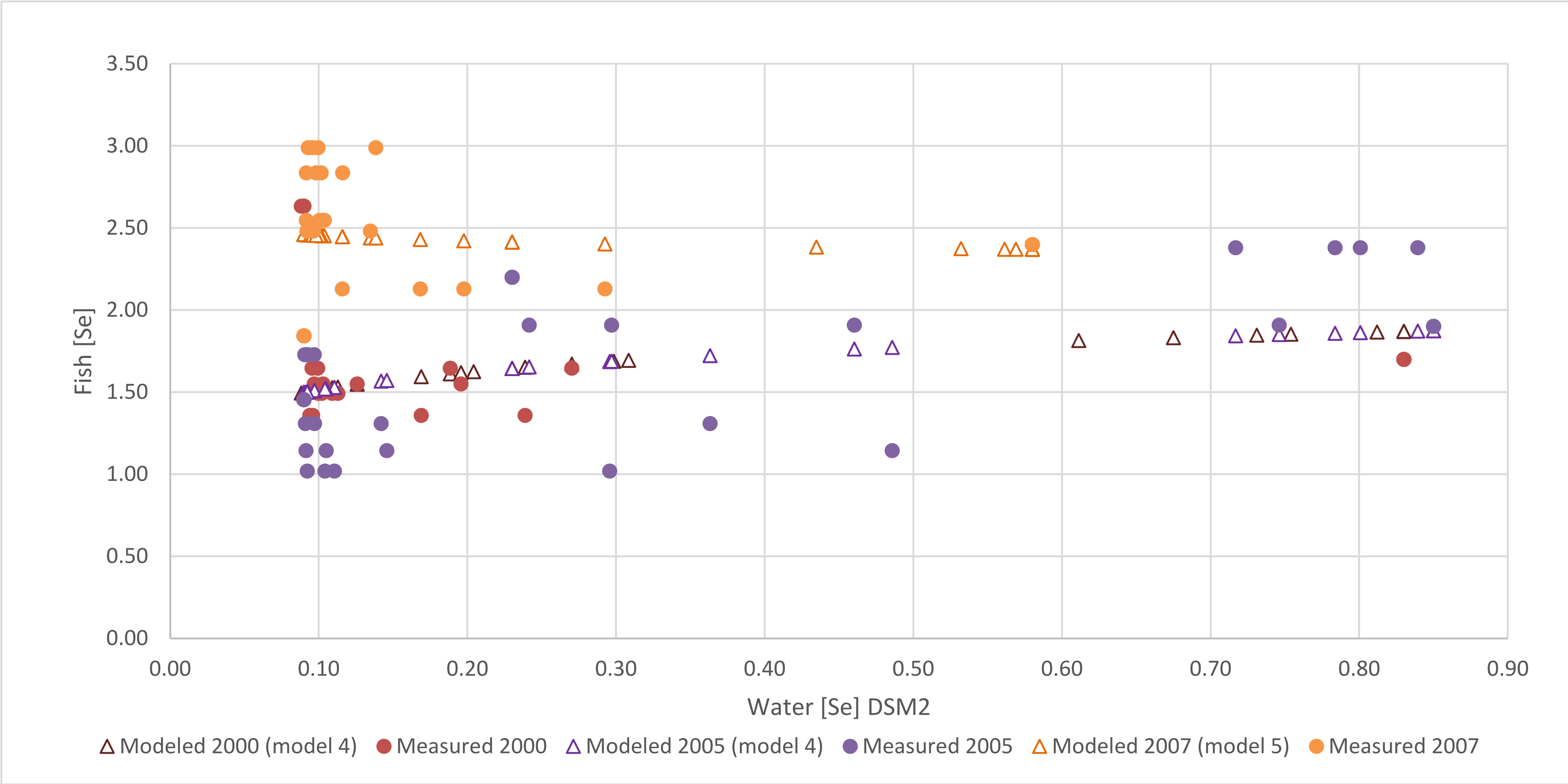


Figure 6D.6 Distribution of Data for Selenium Concentrations in Largemouth Bass Relative to Waterborne Selenium for Model 4 and Model 5

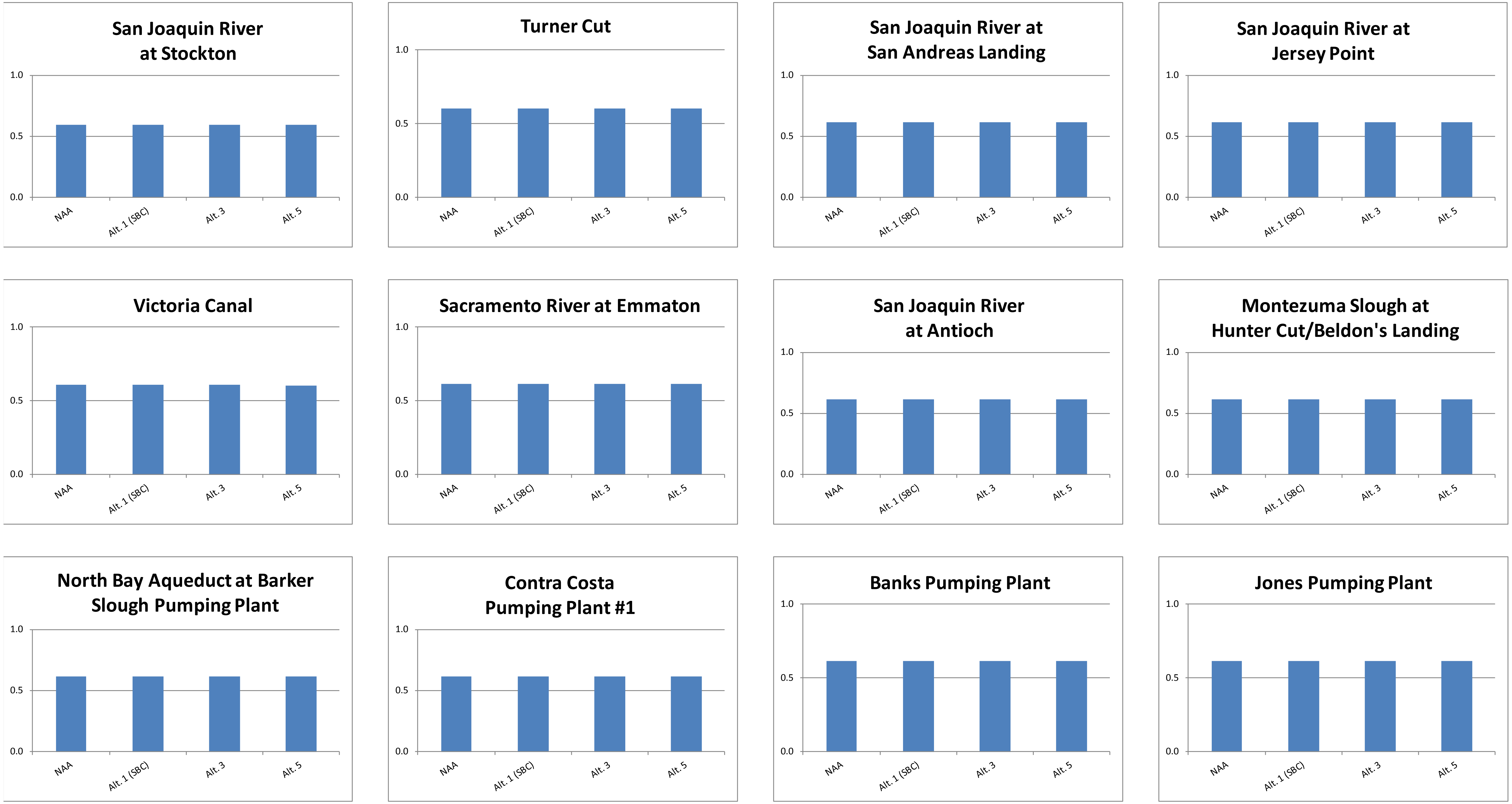


Figure 6D.7 Level of Concern Exceedance Quotients for Selenium Concentrations in Whole-Body Fish for Drought Years

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1. Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

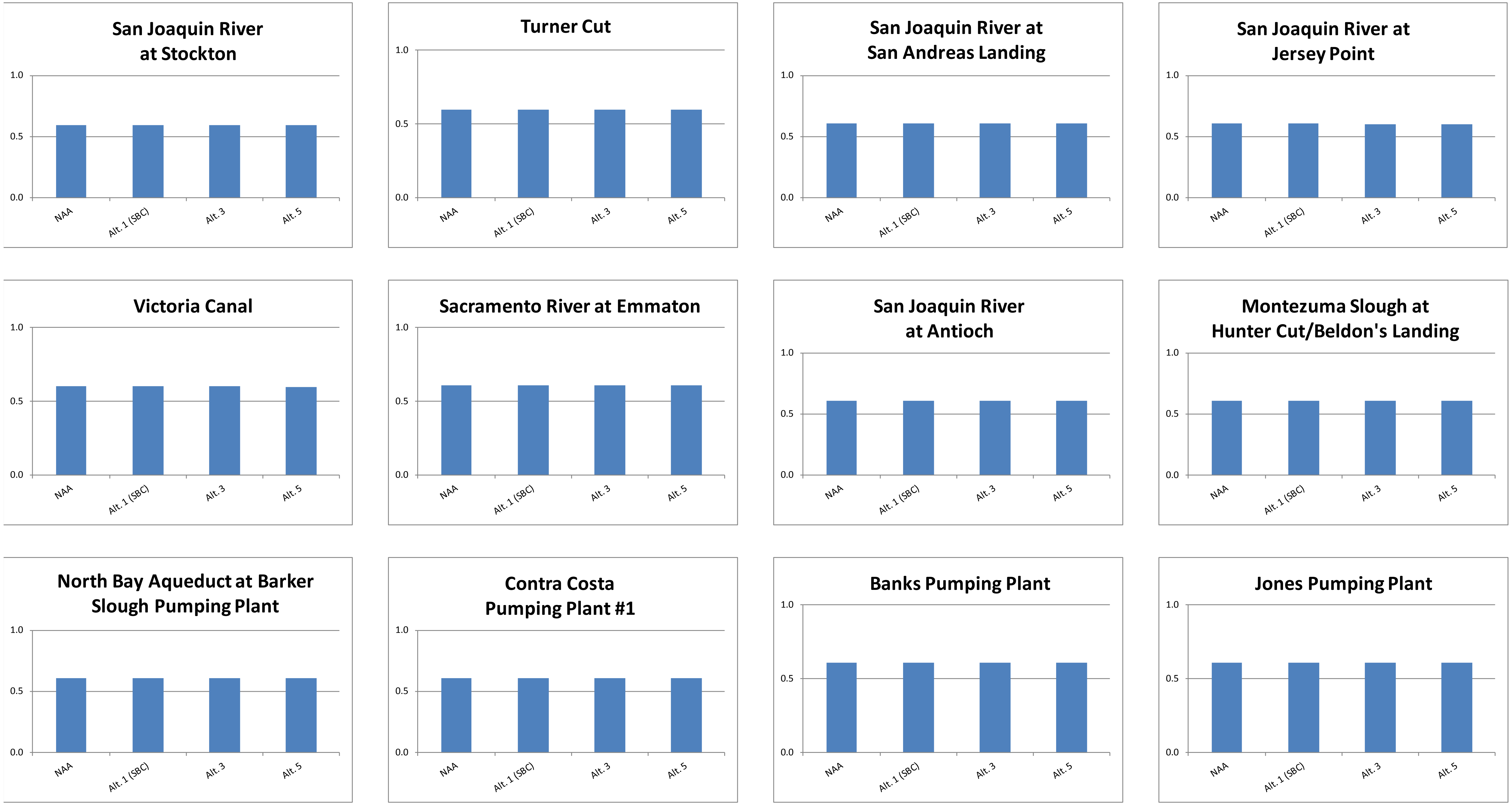


Figure 6D.8 Level of Concern Exceedance Quotients for Selenium Concentrations in Bird Eggs (Invertebrate Diet) for Drought Years

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1. Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

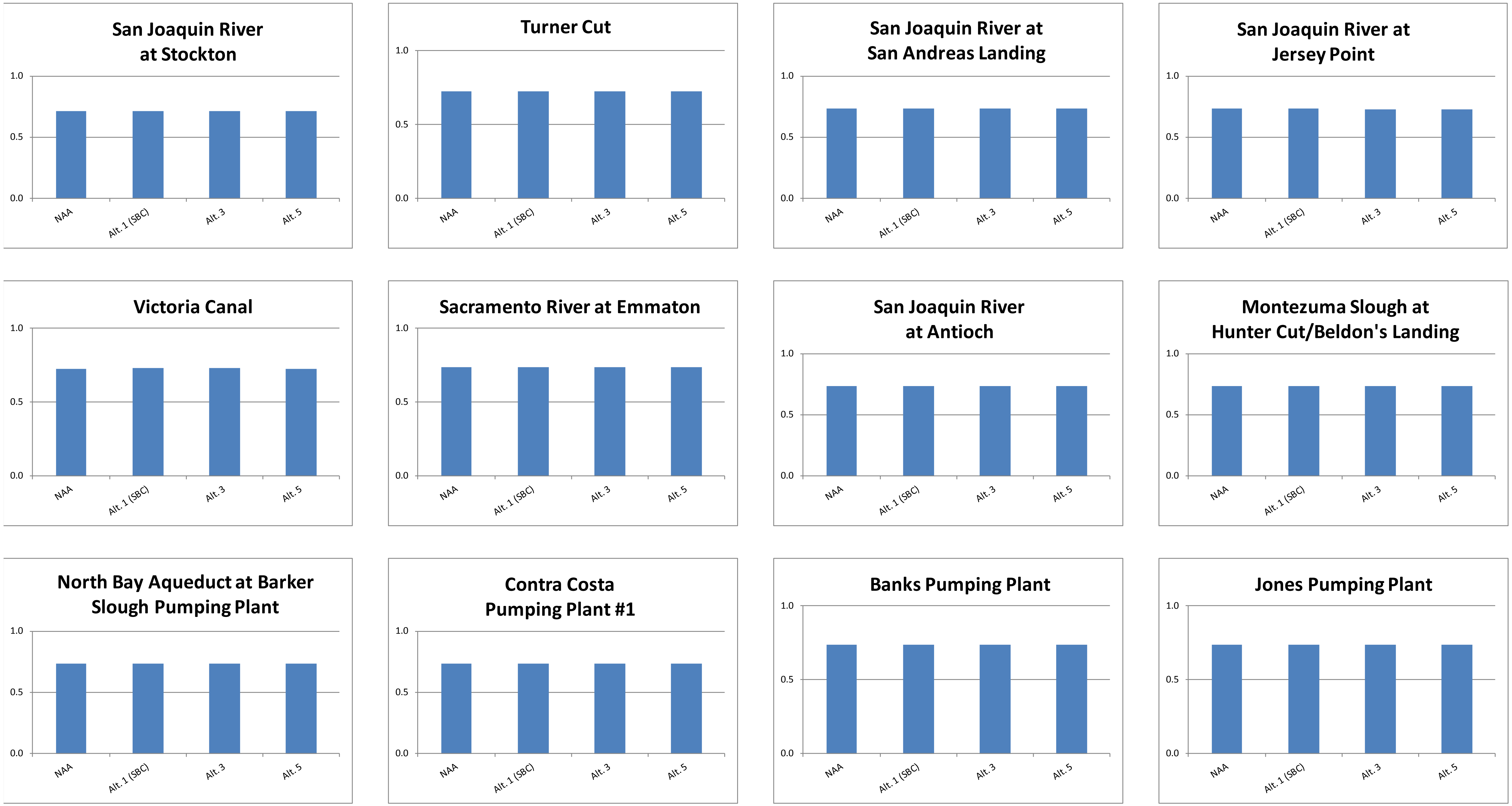


Figure 6D.9 Level of Concern Exceedance Quotients for Selenium Concentrations in Bird Eggs (Fish Diet) for Drought Years

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1. Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

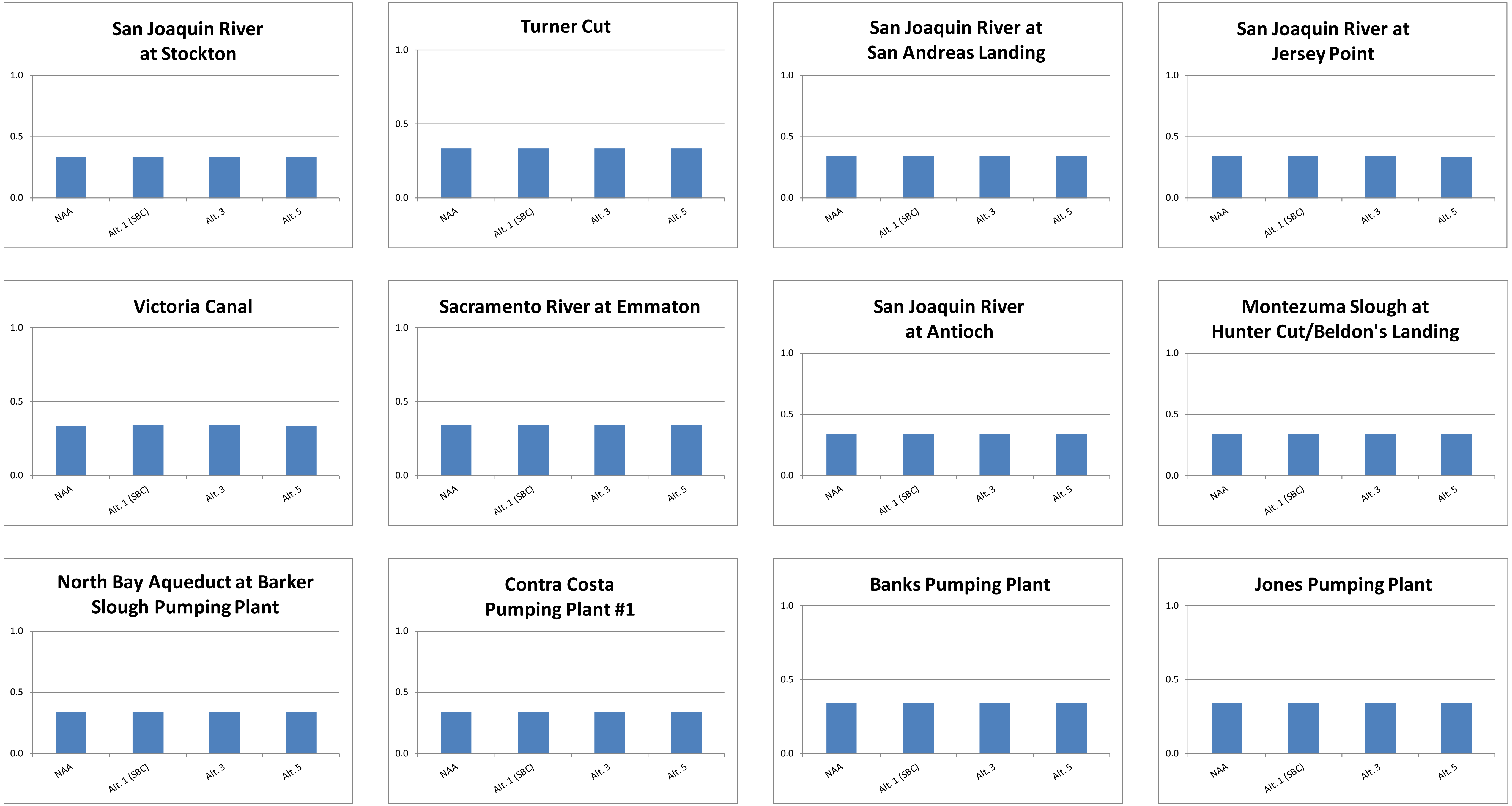


Figure 6D.10 Level of Concern Exceedance Quotients for Selenium Concentrations in Fish Fillets (wet weight) for Drought Years

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1. Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

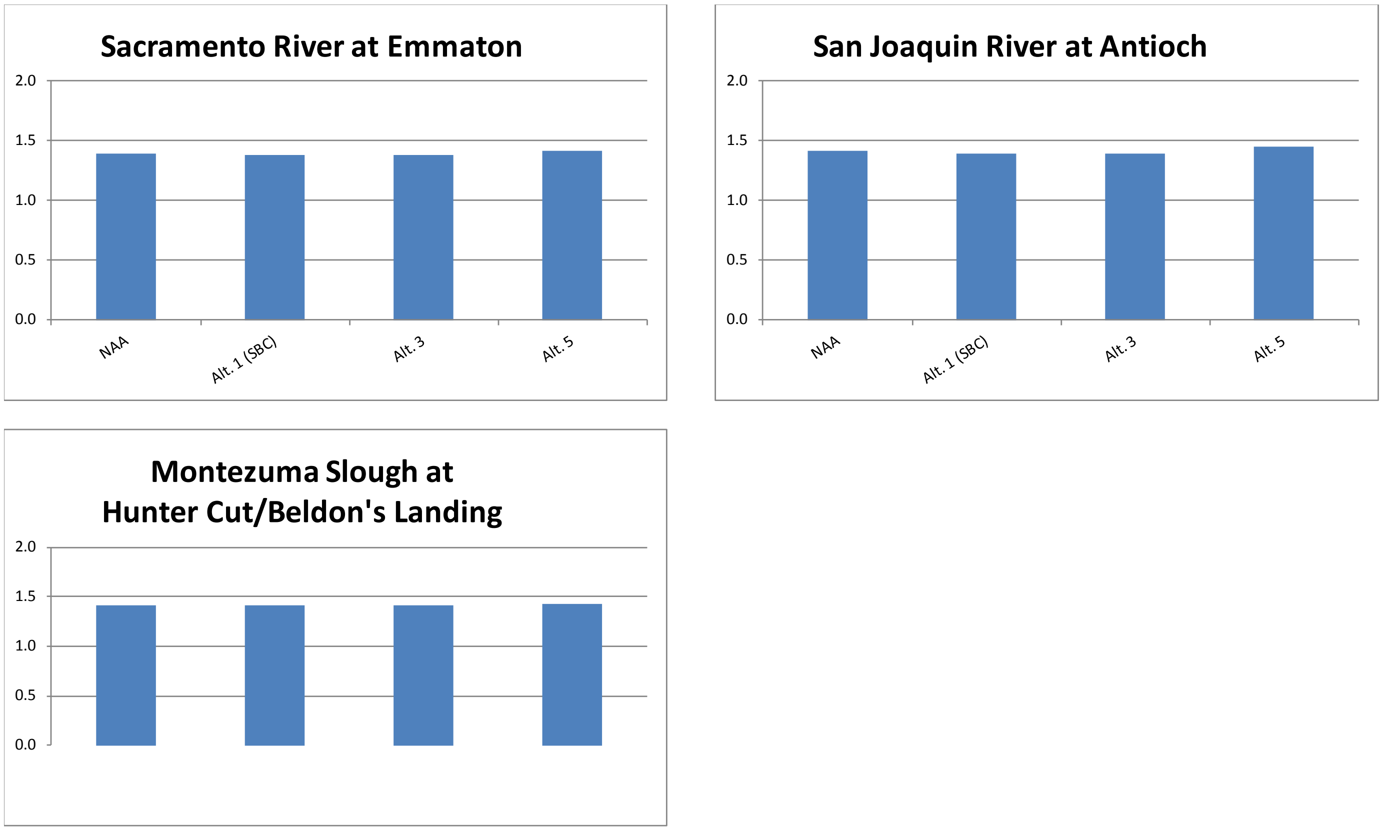


Figure 6D.11 Low Toxicity Threshold Exceedance Quotients for Selenium Concentrations in Whole-body Sturgeon for Drought Years

"Alt. 1 (SBC)" is the same as Second Basis of Comparison. This nomenclature was used in this appendix to be consistent with the model run output for the model run that represents both Second Basis of Comparison and Alternative 1.
Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately.
Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

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Appendix 6E

Analysis of Delta Salinity Indicators

This appendix provides information about the methods and assumptions used for the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis for Delta salinity indicators. It is organized into two main sections that are briefly described below:

- Section 6E.1: Analysis of Delta Salinity Indicators Methodology and Assumptions
  - The impacts analysis for Delta salinity indicators uses the DSM2-QUAL model to quantify changes in salinity, chloride, and bromide concentrations. This section describes the overall analytical approach and assumptions for simulations of the No Action Alternative, Second Basis of Comparison, and the other alternatives.
- Section 6E.2: Analysis of Delta Salinity Indicators Results
  - This section presents the results for salinity, chloride concentration, and bromide concentration at different locations within in the Delta.

6E.1 Analysis of Delta Salinity Indicators Methodology and Assumptions

6E.1.1 Analysis Methodology

To evaluate the potential effects on water quality within the Delta, three different parameters were quantified: salinity (measured as Electrical Conductivity [EC]), chloride concentration, and bromide concentration. This section describes how these parameters were estimated for the analysis.

6E.1.1.1 Salinity

Monthly average salinity in the Delta was estimated at select locations within the Delta in terms of EC (in units of micromhos per centimeter [µmhos/cm]) using the DSM2-QUAL model for all the alternatives. Refer to Appendix 5A, Section A for a detailed description of the DSM2-QUAL model.

6E.1.1.2 Chloride Concentration

Monthly average chloride concentration at primarily diversion and export locations within the Delta was calculated based on the maximum of the following regression equations taken from CalSim II:

$$CCl- = EC*0.285-50$$

$$CCl- = EC*0.15-12$$

where: EC is the monthly average Electrical Conductivity value at the export location and CCl- is the monthly average chloride concentration in mg/L

The regression equations calculate chloride concentrations based on whether the location is riverine or seawater dominant. To be conservative, the maximum of chloride concentration calculated using the above two equations was used. The EC value in this equation is the salinity value described previously that is output from the DSM2-QUAL model.

6E.1.1.3 Bromide Concentration

Monthly average bromide concentration at diversion and export locations within the Delta was calculated based on the following regression equations from the California Department of Water Resources (DWR) 33rd Annual Progress Report (DWR 2012):

*if VolFpMartinez <0.4 then CBr- = EC*0.0004-0.0364*

*if VolFpMartinez >0.4 then CBr- = EC*0.0000827-0.1117*

where: VolFpMartinez is the monthly average Martinez Source Water (Volumetric) Fingerprinting value at the location, EC is the monthly average Electrical Conductivity (µmhos/cm) value at the export location and CBr- is the monthly average bromide concentration (mg/L)

The Volumetric Fingerprinting and EC values (the same salinity value used for the chloride calculation) in this equation are both outputs of the DSM2-QUAL model, and methodology for estimating these parameters is described in Appendix 5A, Section A.

6E.1.2 Analysis Scenario Assumptions

This section describes the assumptions for the Analysis of the Delta Salinity Indicators for the No Action Alternative, Second Basis of Comparison, and other alternatives.

The following CalSim II model simulations were performed as the basis of evaluating the impacts of Alternatives 1 through 5 as compared to the No Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison:

- No Action Alternative
- Second Basis of Comparison

The following model simulations of other alternatives were performed:

- Alternative 1 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for simulation purposes, considered the same as No Action Alternative
- Alternative 3

- Alternative 4 – for simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

Assumptions for each of these alternatives were developed with the surface water modeling tools and are described in Appendix 5A, Section B.

Assumptions for each of these alternatives are reflected to monthly CalSim II flows that are input into the DSM2 model to generate the salinity results described in this section. The salinity (EC) results are then used to calculate the chloride and bromide concentrations based on the equations described in this section. The equations described above pertain to all alternatives.

6E.2 Analysis of Delta Salinity Indicators Results

Results are provided for each of the following runs separately:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1
- Alternative 3
- Alternative 5

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

In addition, the same statistics are provided for the following comparisons to establish changes of the alternative with respect to one of the bases of comparison:

- Alternative 1 compared to No Action Alternative
- Alternative 3 compared to No Action Alternative
- Alternative 5 compared to No Action Alternative
- No Action Alternative compared to Second Basis of Comparison
- Alternative 3 compared to Second Basis of Comparison
- Alternative 5 compared to Second Basis of Comparison

The first set of results is provided as probability of exceedance curves of salinity (EC) for select locations within the Delta. For this analysis, exceedance plots for monthly average EC were generated based on the 82-year CalSim II time period for each of the alternatives and bases of comparison. Differences among alternatives were evaluated using the exceedance probability corresponding to varying levels of salinity. The first set of results is provided as the following figures:

- B.1. Sacramento River downstream of Steamboat Slough Salinity (Figures 6E.B.1.1. through 6E.B.1.12.)

- B.2. Sacramento River at Emmaton Salinity (Figures 6E.B.2.1. through 6E.B.2.12.)
- B.3. San Joaquin River at Jersey Point Salinity (Figures 6E.B.3.1. through 6E.B.3.12.)
- B.4. Sacramento River at Collinsville Salinity (Figures 6E.B.4.1. through 6E.B.4.12.)
- B.5. Sacramento River at Mallard Slough Salinity (Figures 6E.B.5.1. through 6E.B.5.12.)
- B.6. Sacramento River at Port Chicago Salinity (Figures 6E.B.6.1. through 6E.B.6.12.)
- B.7. Jones Pumping Plant Salinity (Figures 6E.B.7.1. through 6E.B.7.12.)
- B.8. Banks Pumping Plant Salinity (Figures 6E.B.8.1. through 6E.B.8.12.)
- B.9. Antioch Salinity (Figures 6E.B.9.1. through 6E.B.9.12.)
- B.10.1. Chipps Island North Channel Salinity (Figures 6E.B.10.1.1. through 6E.B.10.1.12.)
- B.10.2. Chipps Island South Channel Salinity (Figures 6E.B.10.2.1. through 6E.B.10.2.12.)
- B.11. Old River at Rock Slough Salinity (Figures 6E.B.11.1. through 6E.B.11.12.)
- B.12. Contra Costa Water District Old River Intake Salinity (Figures 6E.B.12.1. through 6E.B.12.12.)
- B.13. Contra Costa Water District Victoria Canal Intake Salinity (Figures 6E.B.13.1. through 6E.B.13.12.)
- B.14. Barker Slough North Bay Aqueduct Intake Salinity (Figures 6E.B.14.1. through 6E.B.14.12.)
- B.15. San Joaquin River at Vernalis Salinity (Figures 6E.B.15.1. through 6E.B.15.12.)

A discussion of results and impact assessment is provided in the Environmental Consequences section of Chapter 6.

The second set of results is provided as tables summarizing the EC as well as chloride and bromide concentrations at select locations within the Delta with long-term averages over the entire CalSim II simulation period. Averages are also provided by water year type.

As noted earlier, EC was used as surrogate for Delta salinity results.

The following results are presented in this section:

- B.1. Sacramento River downstream of Steamboat Slough Salinity (Tables 6E.B.1.1. through 6E.B.1.6.)

- B.2. Sacramento River at Emmaton Salinity (Tables 6E.B.2.1. through 6E.B.2.6.)
- B.3. San Joaquin River at Jersey Point Salinity (Tables 6E.B.3.1. through 6E.B.3.6.)
- B.4. Sacramento River at Collinsville Salinity (Tables 6E.B.4.1. through 6E.B.4.6.)
- B.5. Sacramento River at Mallard Slough Salinity (Tables 6E.B.5.1. through 6E.B.5.6.)
- B.6. Sacramento River at Port Chicago Salinity (Tables 6E.B.6.1. through 6E.B.6.6.)
- B.7. Jones Pumping Plant Salinity (Tables 6E.B.7.1. through 6E.B.7.6.)
- B.8. Banks Pumping Plant Salinity (Tables 6E.B.8.1. through 6E.B.8.6.)
- B.9. Antioch Salinity (Tables 6E.B.9.1. through 6E.B.9.6.)
- B.10.1. Chipps Island North Channel Salinity (Tables 6E.B.10.1.1. through 6E.B.10.1.6.)
- B.10.2. Chipps Island South Channel Salinity (Tables 6E.B.10.2.1. through 6E.B.10.2.6.)
- B.11. Old River at Rock Slough Salinity (Tables 6E.B.11.1. through 6E.B.11.6.)
- B.12. Contra Costa Water District Old River Intake Salinity (Tables 6E.B.12.1. through 6E.B.12.6.)
- B.13. Contra Costa Water District Victoria Canal Intake Salinity (Tables 6E.B.13.1. through 6E.B.13.6.)
- B.14. Barker Slough North Bay Aqueduct Intake Salinity (Tables 6E.B.14.1. through 6E.B.14.6.)
- B.15. San Joaquin River at Vernalis Salinity (Tables 6E.B.15.1. through 6E.B.15.6.)
- B.16. Sacramento River at Mallard Slough Chloride Concentration (Tables 6E.B.16.1. through 6E.B.16.6.)
- B.17. Jones Pumping Plant Chloride Concentration (Tables 6E.B.17.1. through 6E.B.17.6.)
- B.18. Banks Pumping Plant Chloride Concentration (Tables 6E.B.18.1. through 6E.B.18.6.)
- B.19. Old River at Rock Slough Chloride Concentration (Tables 6E.B.19.1. through 6E.B.19.6.)
- B.20. Contra Costa Water District Old River Intake Chloride Concentration (Tables 6E.B.20.1. through 6E.B.20.6.)

- B.21. Contra Costa Water District Victoria Canal Intake Chloride Concentration (Tables 6E.B.21.1. through 6E.B.21.6.)
- B.22. Antioch Chloride Concentration (Tables 6E.B.22.1. through 6E.B.22.6.)
- B.23. Jones Pumping Plant Bromide Concentration (Tables 6E.B.23.1. through 6E.B.23.6.)
- B.24. Banks Pumping Plant Bromide Concentration (Tables 6E.B.24.1. through 6E.B.24.6.)
- B.25. Old River at Rock Slough Bromide Concentration (Tables 6E.B.25.1. through 6E.B.25.6.)
- B.26. Contra Costa Water District Old River Intake Bromide Concentration (Tables 6E.B.26.1. through 6E.B.26.6.)
- B.27. Contra Costa Water District Victoria Canal Intake Bromide Concentration (Tables 6E.B.27.1. through 6E.B.27.6.)

The third set of results provided are probability of exceedance curves that present the differences between simulated salinity or chloride concentrations and the D-1641 agricultural salinity standards or M&I chloride concentration standards for select locations within the Delta. Each plot contains a dashed threshold line at the zero value on the Y-Axis. Values above this line indicate the percentage of years the applied D-1641 standard was exceeded. For this analysis, exceedance plots were generated based on the 82-year simulation period for each alternative.

As noted earlier, EC was used as surrogate for Delta salinity results.

The following results are presented in this section:

- B.28. Sacramento River at Emmaton Compliance with D-1641 Agricultural Salinity Standard
- B.29. San Joaquin River at Jersey Point Compliance with D-1641 Agricultural Salinity Standard
- B.30. Contra Costa Canal at Pumping Plant #1 Compliance with D-1641 M&I Chloride Standard
- B.31. San Joaquin River at Antioch Water Works Compliance with D-1641 M&I Chloride Standard
- B.32. West Canal at Mouth of Clifton Court Forebay Compliance with D-1641 M&I Chloride Standard
- B.33. Delta-Mendota Canal at Tracy Pumping Plant Compliance with D-1641 M&I Chloride Standard
- B.34. Barker Slough at North Bay Aqueduct Compliance with D-1641 M&I Chloride Standard
- B.35. Cache Slough at City of Vallejo Intake Compliance with D-1641 M&I Chloride Standard

6E.3 References

DWR (California Department of Water Resources). 2012. "Chapter 5: Estimating Delta-wide Bromide Using DSM2-Simulated EC Fingerprints. Methodology for Flow and Salinity Estimates in the Sacramento-San Joaquin Delta and Suisun Marsh", 33rd Annual Progress Report.

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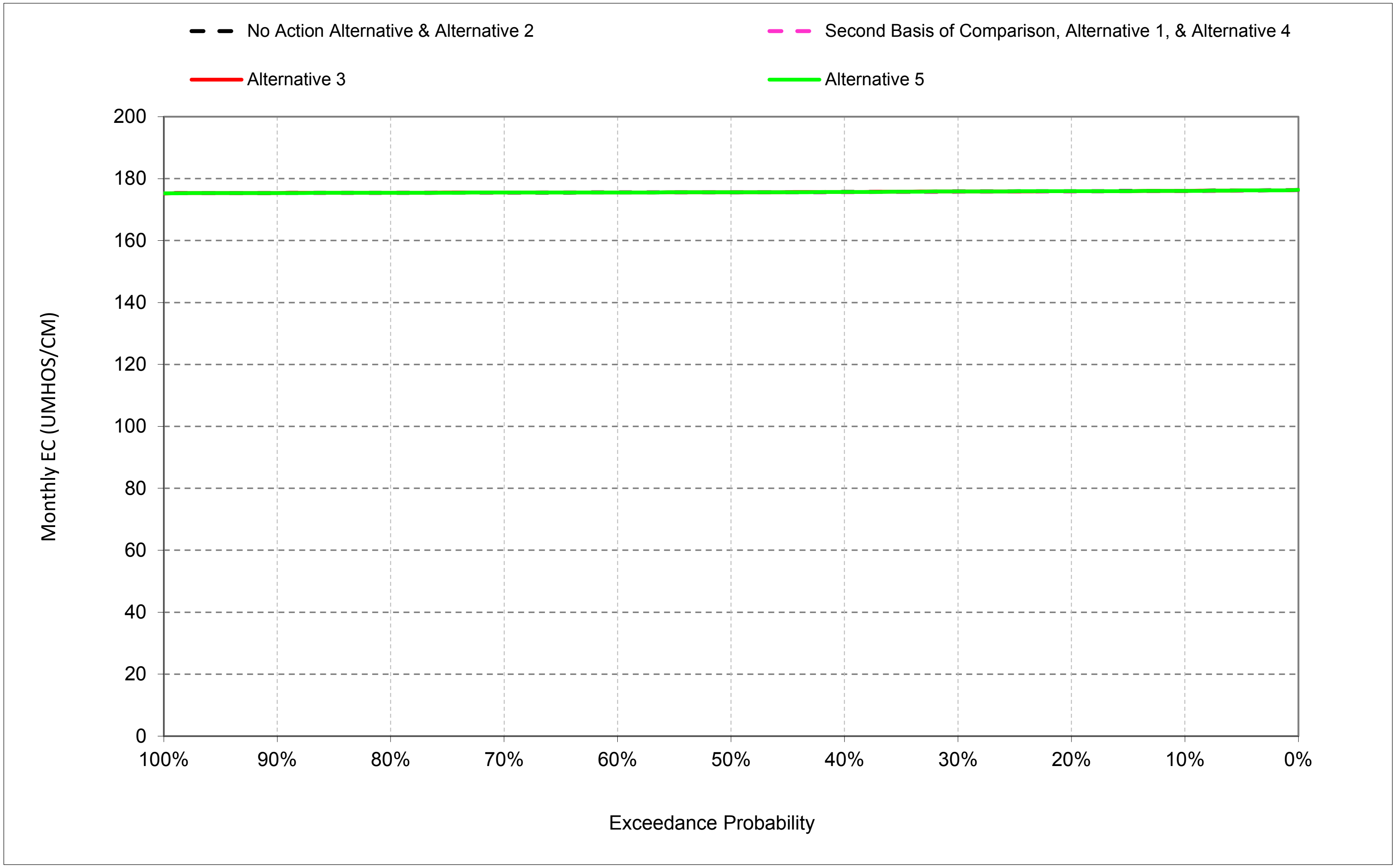
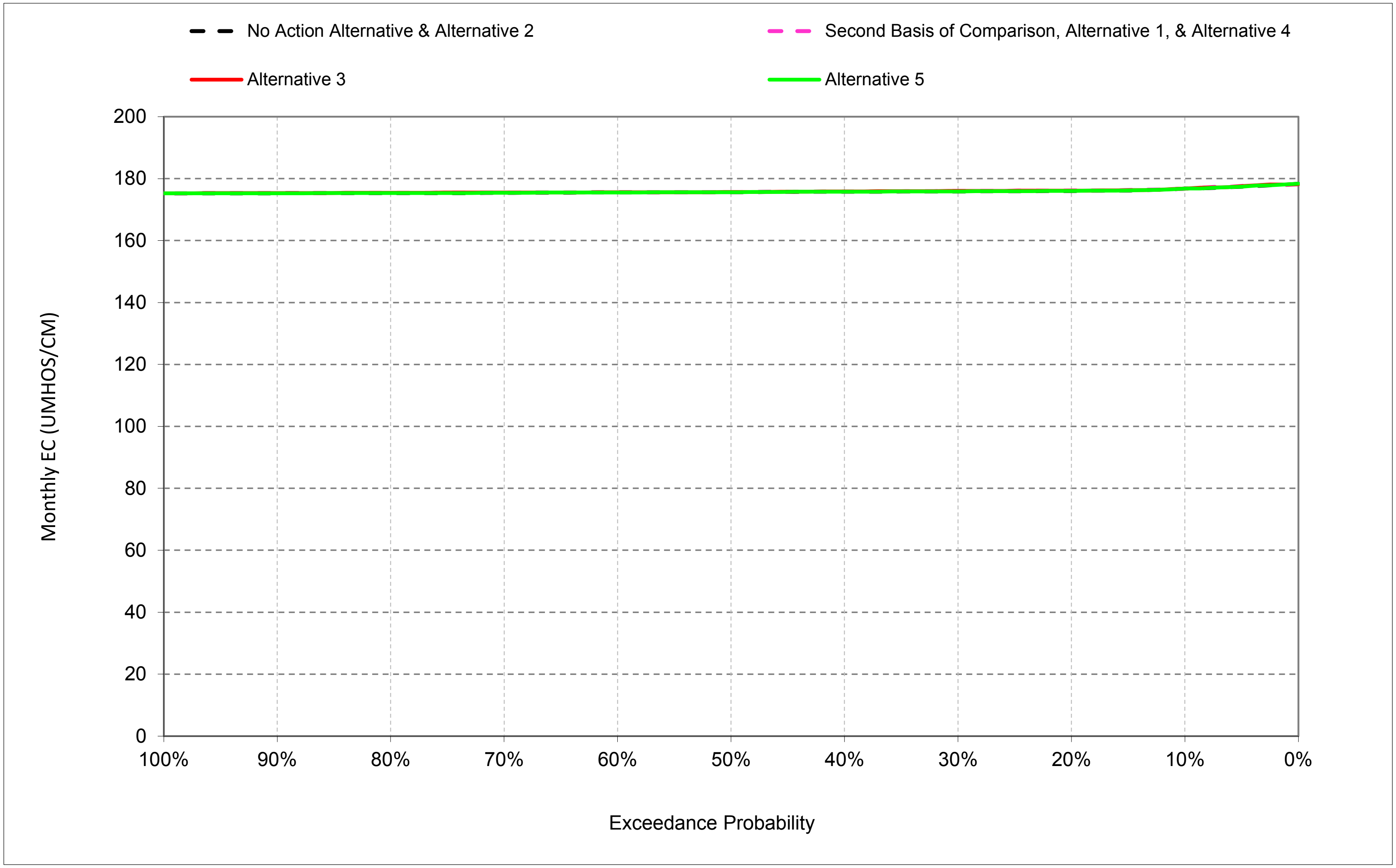
B.1. Sacramento River downstream of Steamboat Slough Salinity

Figure 6E.B.1.1. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, October



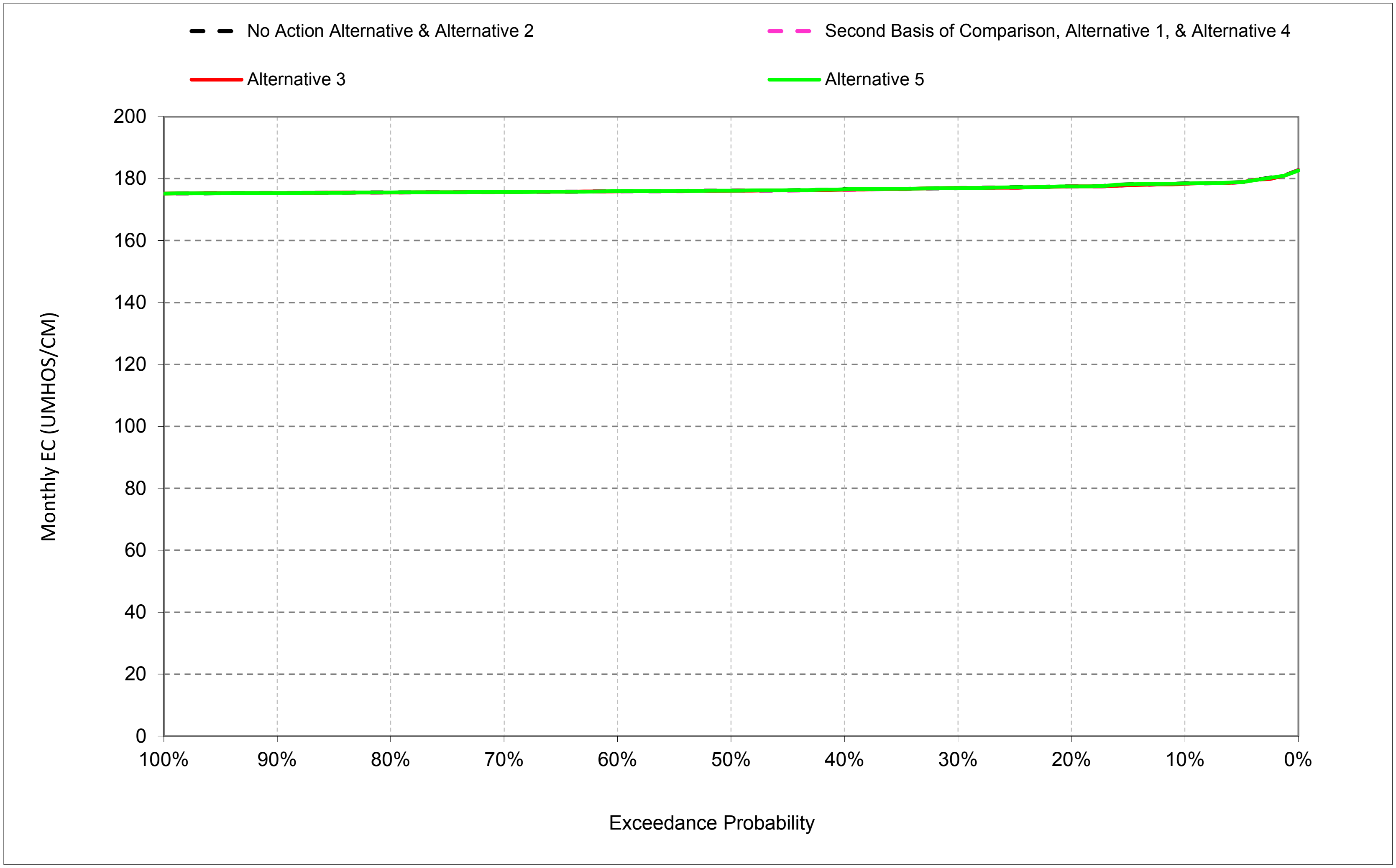
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.2. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, November



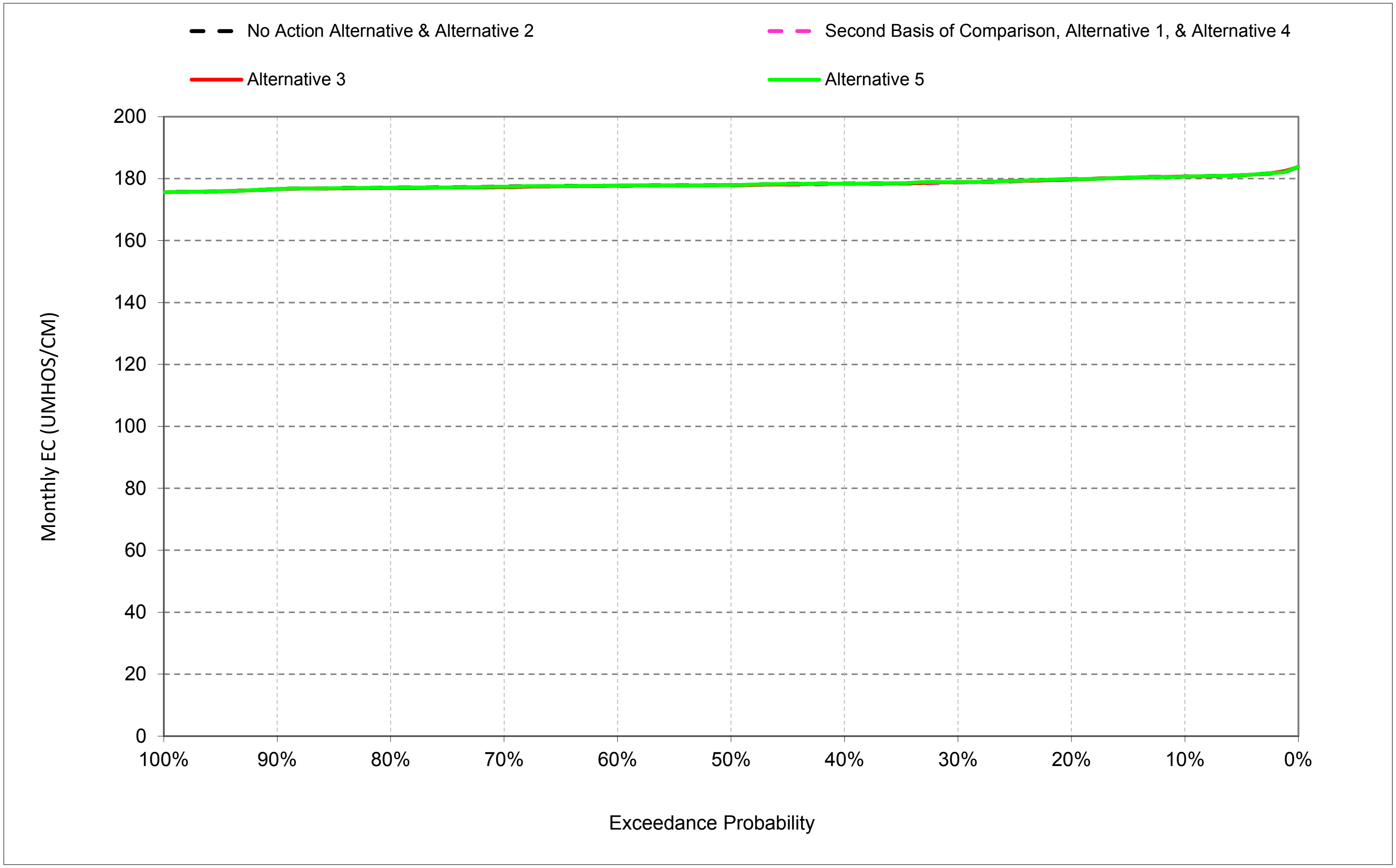
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.3. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, December



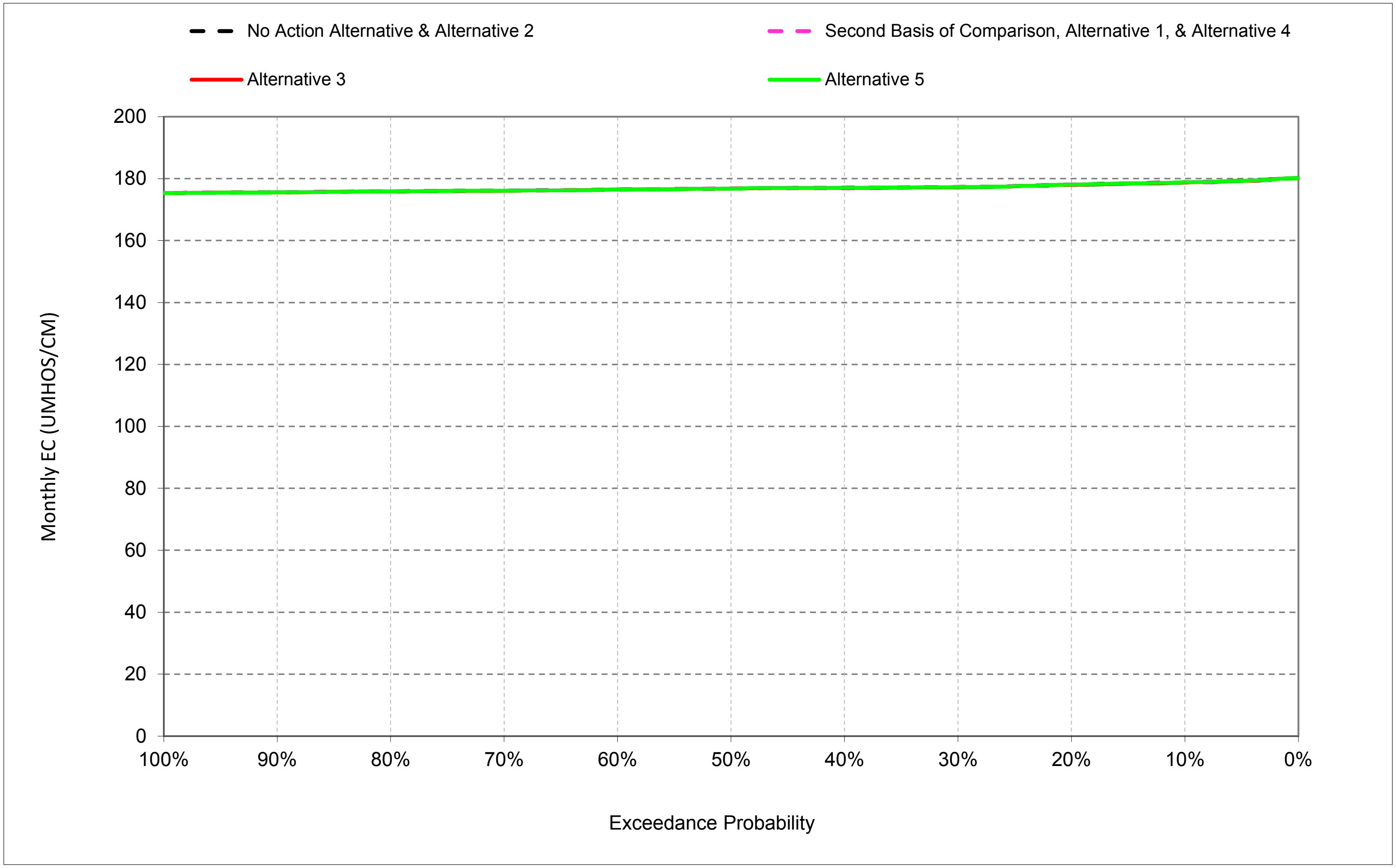
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.4. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, January



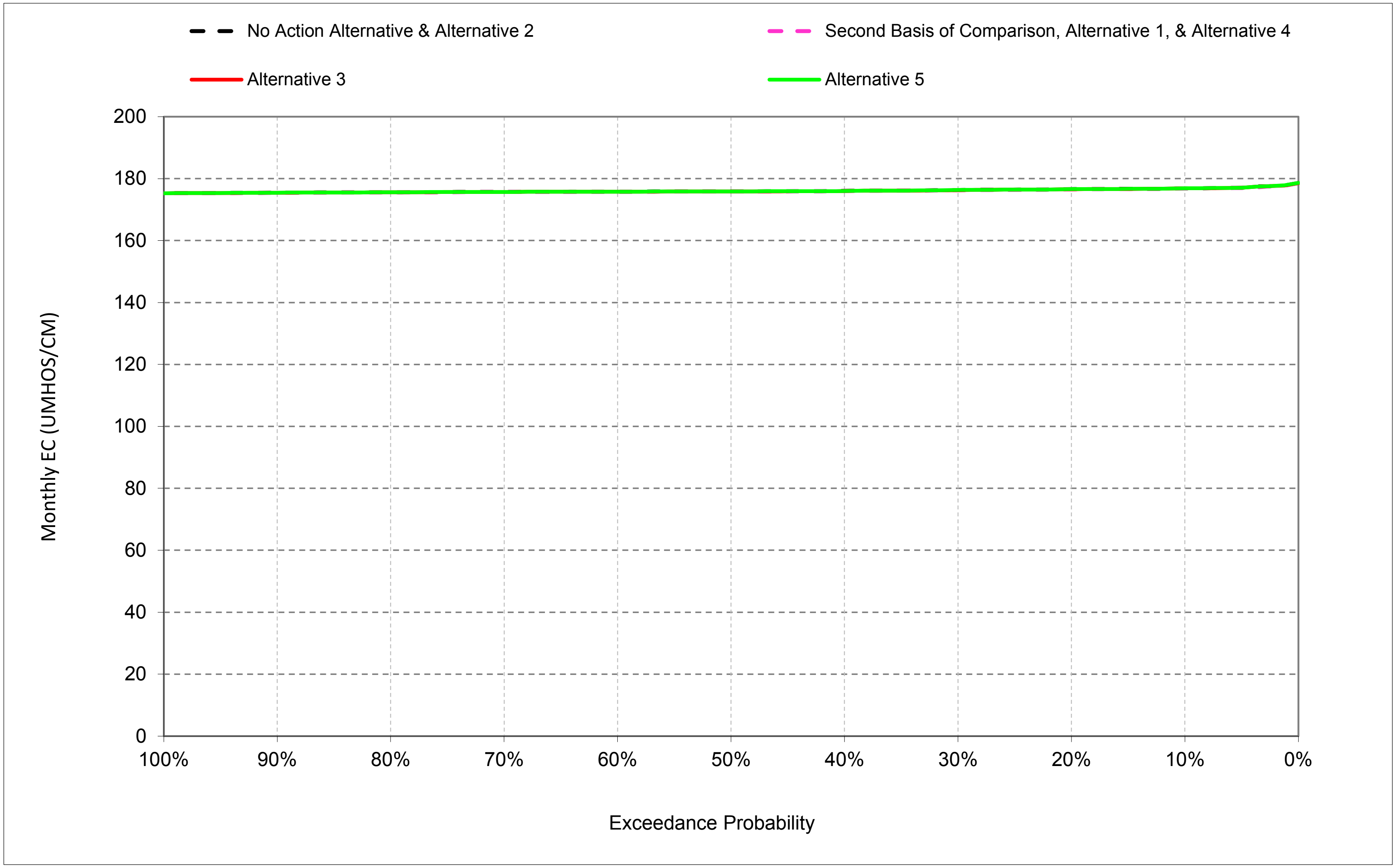
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.5. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, February



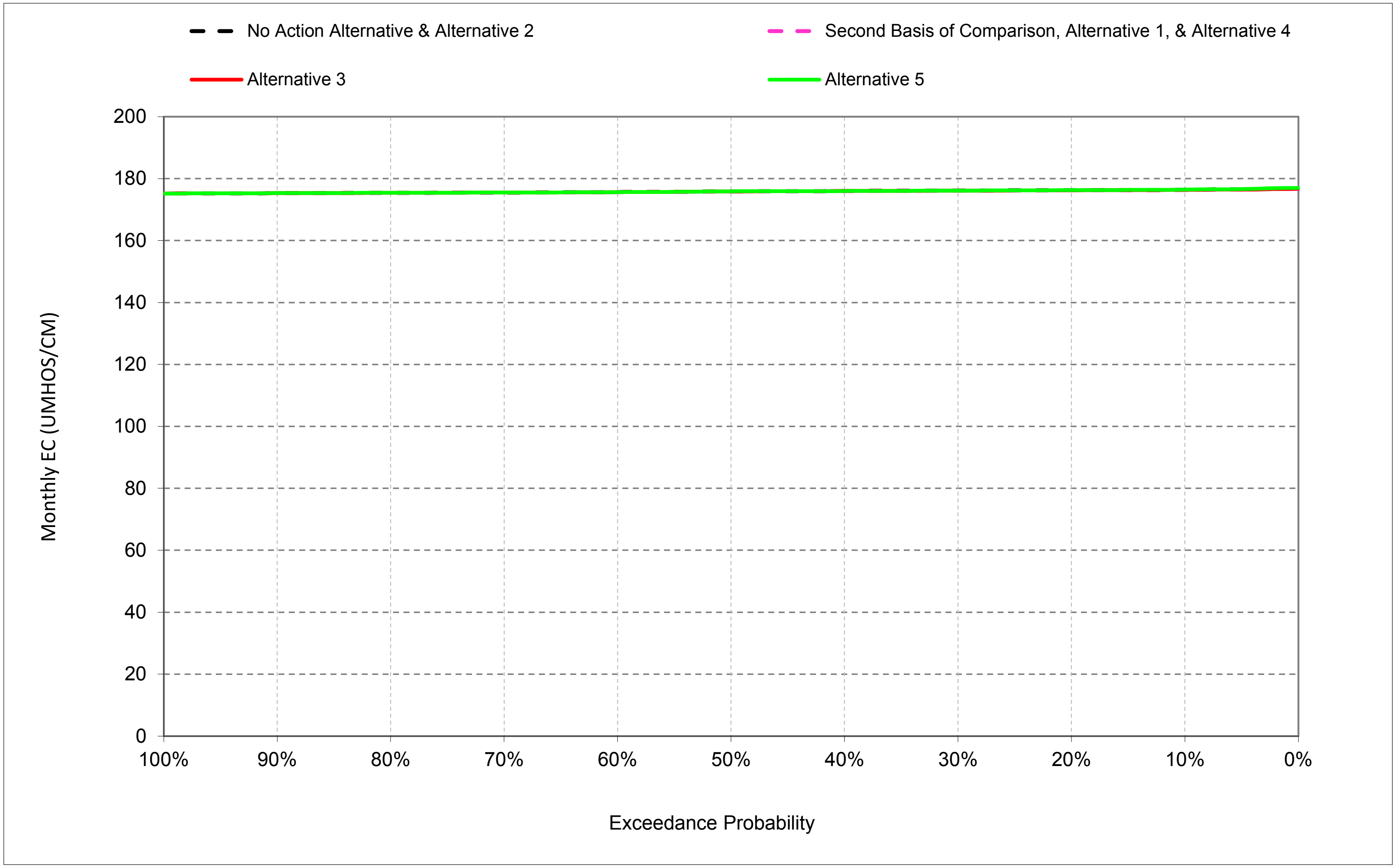
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.6. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, March



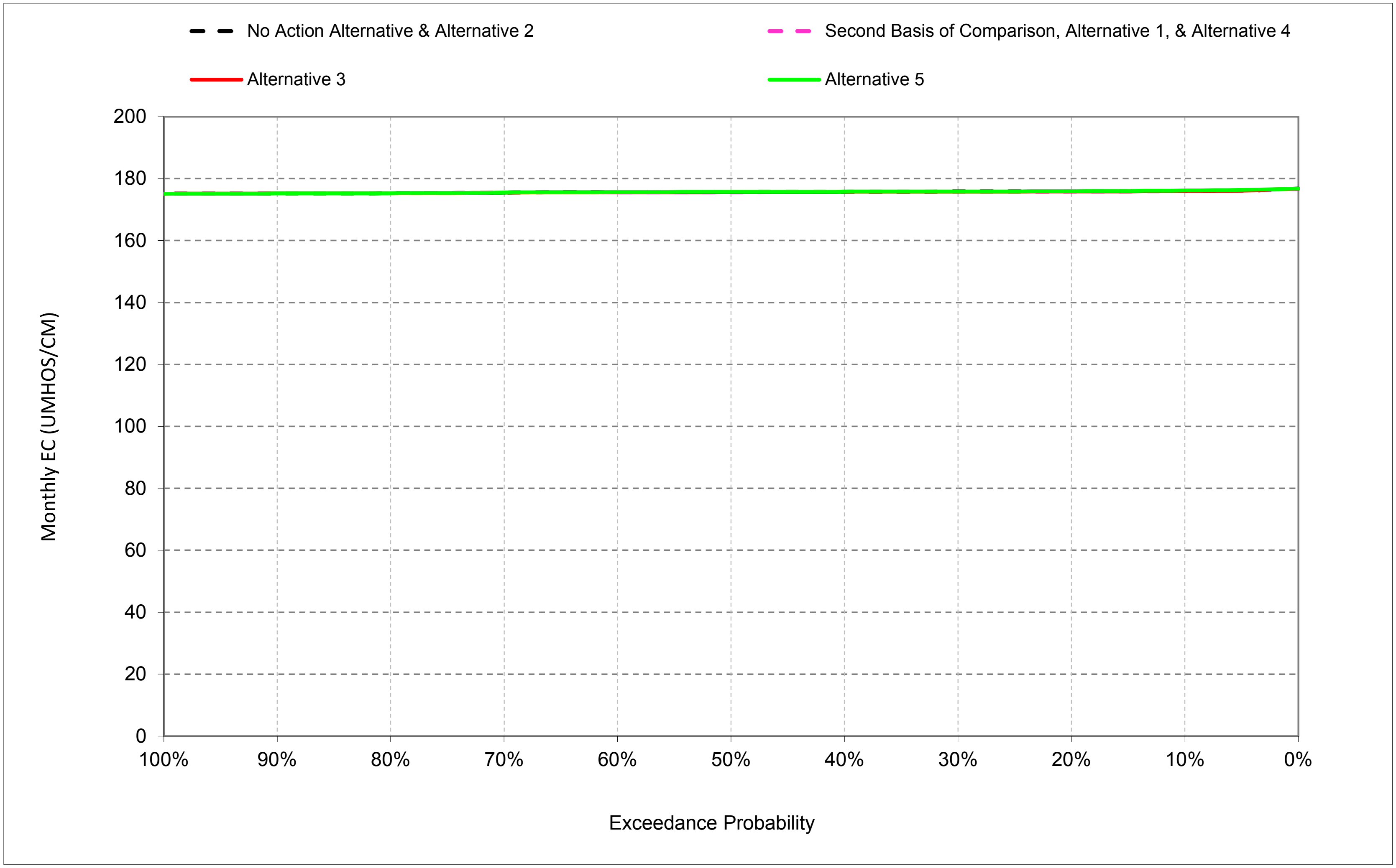
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.7. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, April



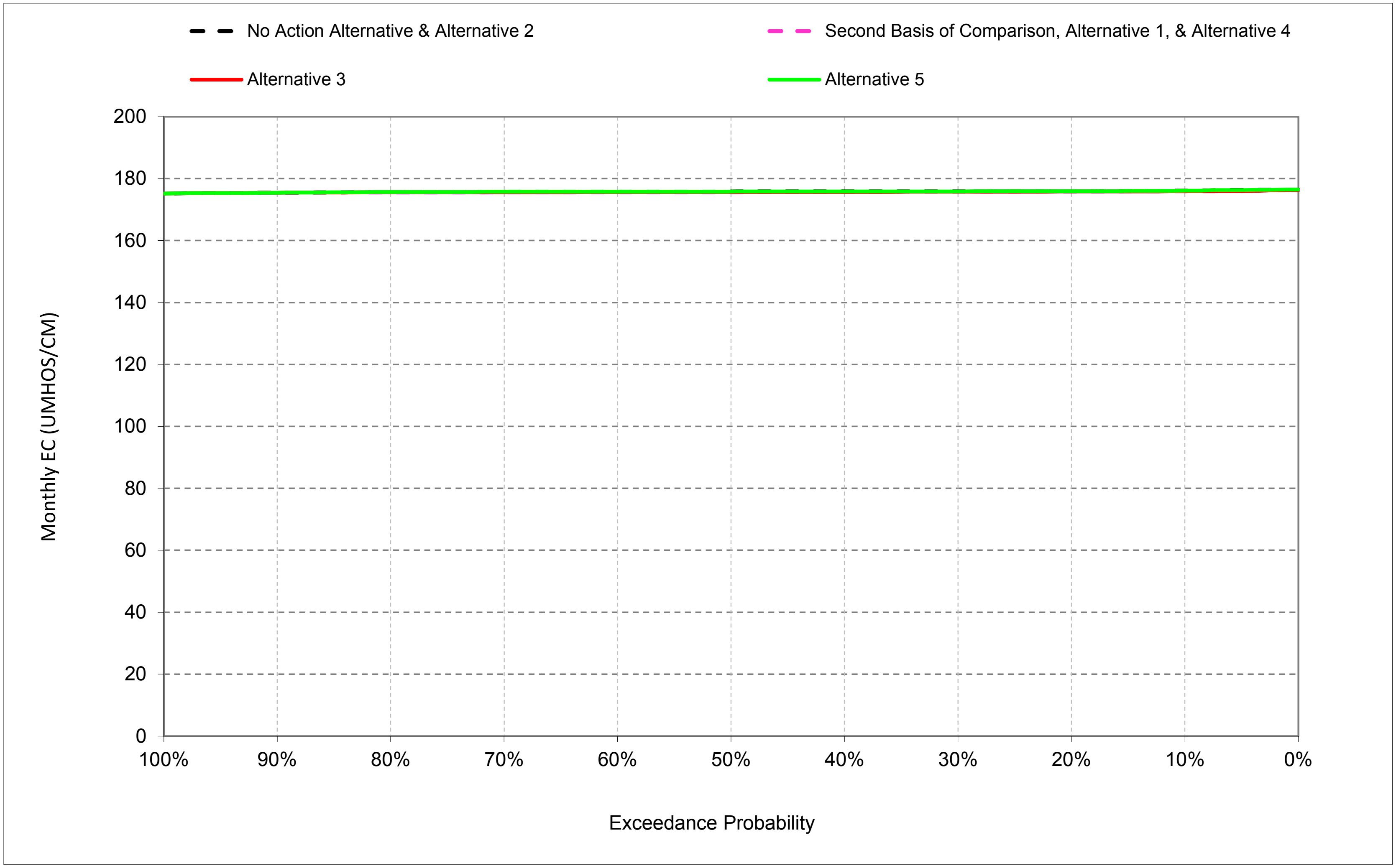
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.8. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, May



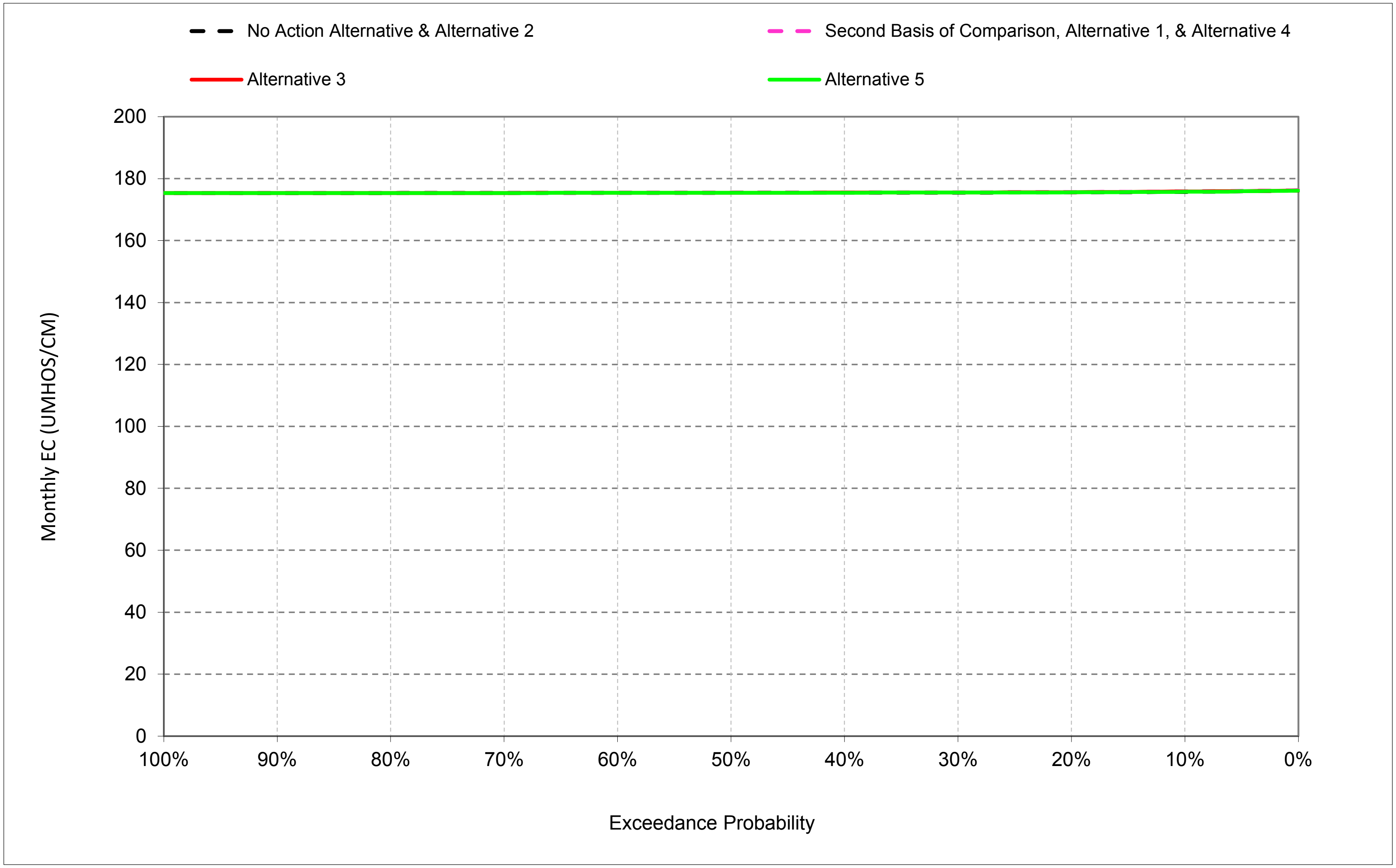
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.9. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, June



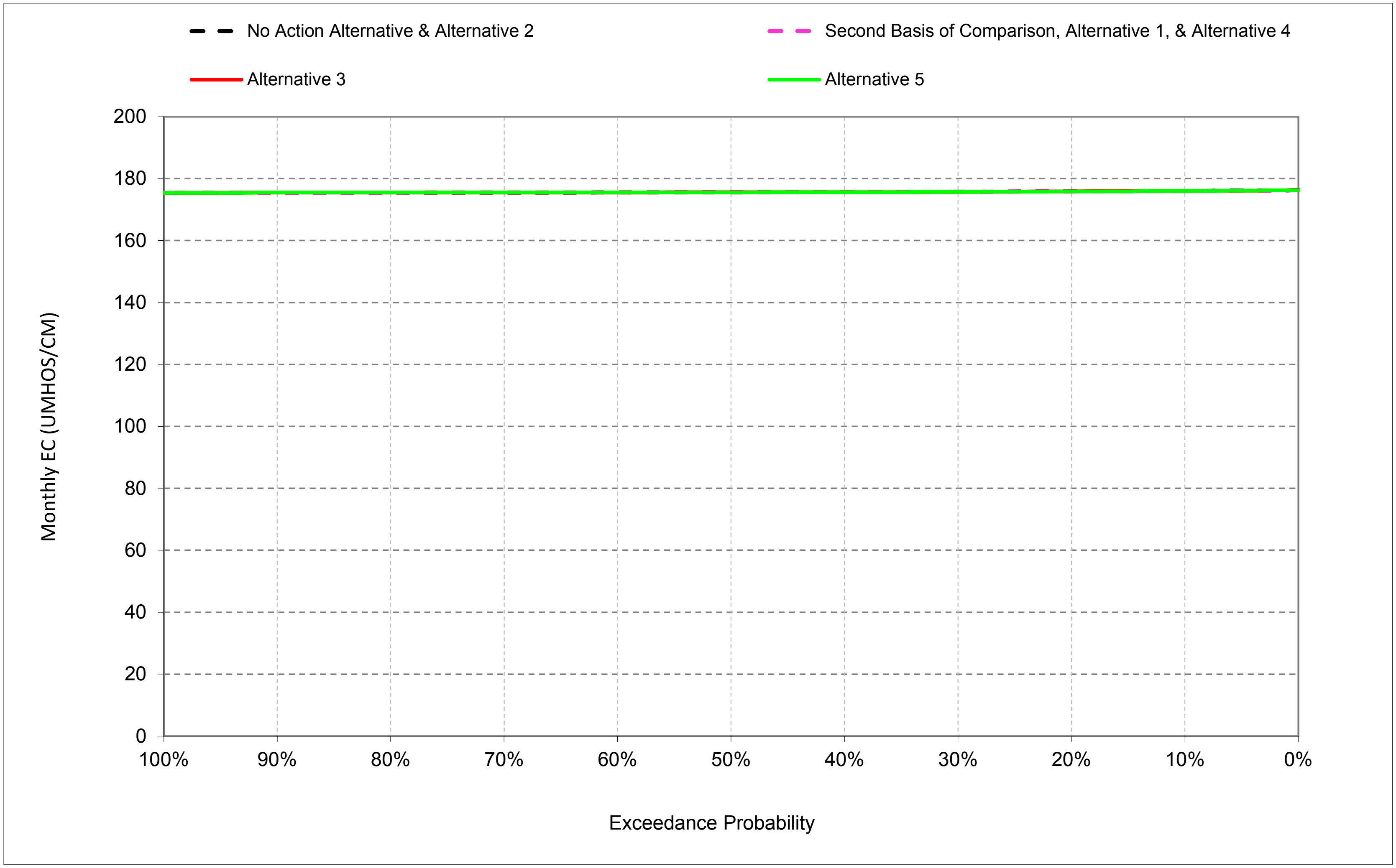
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.10. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, July



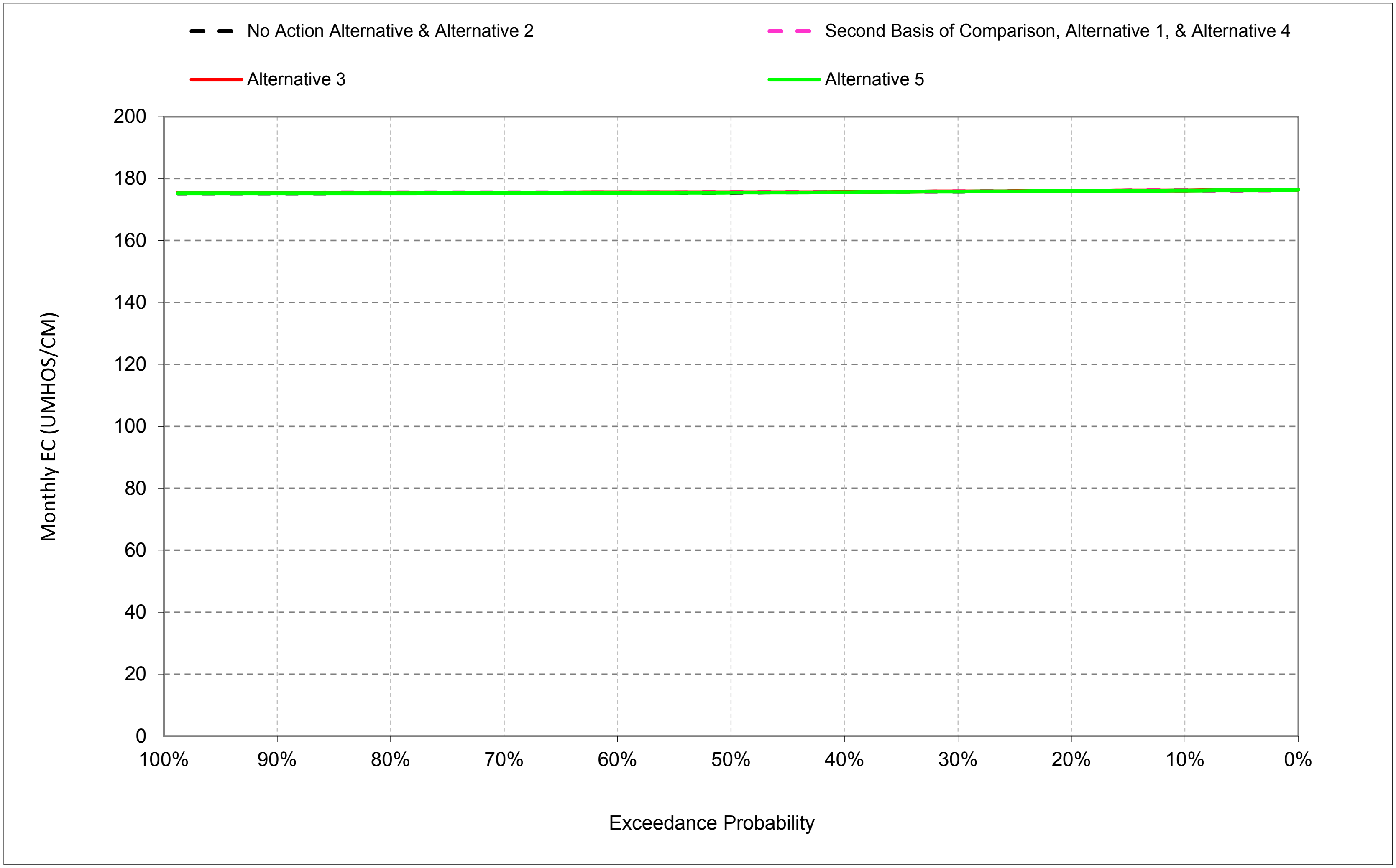
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.11. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.1.12. Sacramento River d/s of Steamboat Slough Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.1.1. Sacramento River d/s of Steamboat Slough Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	175	176	176
40%	176	176	177	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	175
60%	176	176	176	178	177	176	176	176	176	175	176	175
70%	175	175	176	177	176	176	175	176	176	175	176	175
80%	175	175	176	177	176	176	175	175	176	175	175	175
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	175	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	175
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	175	175
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 1

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	176	176	176
40%	176	176	176	178	177	176	176	176	176	176	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	176
60%	176	176	176	178	177	176	176	176	176	175	176	176
70%	175	176	176	177	176	176	175	176	176	175	176	176
80%	175	175	176	177	176	176	175	175	176	175	176	176
90%	175	175	175	177	176	175	175	175	175	175	175	176
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	176	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	176
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	176	176
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	178	178	177	176	176	176	176	176	176

Alternative 1 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.1.2. Sacramento River d/s of Steamboat Slough Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	175	176	176
40%	176	176	177	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	175
60%	176	176	176	178	177	176	176	176	176	175	176	175
70%	175	175	176	177	176	176	175	176	176	175	176	175
80%	175	175	176	177	176	176	175	175	176	175	175	175
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	175	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	175
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	175	175
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	176	176	176
40%	176	176	176	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	176
60%	176	176	176	178	177	176	176	176	176	175	176	176
70%	176	175	176	177	176	176	175	175	176	175	176	176
80%	175	175	176	177	176	176	175	175	176	175	176	176
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	176	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	176
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	176	176
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.1.3. Sacramento River d/s of Steamboat Slough Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	175	176	176
40%	176	176	177	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	175
60%	176	176	176	178	177	176	176	176	176	175	176	175
70%	175	175	176	177	176	176	175	176	176	175	176	175
80%	175	175	176	177	176	176	175	175	176	175	175	175
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	175	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	175
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	175	175
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	175	176	176
40%	176	176	177	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	175
60%	176	176	176	178	177	176	176	176	176	175	176	175
70%	175	175	176	177	176	176	175	176	176	175	176	175
80%	175	175	176	177	176	176	175	175	176	175	175	175
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	175	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	175
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	175	175
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	175	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.1.4. Sacramento River d/s of Steamboat Slough Salinity, Monthly EC

Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	176	176	176
40%	176	176	176	178	177	176	176	176	176	176	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	176
60%	176	176	176	178	177	176	176	176	176	175	176	176
70%	175	176	176	177	176	176	175	176	176	175	176	176
80%	175	175	176	177	176	176	175	175	176	175	176	176
90%	175	175	175	177	176	175	175	175	175	175	175	176
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	176	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	176
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	176	176
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	178	178	177	176	176	176	176	176	176

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	175	176	176
40%	176	176	177	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	175
60%	176	176	176	178	177	176	176	176	176	175	176	175
70%	175	175	176	177	176	176	175	176	176	175	176	175
80%	175	175	176	177	176	176	175	175	176	175	175	175
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	175	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	175
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	175	175
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

No Action Alternative minus Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.1.5. Sacramento River d/s of Steamboat Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	176	176	176
40%	176	176	176	178	177	176	176	176	176	176	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	176
60%	176	176	176	178	177	176	176	176	176	175	176	176
70%	175	176	176	177	176	176	175	176	176	175	176	176
80%	175	175	176	177	176	176	175	175	176	175	176	176
90%	175	175	175	177	176	175	175	175	175	175	175	176
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	176	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	176
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	176	176
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	178	178	177	176	176	176	176	176	176

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	176	176	176
40%	176	176	176	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	176
60%	176	176	176	178	177	176	176	176	176	175	176	176
70%	176	175	176	177	176	176	175	175	176	175	176	176
80%	175	175	176	177	176	176	175	175	176	175	176	176
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	176	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	176
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	176	176
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.1.6. Sacramento River d/s of Steamboat Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	176	176	176
40%	176	176	176	178	177	176	176	176	176	176	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	176
60%	176	176	176	178	177	176	176	176	176	175	176	176
70%	175	176	176	177	176	176	175	176	176	175	176	176
80%	175	175	176	177	176	176	175	175	176	175	176	176
90%	175	175	175	177	176	175	175	175	175	175	175	176
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	176	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	176
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	176	176
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	176	176	176
Critical (15%)	176	176	177	178	178	177	176	176	176	176	176	176

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	176	177	178	181	179	177	176	176	176	176	176	176
20%	176	176	177	180	178	177	176	176	176	176	176	176
30%	176	176	177	179	177	176	176	176	176	175	176	176
40%	176	176	177	178	177	176	176	176	176	175	176	176
50%	176	176	176	178	177	176	176	176	176	175	176	175
60%	176	176	176	178	177	176	176	176	176	175	176	175
70%	175	175	176	177	176	176	175	176	176	175	176	175
80%	175	175	176	177	176	176	175	175	176	175	175	175
90%	175	175	175	177	176	175	175	175	175	175	175	175
Long Term												
Full Simulation Period[b]	176	176	177	178	177	176	176	176	176	175	176	176
Water Year Types[c]												
Wet (32%)	176	176	177	178	176	176	176	175	176	175	176	175
Above Normal (16%)	176	176	177	178	177	176	176	176	176	175	175	175
Below Normal (13%)	176	176	177	178	177	176	176	176	176	175	176	176
Dry (24%)	176	176	176	179	177	176	176	176	176	175	176	176
Critical (15%)	176	176	177	179	178	177	176	176	176	176	176	176

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	0	0	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

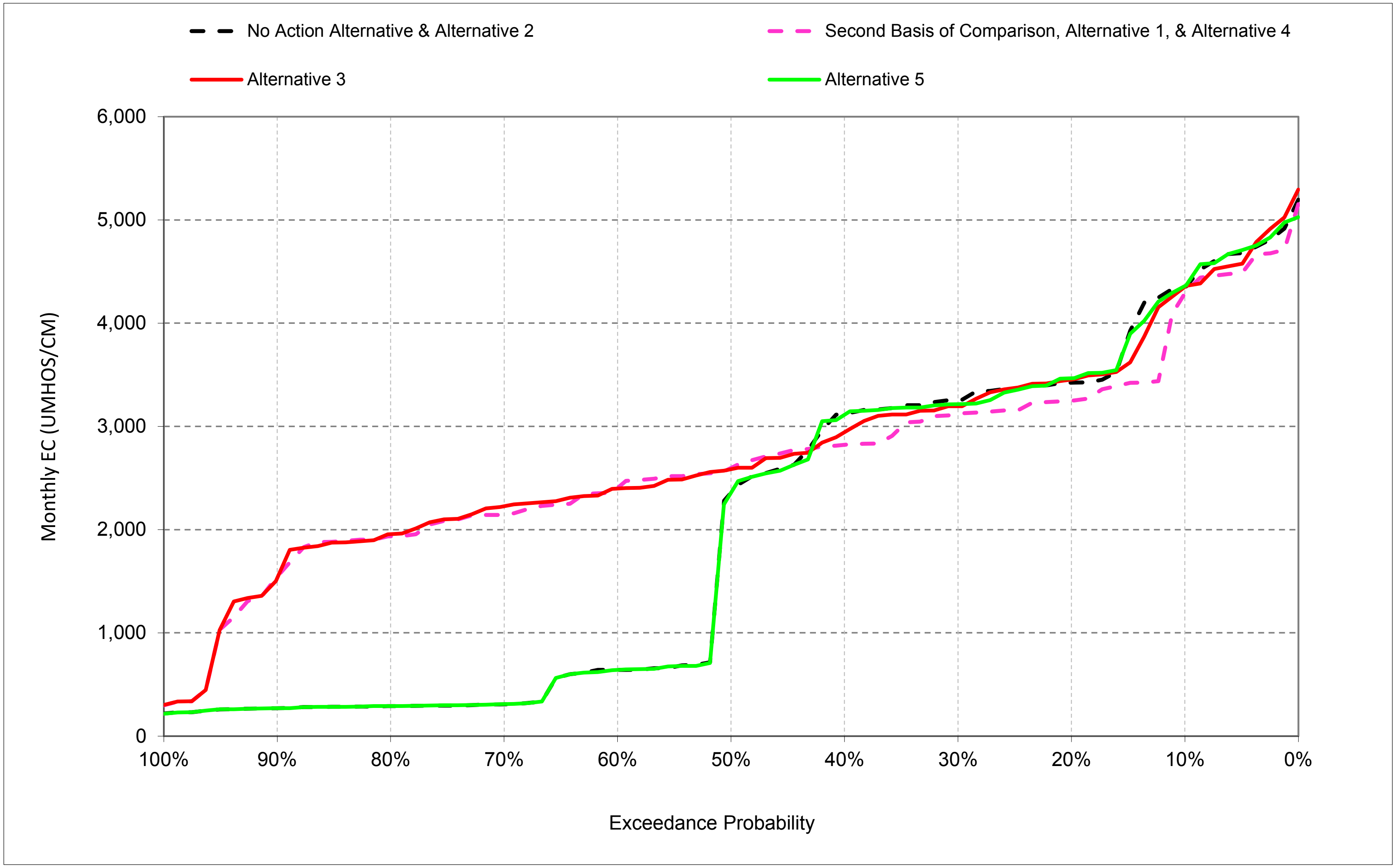
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

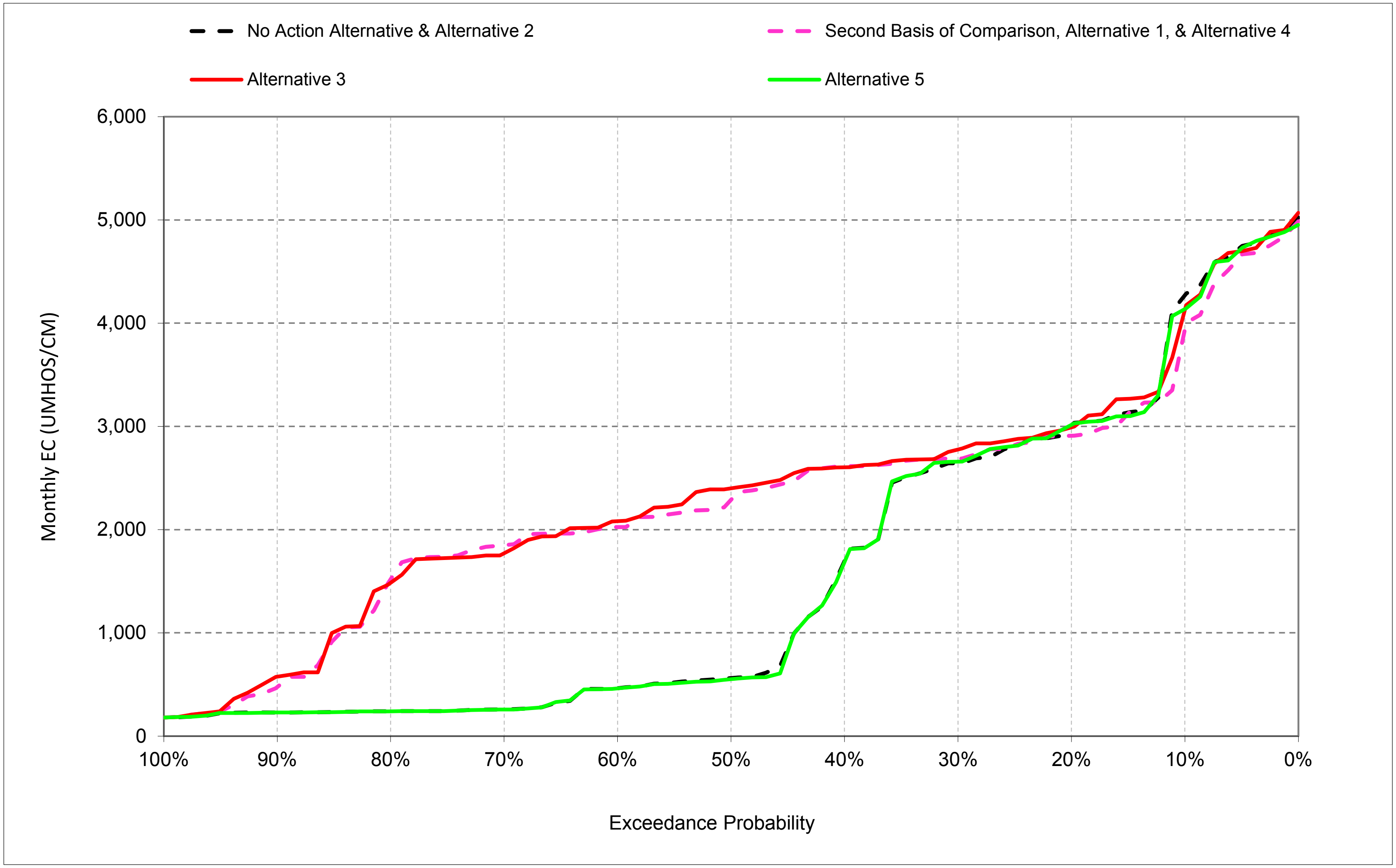
B.2. Sacramento River at Emmaton Salinity

Figure 6E.B.2.1. Sacramento River at Emmaton Salinity, Electrical Conductivity, October



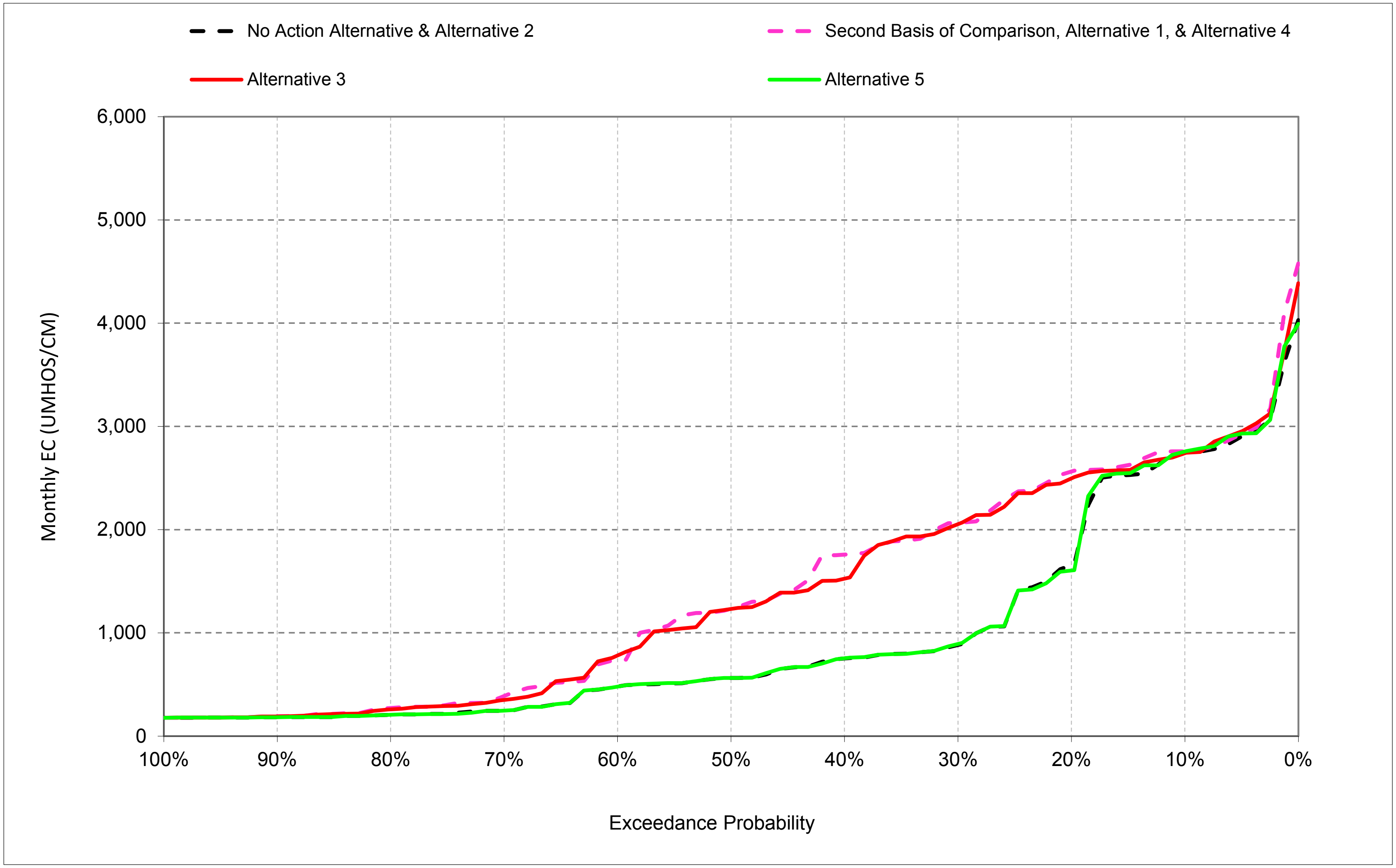
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.2. Sacramento River at Emmaton Salinity, Electrical Conductivity, November



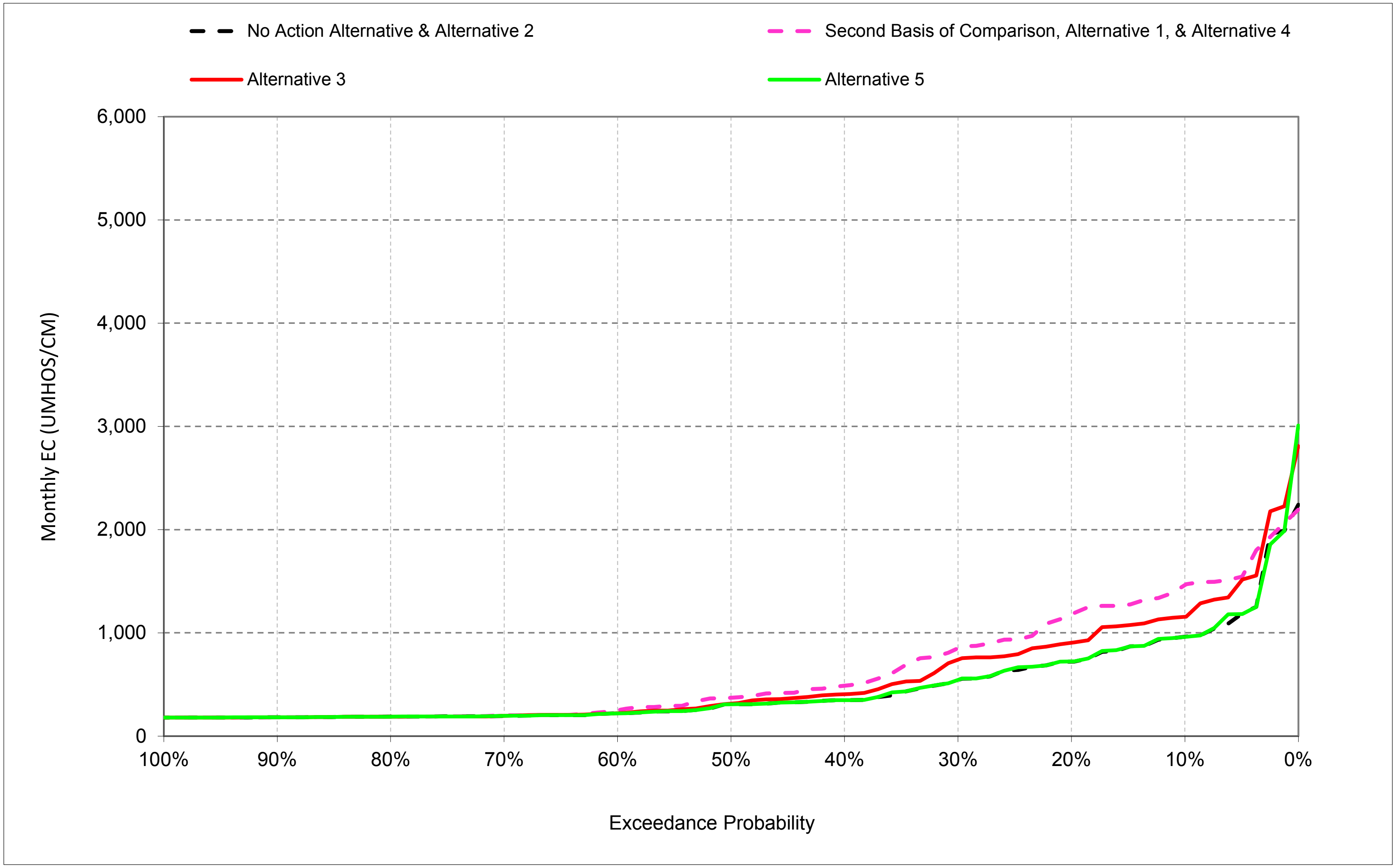
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.3. Sacramento River at Emmaton Salinity, Electrical Conductivity, December



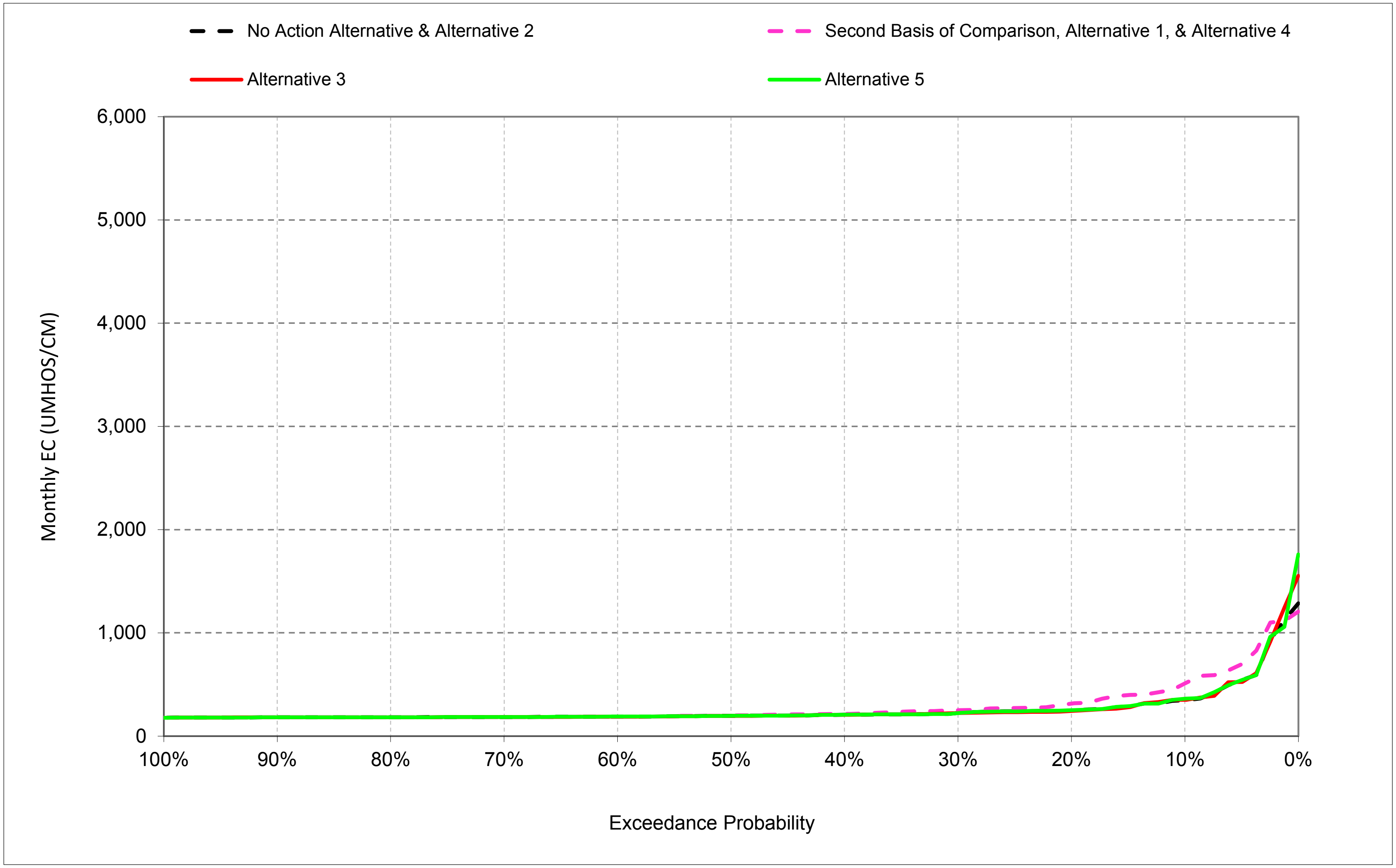
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.4. Sacramento River at Emmaton Salinity, Electrical Conductivity, January



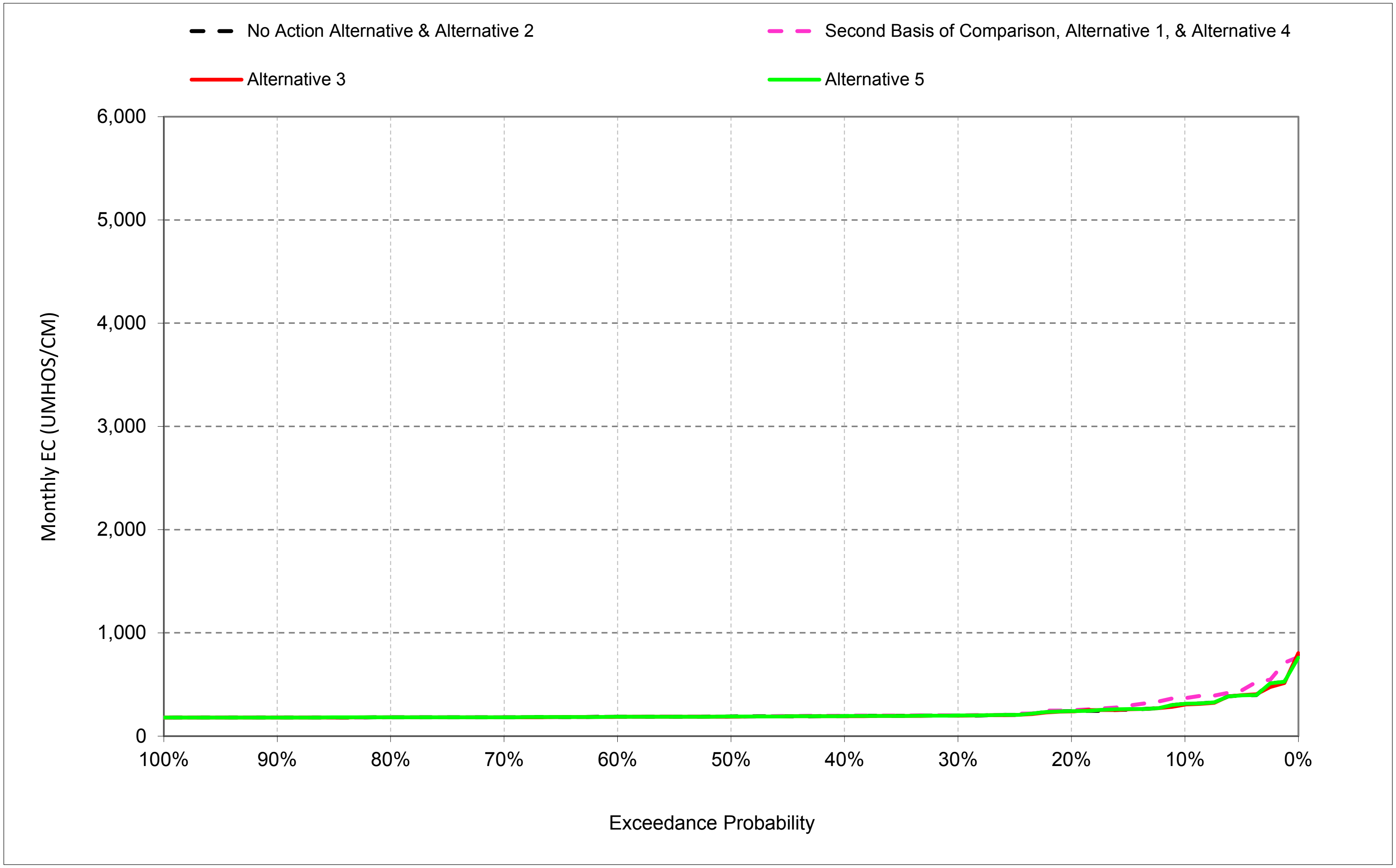
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.5. Sacramento River at Emmaton Salinity, Electrical Conductivity, February



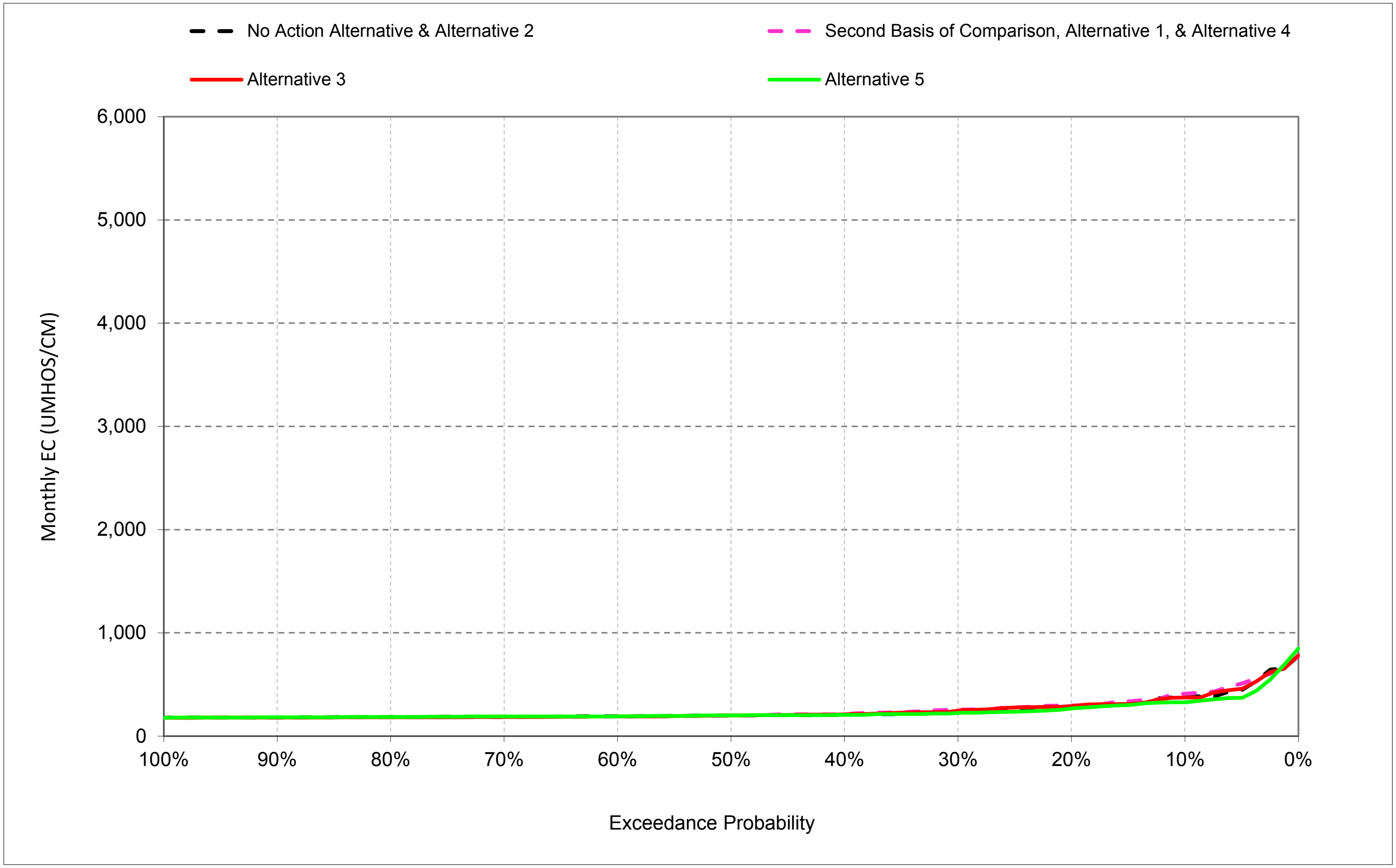
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.6. Sacramento River at Emmaton Salinity, Electrical Conductivity, March



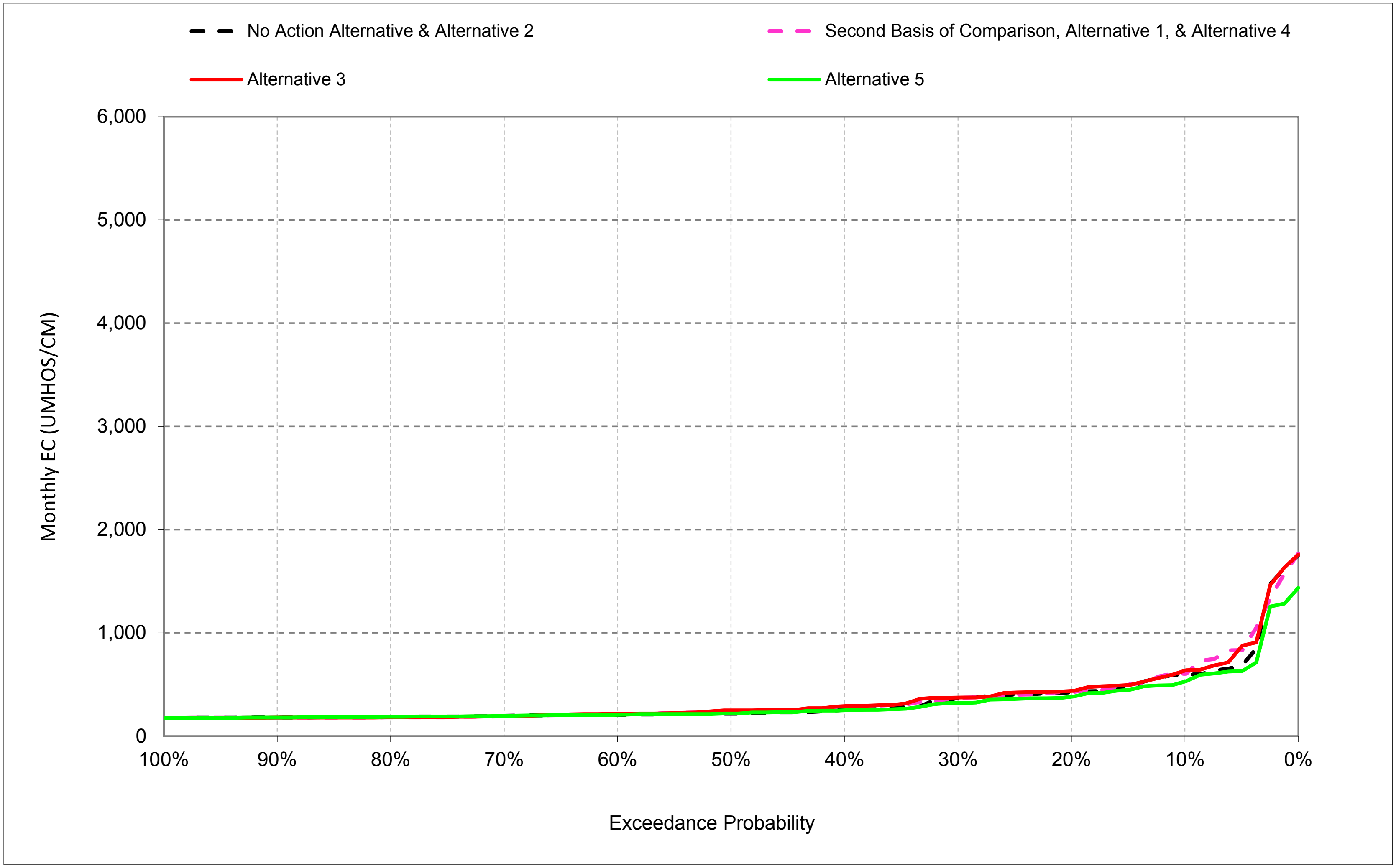
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.7. Sacramento River at Emmaton Salinity, Electrical Conductivity, April



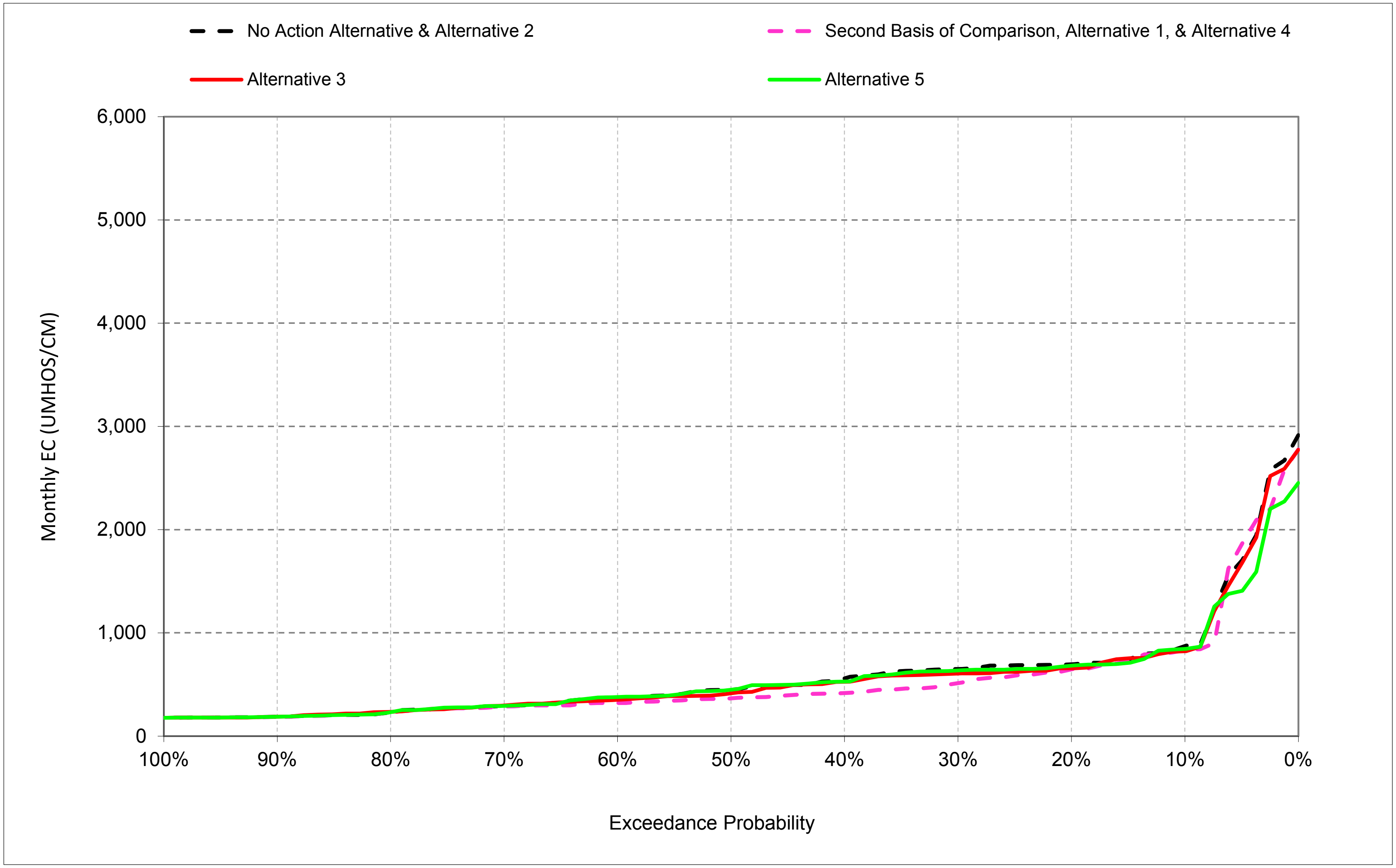
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.8. Sacramento River at Emmaton Salinity, Electrical Conductivity, May



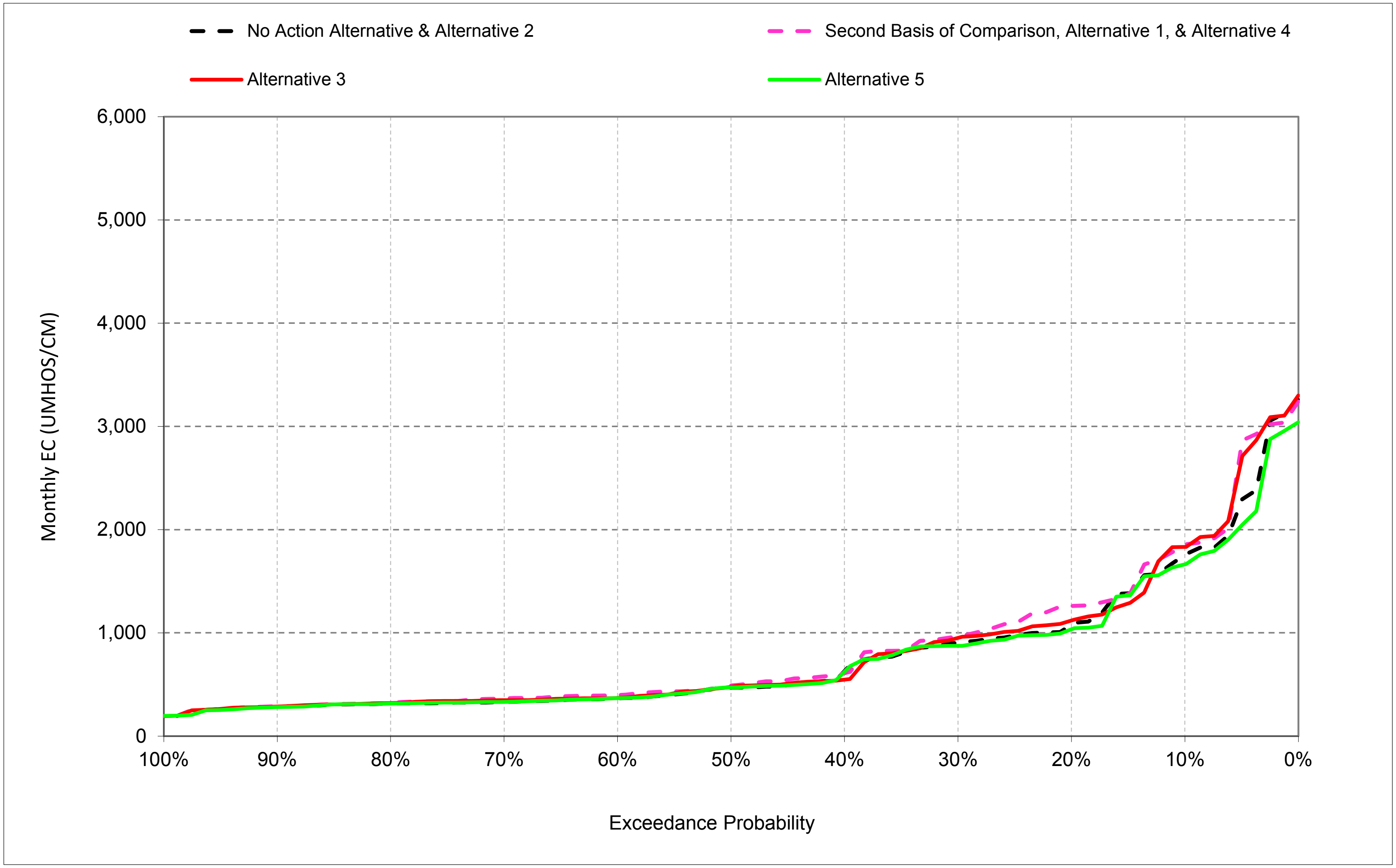
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.9. Sacramento River at Emmaton Salinity, Electrical Conductivity, June



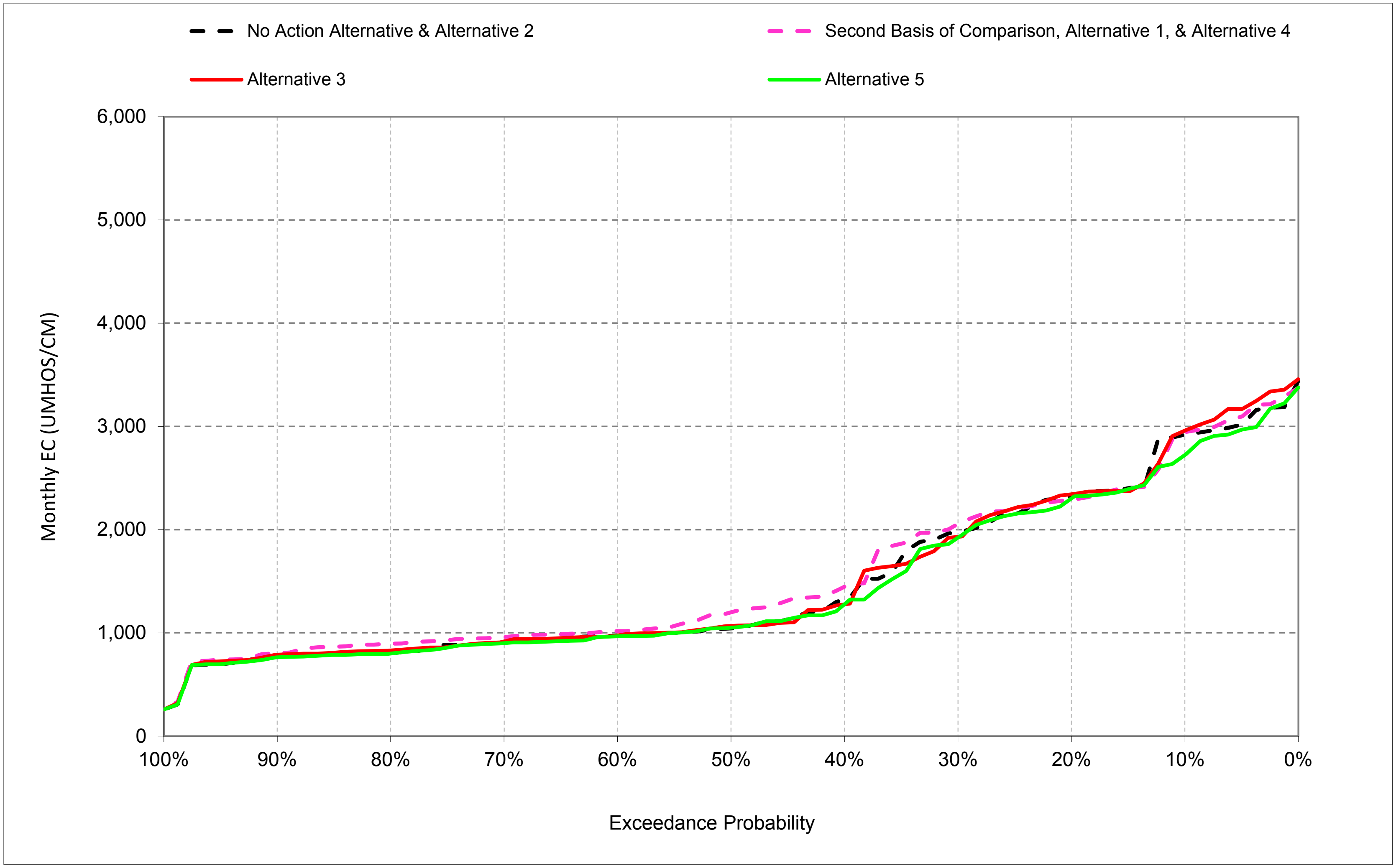
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.10. Sacramento River at Emmaton Salinity, Electrical Conductivity, July



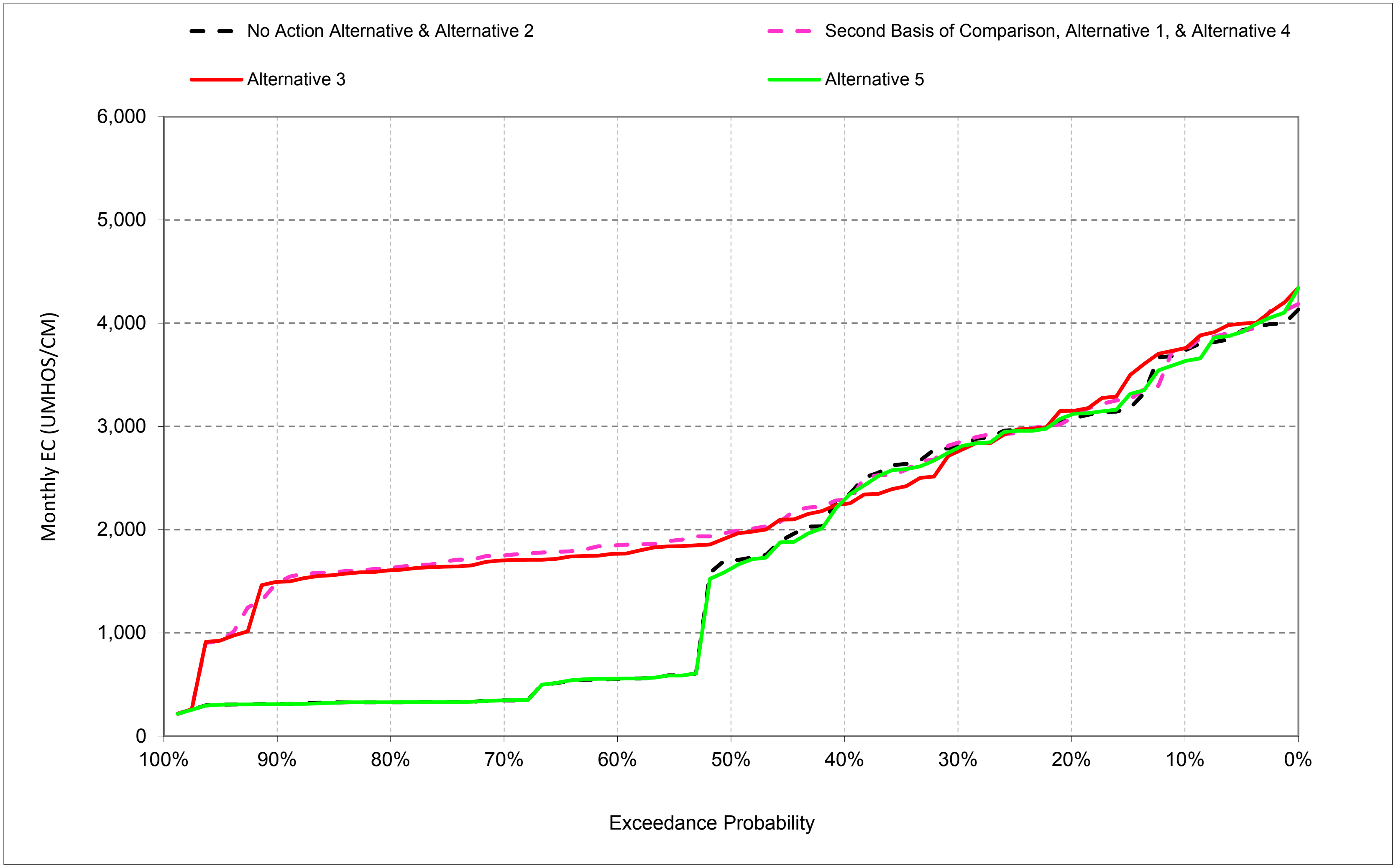
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.11. Sacramento River at Emmaton Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.2.12. Sacramento River at Emmaton Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.2.1. Sacramento River at Emmaton Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4,353	4,269	2,750	963	348	313	382	596	871	1,756	2,920	3,735
20%	3,424	3,010	1,654	722	247	241	278	424	696	1,081	2,329	3,071
30%	3,256	2,642	883	543	224	199	232	370	650	906	1,977	2,813
40%	3,124	1,695	751	348	206	194	207	252	559	629	1,326	2,325
50%	2,357	562	564	307	196	190	200	217	451	469	1,044	1,702
60%	641	463	480	221	189	187	191	207	375	366	972	554
70%	308	258	247	195	184	183	189	197	292	330	903	347
80%	291	241	207	189	183	182	185	186	231	316	804	329
90%	270	229	182	182	182	181	181	180	188	285	768	313
Long Term												
Full Simulation Period[b]	2,011	1,571	982	473	259	224	246	342	587	779	1,491	1,709
Water Year Types[c]												
Wet (32%)	1,272	761	314	214	184	183	187	192	276	303	845	317
Above Normal (16%)	2,637	1,663	731	271	193	184	192	208	381	354	845	552
Below Normal (13%)	1,347	1,075	895	471	249	224	242	298	547	506	1,096	2,170
Dry (24%)	2,153	1,802	1,332	609	290	222	248	338	604	1,010	2,063	2,766
Critical (15%)	3,304	3,293	2,198	1,024	447	357	436	856	1,491	2,139	2,998	3,789

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4,287	3,938	2,758	1,462	511	368	410	605	835	1,851	2,940	3,740
20%	3,250	2,909	2,563	1,181	315	251	296	428	647	1,260	2,289	3,079
30%	3,121	2,689	2,067	852	251	201	255	367	513	966	2,055	2,842
40%	2,822	2,612	1,758	488	216	197	214	288	417	608	1,446	2,287
50%	2,597	2,289	1,235	371	199	189	200	233	367	490	1,199	1,978
60%	2,402	2,026	735	250	188	187	190	212	320	396	1,018	1,849
70%	2,147	1,849	388	201	185	183	185	191	288	365	959	1,749
80%	1,936	1,517	271	188	183	181	182	182	225	321	896	1,630
90%	1,544	474	192	182	182	180	180	179	188	289	803	1,482
Long Term												
Full Simulation Period[b]	2,653	2,272	1,393	621	288	236	255	355	531	834	1,549	2,292
Water Year Types[c]												
Wet (32%)	2,188	1,713	478	235	184	183	187	196	255	320	888	1,513
Above Normal (16%)	2,981	2,205	1,247	362	199	184	192	215	315	368	929	1,744
Below Normal (13%)	2,203	1,754	1,466	813	336	245	256	308	387	537	1,275	2,227
Dry (24%)	2,831	2,625	1,927	865	332	229	259	344	549	1,091	2,089	2,798
Critical (15%)	3,421	3,444	2,575	1,156	494	408	460	914	1,464	2,297	3,001	3,791

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-66	-330	9	499	162	56	28	9	-37	95	20	5
20%	-174	-101	909	459	68	9	18	4	-49	180	-40	8
30%	-135	47	1,184	308	28	3	23	-3	-137	60	79	29
40%	-303	918	1,007	140	9	3	8	35	-142	-21	120	-37
50%	240	1,727	671	63	3	-1	0	16	-84	21	155	276
60%	1,761	1,562	255	29	-2	0	-1	5	-54	30	46	1,295
70%	1,839	1,591	141	6	0	0	-4	-5	-5	35	56	1,402
80%	1,646	1,276	64	-1	0	0	-2	-4	-6	5	92	1,301
90%	1,274	245	10	0	0	0	-1	-1	0	4	36	1,169
Long Term												
Full Simulation Period[b]	642	702	410	148	29	12	8	13	-56	55	58	584
Water Year Types[c]												
Wet (32%)	916	952	164	21	0	0	0	4	-22	18	43	1,195
Above Normal (16%)	344	542	515	91	6	0	0	7	-66	14	84	1,192
Below Normal (13%)	856	680	571	342	87	21	14	9	-159	31	179	57
Dry (24%)	678	823	594	256	41	7	12	6	-55	81	27	31
Critical (15%)	116	150	377	132	47	52	24	58	-26	158	3	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.2.2. Sacramento River at Emmaton Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,353	4,269	2,750	963	348	313	382	596	871	1,756	2,920	3,735
20%	3,424	3,010	1,654	722	247	241	278	424	696	1,081	2,329	3,071
30%	3,256	2,642	883	543	224	199	232	370	650	906	1,977	2,813
40%	3,124	1,695	751	348	206	194	207	252	559	629	1,326	2,325
50%	2,357	562	564	307	196	190	200	217	451	469	1,044	1,702
60%	641	463	480	221	189	187	191	207	375	366	972	554
70%	308	258	247	195	184	183	189	197	292	330	903	347
80%	291	241	207	189	183	182	185	186	231	316	804	329
90%	270	229	182	182	182	181	181	180	188	285	768	313
Long Term												
Full Simulation Period[b]	2,011	1,571	982	473	259	224	246	342	587	779	1,491	1,709
Water Year Types[c]												
Wet (32%)	1,272	761	314	214	184	183	187	192	276	303	845	317
Above Normal (16%)	2,637	1,663	731	271	193	184	192	208	381	354	845	552
Below Normal (13%)	1,347	1,075	895	471	249	224	242	298	547	506	1,096	2,170
Dry (24%)	2,153	1,802	1,332	609	290	222	248	338	604	1,010	2,063	2,766
Critical (15%)	3,304	3,293	2,198	1,024	447	357	436	856	1,491	2,139	2,998	3,789

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,351	4,124	2,740	1,155	351	305	373	633	821	1,832	2,958	3,758
20%	3,452	2,991	2,496	904	243	239	292	438	656	1,120	2,342	3,150
30%	3,196	2,776	2,053	739	222	198	246	374	605	951	1,930	2,757
40%	2,943	2,604	1,525	405	207	193	211	290	526	548	1,277	2,249
50%	2,584	2,400	1,232	314	195	189	199	249	413	478	1,067	1,938
60%	2,398	2,082	782	222	188	186	190	217	351	370	976	1,765
70%	2,227	1,772	349	196	184	183	186	193	297	348	918	1,702
80%	1,956	1,484	260	187	182	181	182	181	234	321	828	1,606
90%	1,531	575	191	182	182	181	180	179	187	287	790	1,499
Long Term												
Full Simulation Period[b]	2,729	2,324	1,361	557	262	223	249	358	565	806	1,504	2,271
Water Year Types[c]												
Wet (32%)	2,196	1,742	472	225	184	183	186	200	273	312	854	1,516
Above Normal (16%)	3,143	2,217	1,153	305	191	183	192	217	353	359	879	1,730
Below Normal (13%)	2,323	1,808	1,467	634	254	225	248	324	523	504	1,064	1,989
Dry (24%)	2,860	2,688	1,906	737	286	221	252	350	578	1,016	2,073	2,822
Critical (15%)	3,587	3,566	2,509	1,181	477	354	444	895	1,444	2,286	3,046	3,837

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2	-145	-10	192	2	-8	-9	37	-50	76	38	23
20%	28	-18	841	182	-5	-2	14	14	-40	40	13	79
30%	-60	134	1,170	196	-1	0	14	4	-45	45	-47	-56
40%	-181	909	774	57	1	-1	5	37	-33	-81	-49	-76
50%	227	1,838	668	7	-1	-1	0	32	-38	9	23	235
60%	1,757	1,618	302	1	-1	-1	-1	10	-24	3	4	1,211
70%	1,919	1,513	103	0	0	0	-3	-4	5	17	15	1,355
80%	1,666	1,243	53	-2	0	0	-3	-4	3	5	24	1,278
90%	1,261	346	9	0	0	0	-1	-1	-1	2	22	1,186
Long Term												
Full Simulation Period[b]	718	753	379	85	3	-1	3	16	-22	26	13	563
Water Year Types[c]												
Wet (32%)	923	981	157	11	0	0	0	8	-4	9	9	1,198
Above Normal (16%)	506	554	422	35	-2	-1	-1	9	-28	5	34	1,177
Below Normal (13%)	976	734	571	162	5	1	6	25	-24	-2	-32	-181
Dry (24%)	707	887	574	128	-4	-2	4	12	-25	6	10	55
Critical (15%)	283	273	311	156	29	-3	7	39	-47	147	48	48

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.2.3. Sacramento River at Emmaton Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,353	4,269	2,750	963	348	313	382	596	871	1,756	2,920	3,735
20%	3,424	3,010	1,654	722	247	241	278	424	696	1,081	2,329	3,071
30%	3,256	2,642	883	543	224	199	232	370	650	906	1,977	2,813
40%	3,124	1,695	751	348	206	194	207	252	559	629	1,326	2,325
50%	2,357	562	564	307	196	190	200	217	451	469	1,044	1,702
60%	641	463	480	221	189	187	191	207	375	366	972	554
70%	308	258	247	195	184	183	189	197	292	330	903	347
80%	291	241	207	189	183	182	185	186	231	316	804	329
90%	270	229	182	182	182	181	181	180	188	285	768	313
Long Term												
Full Simulation Period[b]	2,011	1,571	982	473	259	224	246	342	587	779	1,491	1,709
Water Year Types[c]												
Wet (32%)	1,272	761	314	214	184	183	187	192	276	303	845	317
Above Normal (16%)	2,637	1,663	731	271	193	184	192	208	381	354	845	552
Below Normal (13%)	1,347	1,075	895	471	249	224	242	298	547	506	1,096	2,170
Dry (24%)	2,153	1,802	1,332	609	290	222	248	338	604	1,010	2,063	2,766
Critical (15%)	3,304	3,293	2,198	1,024	447	357	436	856	1,491	2,139	2,998	3,789

Alternative 5

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,359	4,137	2,757	961	362	313	326	528	845	1,664	2,721	3,631
20%	3,466	3,015	1,604	723	251	242	267	382	683	1,034	2,303	3,113
30%	3,215	2,659	892	544	223	199	224	319	637	874	1,921	2,792
40%	3,112	1,684	754	348	206	194	206	250	528	623	1,276	2,289
50%	2,357	552	563	307	196	190	200	218	449	470	1,050	1,622
60%	641	463	480	220	189	187	192	207	378	367	966	557
70%	309	258	247	195	185	183	189	197	292	332	901	349
80%	292	240	207	188	183	182	185	187	231	315	800	329
90%	270	228	182	182	182	181	181	180	188	281	762	312
Long Term												
Full Simulation Period[b]	2,004	1,565	987	483	264	224	239	318	555	757	1,457	1,699
Water Year Types[c]												
Wet (32%)	1,271	766	315	214	184	183	187	192	278	300	832	317
Above Normal (16%)	2,611	1,640	723	271	193	184	192	210	382	354	847	555
Below Normal (13%)	1,350	1,079	897	472	249	224	235	286	546	504	1,079	2,118
Dry (24%)	2,153	1,797	1,343	616	292	222	236	324	585	983	2,017	2,758
Critical (15%)	3,288	3,275	2,218	1,082	484	357	412	729	1,305	2,037	2,882	3,781

Alternative 5 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	-132	7	-2	14	1	-56	-68	-26	-92	-199	-105
20%	42	6	-51	1	4	0	-11	-43	-13	-46	-27	42
30%	-41	17	10	1	-1	0	-8	-50	-13	-32	-55	-21
40%	-13	-11	2	0	0	0	-1	-2	-30	-6	-50	-36
50%	0	-10	-1	0	0	0	0	1	-2	2	7	-80
60%	0	-1	0	0	0	0	1	0	3	1	-6	3
70%	1	0	0	0	0	0	0	0	0	2	-2	2
80%	1	-1	1	-1	0	0	0	1	0	0	-4	0
90%	0	-1	0	0	0	0	0	0	0	-3	-6	-1
Long Term												
Full Simulation Period[b]	-7	-5	4	10	6	0	-7	-24	-31	-23	-34	-10
Water Year Types[c]												
Wet (32%)	-1	4	0	0	0	0	0	-1	1	-3	-13	0
Above Normal (16%)	-26	-23	-8	0	0	0	0	1	1	0	2	2
Below Normal (13%)	3	5	1	1	0	0	-7	-12	-1	-2	-17	-53
Dry (24%)	0	-4	10	7	2	0	-12	-14	-19	-27	-46	-9
Critical (15%)	-17	-18	20	58	37	1	-25	-127	-186	-102	-116	-7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.2.4. Sacramento River at Emmaton Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4,287	3,938	2,758	1,462	511	368	410	605	835	1,851	2,940	3,740
20%	3,250	2,909	2,563	1,181	315	251	296	428	647	1,260	2,289	3,079
30%	3,121	2,689	2,067	852	251	201	255	367	513	966	2,055	2,842
40%	2,822	2,612	1,758	488	216	197	214	288	417	608	1,446	2,287
50%	2,597	2,289	1,235	371	199	189	200	233	367	490	1,199	1,978
60%	2,402	2,026	735	250	188	187	190	212	320	396	1,018	1,849
70%	2,147	1,849	388	201	185	183	185	191	288	365	959	1,749
80%	1,936	1,517	271	188	183	181	182	182	225	321	896	1,630
90%	1,544	474	192	182	182	180	180	179	188	289	803	1,482
Long Term												
Full Simulation Period[b]	2,653	2,272	1,393	621	288	236	255	355	531	834	1,549	2,292
Water Year Types[c]												
Wet (32%)	2,188	1,713	478	235	184	183	187	196	255	320	888	1,513
Above Normal (16%)	2,981	2,205	1,247	362	199	184	192	215	315	368	929	1,744
Below Normal (13%)	2,203	1,754	1,466	813	336	245	256	308	387	537	1,275	2,227
Dry (24%)	2,831	2,625	1,927	865	332	229	259	344	549	1,091	2,089	2,798
Critical (15%)	3,421	3,444	2,575	1,156	494	408	460	914	1,464	2,297	3,001	3,791

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4,353	4,269	2,750	963	348	313	382	596	871	1,756	2,920	3,735
20%	3,424	3,010	1,654	722	247	241	278	424	696	1,081	2,329	3,071
30%	3,256	2,642	883	543	224	199	232	370	650	906	1,977	2,813
40%	3,124	1,695	751	348	206	194	207	252	559	629	1,326	2,325
50%	2,357	562	564	307	196	190	200	217	451	469	1,044	1,702
60%	641	463	480	221	189	187	191	207	375	366	972	554
70%	308	258	247	195	184	183	189	197	292	330	903	347
80%	291	241	207	189	183	182	185	186	231	316	804	329
90%	270	229	182	182	182	181	181	180	188	285	768	313
Long Term												
Full Simulation Period[b]	2,011	1,571	982	473	259	224	246	342	587	779	1,491	1,709
Water Year Types[c]												
Wet (32%)	1,272	761	314	214	184	183	187	192	276	303	845	317
Above Normal (16%)	2,637	1,663	731	271	193	184	192	208	381	354	845	552
Below Normal (13%)	1,347	1,075	895	471	249	224	242	298	547	506	1,096	2,170
Dry (24%)	2,153	1,802	1,332	609	290	222	248	338	604	1,010	2,063	2,766
Critical (15%)	3,304	3,293	2,198	1,024	447	357	436	856	1,491	2,139	2,998	3,789

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	66	330	-9	-499	-162	-56	-28	-9	37	-95	-20	-5
20%	174	101	-909	-459	-68	-9	-18	-4	49	-180	40	-8
30%	135	-47	-1,184	-308	-28	-3	-23	3	137	-60	-79	-29
40%	303	-918	-1,007	-140	-9	-3	-8	-35	142	21	-120	37
50%	-240	-1,727	-671	-63	-3	1	0	-16	84	-21	-155	-276
60%	-1,761	-1,562	-255	-29	2	0	1	-5	54	-30	-46	-1,295
70%	-1,839	-1,591	-141	-6	0	0	4	5	5	-35	-56	-1,402
80%	-1,646	-1,276	-64	1	0	0	2	4	6	-5	-92	-1,301
90%	-1,274	-245	-10	0	0	0	1	1	0	-4	-36	-1,169
Long Term												
Full Simulation Period[b]	-642	-702	-410	-148	-29	-12	-8	-13	56	-55	-58	-584
Water Year Types[c]												
Wet (32%)	-916	-952	-164	-21	0	0	0	-4	22	-18	-43	-1,195
Above Normal (16%)	-344	-542	-515	-91	-6	0	0	-7	66	-14	-84	-1,192
Below Normal (13%)	-856	-680	-571	-342	-87	-21	-14	-9	159	-31	-179	-57
Dry (24%)	-678	-823	-594	-256	-41	-7	-12	-6	55	-81	-27	-31
Critical (15%)	-116	-150	-377	-132	-47	-52	-24	-58	26	-158	-3	-3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.2.5. Sacramento River at Emmaton Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4,287	3,938	2,758	1,462	511	368	410	605	835	1,851	2,940	3,740
20%	3,250	2,909	2,563	1,181	315	251	296	428	647	1,260	2,289	3,079
30%	3,121	2,689	2,067	852	251	201	255	367	513	966	2,055	2,842
40%	2,822	2,612	1,758	488	216	197	214	288	417	608	1,446	2,287
50%	2,597	2,289	1,235	371	199	189	200	233	367	490	1,199	1,978
60%	2,402	2,026	735	250	188	187	190	212	320	396	1,018	1,849
70%	2,147	1,849	388	201	185	183	185	191	288	365	959	1,749
80%	1,936	1,517	271	188	183	181	182	182	225	321	896	1,630
90%	1,544	474	192	182	182	180	180	179	188	289	803	1,482
Long Term												
Full Simulation Period[b]	2,653	2,272	1,393	621	288	236	255	355	531	834	1,549	2,292
Water Year Types[c]												
Wet (32%)	2,188	1,713	478	235	184	183	187	196	255	320	888	1,513
Above Normal (16%)	2,981	2,205	1,247	362	199	184	192	215	315	368	929	1,744
Below Normal (13%)	2,203	1,754	1,466	813	336	245	256	308	387	537	1,275	2,227
Dry (24%)	2,831	2,625	1,927	865	332	229	259	344	549	1,091	2,089	2,798
Critical (15%)	3,421	3,444	2,575	1,156	494	408	460	914	1,464	2,297	3,001	3,791

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4,351	4,124	2,740	1,155	351	305	373	633	821	1,832	2,958	3,758
20%	3,452	2,991	2,496	904	243	239	292	438	656	1,120	2,342	3,150
30%	3,196	2,776	2,053	739	222	198	246	374	605	951	1,930	2,757
40%	2,943	2,604	1,525	405	207	193	211	290	526	548	1,277	2,249
50%	2,584	2,400	1,232	314	195	189	199	249	413	478	1,067	1,938
60%	2,398	2,082	782	222	188	186	190	217	351	370	976	1,765
70%	2,227	1,772	349	196	184	183	186	193	297	348	918	1,702
80%	1,956	1,484	260	187	182	181	182	181	234	321	828	1,606
90%	1,531	575	191	182	182	181	180	179	187	287	790	1,499
Long Term												
Full Simulation Period[b]	2,729	2,324	1,361	557	262	223	249	358	565	806	1,504	2,271
Water Year Types[c]												
Wet (32%)	2,196	1,742	472	225	184	183	186	200	273	312	854	1,516
Above Normal (16%)	3,143	2,217	1,153	305	191	183	192	217	353	359	879	1,730
Below Normal (13%)	2,323	1,808	1,467	634	254	225	248	324	523	504	1,064	1,989
Dry (24%)	2,860	2,688	1,906	737	286	221	252	350	578	1,016	2,073	2,822
Critical (15%)	3,587	3,566	2,509	1,181	477	354	444	895	1,444	2,286	3,046	3,837

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	64	185	-19	-307	-160	-63	-36	28	-13	-19	18	18
20%	202	82	-67	-276	-72	-12	-4	10	9	-140	53	71
30%	75	86	-14	-112	-29	-3	-8	7	92	-16	-125	-85
40%	122	-9	-234	-83	-9	-4	-3	2	109	-61	-169	-39
50%	-13	111	-3	-56	-4	-1	0	16	47	-11	-132	-41
60%	-4	56	47	-28	0	0	0	5	30	-27	-42	-84
70%	80	-77	-38	-6	0	0	0	2	9	-17	-41	-47
80%	20	-33	-11	0	0	0	0	0	9	0	-68	-23
90%	-13	100	-1	0	0	0	0	0	-1	-2	-13	17
Long Term												
Full Simulation Period[b]	75	52	-31	-64	-26	-13	-6	3	34	-28	-44	-21
Water Year Types[c]												
Wet (32%)	7	29	-7	-10	0	0	0	4	18	-9	-34	3
Above Normal (16%)	162	12	-93	-56	-8	0	0	2	37	-9	-50	-14
Below Normal (13%)	120	54	1	-179	-82	-20	-8	16	135	-33	-211	-238
Dry (24%)	29	64	-20	-128	-46	-9	-7	6	29	-75	-16	24
Critical (15%)	166	122	-66	25	-17	-54	-17	-18	-20	-11	44	45

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.2.6. Sacramento River at Emmaton Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,287	3,938	2,758	1,462	511	368	410	605	835	1,851	2,940	3,740
20%	3,250	2,909	2,563	1,181	315	251	296	428	647	1,260	2,289	3,079
30%	3,121	2,689	2,067	852	251	201	255	367	513	966	2,055	2,842
40%	2,822	2,612	1,758	488	216	197	214	288	417	608	1,446	2,287
50%	2,597	2,289	1,235	371	199	189	200	233	367	490	1,199	1,978
60%	2,402	2,026	735	250	188	187	190	212	320	396	1,018	1,849
70%	2,147	1,849	388	201	185	183	185	191	288	365	959	1,749
80%	1,936	1,517	271	188	183	181	182	182	225	321	896	1,630
90%	1,544	474	192	182	182	180	180	179	188	289	803	1,482
Long Term												
Full Simulation Period[b]	2,653	2,272	1,393	621	288	236	255	355	531	834	1,549	2,292
Water Year Types[c]												
Wet (32%)	2,188	1,713	478	235	184	183	187	196	255	320	888	1,513
Above Normal (16%)	2,981	2,205	1,247	362	199	184	192	215	315	368	929	1,744
Below Normal (13%)	2,203	1,754	1,466	813	336	245	256	308	387	537	1,275	2,227
Dry (24%)	2,831	2,625	1,927	865	332	229	259	344	549	1,091	2,089	2,798
Critical (15%)	3,421	3,444	2,575	1,156	494	408	460	914	1,464	2,297	3,001	3,791

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,359	4,137	2,757	961	362	313	326	528	845	1,664	2,721	3,631
20%	3,466	3,015	1,604	723	251	242	267	382	683	1,034	2,303	3,113
30%	3,215	2,659	892	544	223	199	224	319	637	874	1,921	2,792
40%	3,112	1,684	754	348	206	194	206	250	528	623	1,276	2,289
50%	2,357	552	563	307	196	190	200	218	449	470	1,050	1,622
60%	641	463	480	220	189	187	192	207	378	367	966	557
70%	309	258	247	195	185	183	189	197	292	332	901	349
80%	292	240	207	188	183	182	185	187	231	315	800	329
90%	270	228	182	182	182	181	181	180	188	281	762	312
Long Term												
Full Simulation Period[b]	2,004	1,565	987	483	264	224	239	318	555	757	1,457	1,699
Water Year Types[c]												
Wet (32%)	1,271	766	315	214	184	183	187	192	278	300	832	317
Above Normal (16%)	2,611	1,640	723	271	193	184	192	210	382	354	847	555
Below Normal (13%)	1,350	1,079	897	472	249	224	235	286	546	504	1,079	2,118
Dry (24%)	2,153	1,797	1,343	616	292	222	236	324	585	983	2,017	2,758
Critical (15%)	3,288	3,275	2,218	1,082	484	357	412	729	1,305	2,037	2,882	3,781

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	72	198	-1	-501	-149	-55	-84	-76	11	-187	-219	-110
20%	216	106	-959	-457	-64	-9	-29	-46	36	-226	14	34
30%	94	-30	-1,175	-308	-28	-2	-31	-48	124	-92	-134	-50
40%	290	-929	-1,005	-140	-9	-3	-8	-37	112	15	-170	1
50%	-240	-1,738	-671	-63	-3	1	0	-14	83	-19	-148	-356
60%	-1,761	-1,563	-255	-30	2	0	2	-4	58	-29	-51	-1,292
70%	-1,838	-1,591	-141	-6	0	0	4	6	5	-33	-58	-1,400
80%	-1,644	-1,277	-64	0	0	0	3	5	6	-5	-96	-1,301
90%	-1,274	-247	-10	0	0	0	1	1	0	-8	-41	-1,170
Long Term												
Full Simulation Period[b]	-649	-707	-406	-138	-24	-12	-15	-37	24	-77	-92	-593
Water Year Types[c]												
Wet (32%)	-917	-948	-163	-21	0	0	0	-5	23	-20	-56	-1,196
Above Normal (16%)	-370	-565	-523	-91	-6	0	1	-5	67	-14	-82	-1,189
Below Normal (13%)	-853	-675	-569	-341	-87	-21	-21	-22	158	-33	-196	-110
Dry (24%)	-678	-827	-584	-249	-39	-7	-23	-20	36	-108	-73	-40
Critical (15%)	-133	-168	-357	-74	-10	-51	-49	-185	-159	-260	-120	-10

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

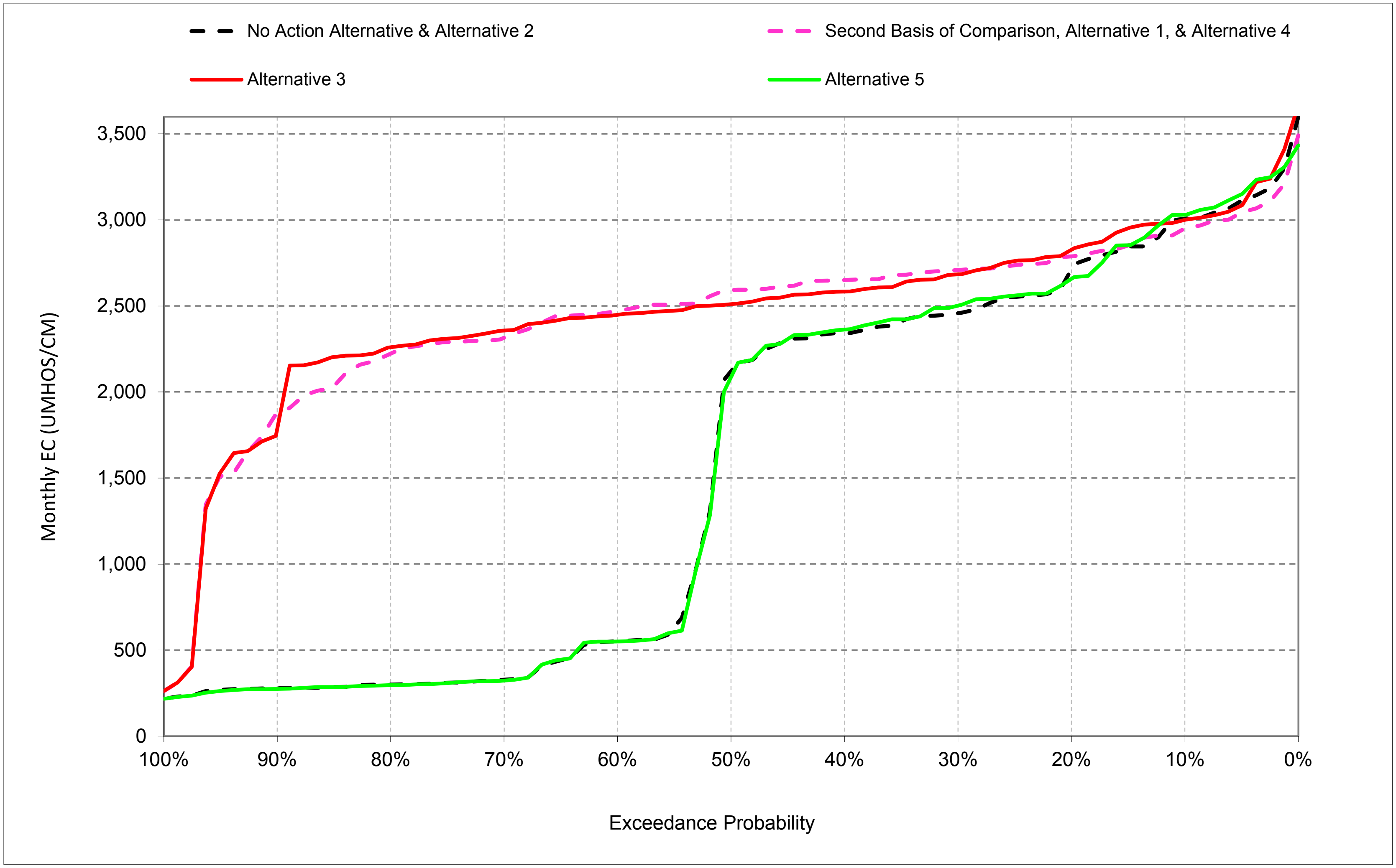
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

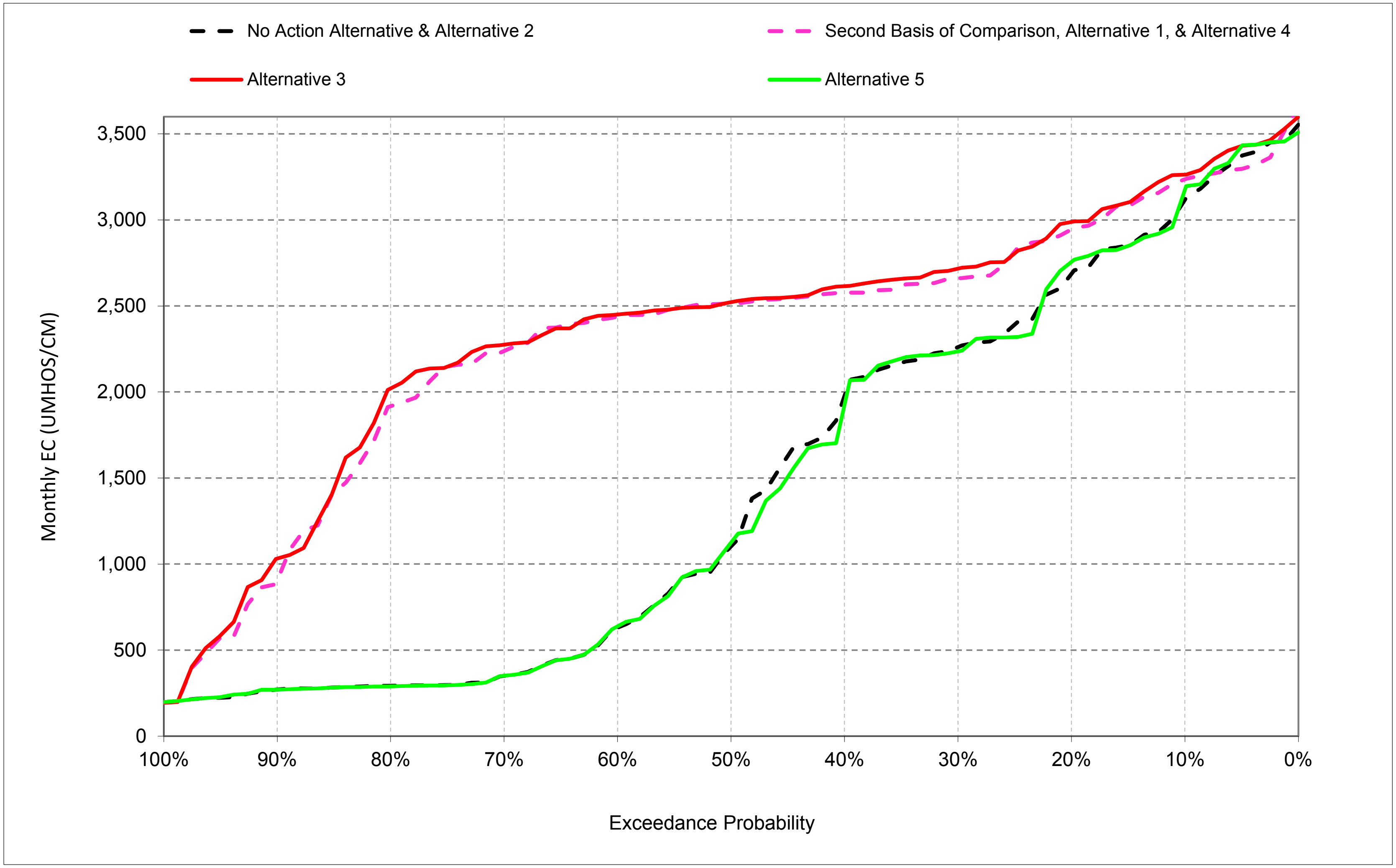
B.3. San Joaquin River at Jersey Point Salinity

Figure 6E.B.3.1. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, October



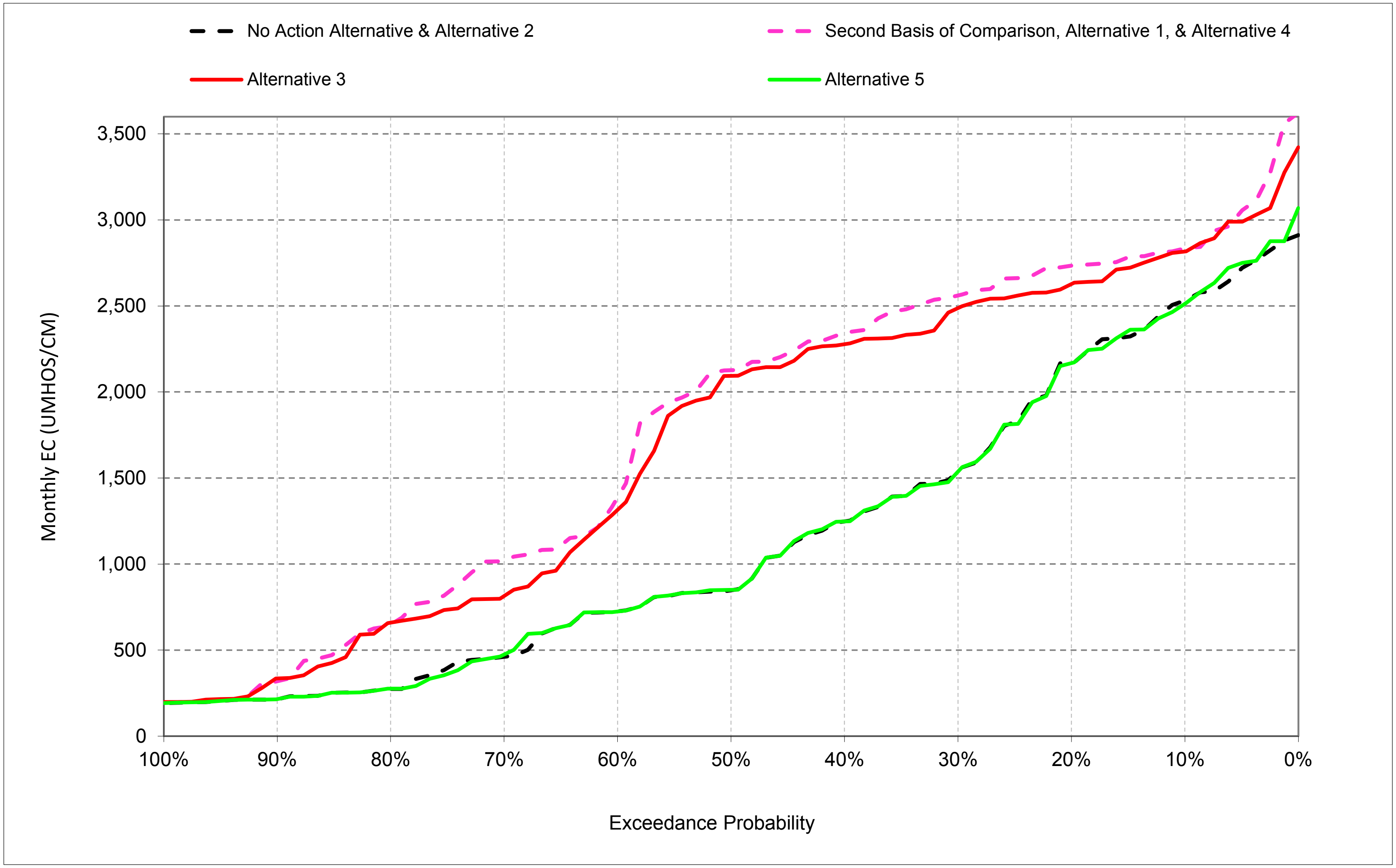
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.2. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, November



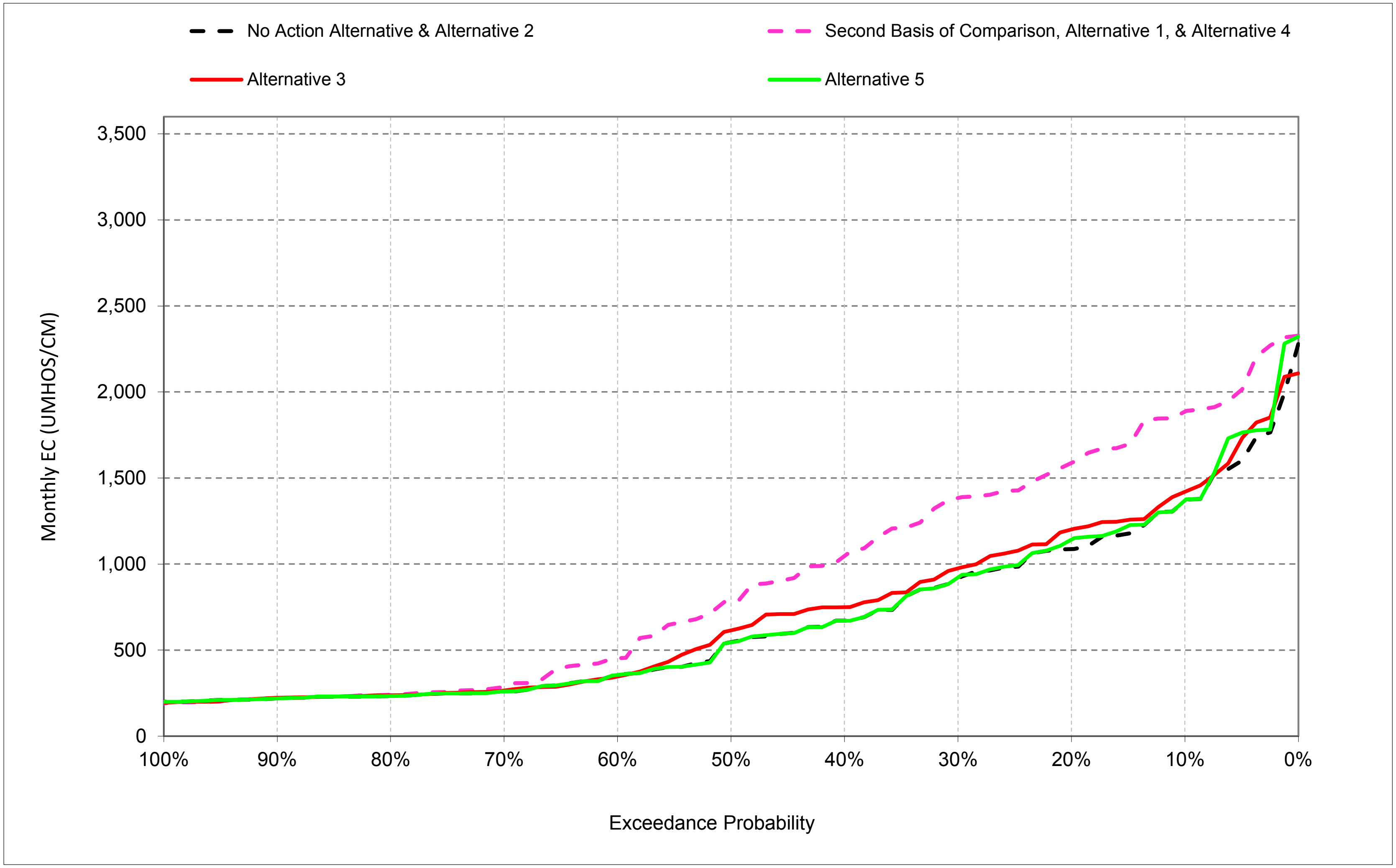
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.3. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, December



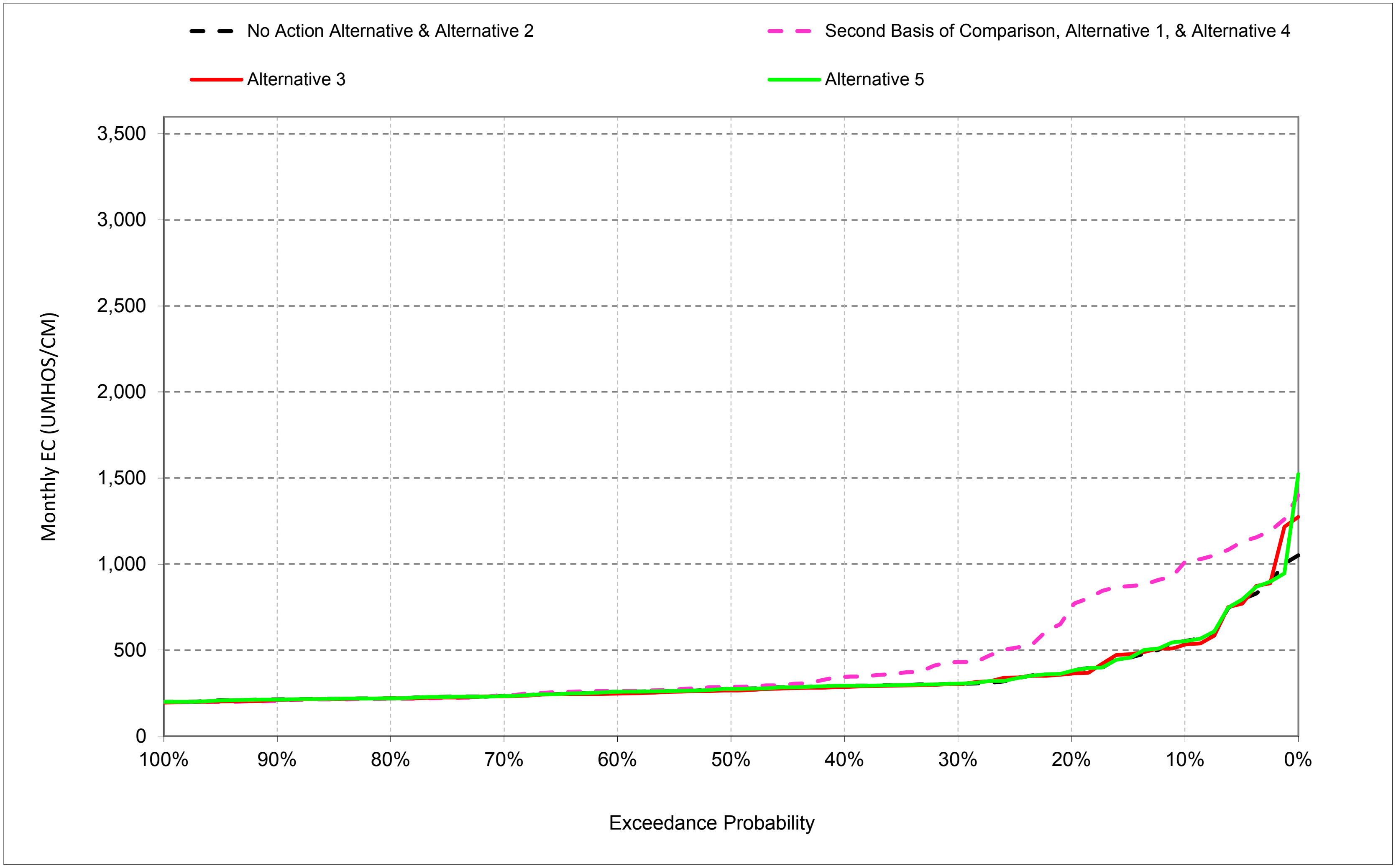
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.4. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, January



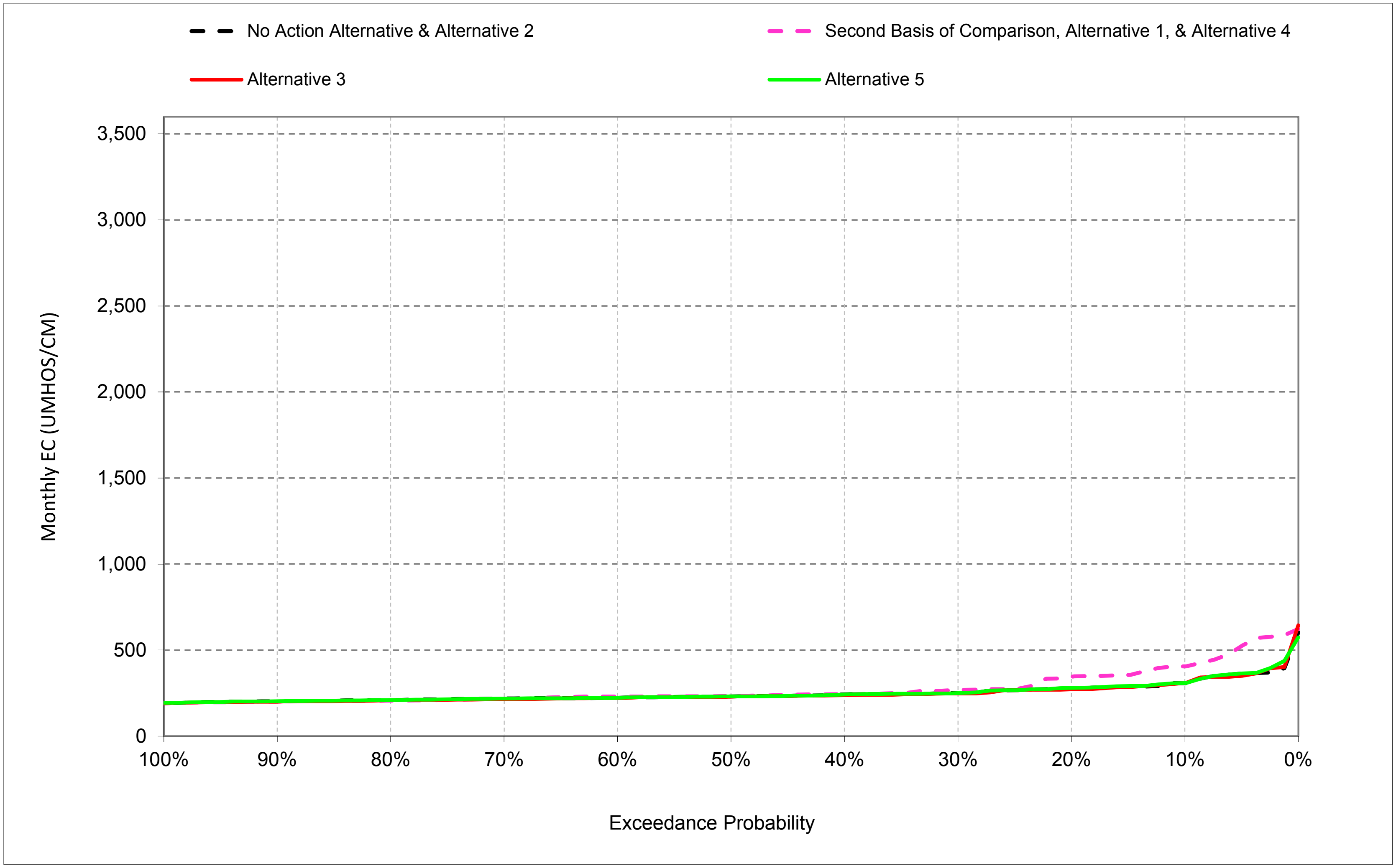
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.5. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, February



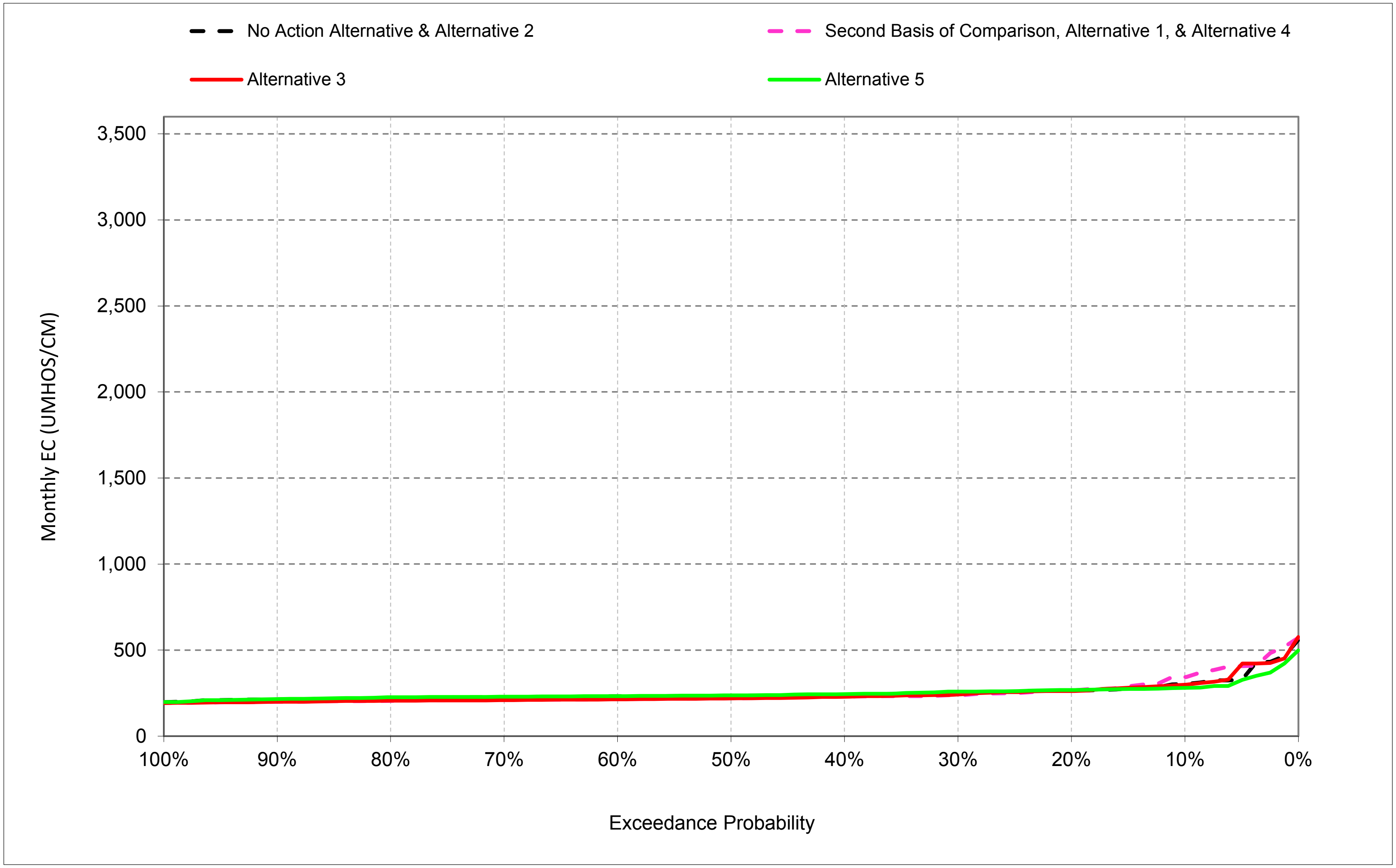
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.6. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, March



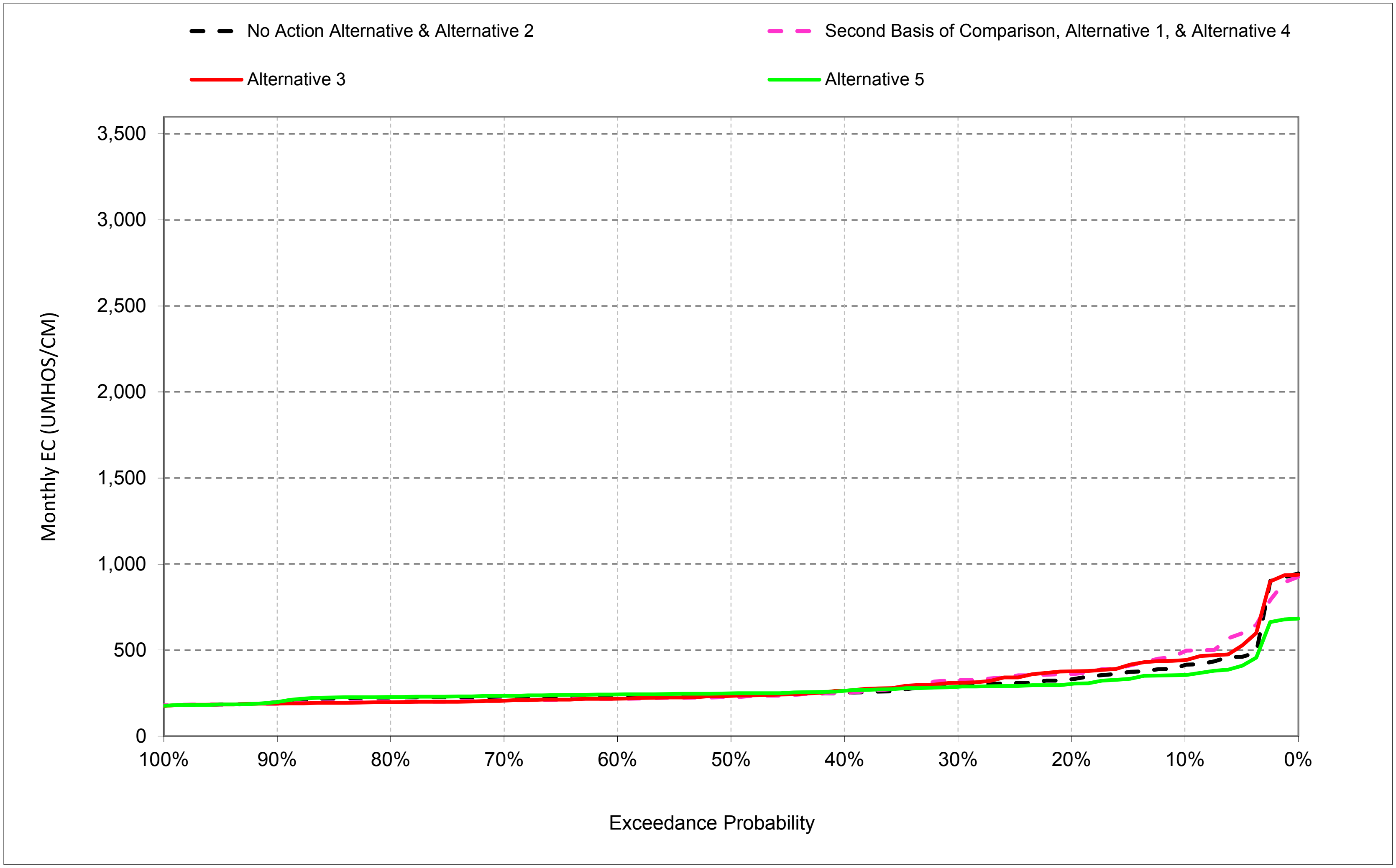
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.7. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, April



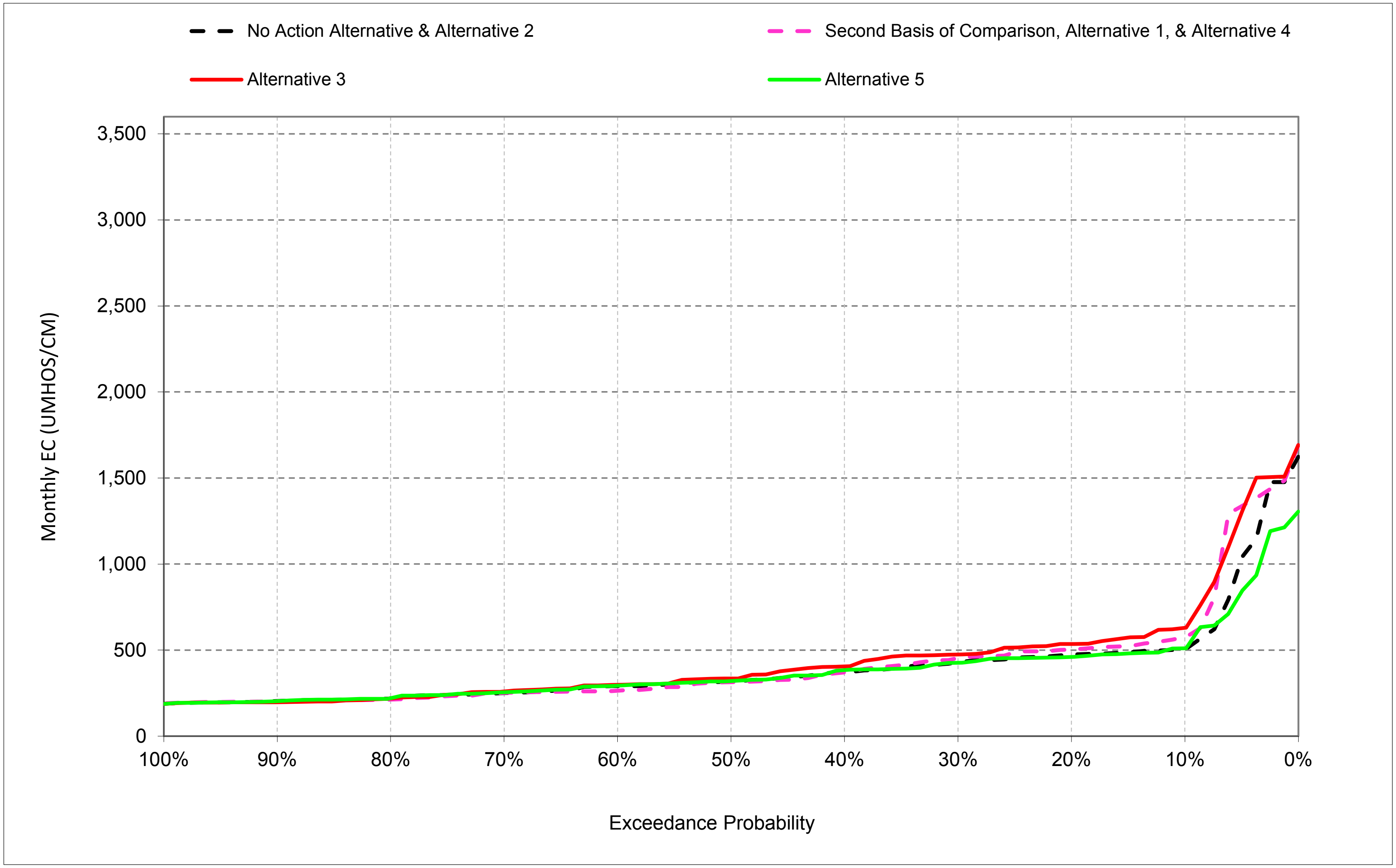
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.8. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, May



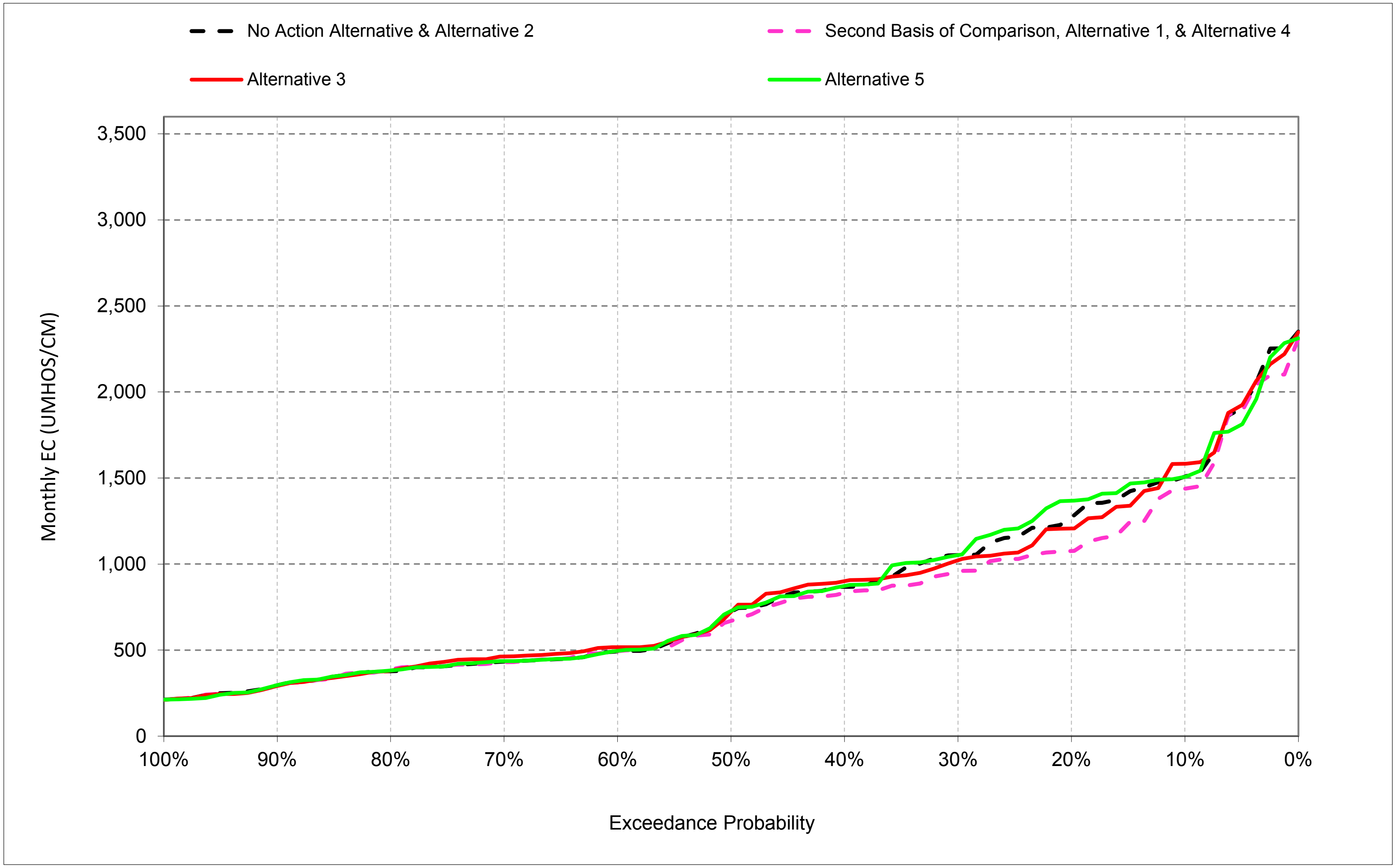
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.9. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, June



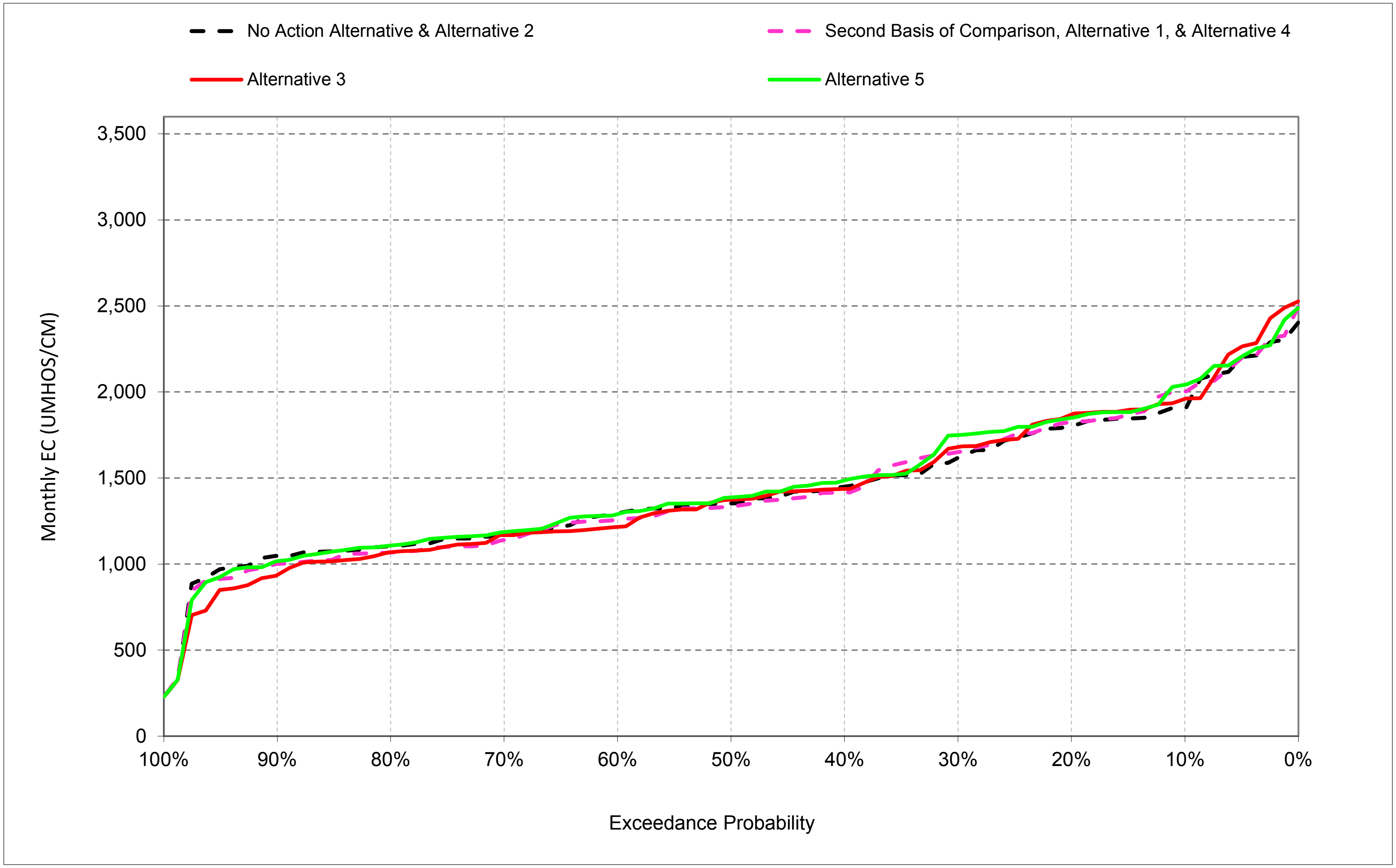
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.10. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, July



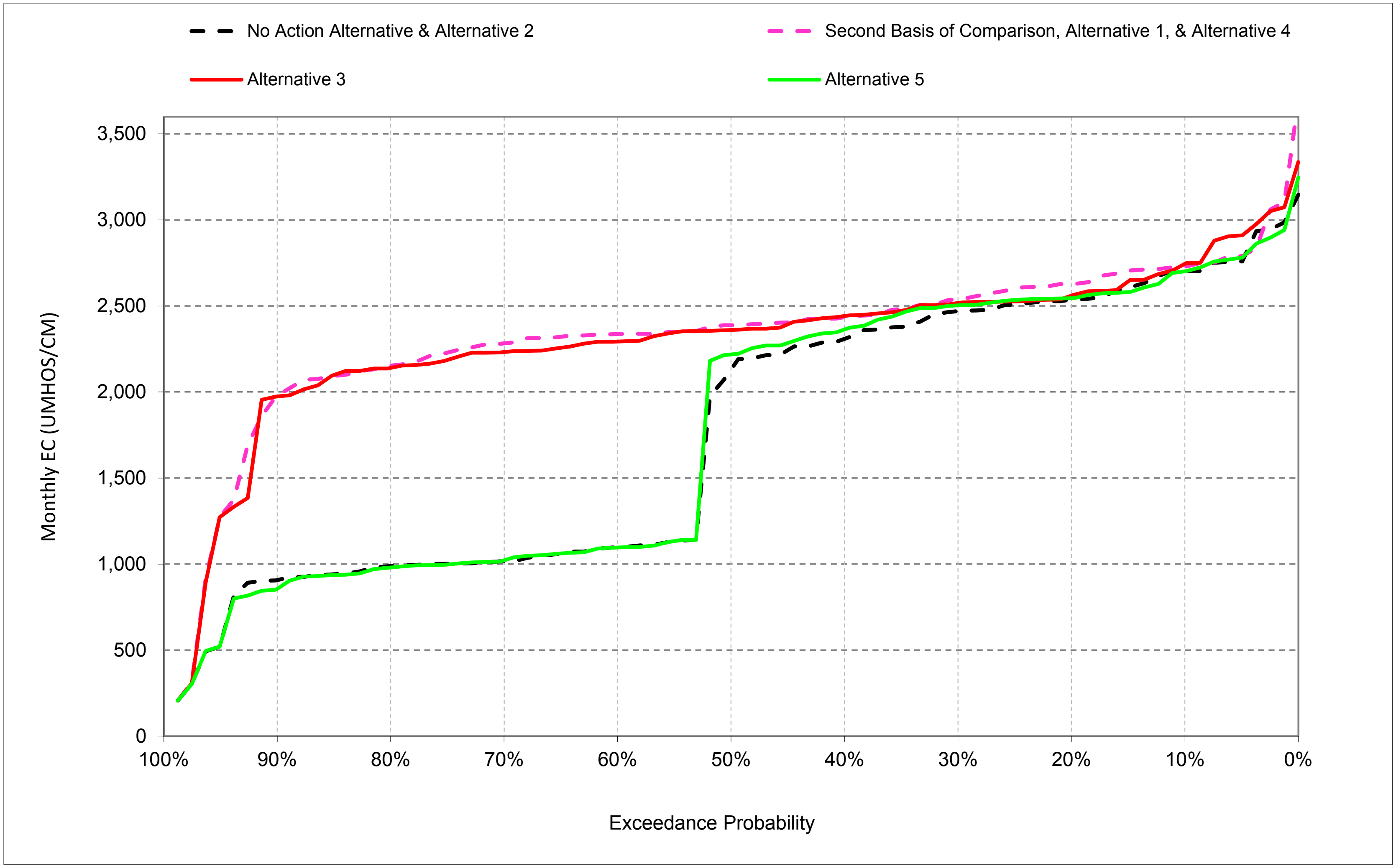
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.11. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.3.12. San Joaquin River at Jersey Point Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.3.1. San Joaquin River at Jersey Point Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,007	3,116	2,532	1,369	552	308	303	413	508	1,509	1,909	2,703
20%	2,714	2,686	2,171	1,087	379	280	265	330	474	1,272	1,802	2,537
30%	2,458	2,260	1,540	915	304	251	253	294	429	1,053	1,617	2,470
40%	2,342	1,975	1,248	671	293	242	242	252	373	867	1,450	2,309
50%	2,121	1,104	848	546	275	231	234	243	317	724	1,353	2,131
60%	551	631	725	355	258	223	231	238	290	492	1,293	1,097
70%	328	350	461	259	233	218	226	228	250	433	1,167	1,016
80%	299	293	274	233	219	210	220	225	219	377	1,104	995
90%	278	270	214	219	213	202	214	198	204	295	1,047	924
Long Term												
Full Simulation Period[b]	1,547	1,452	1,168	674	334	249	253	292	398	833	1,429	1,762
Water Year Types[c]												
Wet (32%)	1,075	917	488	284	236	220	223	214	238	352	1,085	906
Above Normal (16%)	2,065	1,629	1,061	461	253	218	232	238	302	462	1,168	1,023
Below Normal (13%)	1,065	1,117	1,155	696	330	247	249	275	373	793	1,421	2,422
Dry (24%)	1,617	1,634	1,576	950	395	260	249	291	407	1,251	1,669	2,464
Critical (15%)	2,335	2,424	2,088	1,270	538	332	348	541	856	1,617	2,060	2,643

Alternative 1

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,951	3,235	2,834	1,886	1,012	405	344	494	576	1,438	2,003	2,729
20%	2,789	2,945	2,734	1,587	747	345	266	361	503	1,075	1,825	2,628
30%	2,708	2,660	2,560	1,383	430	268	238	324	454	955	1,650	2,539
40%	2,651	2,577	2,340	1,047	344	244	230	252	370	833	1,416	2,435
50%	2,592	2,514	2,127	782	286	233	220	227	313	670	1,335	2,388
60%	2,471	2,437	1,386	452	262	230	215	218	263	494	1,258	2,336
70%	2,315	2,238	1,023	290	238	215	212	208	252	429	1,139	2,283
80%	2,222	1,917	648	240	217	207	205	200	213	388	1,067	2,162
90%	1,874	903	319	221	204	200	199	189	202	292	1,001	2,028
Long Term												
Full Simulation Period[b]	2,438	2,323	1,788	916	442	275	249	298	418	785	1,422	2,337
Water Year Types[c]												
Wet (32%)	2,232	2,126	939	330	234	220	211	203	229	350	1,034	1,951
Above Normal (16%)	2,643	2,234	1,760	746	307	218	209	219	287	463	1,159	2,348
Below Normal (13%)	2,326	2,133	1,944	1,320	577	293	248	298	394	802	1,409	2,421
Dry (24%)	2,485	2,483	2,323	1,276	558	290	247	308	443	1,079	1,696	2,569
Critical (15%)	2,688	2,756	2,623	1,400	725	416	378	574	954	1,571	2,104	2,696

Alternative 1 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-56	119	302	517	460	98	40	81	68	-71	94	26
20%	74	259	562	500	368	64	1	31	29	-197	23	91
30%	251	400	1,021	468	126	17	-15	31	25	-97	34	68
40%	308	601	1,092	375	52	2	-12	0	-2	-34	-34	126
50%	471	1,410	1,279	236	11	2	-14	-17	-4	-54	-18	257
60%	1,920	1,806	662	96	5	7	-15	-21	-27	2	-35	1,239
70%	1,987	1,888	562	31	5	-3	-14	-20	2	-3	-27	1,267
80%	1,923	1,624	374	8	-2	-3	-14	-25	-6	10	-37	1,168
90%	1,595	633	104	1	-9	-2	-15	-9	-1	-3	-46	1,104
Long Term												
Full Simulation Period[b]	891	871	620	242	108	26	-4	6	20	-48	-6	574
Water Year Types[c]												
Wet (32%)	1,157	1,209	450	46	-2	0	-12	-11	-9	-2	-51	1,044
Above Normal (16%)	577	605	699	285	54	0	-23	-19	-15	1	-10	1,325
Below Normal (13%)	1,261	1,016	789	624	247	45	-1	23	21	9	-12	-1
Dry (24%)	867	849	747	326	163	31	-2	18	35	-172	26	105
Critical (15%)	353	332	536	130	187	84	30	33	98	-47	44	54

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.3.2. San Joaquin River at Jersey Point Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,007	3,116	2,532	1,369	552	308	303	413	508	1,509	1,909	2,703
20%	2,714	2,686	2,171	1,087	379	280	265	330	474	1,272	1,802	2,537
30%	2,458	2,260	1,540	915	304	251	253	294	429	1,053	1,617	2,470
40%	2,342	1,975	1,248	671	293	242	242	252	373	867	1,450	2,309
50%	2,121	1,104	848	546	275	231	234	243	317	724	1,353	2,131
60%	551	631	725	355	258	223	231	238	290	492	1,293	1,097
70%	328	350	461	259	233	218	226	228	250	433	1,167	1,016
80%	299	293	274	233	219	210	220	225	219	377	1,104	995
90%	278	270	214	219	213	202	214	198	204	295	1,047	924
Long Term												
Full Simulation Period[b]	1,547	1,452	1,168	674	334	249	253	292	398	833	1,429	1,762
Water Year Types[c]												
Wet (32%)	1,075	917	488	284	236	220	223	214	238	352	1,085	906
Above Normal (16%)	2,065	1,629	1,061	461	253	218	232	238	302	462	1,168	1,023
Below Normal (13%)	1,065	1,117	1,155	696	330	247	249	275	373	793	1,421	2,422
Dry (24%)	1,617	1,634	1,576	950	395	260	249	291	407	1,251	1,669	2,464
Critical (15%)	2,335	2,424	2,088	1,270	538	332	348	541	856	1,617	2,060	2,643

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,000	3,264	2,817	1,420	531	309	299	442	629	1,583	1,959	2,745
20%	2,826	2,989	2,627	1,201	363	272	262	376	536	1,207	1,869	2,559
30%	2,684	2,717	2,487	974	302	248	242	309	474	1,021	1,680	2,517
40%	2,583	2,615	2,277	750	286	238	228	264	405	901	1,436	2,442
50%	2,510	2,522	2,094	615	265	229	219	234	335	722	1,374	2,360
60%	2,448	2,450	1,315	347	246	221	214	218	298	516	1,216	2,297
70%	2,357	2,275	814	265	231	214	209	206	260	463	1,168	2,238
80%	2,260	2,021	659	237	220	209	205	197	218	380	1,069	2,154
90%	1,786	1,032	335	223	210	201	199	189	197	291	937	1,984
Long Term												
Full Simulation Period[b]	2,455	2,358	1,709	713	337	248	243	296	442	831	1,420	2,311
Water Year Types[c]												
Wet (32%)	2,213	2,168	893	303	233	218	209	203	247	360	996	1,901
Above Normal (16%)	2,755	2,312	1,652	532	250	213	209	219	309	478	1,156	2,328
Below Normal (13%)	2,323	2,126	1,949	863	348	247	242	294	443	854	1,458	2,437
Dry (24%)	2,504	2,538	2,278	964	386	258	243	306	477	1,199	1,702	2,528
Critical (15%)	2,694	2,737	2,370	1,243	561	334	355	567	952	1,597	2,120	2,701

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-7	147	285	51	-21	2	-4	29	121	75	50	42
20%	112	303	456	113	-16	-8	-3	46	62	-66	67	22
30%	226	457	947	59	-2	-3	-11	15	45	-31	63	47
40%	241	640	1,030	78	-7	-4	-14	12	33	34	-14	133
50%	389	1,418	1,246	69	-10	-2	-15	-10	18	-2	21	228
60%	1,897	1,820	591	-8	-11	-1	-17	-21	8	24	-77	1,199
70%	2,029	1,924	353	6	-2	-4	-18	-22	10	30	1	1,222
80%	1,960	1,729	385	4	0	-1	-14	-28	-1	3	-35	1,160
90%	1,507	762	120	4	-2	-2	-15	-9	-7	-4	-111	1,060
Long Term												
Full Simulation Period[b]	908	906	541	39	2	-2	-9	4	44	-2	-9	548
Water Year Types[c]												
Wet (32%)	1,138	1,250	405	19	-3	-2	-14	-11	9	8	-89	995
Above Normal (16%)	689	683	591	71	-3	-4	-23	-18	7	15	-12	1,305
Below Normal (13%)	1,258	1,009	794	168	18	0	-7	19	71	62	37	14
Dry (24%)	887	904	702	14	-9	-2	-6	15	70	-52	32	64
Critical (15%)	359	313	282	-26	24	2	7	26	96	-20	59	58

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.3.3. San Joaquin River at Jersey Point Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,007	3,116	2,532	1,369	552	308	303	413	508	1,509	1,909	2,703
20%	2,714	2,686	2,171	1,087	379	280	265	330	474	1,272	1,802	2,537
30%	2,458	2,260	1,540	915	304	251	253	294	429	1,053	1,617	2,470
40%	2,342	1,975	1,248	671	293	242	242	252	373	867	1,450	2,309
50%	2,121	1,104	848	546	275	231	234	243	317	724	1,353	2,131
60%	551	631	725	355	258	223	231	238	290	492	1,293	1,097
70%	328	350	461	259	233	218	226	228	250	433	1,167	1,016
80%	299	293	274	233	219	210	220	225	219	377	1,104	995
90%	278	270	214	219	213	202	214	198	204	295	1,047	924
Long Term												
Full Simulation Period[b]	1,547	1,452	1,168	674	334	249	253	292	398	833	1,429	1,762
Water Year Types[c]												
Wet (32%)	1,075	917	488	284	236	220	223	214	238	352	1,085	906
Above Normal (16%)	2,065	1,629	1,061	461	253	218	232	238	302	462	1,168	1,023
Below Normal (13%)	1,065	1,117	1,155	696	330	247	249	275	373	793	1,421	2,422
Dry (24%)	1,617	1,634	1,576	950	395	260	249	291	407	1,251	1,669	2,464
Critical (15%)	2,335	2,424	2,088	1,270	538	332	348	541	856	1,617	2,060	2,643

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,030	3,172	2,512	1,369	552	308	281	355	510	1,507	2,042	2,701
20%	2,657	2,756	2,168	1,141	379	280	269	304	460	1,368	1,849	2,544
30%	2,502	2,236	1,537	922	304	250	258	287	426	1,052	1,749	2,503
40%	2,363	1,922	1,248	671	293	242	244	263	383	873	1,485	2,363
50%	2,086	1,124	850	544	274	231	237	248	320	728	1,387	2,218
60%	550	638	724	355	258	223	233	242	293	495	1,290	1,096
70%	323	351	474	259	233	218	229	234	255	435	1,186	1,021
80%	295	289	275	233	219	210	226	227	220	381	1,107	988
90%	274	270	215	219	213	202	216	198	204	297	1,017	906
Long Term												
Full Simulation Period[b]	1,552	1,448	1,171	686	340	250	250	277	383	842	1,453	1,775
Water Year Types[c]												
Wet (32%)	1,078	948	493	284	236	220	223	215	240	352	1,079	898
Above Normal (16%)	2,090	1,576	1,047	460	253	218	233	241	305	465	1,163	1,020
Below Normal (13%)	1,068	1,121	1,152	697	329	247	251	272	375	800	1,423	2,443
Dry (24%)	1,617	1,610	1,593	967	398	260	252	287	409	1,296	1,740	2,503
Critical (15%)	2,333	2,420	2,088	1,321	576	337	320	441	742	1,592	2,129	2,667

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	23	56	-19	1	0	0	-23	-58	2	-1	133	-2
20%	-57	70	-3	54	0	0	4	-27	-14	96	47	8
30%	44	-24	-3	7	0	-1	5	-7	-3	-1	133	33
40%	20	-54	0	-1	0	0	2	11	11	6	35	54
50%	-35	20	2	-1	-1	0	2	5	3	4	35	87
60%	-1	7	0	0	0	0	2	4	3	3	-3	-1
70%	-5	1	12	0	0	0	3	6	5	3	19	5
80%	-4	-4	1	0	0	0	6	3	1	4	4	-7
90%	-4	-1	0	0	0	0	2	0	0	2	-30	-17
Long Term												
Full Simulation Period[b]	5	-5	3	12	6	1	-3	-15	-15	9	25	13
Water Year Types[c]												
Wet (32%)	3	31	4	0	0	0	0	1	2	0	-6	-8
Above Normal (16%)	24	-54	-14	-1	0	0	1	4	3	2	-5	-3
Below Normal (13%)	3	4	-3	1	0	0	2	-3	3	7	2	20
Dry (24%)	0	-23	16	17	3	0	3	-4	1	45	70	40
Critical (15%)	-2	-4	0	51	38	5	-28	-100	-114	-26	69	25

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.3.4. San Joaquin River at Jersey Point Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	2,951	3,235	2,834	1,886	1,012	405	344	494	576	1,438	2,003	2,729
20%	2,789	2,945	2,734	1,587	747	345	266	361	503	1,075	1,825	2,628
30%	2,708	2,660	2,560	1,383	430	268	238	324	454	955	1,650	2,539
40%	2,651	2,577	2,340	1,047	344	244	230	252	370	833	1,416	2,435
50%	2,592	2,514	2,127	782	286	233	220	227	313	670	1,335	2,388
60%	2,471	2,437	1,386	452	262	230	215	218	263	494	1,258	2,336
70%	2,315	2,238	1,023	290	238	215	212	208	252	429	1,139	2,283
80%	2,222	1,917	648	240	217	207	205	200	213	388	1,067	2,162
90%	1,874	903	319	221	204	200	199	189	202	292	1,001	2,028
Long Term												
Full Simulation Period[b]	2,438	2,323	1,788	916	442	275	249	298	418	785	1,422	2,337
Water Year Types[c]												
Wet (32%)	2,232	2,126	939	330	234	220	211	203	229	350	1,034	1,951
Above Normal (16%)	2,643	2,234	1,760	746	307	218	209	219	287	463	1,159	2,348
Below Normal (13%)	2,326	2,133	1,944	1,320	577	293	248	298	394	802	1,409	2,421
Dry (24%)	2,485	2,483	2,323	1,276	558	290	247	308	443	1,079	1,696	2,569
Critical (15%)	2,688	2,756	2,623	1,400	725	416	378	574	954	1,571	2,104	2,696

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	3,007	3,116	2,532	1,369	552	308	303	413	508	1,509	1,909	2,703
20%	2,714	2,686	2,171	1,087	379	280	265	330	474	1,272	1,802	2,537
30%	2,458	2,260	1,540	915	304	251	253	294	429	1,053	1,617	2,470
40%	2,342	1,975	1,248	671	293	242	242	252	373	867	1,450	2,309
50%	2,121	1,104	848	546	275	231	234	243	317	724	1,353	2,131
60%	551	631	725	355	258	223	231	238	290	492	1,293	1,097
70%	328	350	461	259	233	218	226	228	250	433	1,167	1,016
80%	299	293	274	233	219	210	220	225	219	377	1,104	995
90%	278	270	214	219	213	202	214	198	204	295	1,047	924
Long Term												
Full Simulation Period[b]	1,547	1,452	1,168	674	334	249	253	292	398	833	1,429	1,762
Water Year Types[c]												
Wet (32%)	1,075	917	488	284	236	220	223	214	238	352	1,085	906
Above Normal (16%)	2,065	1,629	1,061	461	253	218	232	238	302	462	1,168	1,023
Below Normal (13%)	1,065	1,117	1,155	696	330	247	249	275	373	793	1,421	2,422
Dry (24%)	1,617	1,634	1,576	950	395	260	249	291	407	1,251	1,669	2,464
Critical (15%)	2,335	2,424	2,088	1,270	538	332	348	541	856	1,617	2,060	2,643

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	56	-119	-302	-517	-460	-98	-40	-81	-68	71	-94	-26
20%	-74	-259	-562	-500	-368	-64	-1	-31	-29	197	-23	-91
30%	-251	-400	-1,021	-468	-126	-17	15	-31	-25	97	-34	-68
40%	-308	-601	-1,092	-375	-52	-2	12	0	2	34	34	-126
50%	-471	-1,410	-1,279	-236	-11	-2	14	17	4	54	18	-257
60%	-1,920	-1,806	-662	-96	-5	-7	15	21	27	-2	35	-1,239
70%	-1,987	-1,888	-562	-31	-5	3	14	20	-2	3	27	-1,267
80%	-1,923	-1,624	-374	-8	2	3	14	25	6	-10	37	-1,168
90%	-1,595	-633	-104	-1	9	2	15	9	1	3	46	-1,104
Long Term												
Full Simulation Period[b]	-891	-871	-620	-242	-108	-26	4	-6	-20	48	6	-574
Water Year Types[c]												
Wet (32%)	-1,157	-1,209	-450	-46	2	0	12	11	9	2	51	-1,044
Above Normal (16%)	-577	-605	-699	-285	-54	0	23	19	15	-1	10	-1,325
Below Normal (13%)	-1,261	-1,016	-789	-624	-247	-45	1	-23	-21	-9	12	1
Dry (24%)	-867	-849	-747	-326	-163	-31	2	-18	-35	172	-26	-105
Critical (15%)	-353	-332	-536	-130	-187	-84	-30	-33	-98	47	-44	-54

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.3.5. San Joaquin River at Jersey Point Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	2,951	3,235	2,834	1,886	1,012	405	344	494	576	1,438	2,003	2,729
20%	2,789	2,945	2,734	1,587	747	345	266	361	503	1,075	1,825	2,628
30%	2,708	2,660	2,560	1,383	430	268	238	324	454	955	1,650	2,539
40%	2,651	2,577	2,340	1,047	344	244	230	252	370	833	1,416	2,435
50%	2,592	2,514	2,127	782	286	233	220	227	313	670	1,335	2,388
60%	2,471	2,437	1,386	452	262	230	215	218	263	494	1,258	2,336
70%	2,315	2,238	1,023	290	238	215	212	208	252	429	1,139	2,283
80%	2,222	1,917	648	240	217	207	205	200	213	388	1,067	2,162
90%	1,874	903	319	221	204	200	199	189	202	292	1,001	2,028
Long Term												
Full Simulation Period[b]	2,438	2,323	1,788	916	442	275	249	298	418	785	1,422	2,337
Water Year Types[c]												
Wet (32%)	2,232	2,126	939	330	234	220	211	203	229	350	1,034	1,951
Above Normal (16%)	2,643	2,234	1,760	746	307	218	209	219	287	463	1,159	2,348
Below Normal (13%)	2,326	2,133	1,944	1,320	577	293	248	298	394	802	1,409	2,421
Dry (24%)	2,485	2,483	2,323	1,276	558	290	247	308	443	1,079	1,696	2,569
Critical (15%)	2,688	2,756	2,623	1,400	725	416	378	574	954	1,571	2,104	2,696

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	3,000	3,264	2,817	1,420	531	309	299	442	629	1,583	1,959	2,745
20%	2,826	2,989	2,627	1,201	363	272	262	376	536	1,207	1,869	2,559
30%	2,684	2,717	2,487	974	302	248	242	309	474	1,021	1,680	2,517
40%	2,583	2,615	2,277	750	286	238	228	264	405	901	1,436	2,442
50%	2,510	2,522	2,094	615	265	229	219	234	335	722	1,374	2,360
60%	2,448	2,450	1,315	347	246	221	214	218	298	516	1,216	2,297
70%	2,357	2,275	814	265	231	214	209	206	260	463	1,168	2,238
80%	2,260	2,021	659	237	220	209	205	197	218	380	1,069	2,154
90%	1,786	1,032	335	223	210	201	199	189	197	291	937	1,984
Long Term												
Full Simulation Period[b]	2,455	2,358	1,709	713	337	248	243	296	442	831	1,420	2,311
Water Year Types[c]												
Wet (32%)	2,213	2,168	893	303	233	218	209	203	247	360	996	1,901
Above Normal (16%)	2,755	2,312	1,652	532	250	213	209	219	309	478	1,156	2,328
Below Normal (13%)	2,323	2,126	1,949	863	348	247	242	294	443	854	1,458	2,437
Dry (24%)	2,504	2,538	2,278	964	386	258	243	306	477	1,199	1,702	2,528
Critical (15%)	2,694	2,737	2,370	1,243	561	334	355	567	952	1,597	2,120	2,701

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	49	28	-17	-466	-480	-96	-45	-52	53	146	-44	16
20%	38	44	-107	-386	-384	-72	-4	15	33	132	44	-69
30%	-24	57	-73	-409	-128	-20	4	-15	20	66	29	-21
40%	-67	39	-63	-297	-58	-5	-2	12	35	68	20	7
50%	-82	7	-33	-168	-21	-4	-1	7	22	52	39	-28
60%	-23	13	-71	-105	-16	-9	-2	0	35	22	-42	-39
70%	42	36	-210	-25	-7	-1	-3	-2	8	33	28	-45
80%	37	104	11	-4	2	2	0	-3	5	-8	2	-8
90%	-88	129	16	2	7	0	0	0	-5	-1	-65	-44
Long Term												
Full Simulation Period[b]	17	35	-79	-203	-106	-27	-6	-2	24	46	-2	-26
Water Year Types[c]												
Wet (32%)	-19	42	-46	-27	-1	-1	-2	1	18	10	-38	-49
Above Normal (16%)	112	78	-108	-214	-57	-4	0	1	22	14	-2	-20
Below Normal (13%)	-3	-7	5	-457	-229	-46	-6	-3	50	53	49	15
Dry (24%)	20	55	-45	-312	-171	-33	-4	-2	34	120	6	-41
Critical (15%)	6	-19	-254	-156	-163	-82	-23	-7	-2	27	15	5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.3.6. San Joaquin River at Jersey Point Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,951	3,235	2,834	1,886	1,012	405	344	494	576	1,438	2,003	2,729
20%	2,789	2,945	2,734	1,587	747	345	266	361	503	1,075	1,825	2,628
30%	2,708	2,660	2,560	1,383	430	268	238	324	454	955	1,650	2,539
40%	2,651	2,577	2,340	1,047	344	244	230	252	370	833	1,416	2,435
50%	2,592	2,514	2,127	782	286	233	220	227	313	670	1,335	2,388
60%	2,471	2,437	1,386	452	262	230	215	218	263	494	1,258	2,336
70%	2,315	2,238	1,023	290	238	215	212	208	252	429	1,139	2,283
80%	2,222	1,917	648	240	217	207	205	200	213	388	1,067	2,162
90%	1,874	903	319	221	204	200	199	189	202	292	1,001	2,028
Long Term												
Full Simulation Period[b]	2,438	2,323	1,788	916	442	275	249	298	418	785	1,422	2,337
Water Year Types[c]												
Wet (32%)	2,232	2,126	939	330	234	220	211	203	229	350	1,034	1,951
Above Normal (16%)	2,643	2,234	1,760	746	307	218	209	219	287	463	1,159	2,348
Below Normal (13%)	2,326	2,133	1,944	1,320	577	293	248	298	394	802	1,409	2,421
Dry (24%)	2,485	2,483	2,323	1,276	558	290	247	308	443	1,079	1,696	2,569
Critical (15%)	2,688	2,756	2,623	1,400	725	416	378	574	954	1,571	2,104	2,696

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3,030	3,172	2,512	1,369	552	308	281	355	510	1,507	2,042	2,701
20%	2,657	2,756	2,168	1,141	379	280	269	304	460	1,368	1,849	2,544
30%	2,502	2,236	1,537	922	304	250	258	287	426	1,052	1,749	2,503
40%	2,363	1,922	1,248	671	293	242	244	263	383	873	1,485	2,363
50%	2,086	1,124	850	544	274	231	237	248	320	728	1,387	2,218
60%	550	638	724	355	258	223	233	242	293	495	1,290	1,096
70%	323	351	474	259	233	218	229	234	255	435	1,186	1,021
80%	295	289	275	233	219	210	226	227	220	381	1,107	988
90%	274	270	215	219	213	202	216	198	204	297	1,017	906
Long Term												
Full Simulation Period[b]	1,552	1,448	1,171	686	340	250	250	277	383	842	1,453	1,775
Water Year Types[c]												
Wet (32%)	1,078	948	493	284	236	220	223	215	240	352	1,079	898
Above Normal (16%)	2,090	1,576	1,047	460	253	218	233	241	305	465	1,163	1,020
Below Normal (13%)	1,068	1,121	1,152	697	329	247	251	272	375	800	1,423	2,443
Dry (24%)	1,617	1,610	1,593	967	398	260	252	287	409	1,296	1,740	2,503
Critical (15%)	2,333	2,420	2,088	1,321	576	337	320	441	742	1,592	2,129	2,667

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	79	-63	-322	-516	-460	-97	-63	-139	-66	70	38	-27
20%	-131	-189	-566	-446	-367	-65	3	-57	-43	293	24	-83
30%	-207	-425	-1,024	-461	-126	-18	20	-38	-28	96	99	-36
40%	-288	-655	-1,092	-376	-51	-2	14	11	13	40	69	-72
50%	-506	-1,390	-1,277	-238	-12	-2	17	22	7	58	53	-170
60%	-1,921	-1,799	-662	-96	-5	-7	17	24	30	1	33	-1,240
70%	-1,992	-1,887	-550	-31	-5	3	17	26	3	6	47	-1,261
80%	-1,927	-1,628	-373	-8	2	3	21	28	8	-6	40	-1,174
90%	-1,599	-633	-104	-2	9	2	17	10	1	5	16	-1,122
Long Term												
Full Simulation Period[b]	-886	-876	-617	-231	-102	-25	1	-21	-35	57	31	-562
Water Year Types[c]												
Wet (32%)	-1,154	-1,178	-446	-46	2	0	12	12	11	2	45	-1,053
Above Normal (16%)	-553	-659	-713	-286	-54	0	24	23	18	1	5	-1,328
Below Normal (13%)	-1,259	-1,012	-792	-624	-247	-46	3	-26	-19	-2	14	21
Dry (24%)	-867	-873	-731	-309	-160	-30	5	-22	-34	217	44	-65
Critical (15%)	-355	-336	-536	-79	-149	-79	-58	-133	-212	21	25	-29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

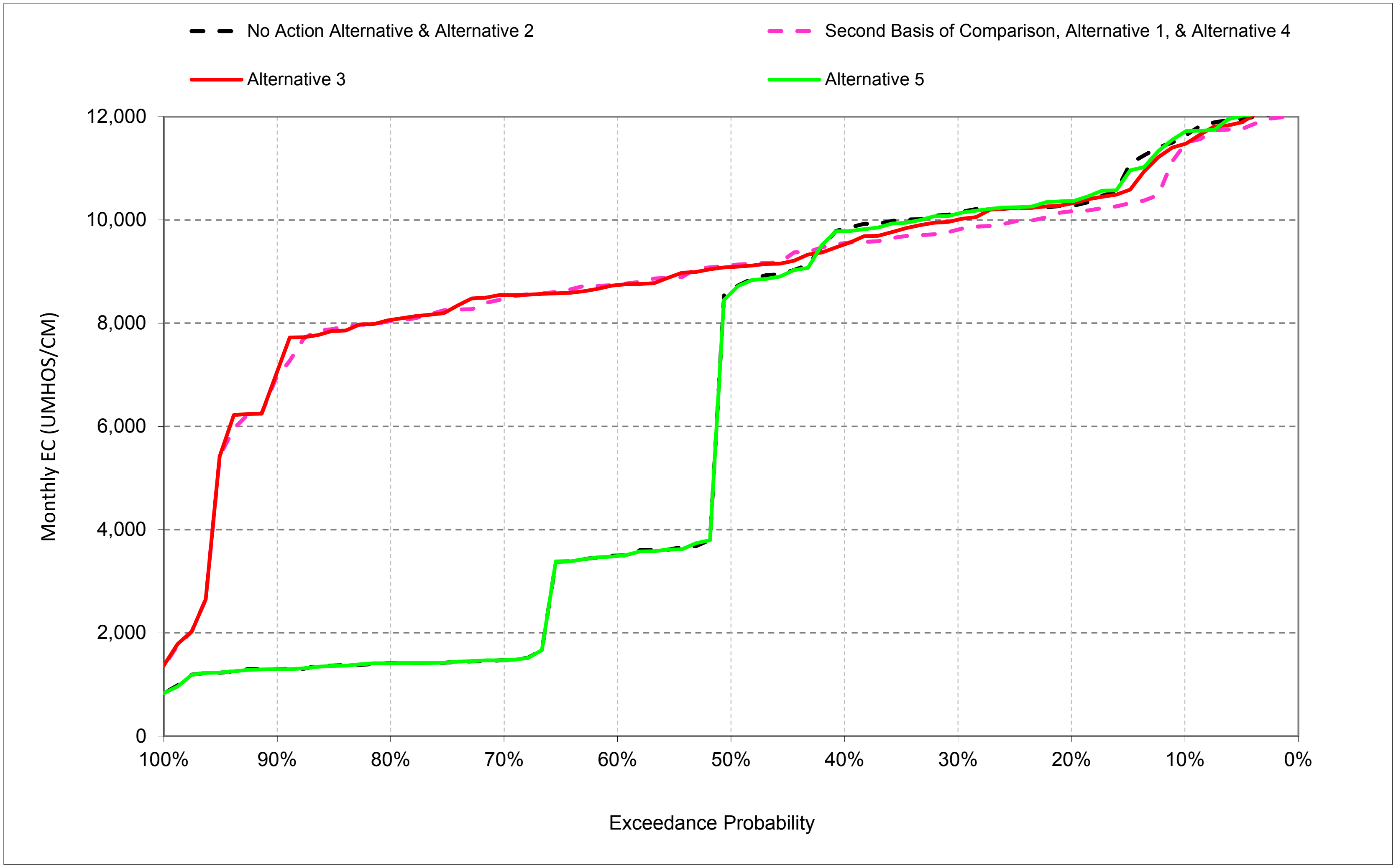
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

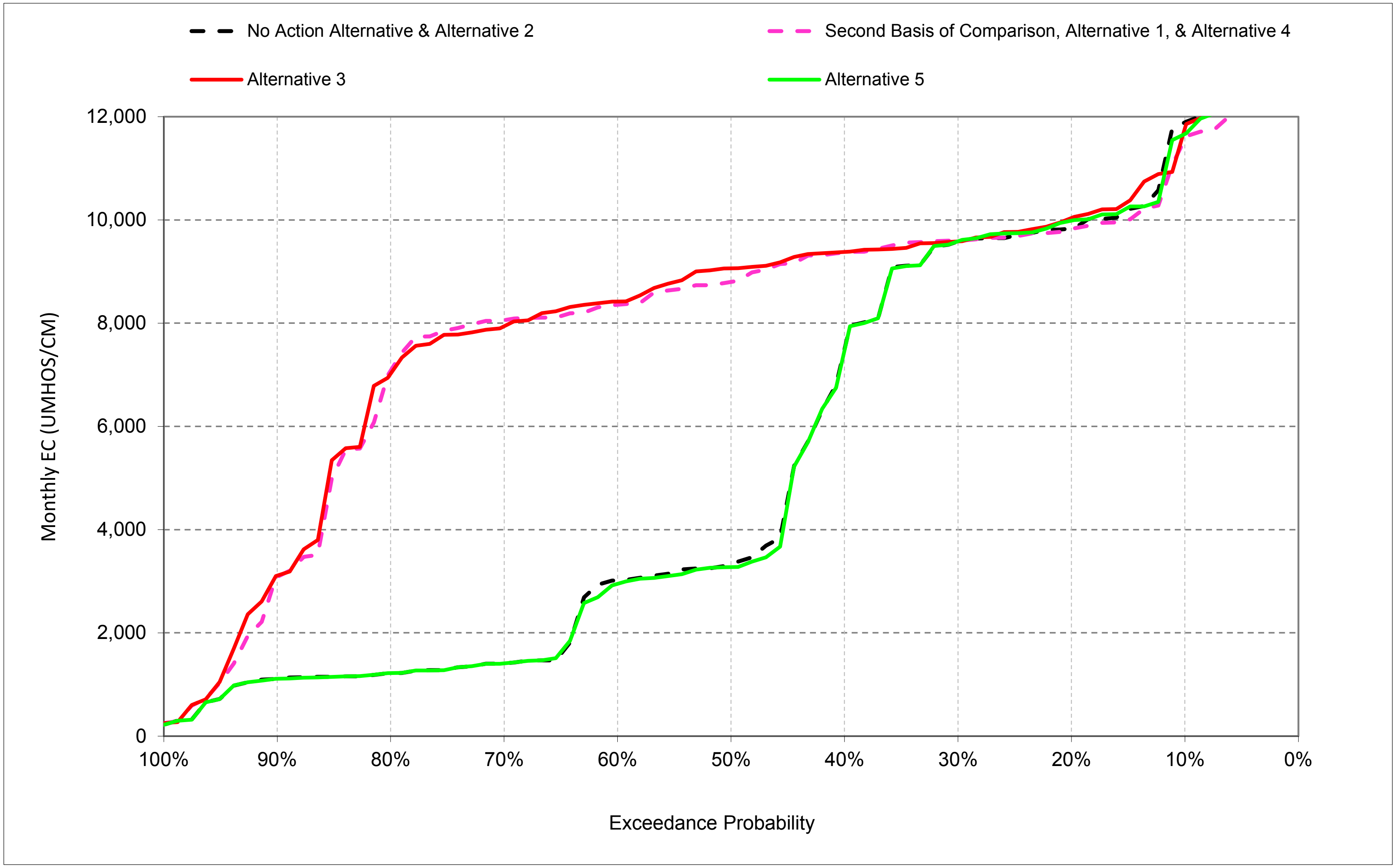
B.4. Sacramento River at Collinsville Salinity

Figure 6E.B.4.1. Sacramento River at Collinsville Salinity, Electrical Conductivity, October



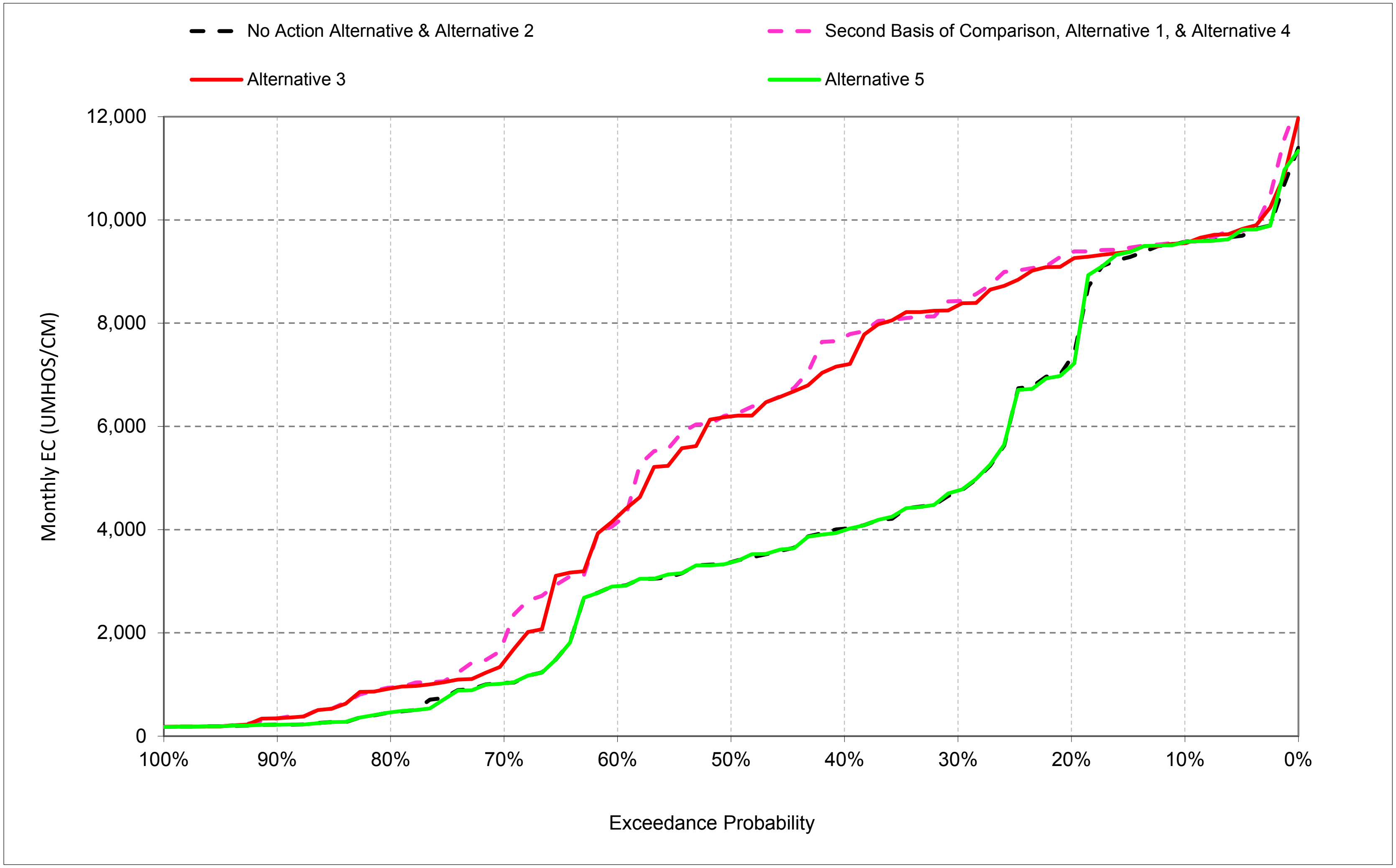
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.2. Sacramento River at Collinsville Salinity, Electrical Conductivity, November



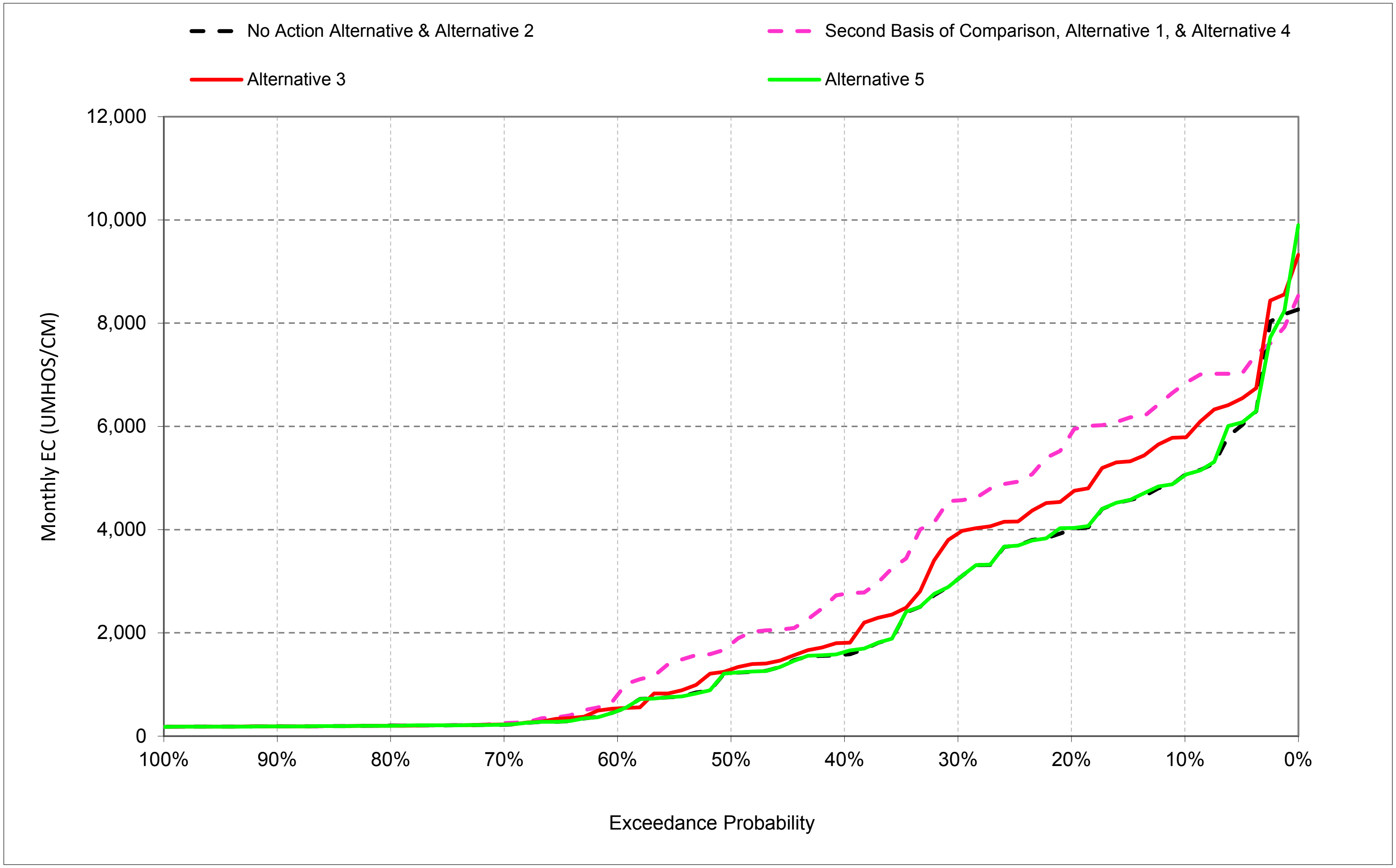
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.3. Sacramento River at Collinsville Salinity, Electrical Conductivity, December



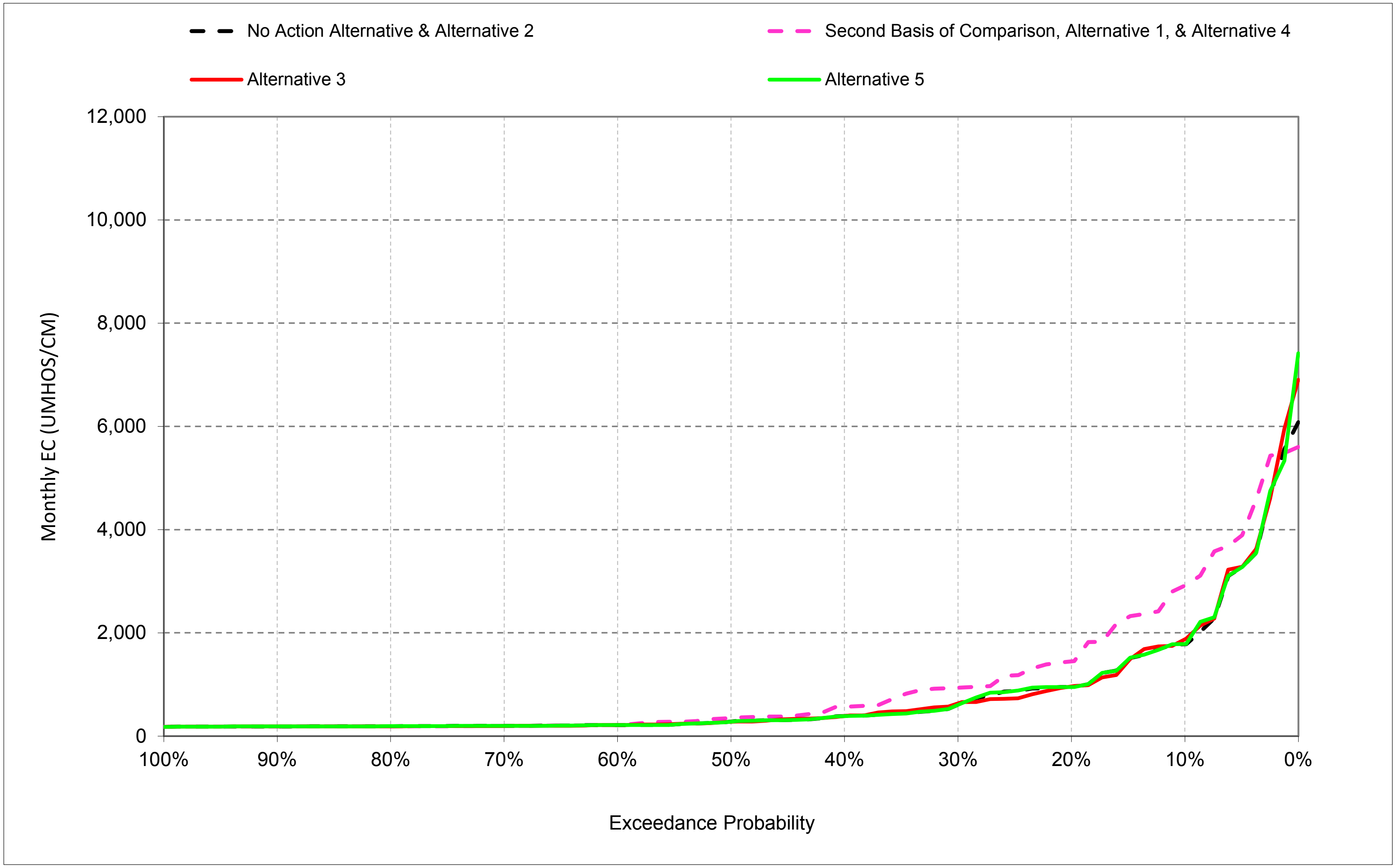
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.4. Sacramento River at Collinsville Salinity, Electrical Conductivity, January



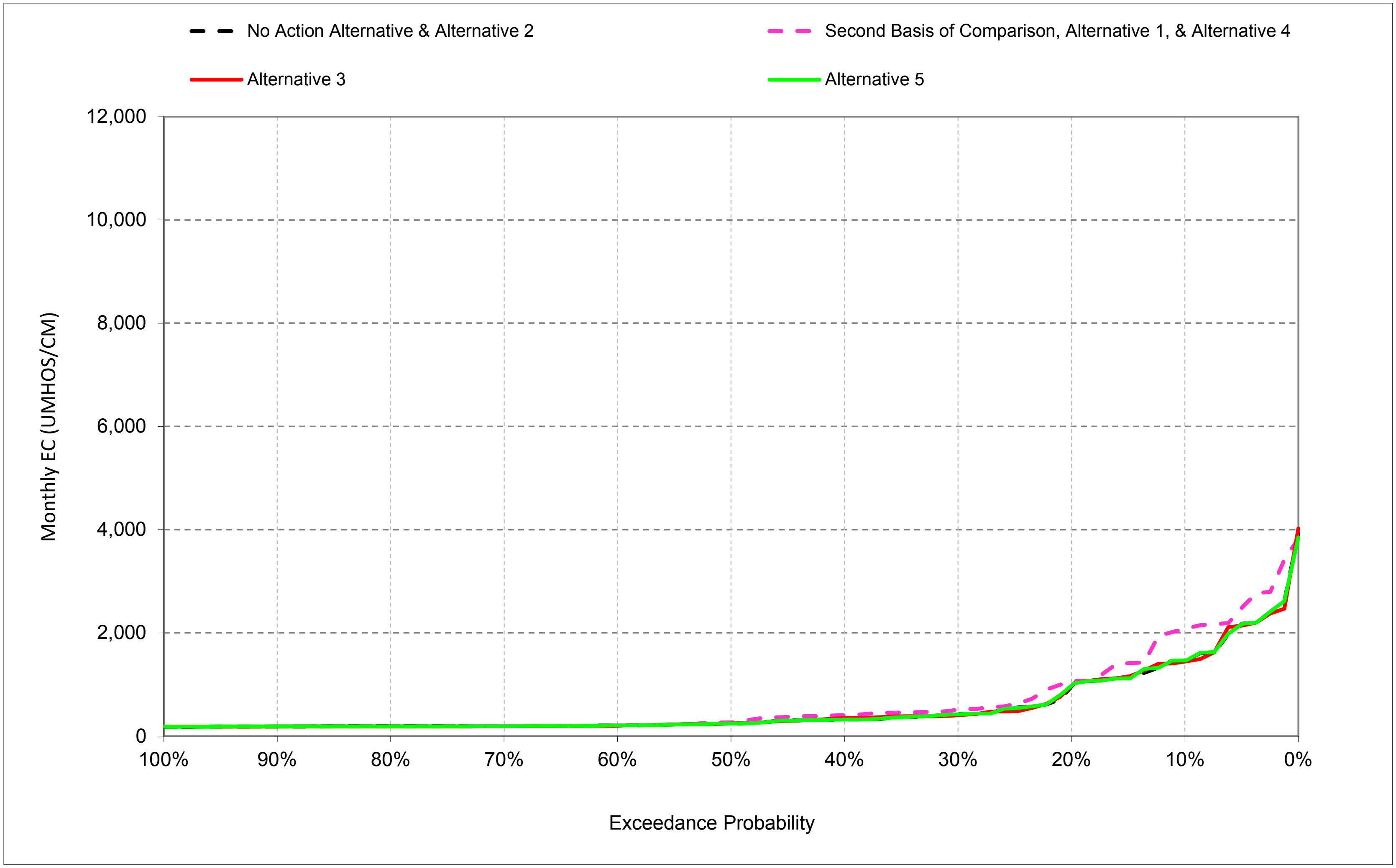
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.5. Sacramento River at Collinsville Salinity, Electrical Conductivity, February



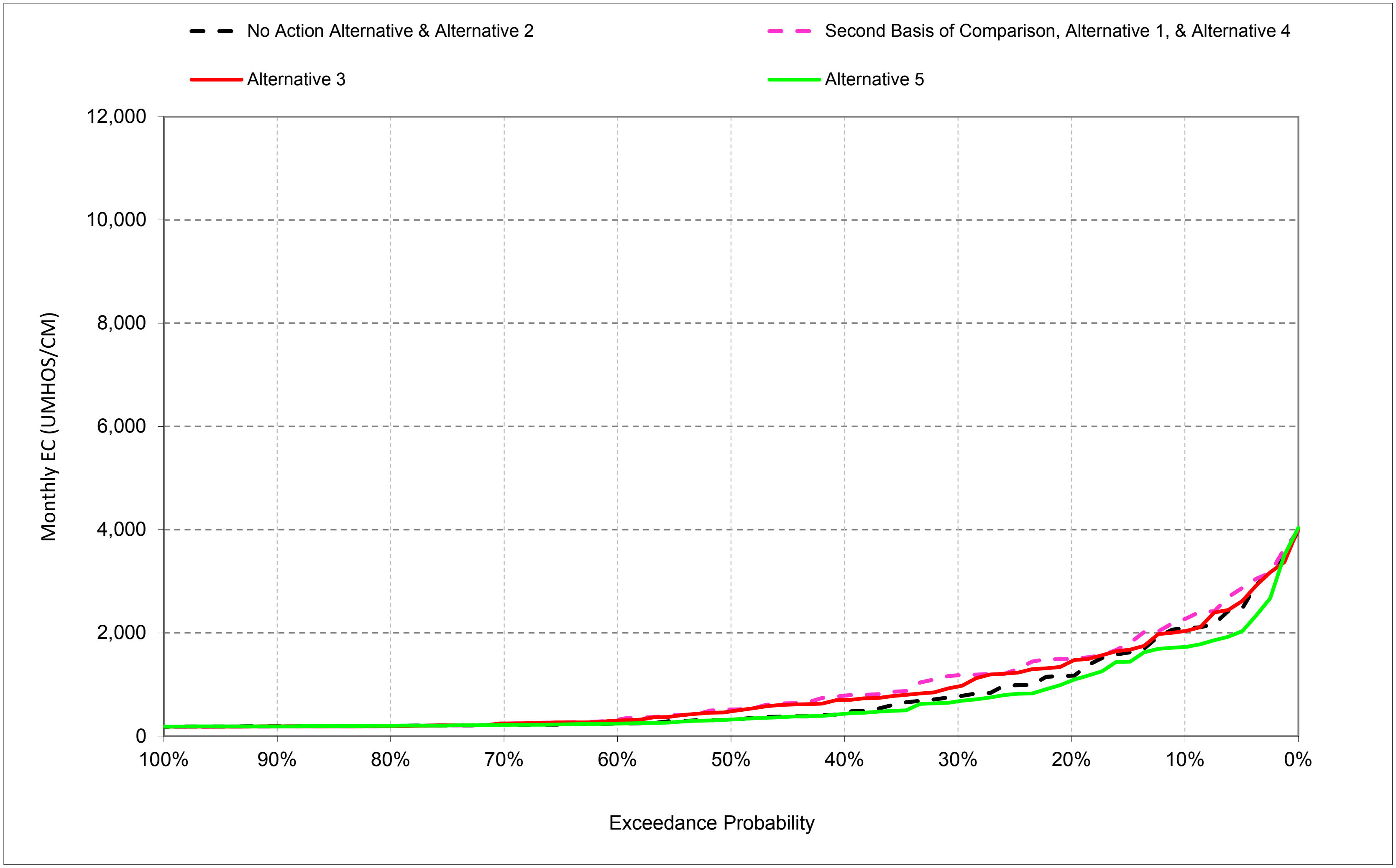
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.6. Sacramento River at Collinsville Salinity, Electrical Conductivity, March



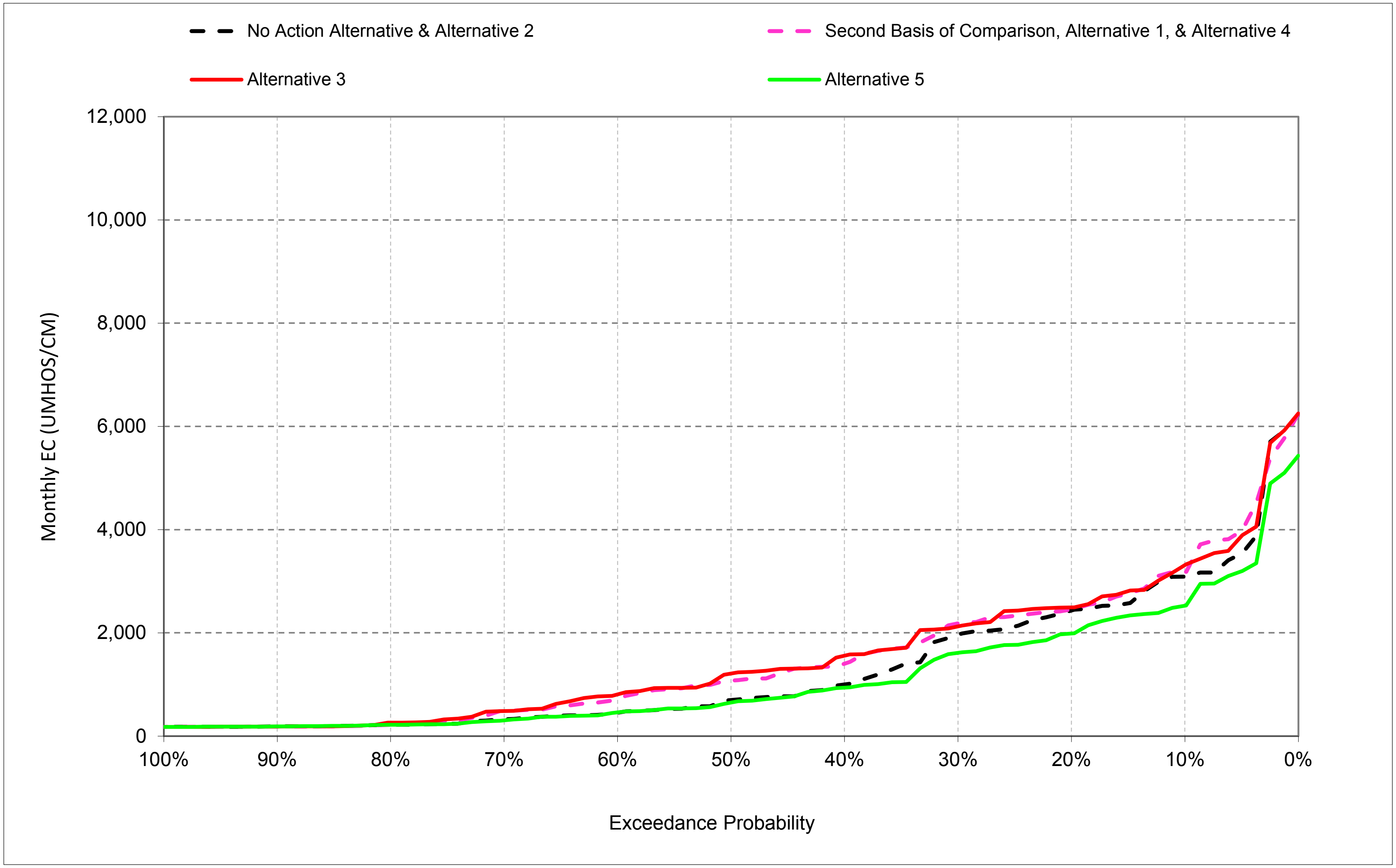
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.7. Sacramento River at Collinsville Salinity, Electrical Conductivity, April



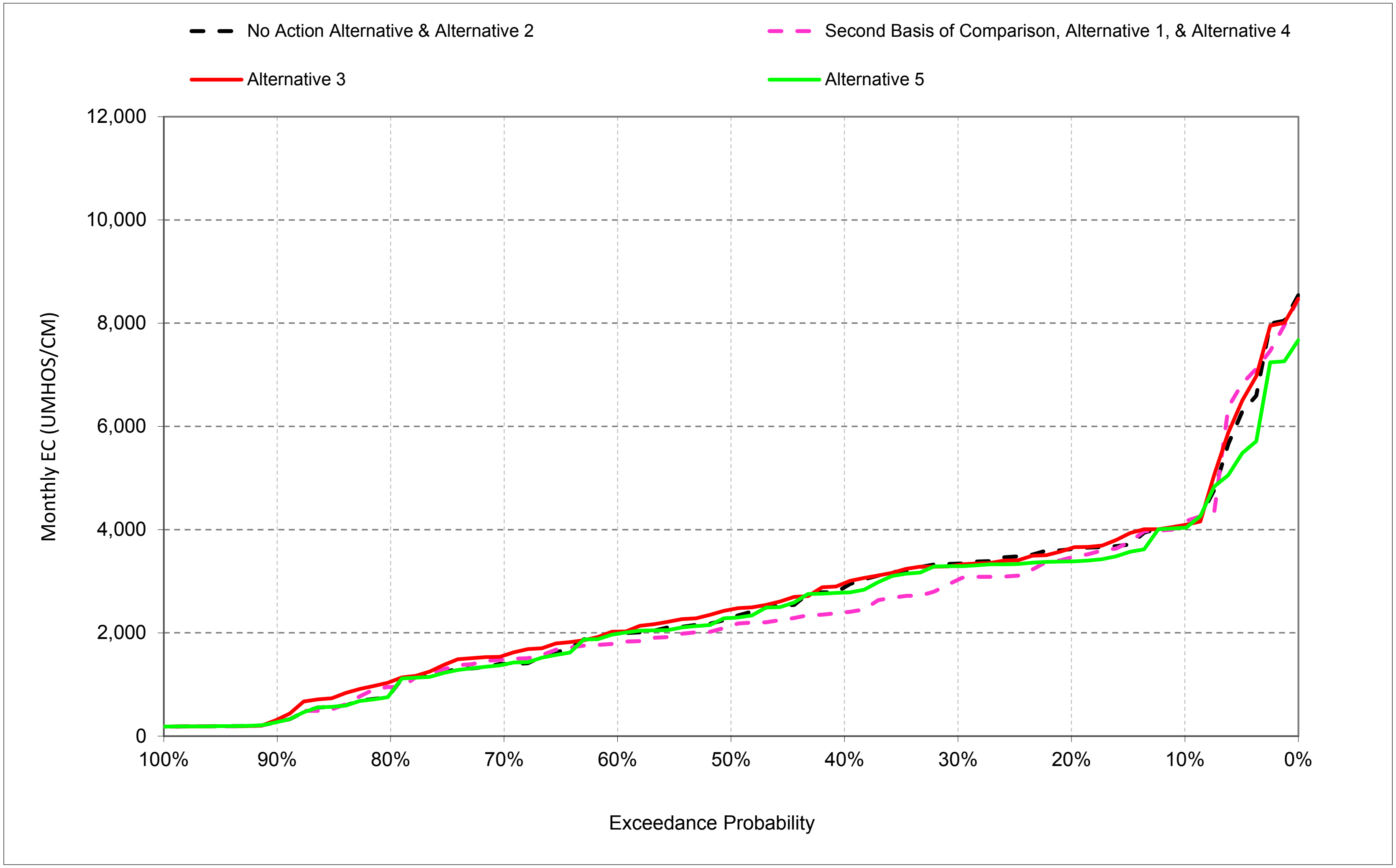
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.8. Sacramento River at Collinsville Salinity, Electrical Conductivity, May



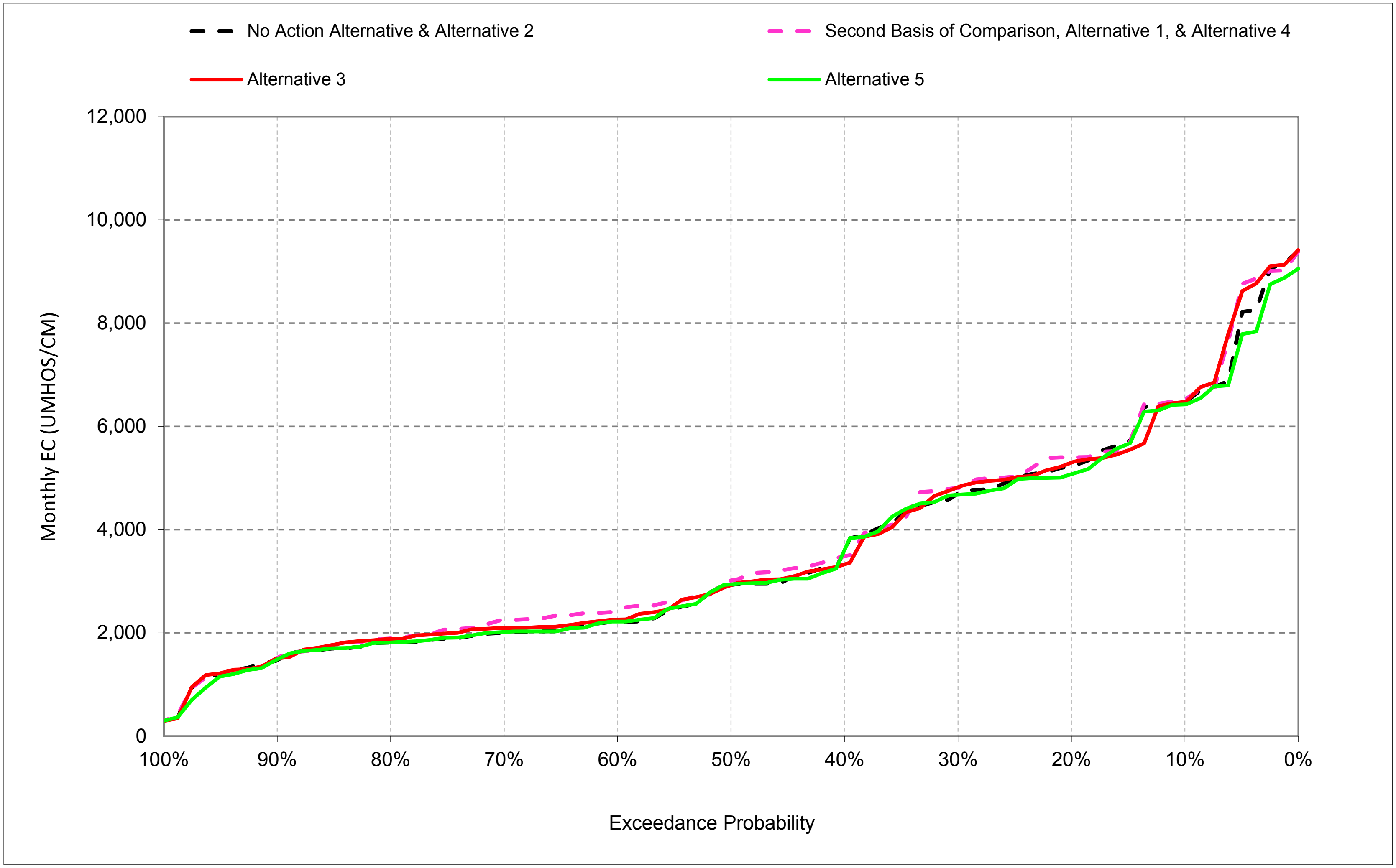
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.9. Sacramento River at Collinsville Salinity, Electrical Conductivity, June



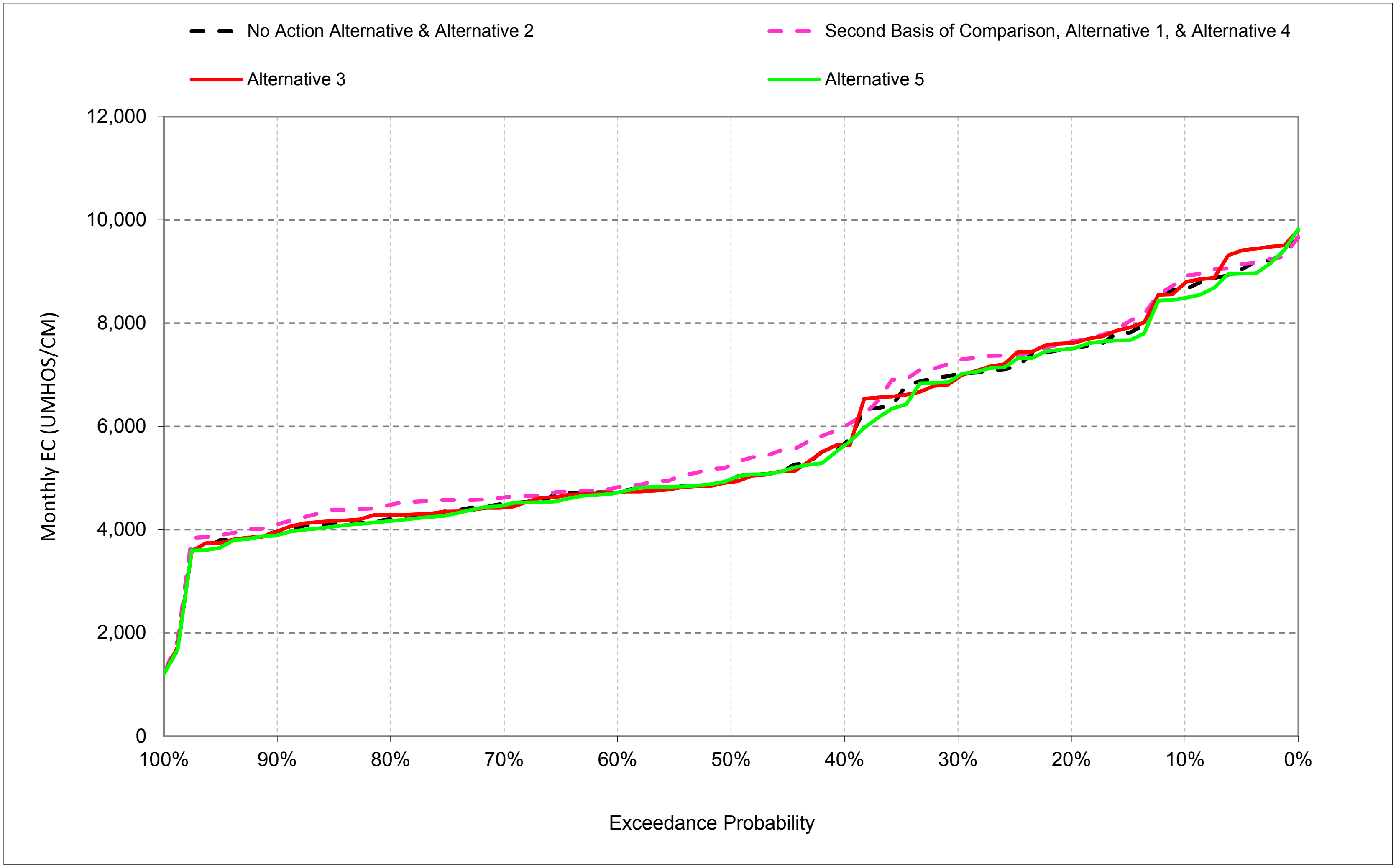
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.10. Sacramento River at Collinsville Salinity, Electrical Conductivity, July



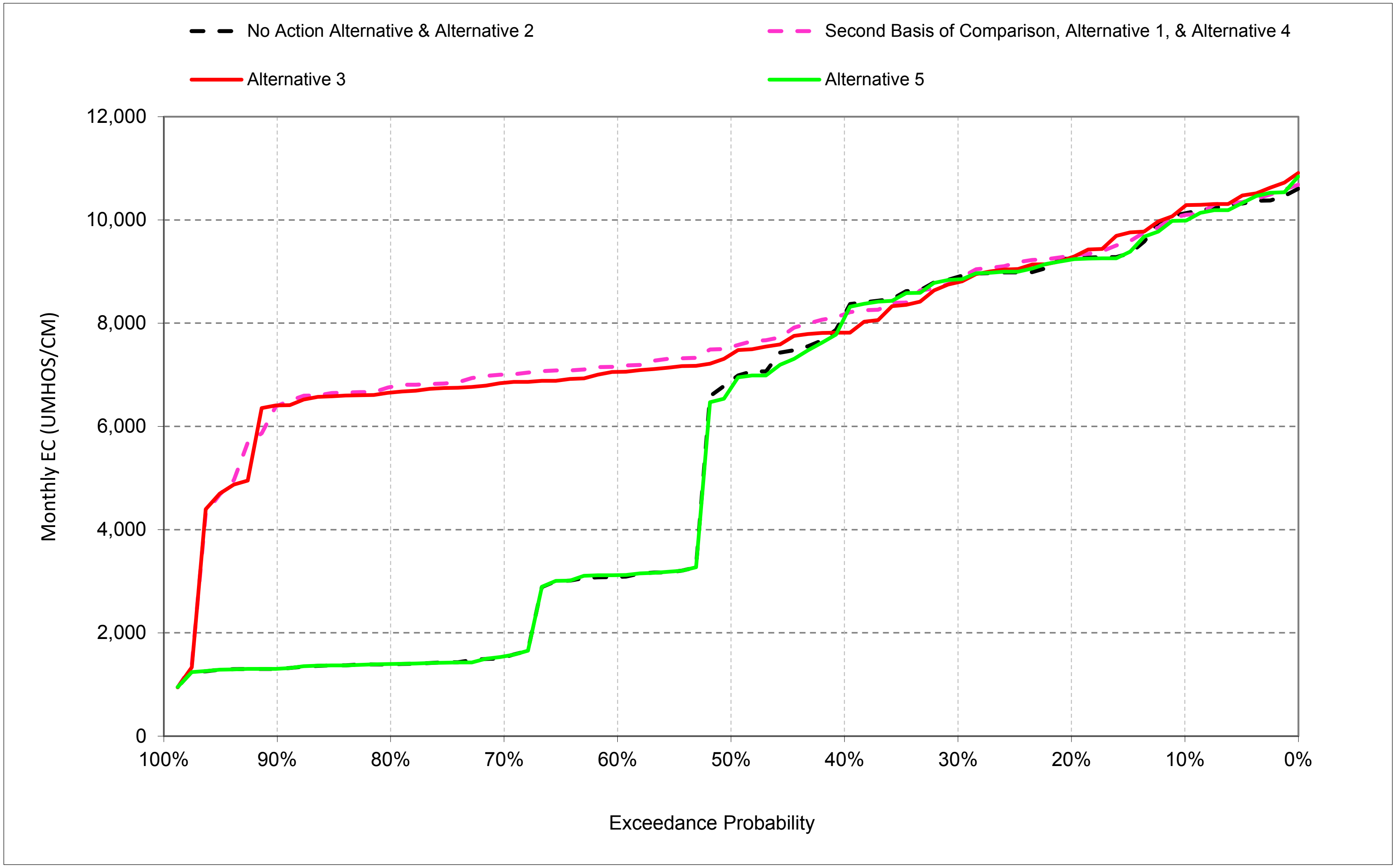
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.11. Sacramento River at Collinsville Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.4.12. Sacramento River at Collinsville Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.4.1. Sacramento River at Collinsville Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,632	11,890	9,578	5,063	1,781	1,464	2,090	3,090	4,155	6,476	8,660	10,127
20%	10,277	9,831	7,332	3,998	949	961	1,169	2,435	3,623	5,234	7,514	9,247
30%	10,141	9,585	4,732	3,041	606	426	769	1,962	3,340	4,700	7,013	8,896
40%	9,827	7,492	4,017	1,576	387	320	453	1,001	2,885	3,600	5,666	8,171
50%	8,639	3,336	3,369	1,222	281	244	322	698	2,293	2,932	4,968	6,885
60%	3,498	3,015	2,905	490	215	209	241	450	1,989	2,212	4,736	3,085
70%	1,470	1,410	1,029	222	198	193	218	326	1,397	2,004	4,502	1,602
80%	1,412	1,217	456	202	191	189	196	218	824	1,812	4,198	1,399
90%	1,298	1,110	222	188	186	187	190	188	272	1,471	3,961	1,323
Long Term												
Full Simulation Period[b]	6,320	5,459	3,962	2,015	786	573	761	1,307	2,527	3,544	5,733	5,585
Water Year Types[c]												
Wet (32%)	4,370	3,158	1,166	437	202	202	225	319	1,019	1,619	4,183	1,371
Above Normal (16%)	7,918	5,626	3,329	851	275	229	264	484	1,882	2,111	4,271	3,089
Below Normal (13%)	4,510	4,152	4,004	2,297	836	671	811	1,339	2,771	3,082	5,111	7,668
Dry (24%)	6,869	6,488	5,652	3,088	1,075	599	870	1,632	3,030	4,941	7,136	8,778
Critical (15%)	9,556	9,748	7,846	4,647	2,075	1,615	2,228	3,767	5,434	7,359	8,905	10,190

Alternative 1

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,466	11,564	9,574	6,827	2,915	2,079	2,268	3,182	4,153	6,528	8,899	10,093
20%	10,165	9,824	9,367	5,863	1,446	1,055	1,498	2,452	3,462	5,402	7,644	9,312
30%	9,811	9,601	8,428	4,565	937	514	1,177	2,185	3,028	4,809	7,272	8,855
40%	9,549	9,369	7,734	2,753	570	406	783	1,403	2,397	3,484	6,003	8,173
50%	9,118	8,800	6,231	1,781	351	267	514	1,075	2,139	3,014	5,252	7,538
60%	8,747	8,357	4,144	797	217	206	316	723	1,804	2,442	4,820	7,164
70%	8,473	8,056	1,856	251	197	194	239	488	1,484	2,243	4,622	7,002
80%	8,043	7,074	940	202	189	189	195	222	949	1,891	4,481	6,761
90%	6,957	3,084	340	189	187	186	187	184	280	1,515	4,102	6,400
Long Term												
Full Simulation Period[b]	8,887	8,107	5,432	2,689	1,009	677	904	1,498	2,415	3,660	5,913	7,773
Water Year Types[c]												
Wet (32%)	7,833	6,691	1,993	596	208	206	274	428	970	1,737	4,299	6,163
Above Normal (16%)	9,564	7,831	5,188	1,319	337	236	365	733	1,694	2,215	4,509	6,968
Below Normal (13%)	8,314	7,234	6,059	3,773	1,345	814	1,055	1,605	2,288	3,197	5,514	7,826
Dry (24%)	9,325	9,173	7,597	4,236	1,380	719	1,062	1,807	2,948	5,018	7,294	8,896
Critical (15%)	10,233	10,495	8,960	5,132	2,549	1,979	2,449	4,032	5,552	7,552	8,997	10,215

Alternative 1 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-166	-326	-4	1,764	1,134	615	178	92	-2	52	240	-34
20%	-112	-6	2,035	1,865	497	94	329	17	-161	168	130	65
30%	-330	16	3,696	1,524	332	89	409	223	-313	109	259	-41
40%	-278	1,877	3,717	1,177	183	85	330	402	-487	-117	336	3
50%	480	5,464	2,863	559	70	22	192	377	-154	82	284	653
60%	5,249	5,342	1,239	307	2	-3	74	273	-185	229	83	4,079
70%	7,003	6,646	827	29	-1	0	21	163	87	239	120	5,400
80%	6,631	5,857	484	-1	-2	0	-2	4	125	78	284	5,362
90%	5,658	1,974	118	0	1	0	-2	-4	8	44	142	5,077
Long Term												
Full Simulation Period[b]	2,567	2,648	1,470	674	224	104	143	191	-113	116	180	2,188
Water Year Types[c]												
Wet (32%)	3,462	3,533	827	159	6	3	49	109	-49	118	116	4,792
Above Normal (16%)	1,646	2,206	1,859	469	61	7	101	248	-188	104	238	3,879
Below Normal (13%)	3,804	3,082	2,055	1,476	509	143	243	266	-482	115	403	157
Dry (24%)	2,456	2,685	1,945	1,148	305	120	192	175	-82	77	157	118
Critical (15%)	677	747	1,114	485	475	365	221	265	118	194	91	25

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.4.2. Sacramento River at Collinsville Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	11,632	11,890	9,578	5,063	1,781	1,464	2,090	3,090	4,155	6,476	8,660	10,127
20%	10,277	9,831	7,332	3,998	949	961	1,169	2,435	3,623	5,234	7,514	9,247
30%	10,141	9,585	4,732	3,041	606	426	769	1,962	3,340	4,700	7,013	8,896
40%	9,827	7,492	4,017	1,576	387	320	453	1,001	2,885	3,600	5,666	8,171
50%	8,639	3,336	3,369	1,222	281	244	322	698	2,293	2,932	4,968	6,885
60%	3,498	3,015	2,905	490	215	209	241	450	1,989	2,212	4,736	3,085
70%	1,470	1,410	1,029	222	198	193	218	326	1,397	2,004	4,502	1,602
80%	1,412	1,217	456	202	191	189	196	218	824	1,812	4,198	1,399
90%	1,298	1,110	222	188	186	187	190	188	272	1,471	3,961	1,323
Long Term												
Full Simulation Period[b]	6,320	5,459	3,962	2,015	786	573	761	1,307	2,527	3,544	5,733	5,585
Water Year Types[c]												
Wet (32%)	4,370	3,158	1,166	437	202	202	225	319	1,019	1,619	4,183	1,371
Above Normal (16%)	7,918	5,626	3,329	851	275	229	264	484	1,882	2,111	4,271	3,089
Below Normal (13%)	4,510	4,152	4,004	2,297	836	671	811	1,339	2,771	3,082	5,111	7,668
Dry (24%)	6,869	6,488	5,652	3,088	1,075	599	870	1,632	3,030	4,941	7,136	8,778
Critical (15%)	9,556	9,748	7,846	4,647	2,075	1,615	2,228	3,767	5,434	7,359	8,905	10,190

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	11,473	11,766	9,549	5,787	1,874	1,443	2,034	3,312	4,091	6,476	8,774	10,265
20%	10,316	10,036	9,229	4,708	962	974	1,448	2,492	3,643	5,299	7,615	9,272
30%	10,004	9,582	8,343	3,924	635	404	960	2,126	3,317	4,823	6,941	8,790
40%	9,525	9,380	7,191	1,805	387	347	700	1,558	2,966	3,326	5,638	7,814
50%	9,090	9,062	6,196	1,292	276	246	478	1,211	2,453	2,926	4,922	7,392
60%	8,738	8,417	4,254	537	212	203	300	808	2,026	2,259	4,719	7,055
70%	8,546	7,940	1,444	225	196	194	245	483	1,562	2,095	4,431	6,842
80%	8,062	7,019	924	200	190	189	195	260	1,055	1,881	4,283	6,655
90%	7,063	3,108	346	189	187	186	187	184	321	1,503	3,965	6,417
Long Term												
Full Simulation Period[b]	8,974	8,210	5,317	2,300	801	573	848	1,520	2,604	3,586	5,768	7,701
Water Year Types[c]												
Wet (32%)	7,796	6,755	1,924	491	202	207	273	471	1,124	1,679	4,162	6,134
Above Normal (16%)	9,825	7,890	4,901	1,000	262	224	349	768	1,940	2,155	4,365	6,907
Below Normal (13%)	8,504	7,415	6,070	2,839	866	676	979	1,668	2,876	3,070	5,050	7,399
Dry (24%)	9,320	9,273	7,532	3,550	1,062	596	973	1,844	3,079	4,904	7,199	8,884
Critical (15%)	10,461	10,663	8,736	5,052	2,188	1,613	2,307	3,932	5,486	7,543	9,042	10,260

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-159	-124	-29	724	92	-21	-56	222	-64	0	114	138
20%	40	206	1,897	710	13	13	279	57	20	66	102	25
30%	-137	-3	3,611	882	29	-22	192	164	-23	123	-72	-106
40%	-303	1,888	3,174	229	0	27	247	557	81	-274	-28	-357
50%	451	5,726	2,827	70	-5	2	156	514	160	-5	-45	507
60%	5,241	5,402	1,349	47	-2	-5	59	358	37	47	-17	3,971
70%	7,076	6,530	416	3	-2	0	27	157	165	90	-71	5,240
80%	6,650	5,801	467	-3	-2	0	-1	42	231	69	86	5,256
90%	5,765	1,999	124	0	1	-1	-2	-4	49	31	5	5,094
Long Term												
Full Simulation Period[b]	2,654	2,751	1,355	285	15	1	88	213	76	42	35	2,115
Water Year Types[c]												
Wet (32%)	3,425	3,597	757	54	-1	5	48	152	105	59	-21	4,763
Above Normal (16%)	1,907	2,265	1,572	149	-14	-4	85	284	58	44	93	3,818
Below Normal (13%)	3,994	3,264	2,066	543	30	5	167	329	105	-13	-61	-270
Dry (24%)	2,451	2,786	1,880	462	-13	-3	102	211	49	-37	63	106
Critical (15%)	904	915	890	405	114	-2	80	165	53	184	137	71

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.4.3. Sacramento River at Collinsville Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	11,632	11,890	9,578	5,063	1,781	1,464	2,090	3,090	4,155	6,476	8,660	10,127
20%	10,277	9,831	7,332	3,998	949	961	1,169	2,435	3,623	5,234	7,514	9,247
30%	10,141	9,585	4,732	3,041	606	426	769	1,962	3,340	4,700	7,013	8,896
40%	9,827	7,492	4,017	1,576	387	320	453	1,001	2,885	3,600	5,666	8,171
50%	8,639	3,336	3,369	1,222	281	244	322	698	2,293	2,932	4,968	6,885
60%	3,498	3,015	2,905	490	215	209	241	450	1,989	2,212	4,736	3,085
70%	1,470	1,410	1,029	222	198	193	218	326	1,397	2,004	4,502	1,602
80%	1,412	1,217	456	202	191	189	196	218	824	1,812	4,198	1,399
90%	1,298	1,110	222	188	186	187	190	188	272	1,471	3,961	1,323
Long Term												
Full Simulation Period[b]	6,320	5,459	3,962	2,015	786	573	761	1,307	2,527	3,544	5,733	5,585
Water Year Types[c]												
Wet (32%)	4,370	3,158	1,166	437	202	202	225	319	1,019	1,619	4,183	1,371
Above Normal (16%)	7,918	5,626	3,329	851	275	229	264	484	1,882	2,111	4,271	3,089
Below Normal (13%)	4,510	4,152	4,004	2,297	836	671	811	1,339	2,771	3,082	5,111	7,668
Dry (24%)	6,869	6,488	5,652	3,088	1,075	599	870	1,632	3,030	4,941	7,136	8,778
Critical (15%)	9,556	9,748	7,846	4,647	2,075	1,615	2,228	3,767	5,434	7,359	8,905	10,190

Alternative 5

	Monthly EC (UMHOS/CM)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	11,705	11,663	9,569	5,052	1,782	1,468	1,727	2,525	4,035	6,427	8,485	9,986
20%	10,368	9,986	7,171	4,034	950	978	1,075	1,987	3,386	5,074	7,505	9,231
30%	10,121	9,585	4,758	3,042	605	424	675	1,614	3,293	4,676	6,975	8,848
40%	9,781	7,463	3,988	1,630	387	319	431	939	2,780	3,601	5,629	8,104
50%	8,583	3,273	3,366	1,222	281	246	321	651	2,291	2,939	4,979	6,741
60%	3,488	2,950	2,905	488	215	208	242	459	1,984	2,219	4,721	3,119
70%	1,470	1,410	1,021	222	198	193	218	303	1,388	2,016	4,472	1,600
80%	1,413	1,219	460	202	191	189	198	218	825	1,814	4,170	1,404
90%	1,295	1,110	222	188	186	187	190	188	273	1,488	3,890	1,324
Long Term												
Full Simulation Period[b]	6,311	5,440	3,967	2,039	804	574	682	1,148	2,424	3,494	5,684	5,571
Water Year Types[c]												
Wet (32%)	4,367	3,175	1,168	437	202	202	224	306	1,015	1,598	4,138	1,371
Above Normal (16%)	7,893	5,516	3,295	850	275	229	264	474	1,874	2,111	4,272	3,103
Below Normal (13%)	4,522	4,157	4,009	2,301	835	670	725	1,189	2,726	3,065	5,071	7,586
Dry (24%)	6,861	6,468	5,682	3,112	1,081	600	739	1,414	2,917	4,887	7,081	8,770
Critical (15%)	9,529	9,725	7,860	4,772	2,188	1,625	1,993	3,221	4,976	7,175	8,795	10,167

Alternative 5 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	74	-227	-9	-11	0	4	-363	-565	-119	-49	-175	-141
20%	92	156	-161	35	0	17	-94	-448	-237	-160	-9	-17
30%	-20	0	26	0	-1	-2	-94	-348	-47	-25	-38	-48
40%	-46	-29	-28	54	0	-1	-23	-62	-105	1	-37	-67
50%	-56	-63	-3	0	0	2	-1	-47	-2	7	11	-143
60%	-10	-66	0	-1	0	-1	1	9	-5	7	-16	34
70%	0	0	-7	0	0	0	0	-22	-9	11	-30	-3
80%	0	2	4	0	0	0	2	-1	1	2	-28	5
90%	-3	0	0	0	0	0	0	0	0	16	-71	1
Long Term												
Full Simulation Period[b]	-9	-19	5	25	18	2	-78	-159	-103	-49	-49	-14
Water Year Types[c]												
Wet (32%)	-3	17	2	0	0	0	-1	-13	-4	-21	-45	0
Above Normal (16%)	-25	-109	-34	-1	0	0	0	-11	-8	0	1	14
Below Normal (13%)	12	6	6	5	-1	-1	-86	-150	-45	-17	-40	-83
Dry (24%)	-7	-19	29	24	6	1	-132	-218	-113	-54	-56	-8
Critical (15%)	-28	-23	13	125	114	10	-235	-546	-457	-184	-110	-22

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.4.4. Sacramento River at Collinsville Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	11,466	11,564	9,574	6,827	2,915	2,079	2,268	3,182	4,153	6,528	8,899	10,093
20%	10,165	9,824	9,367	5,863	1,446	1,055	1,498	2,452	3,462	5,402	7,644	9,312
30%	9,811	9,601	8,428	4,565	937	514	1,177	2,185	3,028	4,809	7,272	8,855
40%	9,549	9,369	7,734	2,753	570	406	783	1,403	2,397	3,484	6,003	8,173
50%	9,118	8,800	6,231	1,781	351	267	514	1,075	2,139	3,014	5,252	7,538
60%	8,747	8,357	4,144	797	217	206	316	723	1,804	2,442	4,820	7,164
70%	8,473	8,056	1,856	251	197	194	239	488	1,484	2,243	4,622	7,002
80%	8,043	7,074	940	202	189	189	195	222	949	1,891	4,481	6,761
90%	6,957	3,084	340	189	187	186	187	184	280	1,515	4,102	6,400
Long Term												
Full Simulation Period[b]	8,887	8,107	5,432	2,689	1,009	677	904	1,498	2,415	3,660	5,913	7,773
Water Year Types[c]												
Wet (32%)	7,833	6,691	1,993	596	208	206	274	428	970	1,737	4,299	6,163
Above Normal (16%)	9,564	7,831	5,188	1,319	337	236	365	733	1,694	2,215	4,509	6,968
Below Normal (13%)	8,314	7,234	6,059	3,773	1,345	814	1,055	1,605	2,288	3,197	5,514	7,826
Dry (24%)	9,325	9,173	7,597	4,236	1,380	719	1,062	1,807	2,948	5,018	7,294	8,896
Critical (15%)	10,233	10,495	8,960	5,132	2,549	1,979	2,449	4,032	5,552	7,552	8,997	10,215

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	11,632	11,890	9,578	5,063	1,781	1,464	2,090	3,090	4,155	6,476	8,660	10,127
20%	10,277	9,831	7,332	3,998	949	961	1,169	2,435	3,623	5,234	7,514	9,247
30%	10,141	9,585	4,732	3,041	606	426	769	1,962	3,340	4,700	7,013	8,896
40%	9,827	7,492	4,017	1,576	387	320	453	1,001	2,885	3,600	5,666	8,171
50%	8,639	3,336	3,369	1,222	281	244	322	698	2,293	2,932	4,968	6,885
60%	3,498	3,015	2,905	490	215	209	241	450	1,989	2,212	4,736	3,085
70%	1,470	1,410	1,029	222	198	193	218	326	1,397	2,004	4,502	1,602
80%	1,412	1,217	456	202	191	189	196	218	824	1,812	4,198	1,399
90%	1,298	1,110	222	188	186	187	190	188	272	1,471	3,961	1,323
Long Term												
Full Simulation Period[b]	6,320	5,459	3,962	2,015	786	573	761	1,307	2,527	3,544	5,733	5,585
Water Year Types[c]												
Wet (32%)	4,370	3,158	1,166	437	202	202	225	319	1,019	1,619	4,183	1,371
Above Normal (16%)	7,918	5,626	3,329	851	275	229	264	484	1,882	2,111	4,271	3,089
Below Normal (13%)	4,510	4,152	4,004	2,297	836	671	811	1,339	2,771	3,082	5,111	7,668
Dry (24%)	6,869	6,488	5,652	3,088	1,075	599	870	1,632	3,030	4,941	7,136	8,778
Critical (15%)	9,556	9,748	7,846	4,647	2,075	1,615	2,228	3,767	5,434	7,359	8,905	10,190

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	166	326	4	-1,764	-1,134	-615	-178	-92	2	-52	-240	34
20%	112	6	-2,035	-1,865	-497	-94	-329	-17	161	-168	-130	-65
30%	330	-16	-3,696	-1,524	-332	-89	-409	-223	313	-109	-259	41
40%	278	-1,877	-3,717	-1,177	-183	-85	-330	-402	487	117	-336	-3
50%	-480	-5,464	-2,863	-559	-70	-22	-192	-377	154	-82	-284	-653
60%	-5,249	-5,342	-1,239	-307	-2	3	-74	-273	185	-229	-83	-4,079
70%	-7,003	-6,646	-827	-29	1	0	-21	-163	-87	-239	-120	-5,400
80%	-6,631	-5,857	-484	1	2	0	2	-4	-125	-78	-284	-5,362
90%	-5,658	-1,974	-118	0	-1	0	2	4	-8	-44	-142	-5,077
Long Term												
Full Simulation Period[b]	-2,567	-2,648	-1,470	-674	-224	-104	-143	-191	113	-116	-180	-2,188
Water Year Types[c]												
Wet (32%)	-3,462	-3,533	-827	-159	-6	-3	-49	-109	49	-118	-116	-4,792
Above Normal (16%)	-1,646	-2,206	-1,859	-469	-61	-7	-101	-248	188	-104	-238	-3,879
Below Normal (13%)	-3,804	-3,082	-2,055	-1,476	-509	-143	-243	-266	482	-115	-403	-157
Dry (24%)	-2,456	-2,685	-1,945	-1,148	-305	-120	-192	-175	82	-77	-157	-118
Critical (15%)	-677	-747	-1,114	-485	-475	-365	-221	-265	-118	-194	-91	-25

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.4.5. Sacramento River at Collinsville Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,466	11,564	9,574	6,827	2,915	2,079	2,268	3,182	4,153	6,528	8,899	10,093
20%	10,165	9,824	9,367	5,863	1,446	1,055	1,498	2,452	3,462	5,402	7,644	9,312
30%	9,811	9,601	8,428	4,565	937	514	1,177	2,185	3,028	4,809	7,272	8,855
40%	9,549	9,369	7,734	2,753	570	406	783	1,403	2,397	3,484	6,003	8,173
50%	9,118	8,800	6,231	1,781	351	267	514	1,075	2,139	3,014	5,252	7,538
60%	8,747	8,357	4,144	797	217	206	316	723	1,804	2,442	4,820	7,164
70%	8,473	8,056	1,856	251	197	194	239	488	1,484	2,243	4,622	7,002
80%	8,043	7,074	940	202	189	189	195	222	949	1,891	4,481	6,761
90%	6,957	3,084	340	189	187	186	187	184	280	1,515	4,102	6,400
Long Term												
Full Simulation Period[b]	8,887	8,107	5,432	2,689	1,009	677	904	1,498	2,415	3,660	5,913	7,773
Water Year Types[c]												
Wet (32%)	7,833	6,691	1,993	596	208	206	274	428	970	1,737	4,299	6,163
Above Normal (16%)	9,564	7,831	5,188	1,319	337	236	365	733	1,694	2,215	4,509	6,968
Below Normal (13%)	8,314	7,234	6,059	3,773	1,345	814	1,055	1,605	2,288	3,197	5,514	7,826
Dry (24%)	9,325	9,173	7,597	4,236	1,380	719	1,062	1,807	2,948	5,018	7,294	8,896
Critical (15%)	10,233	10,495	8,960	5,132	2,549	1,979	2,449	4,032	5,552	7,552	8,997	10,215

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,473	11,766	9,549	5,787	1,874	1,443	2,034	3,312	4,091	6,476	8,774	10,265
20%	10,316	10,036	9,229	4,708	962	974	1,448	2,492	3,643	5,299	7,615	9,272
30%	10,004	9,582	8,343	3,924	635	404	960	2,126	3,317	4,823	6,941	8,790
40%	9,525	9,380	7,191	1,805	387	347	700	1,558	2,966	3,326	5,638	7,814
50%	9,090	9,062	6,196	1,292	276	246	478	1,211	2,453	2,926	4,922	7,392
60%	8,738	8,417	4,254	537	212	203	300	808	2,026	2,259	4,719	7,055
70%	8,546	7,940	1,444	225	196	194	245	483	1,562	2,095	4,431	6,842
80%	8,062	7,019	924	200	190	189	195	260	1,055	1,881	4,283	6,655
90%	7,063	3,108	346	189	187	186	187	184	321	1,503	3,965	6,417
Long Term												
Full Simulation Period[b]	8,974	8,210	5,317	2,300	801	573	848	1,520	2,604	3,586	5,768	7,701
Water Year Types[c]												
Wet (32%)	7,796	6,755	1,924	491	202	207	273	471	1,124	1,679	4,162	6,134
Above Normal (16%)	9,825	7,890	4,901	1,000	262	224	349	768	1,940	2,155	4,365	6,907
Below Normal (13%)	8,504	7,415	6,070	2,839	866	676	979	1,668	2,876	3,070	5,050	7,399
Dry (24%)	9,320	9,273	7,532	3,550	1,062	596	973	1,844	3,079	4,904	7,199	8,884
Critical (15%)	10,461	10,663	8,736	5,052	2,188	1,613	2,307	3,932	5,486	7,543	9,042	10,260

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7	202	-25	-1,040	-1,041	-636	-234	130	-62	-52	-125	172
20%	151	212	-138	-1,155	-484	-81	-50	40	182	-103	-29	-40
30%	193	-18	-86	-641	-303	-111	-217	-59	289	14	-332	-64
40%	-25	11	-543	-947	-183	-58	-83	154	569	-158	-365	-359
50%	-29	262	-36	-489	-75	-21	-37	137	313	-88	-329	-146
60%	-9	60	110	-260	-5	-3	-15	85	222	-183	-101	-109
70%	73	-116	-411	-26	-1	0	6	-5	78	-149	-191	-160
80%	19	-55	-16	-2	0	-1	0	38	106	-9	-198	-106
90%	106	25	6	0	0	0	0	0	41	-12	-137	17
Long Term												
Full Simulation Period[b]	87	103	-115	-388	-209	-103	-56	22	189	-74	-145	-73
Water Year Types[c]												
Wet (32%)	-37	64	-70	-105	-6	2	-1	43	154	-59	-137	-29
Above Normal (16%)	261	59	-287	-320	-75	-12	-16	36	246	-60	-144	-61
Below Normal (13%)	190	181	11	-933	-479	-138	-76	63	588	-128	-464	-427
Dry (24%)	-5	100	-65	-686	-318	-123	-90	36	131	-114	-95	-12
Critical (15%)	228	168	-224	-80	-361	-366	-141	-100	-65	-10	45	45

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.4.6. Sacramento River at Collinsville Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,466	11,564	9,574	6,827	2,915	2,079	2,268	3,182	4,153	6,528	8,899	10,093
20%	10,165	9,824	9,367	5,863	1,446	1,055	1,498	2,452	3,462	5,402	7,644	9,312
30%	9,811	9,601	8,428	4,565	937	514	1,177	2,185	3,028	4,809	7,272	8,855
40%	9,549	9,369	7,734	2,753	570	406	783	1,403	2,397	3,484	6,003	8,173
50%	9,118	8,800	6,231	1,781	351	267	514	1,075	2,139	3,014	5,252	7,538
60%	8,747	8,357	4,144	797	217	206	316	723	1,804	2,442	4,820	7,164
70%	8,473	8,056	1,856	251	197	194	239	488	1,484	2,243	4,622	7,002
80%	8,043	7,074	940	202	189	189	195	222	949	1,891	4,481	6,761
90%	6,957	3,084	340	189	187	186	187	184	280	1,515	4,102	6,400
Long Term												
Full Simulation Period[b]	8,887	8,107	5,432	2,689	1,009	677	904	1,498	2,415	3,660	5,913	7,773
Water Year Types[c]												
Wet (32%)	7,833	6,691	1,993	596	208	206	274	428	970	1,737	4,299	6,163
Above Normal (16%)	9,564	7,831	5,188	1,319	337	236	365	733	1,694	2,215	4,509	6,968
Below Normal (13%)	8,314	7,234	6,059	3,773	1,345	814	1,055	1,605	2,288	3,197	5,514	7,826
Dry (24%)	9,325	9,173	7,597	4,236	1,380	719	1,062	1,807	2,948	5,018	7,294	8,896
Critical (15%)	10,233	10,495	8,960	5,132	2,549	1,979	2,449	4,032	5,552	7,552	8,997	10,215

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11,705	11,663	9,569	5,052	1,782	1,468	1,727	2,525	4,035	6,427	8,485	9,986
20%	10,368	9,986	7,171	4,034	950	978	1,075	1,987	3,386	5,074	7,505	9,231
30%	10,121	9,585	4,758	3,042	605	424	675	1,614	3,293	4,676	6,975	8,848
40%	9,781	7,463	3,988	1,630	387	319	431	939	2,780	3,601	5,629	8,104
50%	8,583	3,273	3,366	1,222	281	246	321	651	2,291	2,939	4,979	6,741
60%	3,488	2,950	2,905	488	215	208	242	459	1,984	2,219	4,721	3,119
70%	1,470	1,410	1,021	222	198	193	218	303	1,388	2,016	4,472	1,600
80%	1,413	1,219	460	202	191	189	198	218	825	1,814	4,170	1,404
90%	1,295	1,110	222	188	186	187	190	188	273	1,488	3,890	1,324
Long Term												
Full Simulation Period[b]	6,311	5,440	3,967	2,039	804	574	682	1,148	2,424	3,494	5,684	5,571
Water Year Types[c]												
Wet (32%)	4,367	3,175	1,168	437	202	202	224	306	1,015	1,598	4,138	1,371
Above Normal (16%)	7,893	5,516	3,295	850	275	229	264	474	1,874	2,111	4,272	3,103
Below Normal (13%)	4,522	4,157	4,009	2,301	835	670	725	1,189	2,726	3,065	5,071	7,586
Dry (24%)	6,861	6,468	5,682	3,112	1,081	600	739	1,414	2,917	4,887	7,081	8,770
Critical (15%)	9,529	9,725	7,860	4,772	2,188	1,625	1,993	3,221	4,976	7,175	8,795	10,167

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	239	99	-5	-1,775	-1,133	-611	-541	-657	-118	-101	-414	-107
20%	203	162	-2,196	-1,830	-496	-77	-423	-465	-76	-328	-139	-82
30%	310	-16	-3,670	-1,524	-333	-91	-503	-572	266	-134	-297	-7
40%	232	-1,906	-3,745	-1,123	-183	-86	-352	-465	383	118	-373	-69
50%	-535	-5,527	-2,866	-559	-70	-20	-193	-424	152	-75	-273	-797
60%	-5,259	-5,408	-1,239	-309	-2	2	-74	-264	180	-222	-99	-4,045
70%	-7,003	-6,646	-834	-29	1	0	-21	-185	-96	-228	-150	-5,403
80%	-6,630	-5,855	-480	0	2	0	3	-5	-124	-76	-312	-5,357
90%	-5,661	-1,974	-118	0	0	0	2	4	-8	-28	-212	-5,076
Long Term												
Full Simulation Period[b]	-2,576	-2,667	-1,465	-649	-206	-102	-222	-350	10	-166	-230	-2,202
Water Year Types[c]												
Wet (32%)	-3,465	-3,516	-825	-159	-6	-3	-50	-122	45	-139	-161	-4,792
Above Normal (16%)	-1,671	-2,315	-1,893	-470	-61	-7	-101	-259	180	-105	-237	-3,865
Below Normal (13%)	-3,792	-3,077	-2,049	-1,471	-510	-144	-329	-416	438	-133	-443	-240
Dry (24%)	-2,463	-2,705	-1,916	-1,124	-299	-119	-324	-393	-31	-130	-213	-126
Critical (15%)	-705	-770	-1,100	-360	-361	-355	-455	-811	-575	-378	-201	-47

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

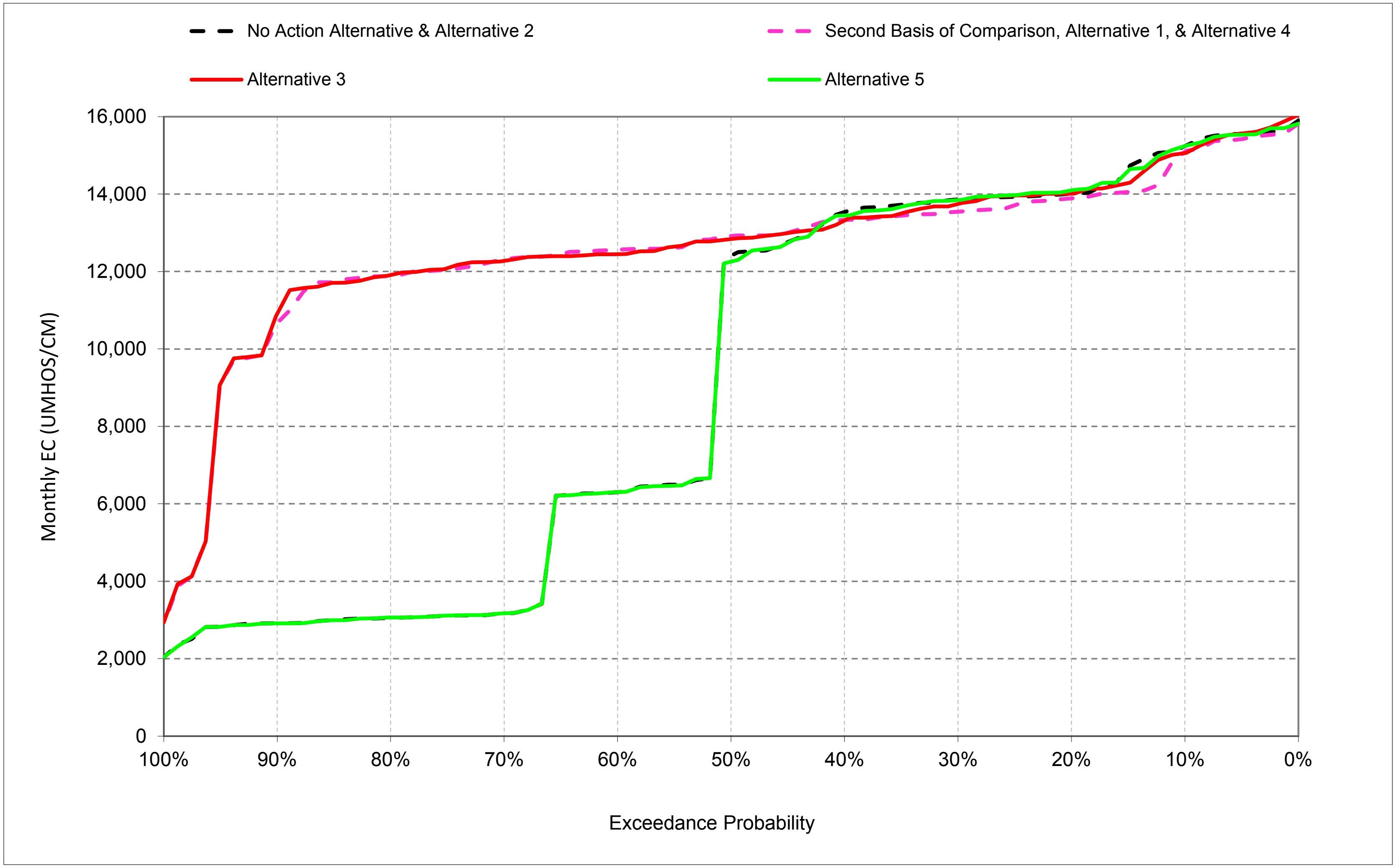
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

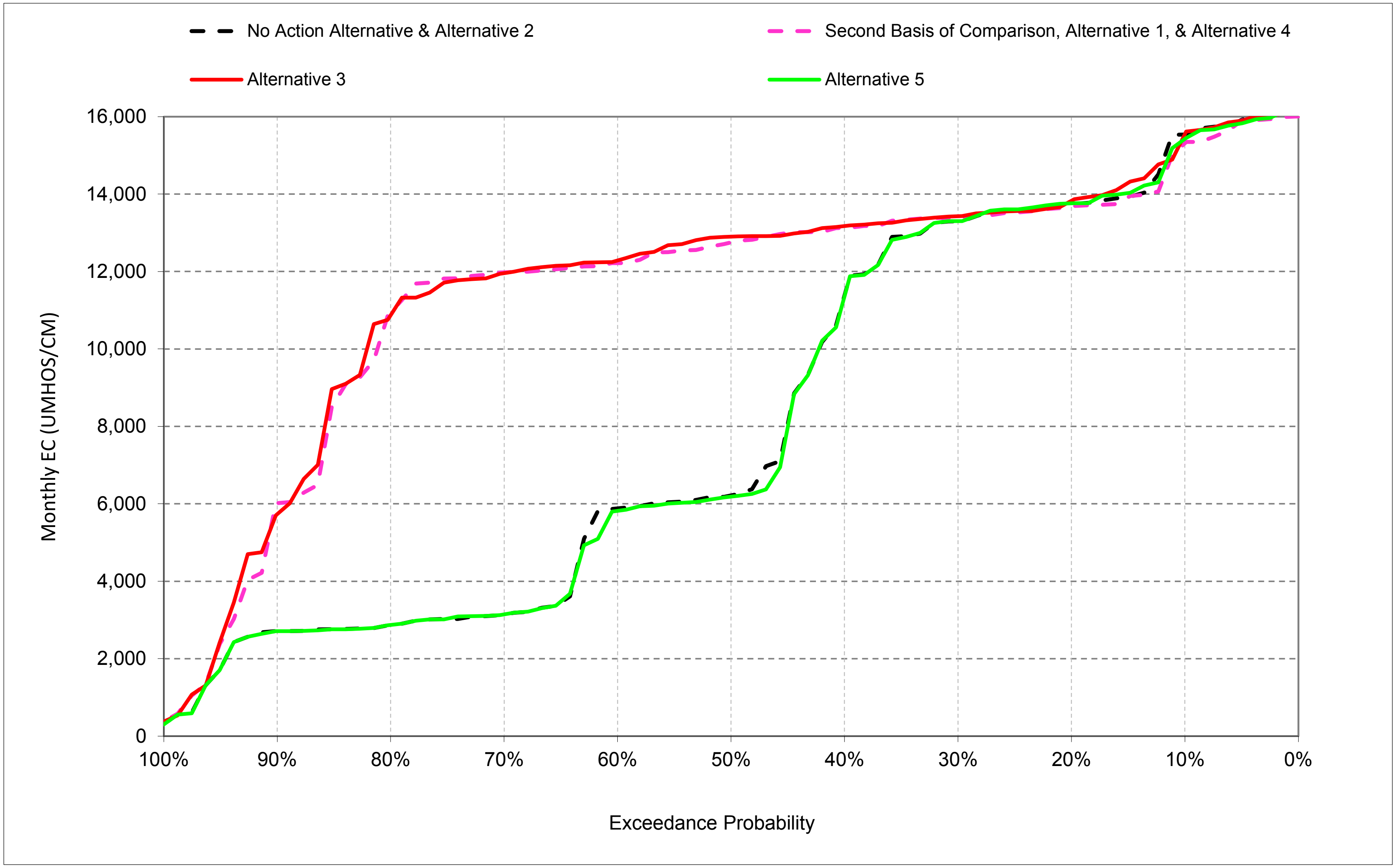
B.5. Sacramento River at Mallard Slough Salinity

Figure 6E.B.5.1. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, October



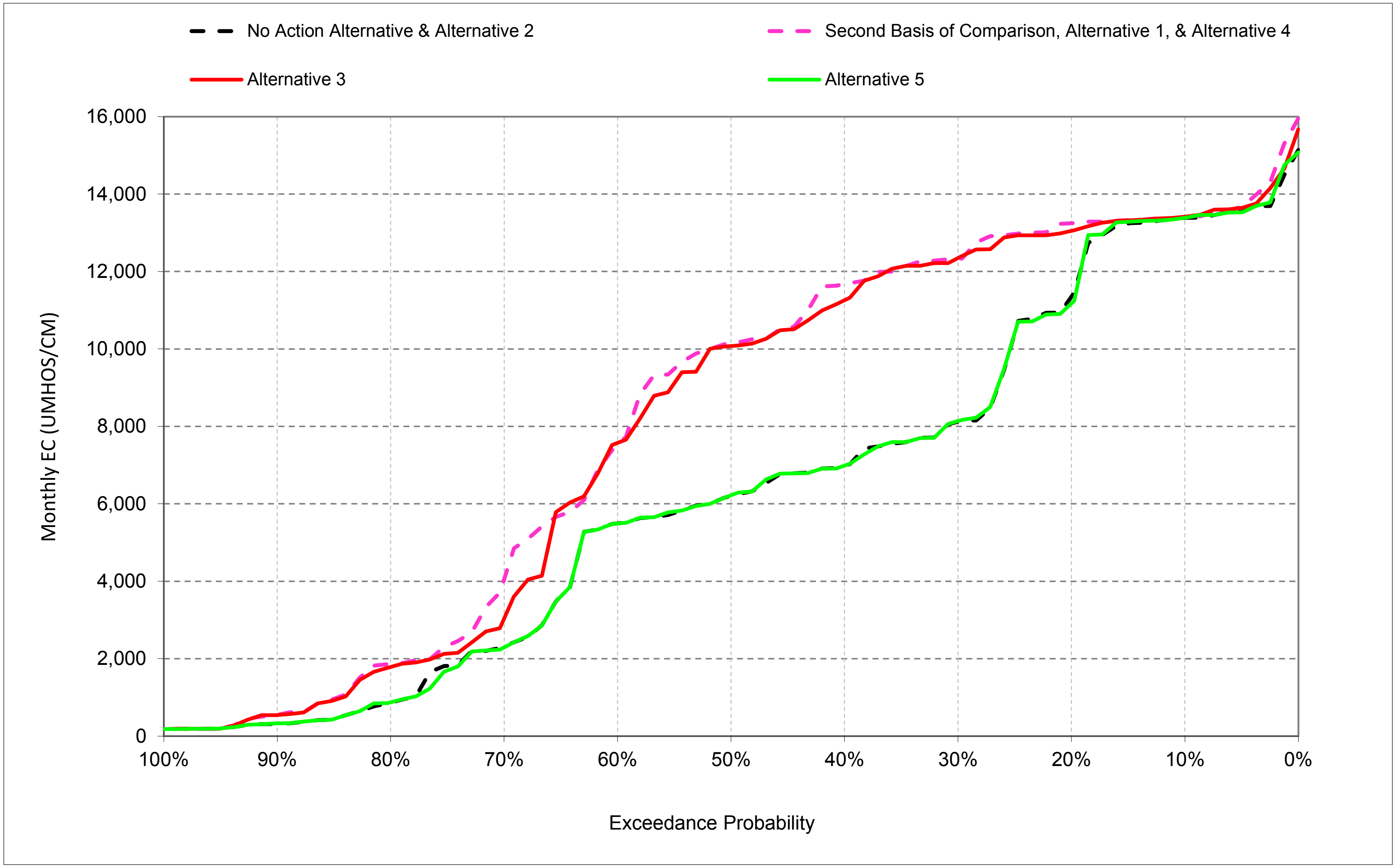
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.2. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, November



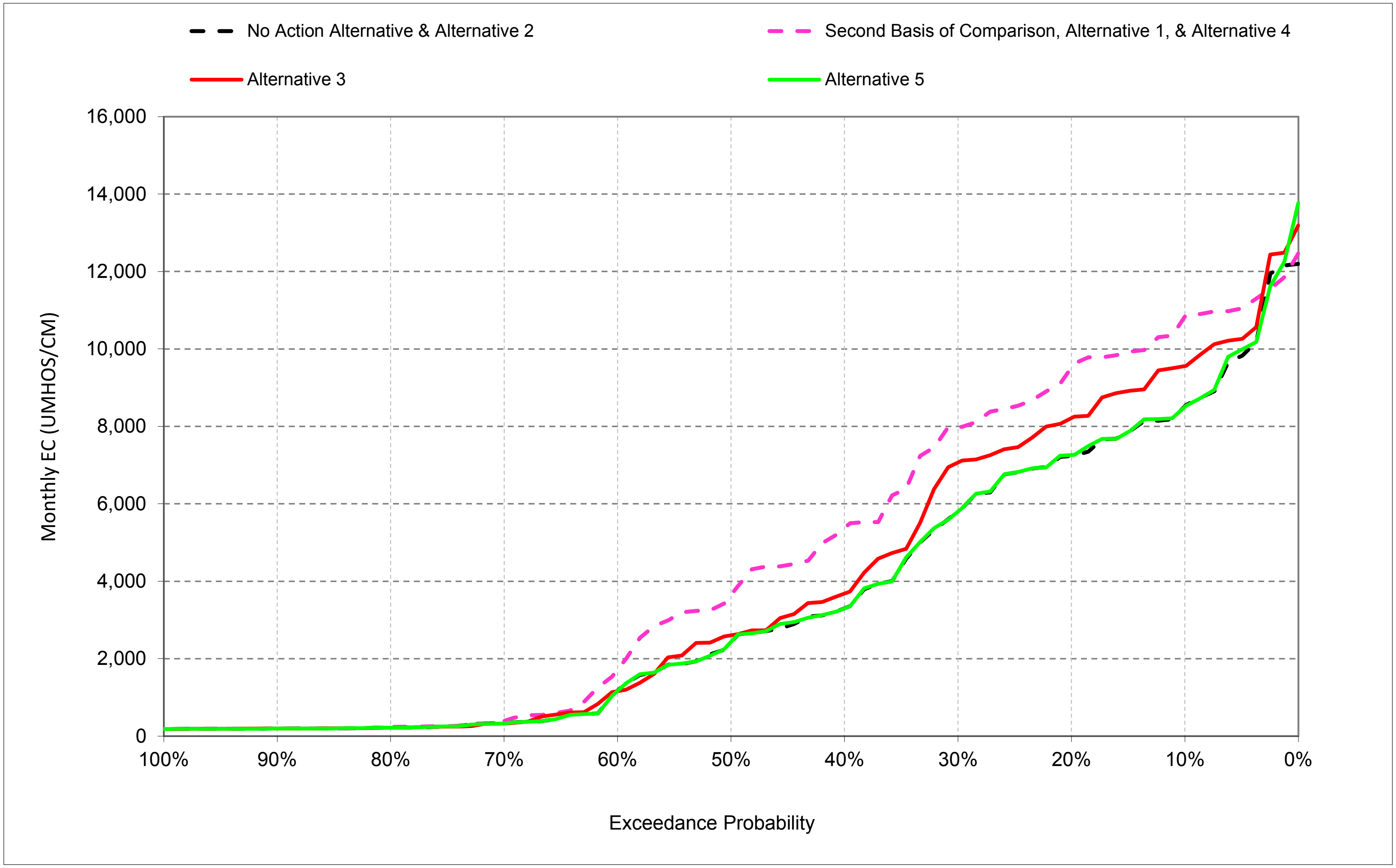
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.3. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, December



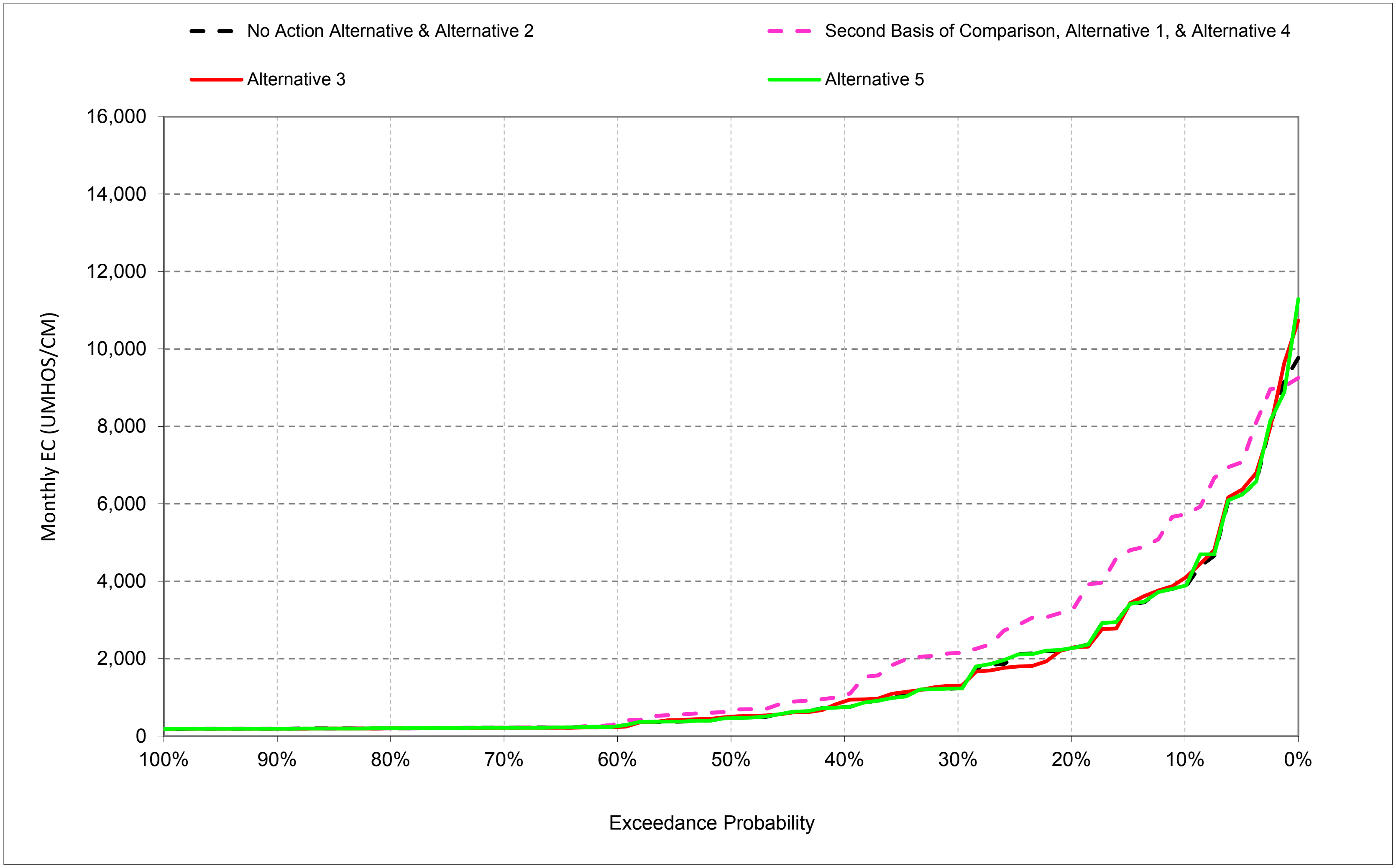
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.4. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, January



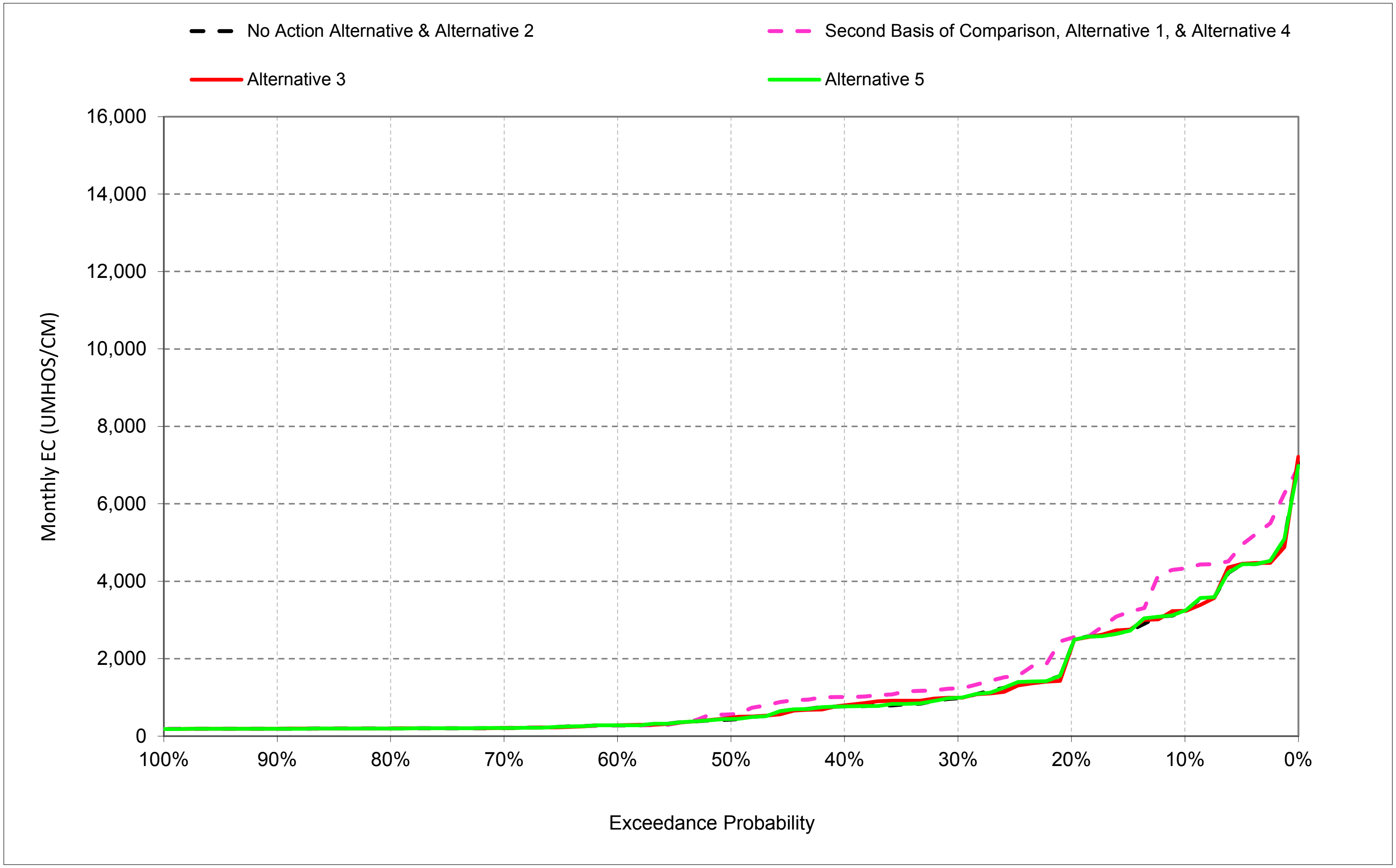
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.5. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, February



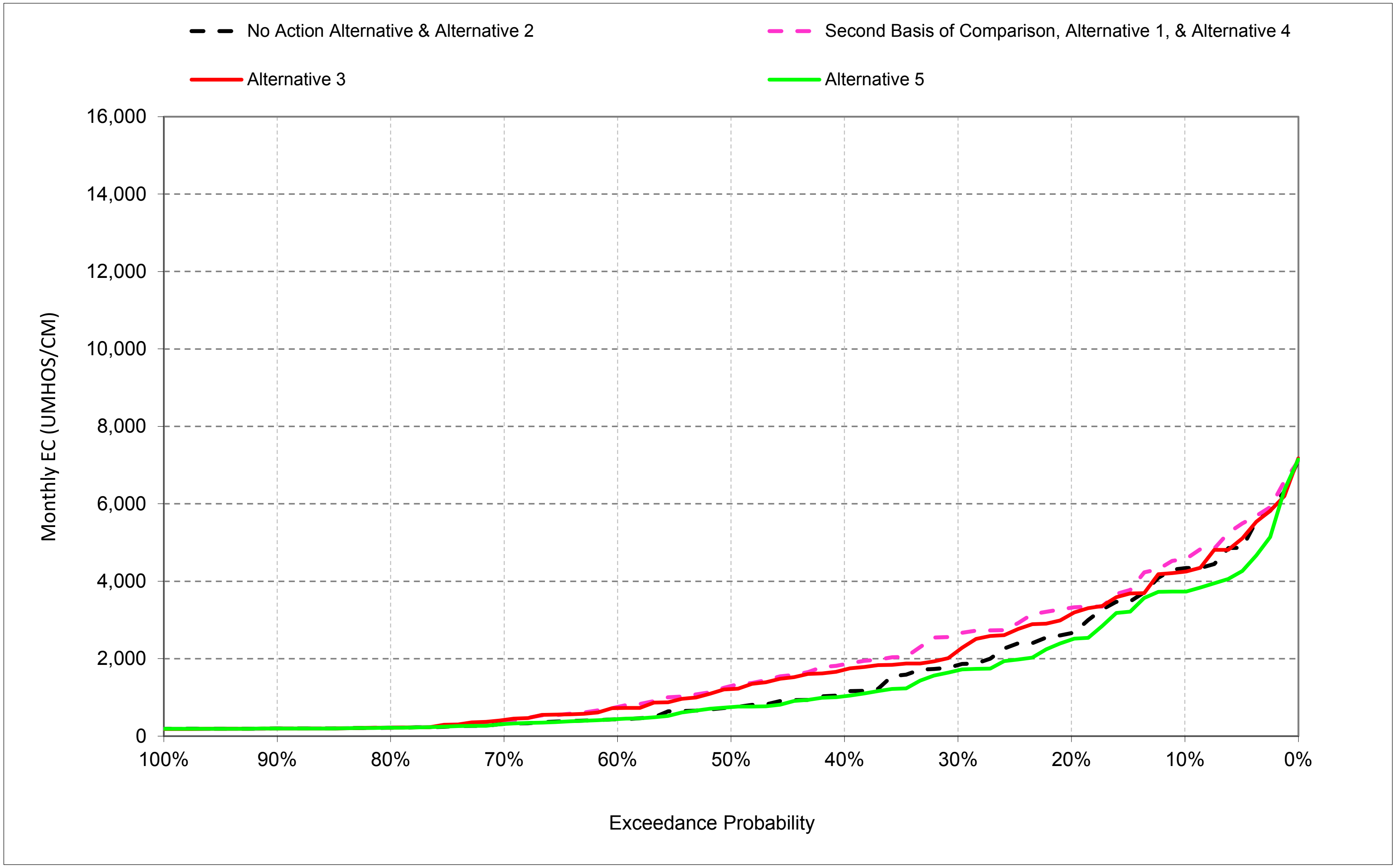
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.6. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, March



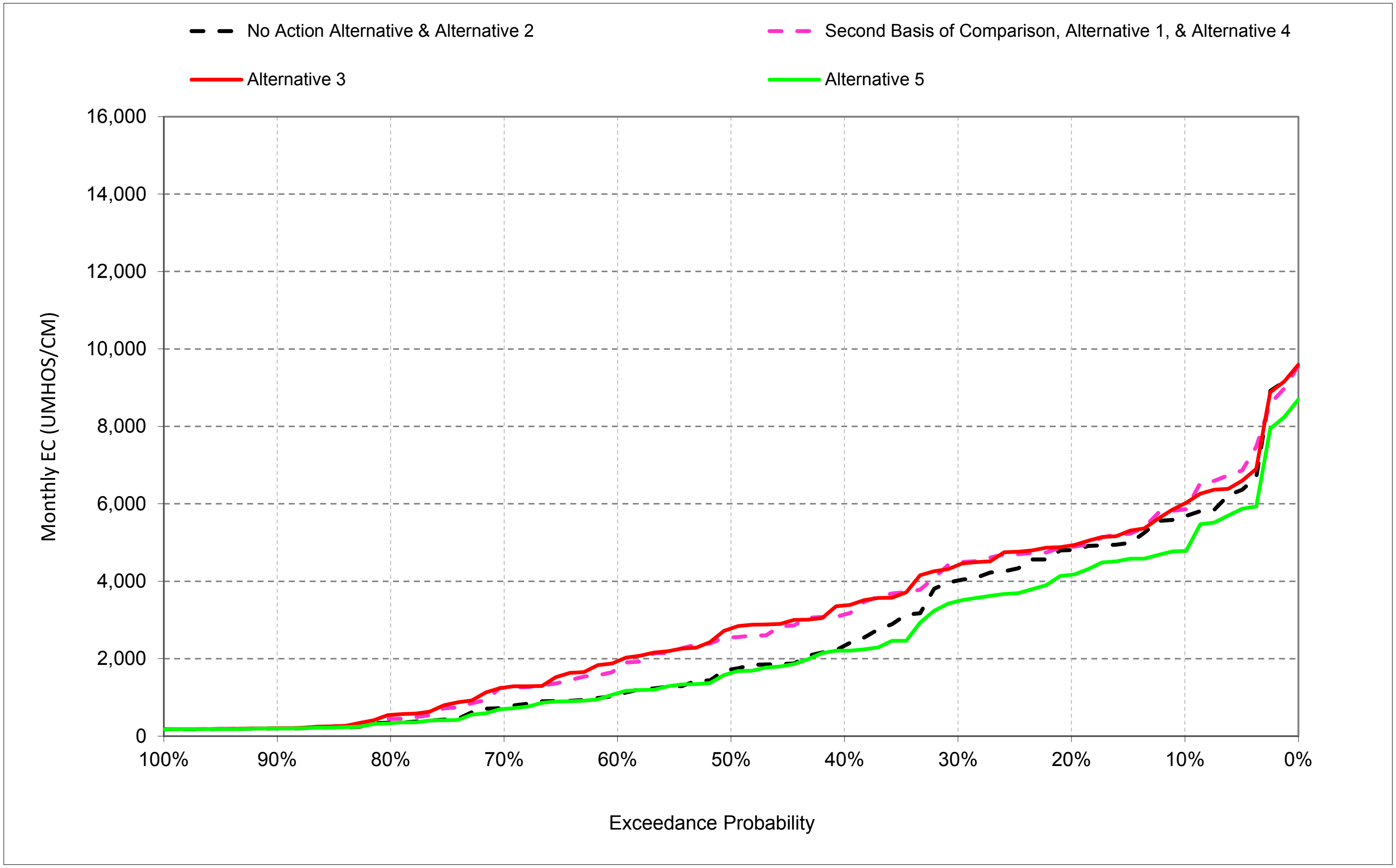
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.7. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, April



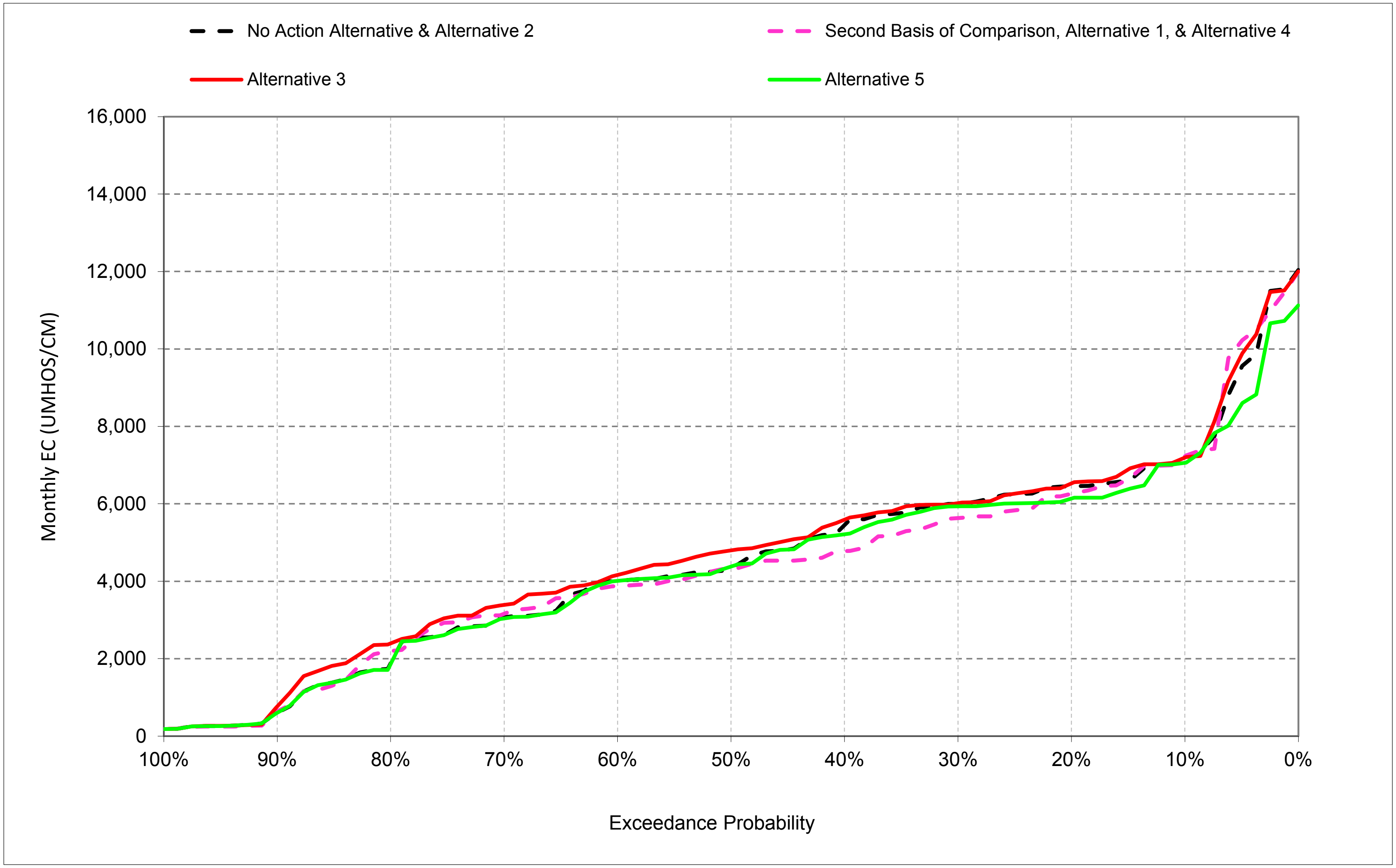
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.8. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, May



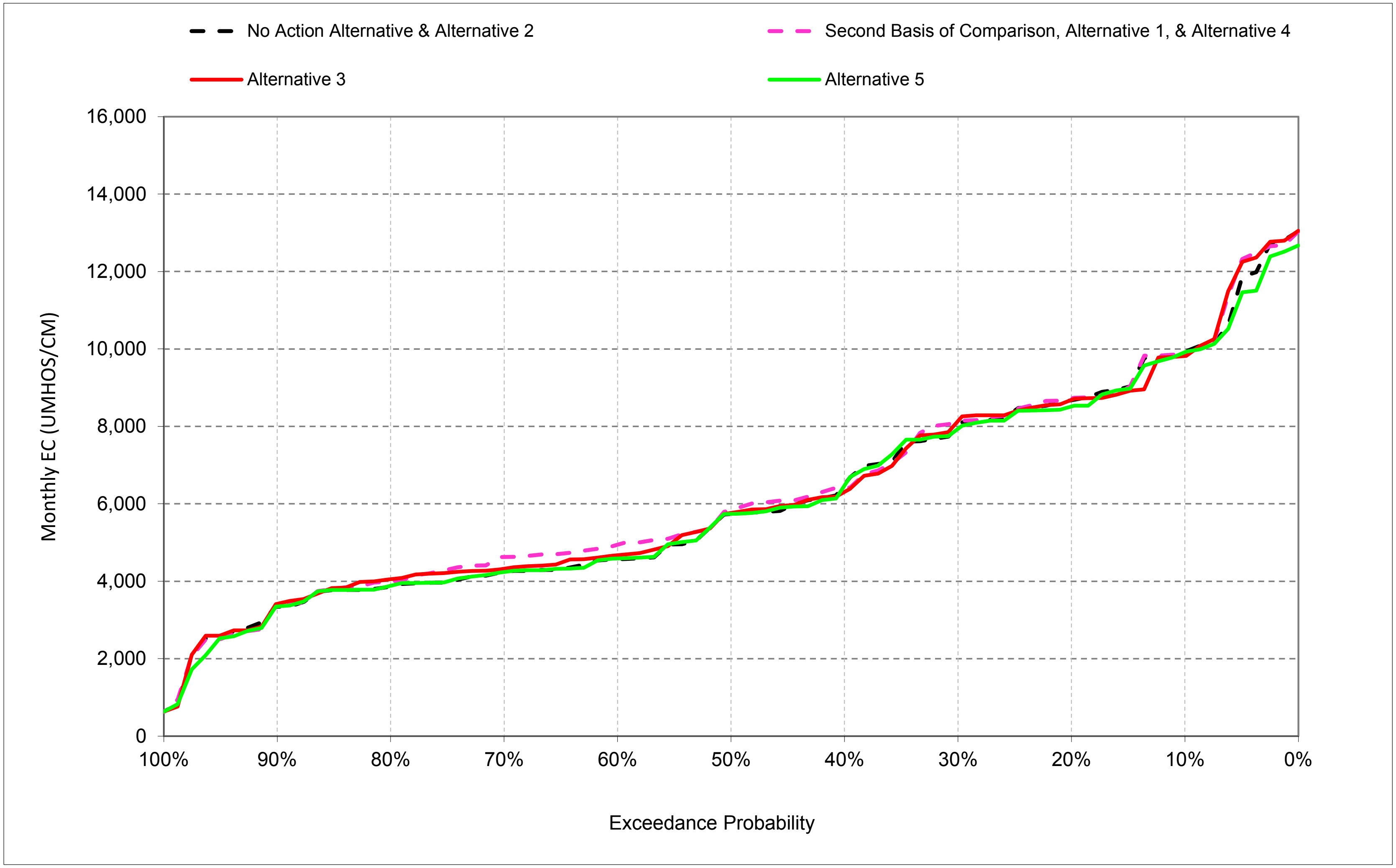
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.9. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, June



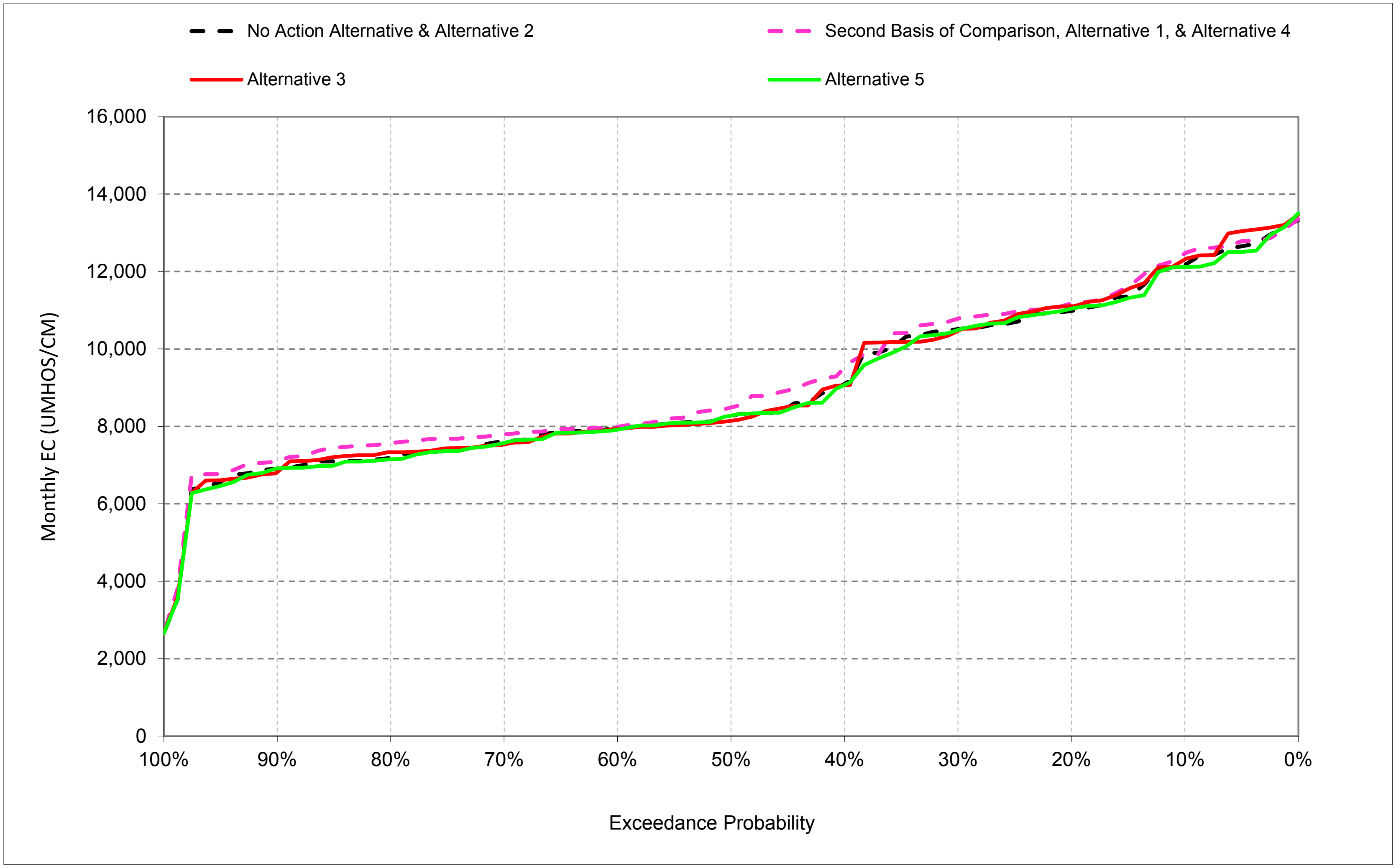
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.10. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, July



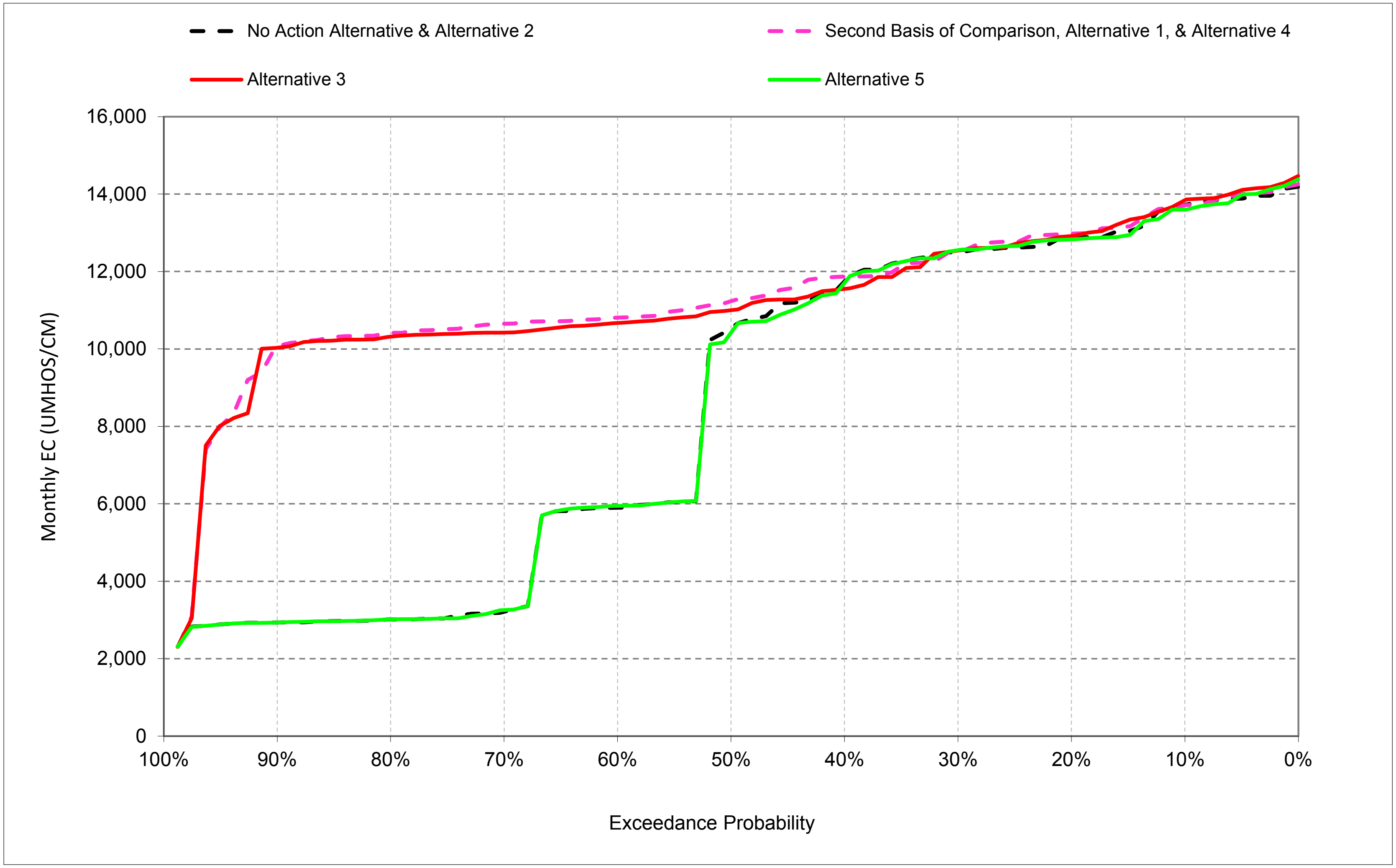
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.11. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.5.12. Sacramento River at Mallard Slough Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.5.1. Sacramento River at Mallard Slough Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,237	15,536	13,384	8,515	3,874	3,239	4,335	5,680	7,198	9,928	12,185	13,719
20%	14,012	13,740	11,351	7,235	2,267	2,304	2,663	4,804	6,453	8,676	10,986	12,881
30%	13,861	13,299	8,120	5,800	1,231	978	1,835	4,016	6,001	7,995	10,513	12,500
40%	13,538	11,380	6,987	3,300	751	768	1,116	2,335	5,450	6,496	9,098	11,747
50%	12,409	6,217	6,205	2,430	463	428	742	1,724	4,356	5,735	8,265	10,544
60%	6,299	5,882	5,494	1,171	259	279	434	1,068	4,011	4,567	7,965	5,899
70%	3,172	3,144	2,322	335	218	209	313	743	3,067	4,239	7,617	3,301
80%	3,053	2,870	865	218	202	197	214	347	1,874	3,867	7,199	3,016
90%	2,914	2,710	319	194	192	192	196	198	601	3,339	6,910	2,938
Long Term												
Full Simulation Period[b]	9,172	8,228	6,310	3,544	1,486	1,142	1,535	2,514	4,524	6,181	8,988	8,454
Water Year Types[c]												
Wet (32%)	6,802	5,359	2,156	746	239	263	337	600	2,026	3,434	7,135	2,988
Above Normal (16%)	11,047	8,470	5,608	1,574	459	352	482	1,112	3,727	4,399	7,324	5,906
Below Normal (13%)	6,911	6,624	6,658	4,288	1,703	1,514	1,817	2,841	5,141	5,934	8,443	11,307
Dry (24%)	9,942	9,655	8,869	5,570	2,142	1,279	1,905	3,351	5,537	8,238	10,656	12,439
Critical (15%)	13,064	13,275	11,485	7,685	4,007	3,337	4,399	6,486	8,542	10,858	12,525	13,801

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,090	15,314	13,389	10,837	5,727	4,332	4,576	5,857	7,222	9,867	12,466	13,714
20%	13,893	13,680	13,246	9,520	3,298	2,537	3,316	4,889	6,259	8,724	11,178	12,976
30%	13,545	13,389	12,331	7,985	2,148	1,232	2,636	4,475	5,630	8,118	10,782	12,513
40%	13,332	13,129	11,675	5,376	1,062	1,012	1,856	3,141	4,780	6,416	9,510	11,868
50%	12,917	12,752	10,145	3,654	654	562	1,293	2,552	4,332	5,844	8,488	11,234
60%	12,563	12,217	7,519	1,717	333	276	754	1,751	3,874	4,942	7,987	10,807
70%	12,314	11,977	4,052	393	217	210	379	1,247	3,159	4,624	7,792	10,651
80%	11,890	10,939	1,860	234	203	199	224	444	2,199	3,992	7,567	10,415
90%	10,671	6,016	549	195	191	194	195	201	640	3,386	7,097	10,072
Long Term												
Full Simulation Period[b]	12,558	11,604	8,216	4,552	1,923	1,359	1,857	2,909	4,430	6,308	9,200	11,360
Water Year Types[c]												
Wet (32%)	11,338	9,856	3,407	1,042	262	275	480	866	1,996	3,614	7,282	9,584
Above Normal (16%)	13,300	11,306	8,006	2,349	621	377	770	1,688	3,550	4,561	7,621	10,626
Below Normal (13%)	12,105	10,844	9,298	6,338	2,544	1,773	2,346	3,389	4,596	6,053	8,887	11,489
Dry (24%)	13,074	12,921	11,277	7,247	2,789	1,594	2,328	3,716	5,491	8,252	10,831	12,584
Critical (15%)	13,952	14,214	12,773	8,412	4,920	3,998	4,785	6,873	8,734	11,031	12,635	13,844

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-147	-222	6	2,321	1,852	1,093	240	177	24	-61	281	-5
20%	-119	-60	1,895	2,285	1,031	233	653	84	-193	48	192	95
30%	-315	90	4,211	2,185	916	254	801	459	-372	122	269	12
40%	-206	1,749	4,688	2,076	311	244	740	806	-669	-80	411	121
50%	508	6,536	3,940	1,224	191	134	552	827	-24	110	223	690
60%	6,263	6,335	2,025	546	74	-3	321	683	-137	376	21	4,908
70%	9,142	8,834	1,731	58	0	1	66	504	92	385	175	7,350
80%	8,837	8,069	995	16	1	2	9	97	325	125	369	7,399
90%	7,757	3,307	230	1	-1	2	-1	3	39	48	188	7,134
Long Term												
Full Simulation Period[b]	3,386	3,376	1,907	1,007	437	216	322	395	-94	127	212	2,906
Water Year Types[c]												
Wet (32%)	4,535	4,497	1,251	296	23	12	144	266	-31	180	147	6,596
Above Normal (16%)	2,253	2,837	2,398	776	162	24	287	576	-177	161	297	4,720
Below Normal (13%)	5,194	4,220	2,639	2,050	841	259	530	548	-545	119	444	182
Dry (24%)	3,132	3,266	2,408	1,677	647	316	423	365	-46	15	176	145
Critical (15%)	888	939	1,288	728	914	661	386	387	192	173	110	44

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.5.2. Sacramento River at Mallard Slough Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,237	15,536	13,384	8,515	3,874	3,239	4,335	5,680	7,198	9,928	12,185	13,719
20%	14,012	13,740	11,351	7,235	2,267	2,304	2,663	4,804	6,453	8,676	10,986	12,881
30%	13,861	13,299	8,120	5,800	1,231	978	1,835	4,016	6,001	7,995	10,513	12,500
40%	13,538	11,380	6,987	3,300	751	768	1,116	2,335	5,450	6,496	9,098	11,747
50%	12,409	6,217	6,205	2,430	463	428	742	1,724	4,356	5,735	8,265	10,544
60%	6,299	5,882	5,494	1,171	259	279	434	1,068	4,011	4,567	7,965	5,899
70%	3,172	3,144	2,322	335	218	209	313	743	3,067	4,239	7,617	3,301
80%	3,053	2,870	865	218	202	197	214	347	1,874	3,867	7,199	3,016
90%	2,914	2,710	319	194	192	192	196	198	601	3,339	6,910	2,938
Long Term												
Full Simulation Period[b]	9,172	8,228	6,310	3,544	1,486	1,142	1,535	2,514	4,524	6,181	8,988	8,454
Water Year Types[c]												
Wet (32%)	6,802	5,359	2,156	746	239	263	337	600	2,026	3,434	7,135	2,988
Above Normal (16%)	11,047	8,470	5,608	1,574	459	352	482	1,112	3,727	4,399	7,324	5,906
Below Normal (13%)	6,911	6,624	6,658	4,288	1,703	1,514	1,817	2,841	5,141	5,934	8,443	11,307
Dry (24%)	9,942	9,655	8,869	5,570	2,142	1,279	1,905	3,351	5,537	8,238	10,656	12,439
Critical (15%)	13,064	13,275	11,485	7,685	4,007	3,337	4,399	6,486	8,542	10,858	12,525	13,801

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,057	15,546	13,418	9,561	4,084	3,235	4,246	6,006	7,191	9,816	12,314	13,839
20%	14,010	13,829	13,051	8,216	2,276	2,279	3,152	4,927	6,524	8,685	11,103	12,914
30%	13,745	13,428	12,346	7,068	1,309	990	2,203	4,416	6,017	8,138	10,465	12,542
40%	13,315	13,176	11,259	3,682	896	795	1,716	3,375	5,588	6,304	9,061	11,552
50%	12,840	12,899	10,075	2,606	500	477	1,215	2,780	4,796	5,766	8,142	11,000
60%	12,448	12,287	7,575	1,162	238	283	724	1,939	4,161	4,674	7,935	10,673
70%	12,276	11,957	3,033	329	215	207	418	1,255	3,390	4,326	7,533	10,424
80%	11,908	10,870	1,784	218	202	198	218	545	2,393	4,051	7,331	10,318
90%	10,908	5,736	545	194	191	193	193	203	769	3,420	6,815	10,079
Long Term												
Full Simulation Period[b]	12,624	11,713	8,056	3,923	1,508	1,146	1,747	2,951	4,715	6,235	9,024	11,274
Water Year Types[c]												
Wet (32%)	11,282	9,923	3,256	836	244	281	481	953	2,268	3,536	7,094	9,531
Above Normal (16%)	13,538	11,404	7,647	1,784	432	345	727	1,769	3,947	4,484	7,437	10,553
Below Normal (13%)	12,284	11,066	9,318	4,963	1,736	1,505	2,183	3,464	5,380	5,934	8,395	11,074
Dry (24%)	13,047	13,005	11,194	6,205	2,134	1,278	2,141	3,771	5,669	8,177	10,724	12,554
Critical (15%)	14,150	14,364	12,508	8,170	4,160	3,340	4,538	6,720	8,645	11,020	12,671	13,879

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-180	10	35	1,046	210	-4	-89	326	-7	-112	129	120
20%	-2	89	1,700	981	9	-25	489	123	72	9	117	33
30%	-115	129	4,226	1,268	78	13	368	399	16	143	-48	42
40%	-223	1,796	4,272	382	145	27	600	1,039	138	-193	-38	-195
50%	431	6,682	3,871	175	37	49	474	1,055	440	31	-123	456
60%	6,149	6,405	2,081	-9	-21	4	290	870	150	108	-31	4,774
70%	9,104	8,813	711	-6	-3	-2	105	512	323	87	-84	7,123
80%	8,856	8,000	919	0	0	1	3	199	519	184	132	7,301
90%	7,994	3,027	227	0	-1	1	-3	5	168	81	-94	7,140
Long Term												
Full Simulation Period[b]	3,452	3,485	1,746	378	22	4	212	437	191	55	36	2,820
Water Year Types[c]												
Wet (32%)	4,480	4,564	1,100	90	5	18	144	354	242	102	-42	6,543
Above Normal (16%)	2,491	2,935	2,039	210	-27	-7	245	658	220	85	114	4,647
Below Normal (13%)	5,373	4,442	2,660	676	33	-8	366	623	240	0	-48	-233
Dry (24%)	3,105	3,350	2,325	635	-8	0	236	420	132	-61	69	115
Critical (15%)	1,086	1,089	1,024	485	153	2	139	235	103	162	145	78

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.5.3. Sacramento River at Mallard Slough Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,237	15,536	13,384	8,515	3,874	3,239	4,335	5,680	7,198	9,928	12,185	13,719
20%	14,012	13,740	11,351	7,235	2,267	2,304	2,663	4,804	6,453	8,676	10,986	12,881
30%	13,861	13,299	8,120	5,800	1,231	978	1,835	4,016	6,001	7,995	10,513	12,500
40%	13,538	11,380	6,987	3,300	751	768	1,116	2,335	5,450	6,496	9,098	11,747
50%	12,409	6,217	6,205	2,430	463	428	742	1,724	4,356	5,735	8,265	10,544
60%	6,299	5,882	5,494	1,171	259	279	434	1,068	4,011	4,567	7,965	5,899
70%	3,172	3,144	2,322	335	218	209	313	743	3,067	4,239	7,617	3,301
80%	3,053	2,870	865	218	202	197	214	347	1,874	3,867	7,199	3,016
90%	2,914	2,710	319	194	192	192	196	198	601	3,339	6,910	2,938
Long Term												
Full Simulation Period[b]	9,172	8,228	6,310	3,544	1,486	1,142	1,535	2,514	4,524	6,181	8,988	8,454
Water Year Types[c]												
Wet (32%)	6,802	5,359	2,156	746	239	263	337	600	2,026	3,434	7,135	2,988
Above Normal (16%)	11,047	8,470	5,608	1,574	459	352	482	1,112	3,727	4,399	7,324	5,906
Below Normal (13%)	6,911	6,624	6,658	4,288	1,703	1,514	1,817	2,841	5,141	5,934	8,443	11,307
Dry (24%)	9,942	9,655	8,869	5,570	2,142	1,279	1,905	3,351	5,537	8,238	10,656	12,439
Critical (15%)	13,064	13,275	11,485	7,685	4,007	3,337	4,399	6,486	8,542	10,858	12,525	13,801

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,241	15,424	13,385	8,505	3,884	3,243	3,734	4,783	7,058	9,914	12,121	13,600
20%	14,093	13,761	11,175	7,258	2,272	2,304	2,491	4,167	6,137	8,512	11,041	12,828
30%	13,846	13,301	8,136	5,800	1,229	993	1,697	3,484	5,932	7,935	10,490	12,552
40%	13,449	11,350	6,985	3,299	748	768	1,031	2,209	5,214	6,470	9,070	11,707
50%	12,255	6,186	6,218	2,436	463	439	746	1,628	4,380	5,741	8,281	10,422
60%	6,301	5,816	5,492	1,168	258	278	439	1,106	4,009	4,587	7,916	5,949
70%	3,171	3,143	2,289	333	218	208	313	703	3,037	4,240	7,575	3,297
80%	3,061	2,871	872	218	202	197	216	331	1,857	3,882	7,148	3,023
90%	2,909	2,711	331	194	192	192	196	198	602	3,351	6,916	2,949
Long Term												
Full Simulation Period[b]	9,163	8,199	6,309	3,570	1,508	1,146	1,397	2,262	4,383	6,124	8,938	8,441
Water Year Types[c]												
Wet (32%)	6,800	5,380	2,158	745	239	263	333	570	2,015	3,396	7,077	2,987
Above Normal (16%)	11,030	8,291	5,547	1,571	459	353	480	1,080	3,707	4,398	7,322	5,925
Below Normal (13%)	6,923	6,630	6,665	4,294	1,702	1,513	1,653	2,579	5,058	5,909	8,397	11,232
Dry (24%)	9,931	9,633	8,899	5,601	2,152	1,282	1,657	2,968	5,362	8,190	10,613	12,432
Critical (15%)	13,035	13,254	11,487	7,809	4,145	3,357	4,027	5,741	7,997	10,656	12,425	13,773

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	4	-112	1	-10	10	4	-602	-896	-140	-14	-64	-119
20%	82	21	-176	23	5	0	-172	-637	-315	-164	55	-53
30%	-14	2	16	0	-3	15	-138	-532	-69	-60	-23	51
40%	-89	-31	-3	-1	-3	0	-85	-126	-236	-27	-29	-40
50%	-154	-31	14	6	0	11	4	-96	24	6	16	-122
60%	2	-66	-2	-3	-1	-1	6	38	-2	20	-50	49
70%	-1	0	-33	-3	0	0	0	-40	-30	1	-43	-4
80%	8	1	7	-1	0	0	1	-16	-17	15	-50	7
90%	-5	2	12	0	0	0	0	0	1	13	6	10
Long Term												
Full Simulation Period[b]	-9	-29	0	26	22	4	-138	-252	-140	-57	-50	-13
Water Year Types[c]												
Wet (32%)	-2	21	2	-1	0	0	-3	-29	-12	-38	-59	-1
Above Normal (16%)	-17	-179	-60	-2	0	0	-2	-32	-20	-1	-2	19
Below Normal (13%)	12	6	6	7	-1	-1	-163	-262	-82	-25	-46	-75
Dry (24%)	-11	-22	30	31	9	3	-248	-383	-175	-48	-43	-7
Critical (15%)	-29	-21	2	124	139	20	-372	-744	-545	-202	-100	-28

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.5.4. Sacramento River at Mallard Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,090	15,314	13,389	10,837	5,727	4,332	4,576	5,857	7,222	9,867	12,466	13,714
20%	13,893	13,680	13,246	9,520	3,298	2,537	3,316	4,889	6,259	8,724	11,178	12,976
30%	13,545	13,389	12,331	7,985	2,148	1,232	2,636	4,475	5,630	8,118	10,782	12,513
40%	13,332	13,129	11,675	5,376	1,062	1,012	1,856	3,141	4,780	6,416	9,510	11,868
50%	12,917	12,752	10,145	3,654	654	562	1,293	2,552	4,332	5,844	8,488	11,234
60%	12,563	12,217	7,519	1,717	333	276	754	1,751	3,874	4,942	7,987	10,807
70%	12,314	11,977	4,052	393	217	210	379	1,247	3,159	4,624	7,792	10,651
80%	11,890	10,939	1,860	234	203	199	224	444	2,199	3,992	7,567	10,415
90%	10,671	6,016	549	195	191	194	195	201	640	3,386	7,097	10,072
Long Term												
Full Simulation Period[b]	12,558	11,604	8,216	4,552	1,923	1,359	1,857	2,909	4,430	6,308	9,200	11,360
Water Year Types[c]												
Wet (32%)	11,338	9,856	3,407	1,042	262	275	480	866	1,996	3,614	7,282	9,584
Above Normal (16%)	13,300	11,306	8,006	2,349	621	377	770	1,688	3,550	4,561	7,621	10,626
Below Normal (13%)	12,105	10,844	9,298	6,338	2,544	1,773	2,346	3,389	4,596	6,053	8,887	11,489
Dry (24%)	13,074	12,921	11,277	7,247	2,789	1,594	2,328	3,716	5,491	8,252	10,831	12,584
Critical (15%)	13,952	14,214	12,773	8,412	4,920	3,998	4,785	6,873	8,734	11,031	12,635	13,844

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,237	15,536	13,384	8,515	3,874	3,239	4,335	5,680	7,198	9,928	12,185	13,719
20%	14,012	13,740	11,351	7,235	2,267	2,304	2,663	4,804	6,453	8,676	10,986	12,881
30%	13,861	13,299	8,120	5,800	1,231	978	1,835	4,016	6,001	7,995	10,513	12,500
40%	13,538	11,380	6,987	3,300	751	768	1,116	2,335	5,450	6,496	9,098	11,747
50%	12,409	6,217	6,205	2,430	463	428	742	1,724	4,356	5,735	8,265	10,544
60%	6,299	5,882	5,494	1,171	259	279	434	1,068	4,011	4,567	7,965	5,899
70%	3,172	3,144	2,322	335	218	209	313	743	3,067	4,239	7,617	3,301
80%	3,053	2,870	865	218	202	197	214	347	1,874	3,867	7,199	3,016
90%	2,914	2,710	319	194	192	192	196	198	601	3,339	6,910	2,938
Long Term												
Full Simulation Period[b]	9,172	8,228	6,310	3,544	1,486	1,142	1,535	2,514	4,524	6,181	8,988	8,454
Water Year Types[c]												
Wet (32%)	6,802	5,359	2,156	746	239	263	337	600	2,026	3,434	7,135	2,988
Above Normal (16%)	11,047	8,470	5,608	1,574	459	352	482	1,112	3,727	4,399	7,324	5,906
Below Normal (13%)	6,911	6,624	6,658	4,288	1,703	1,514	1,817	2,841	5,141	5,934	8,443	11,307
Dry (24%)	9,942	9,655	8,869	5,570	2,142	1,279	1,905	3,351	5,537	8,238	10,656	12,439
Critical (15%)	13,064	13,275	11,485	7,685	4,007	3,337	4,399	6,486	8,542	10,858	12,525	13,801

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	147	222	-6	-2,321	-1,852	-1,093	-240	-177	-24	61	-281	5
20%	119	60	-1,895	-2,285	-1,031	-233	-653	-84	193	-48	-192	-95
30%	315	-90	-4,211	-2,185	-916	-254	-801	-459	372	-122	-269	-12
40%	206	-1,749	-4,688	-2,076	-311	-244	-740	-806	669	80	-411	-121
50%	-508	-6,536	-3,940	-1,224	-191	-134	-552	-827	24	-110	-223	-690
60%	-6,263	-6,335	-2,025	-546	-74	3	-321	-683	137	-376	-21	-4,908
70%	-9,142	-8,834	-1,731	-58	0	-1	-66	-504	-92	-385	-175	-7,350
80%	-8,837	-8,069	-995	-16	-1	-2	-9	-97	-325	-125	-369	-7,399
90%	-7,757	-3,307	-230	-1	1	-2	1	-3	-39	-48	-188	-7,134
Long Term												
Full Simulation Period[b]	-3,386	-3,376	-1,907	-1,007	-437	-216	-322	-395	94	-127	-212	-2,906
Water Year Types[c]												
Wet (32%)	-4,535	-4,497	-1,251	-296	-23	-12	-144	-266	31	-180	-147	-6,596
Above Normal (16%)	-2,253	-2,837	-2,398	-776	-162	-24	-287	-576	177	-161	-297	-4,720
Below Normal (13%)	-5,194	-4,220	-2,639	-2,050	-841	-259	-530	-548	545	-119	-444	-182
Dry (24%)	-3,132	-3,266	-2,408	-1,677	-647	-316	-423	-365	46	-15	-176	-145
Critical (15%)	-888	-939	-1,288	-728	-914	-661	-386	-387	-192	-173	-110	-44

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.5.5. Sacramento River at Mallard Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,090	15,314	13,389	10,837	5,727	4,332	4,576	5,857	7,222	9,867	12,466	13,714
20%	13,893	13,680	13,246	9,520	3,298	2,537	3,316	4,889	6,259	8,724	11,178	12,976
30%	13,545	13,389	12,331	7,985	2,148	1,232	2,636	4,475	5,630	8,118	10,782	12,513
40%	13,332	13,129	11,675	5,376	1,062	1,012	1,856	3,141	4,780	6,416	9,510	11,868
50%	12,917	12,752	10,145	3,654	654	562	1,293	2,552	4,332	5,844	8,488	11,234
60%	12,563	12,217	7,519	1,717	333	276	754	1,751	3,874	4,942	7,987	10,807
70%	12,314	11,977	4,052	393	217	210	379	1,247	3,159	4,624	7,792	10,651
80%	11,890	10,939	1,860	234	203	199	224	444	2,199	3,992	7,567	10,415
90%	10,671	6,016	549	195	191	194	195	201	640	3,386	7,097	10,072
Long Term												
Full Simulation Period[b]	12,558	11,604	8,216	4,552	1,923	1,359	1,857	2,909	4,430	6,308	9,200	11,360
Water Year Types[c]												
Wet (32%)	11,338	9,856	3,407	1,042	262	275	480	866	1,996	3,614	7,282	9,584
Above Normal (16%)	13,300	11,306	8,006	2,349	621	377	770	1,688	3,550	4,561	7,621	10,626
Below Normal (13%)	12,105	10,844	9,298	6,338	2,544	1,773	2,346	3,389	4,596	6,053	8,887	11,489
Dry (24%)	13,074	12,921	11,277	7,247	2,789	1,594	2,328	3,716	5,491	8,252	10,831	12,584
Critical (15%)	13,952	14,214	12,773	8,412	4,920	3,998	4,785	6,873	8,734	11,031	12,635	13,844

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,057	15,546	13,418	9,561	4,084	3,235	4,246	6,006	7,191	9,816	12,314	13,839
20%	14,010	13,829	13,051	8,216	2,276	2,279	3,152	4,927	6,524	8,685	11,103	12,914
30%	13,745	13,428	12,346	7,068	1,309	990	2,203	4,416	6,017	8,138	10,465	12,542
40%	13,315	13,176	11,259	3,682	896	795	1,716	3,375	5,588	6,304	9,061	11,552
50%	12,840	12,899	10,075	2,606	500	477	1,215	2,780	4,796	5,766	8,142	11,000
60%	12,448	12,287	7,575	1,162	238	283	724	1,939	4,161	4,674	7,935	10,673
70%	12,276	11,957	3,033	329	215	207	418	1,255	3,390	4,326	7,533	10,424
80%	11,908	10,870	1,784	218	202	198	218	545	2,393	4,051	7,331	10,318
90%	10,908	5,736	545	194	191	193	193	203	769	3,420	6,815	10,079
Long Term												
Full Simulation Period[b]	12,624	11,713	8,056	3,923	1,508	1,146	1,747	2,951	4,715	6,235	9,024	11,274
Water Year Types[c]												
Wet (32%)	11,282	9,923	3,256	836	244	281	481	953	2,268	3,536	7,094	9,531
Above Normal (16%)	13,538	11,404	7,647	1,784	432	345	727	1,769	3,947	4,484	7,437	10,553
Below Normal (13%)	12,284	11,066	9,318	4,963	1,736	1,505	2,183	3,464	5,380	5,934	8,395	11,074
Dry (24%)	13,047	13,005	11,194	6,205	2,134	1,278	2,141	3,771	5,669	8,177	10,724	12,554
Critical (15%)	14,150	14,364	12,508	8,170	4,160	3,340	4,538	6,720	8,645	11,020	12,671	13,879

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-33	232	29	-1,276	-1,643	-1,097	-329	149	-31	-51	-152	125
20%	117	149	-195	-1,304	-1,022	-258	-164	38	265	-39	-75	-62
30%	200	39	15	-917	-839	-241	-433	-59	388	20	-317	29
40%	-17	47	-416	-1,694	-165	-217	-140	234	807	-112	-449	-316
50%	-77	147	-70	-1,048	-154	-85	-78	228	464	-78	-346	-234
60%	-115	70	57	-555	-95	7	-31	188	287	-268	-52	-134
70%	-39	-21	-1,019	-64	-3	-3	39	8	232	-298	-259	-227
80%	18	-69	-76	-16	-1	-1	-6	102	194	59	-237	-97
90%	237	-280	-4	-1	0	-1	-1	2	130	34	-282	6
Long Term												
Full Simulation Period[b]	66	109	-161	-629	-415	-212	-110	42	285	-73	-176	-86
Water Year Types[c]												
Wet (32%)	-56	67	-151	-206	-18	6	0	87	273	-78	-188	-53
Above Normal (16%)	238	98	-359	-565	-189	-31	-43	82	398	-77	-183	-73
Below Normal (13%)	179	222	20	-1,374	-808	-268	-163	75	785	-119	-492	-415
Dry (24%)	-27	83	-83	-1,042	-655	-316	-187	55	178	-76	-107	-30
Critical (15%)	198	150	-264	-243	-761	-658	-247	-153	-89	-11	35	35

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.5.6. Sacramento River at Mallard Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,090	15,314	13,389	10,837	5,727	4,332	4,576	5,857	7,222	9,867	12,466	13,714
20%	13,893	13,680	13,246	9,520	3,298	2,537	3,316	4,889	6,259	8,724	11,178	12,976
30%	13,545	13,389	12,331	7,985	2,148	1,232	2,636	4,475	5,630	8,118	10,782	12,513
40%	13,332	13,129	11,675	5,376	1,062	1,012	1,856	3,141	4,780	6,416	9,510	11,868
50%	12,917	12,752	10,145	3,654	654	562	1,293	2,552	4,332	5,844	8,488	11,234
60%	12,563	12,217	7,519	1,717	333	276	754	1,751	3,874	4,942	7,987	10,807
70%	12,314	11,977	4,052	393	217	210	379	1,247	3,159	4,624	7,792	10,651
80%	11,890	10,939	1,860	234	203	199	224	444	2,199	3,992	7,567	10,415
90%	10,671	6,016	549	195	191	194	195	201	640	3,386	7,097	10,072
Long Term												
Full Simulation Period[b]	12,558	11,604	8,216	4,552	1,923	1,359	1,857	2,909	4,430	6,308	9,200	11,360
Water Year Types[c]												
Wet (32%)	11,338	9,856	3,407	1,042	262	275	480	866	1,996	3,614	7,282	9,584
Above Normal (16%)	13,300	11,306	8,006	2,349	621	377	770	1,688	3,550	4,561	7,621	10,626
Below Normal (13%)	12,105	10,844	9,298	6,338	2,544	1,773	2,346	3,389	4,596	6,053	8,887	11,489
Dry (24%)	13,074	12,921	11,277	7,247	2,789	1,594	2,328	3,716	5,491	8,252	10,831	12,584
Critical (15%)	13,952	14,214	12,773	8,412	4,920	3,998	4,785	6,873	8,734	11,031	12,635	13,844

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,241	15,424	13,385	8,505	3,884	3,243	3,734	4,783	7,058	9,914	12,121	13,600
20%	14,093	13,761	11,175	7,258	2,272	2,304	2,491	4,167	6,137	8,512	11,041	12,828
30%	13,846	13,301	8,136	5,800	1,229	993	1,697	3,484	5,932	7,935	10,490	12,552
40%	13,449	11,350	6,985	3,299	748	768	1,031	2,209	5,214	6,470	9,070	11,707
50%	12,255	6,186	6,218	2,436	463	439	746	1,628	4,380	5,741	8,281	10,422
60%	6,301	5,816	5,492	1,168	258	278	439	1,106	4,009	4,587	7,916	5,949
70%	3,171	3,143	2,289	333	218	208	313	703	3,037	4,240	7,575	3,297
80%	3,061	2,871	872	218	202	197	216	331	1,857	3,882	7,148	3,023
90%	2,909	2,711	331	194	192	192	196	198	602	3,351	6,916	2,949
Long Term												
Full Simulation Period[b]	9,163	8,199	6,309	3,570	1,508	1,146	1,397	2,262	4,383	6,124	8,938	8,441
Water Year Types[c]												
Wet (32%)	6,800	5,380	2,158	745	239	263	333	570	2,015	3,396	7,077	2,987
Above Normal (16%)	11,030	8,291	5,547	1,571	459	353	480	1,080	3,707	4,398	7,322	5,925
Below Normal (13%)	6,923	6,630	6,665	4,294	1,702	1,513	1,653	2,579	5,058	5,909	8,397	11,232
Dry (24%)	9,931	9,633	8,899	5,601	2,152	1,282	1,657	2,968	5,362	8,190	10,613	12,432
Critical (15%)	13,035	13,254	11,487	7,809	4,145	3,357	4,027	5,741	7,997	10,656	12,425	13,773

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	151	109	-4	-2,331	-1,843	-1,088	-842	-1,073	-164	47	-345	-114
20%	200	81	-2,070	-2,262	-1,026	-232	-825	-722	-122	-212	-137	-148
30%	301	-88	-4,195	-2,185	-919	-238	-939	-991	303	-183	-292	39
40%	117	-1,780	-4,690	-2,077	-313	-244	-824	-932	433	54	-440	-161
50%	-662	-6,566	-3,927	-1,217	-192	-123	-548	-924	48	-103	-207	-812
60%	-6,262	-6,401	-2,027	-548	-75	2	-315	-645	135	-355	-71	-4,859
70%	-9,144	-8,834	-1,763	-60	1	-1	-66	-544	-121	-383	-218	-7,354
80%	-8,829	-8,068	-988	-17	-1	-2	-8	-113	-342	-110	-419	-7,391
90%	-7,762	-3,305	-218	-1	1	-2	1	-3	-38	-35	-181	-7,124
Long Term												
Full Simulation Period[b]	-3,395	-3,405	-1,907	-981	-415	-212	-460	-647	-46	-184	-262	-2,919
Water Year Types[c]												
Wet (32%)	-4,538	-4,476	-1,249	-296	-23	-12	-147	-296	19	-218	-205	-6,597
Above Normal (16%)	-2,270	-3,016	-2,459	-778	-162	-24	-290	-608	157	-163	-299	-4,701
Below Normal (13%)	-5,182	-4,215	-2,633	-2,044	-843	-260	-693	-810	462	-144	-490	-257
Dry (24%)	-3,143	-3,288	-2,378	-1,646	-637	-312	-671	-749	-130	-63	-219	-152
Critical (15%)	-917	-960	-1,286	-603	-775	-640	-758	-1,132	-738	-375	-210	-71

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

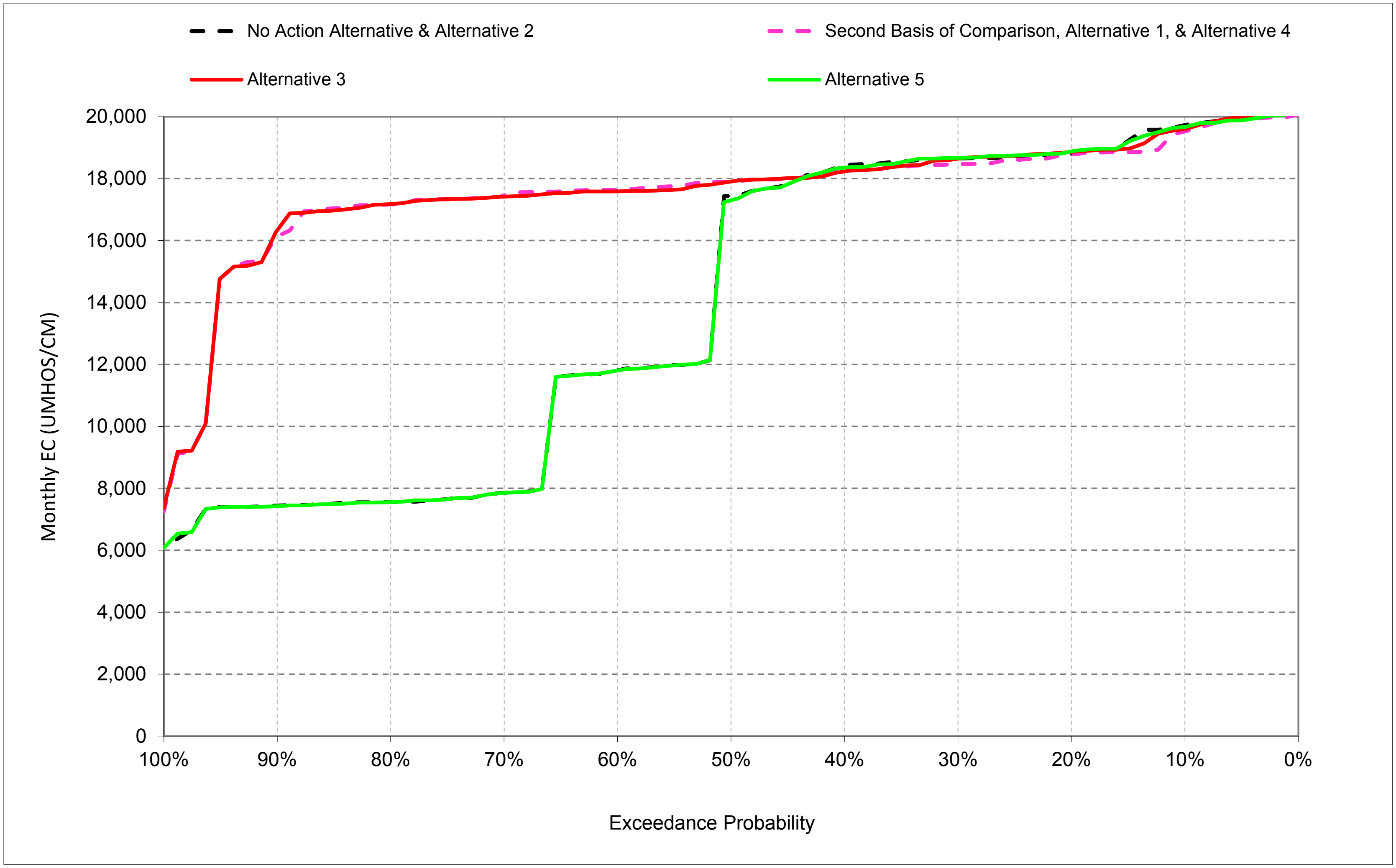
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

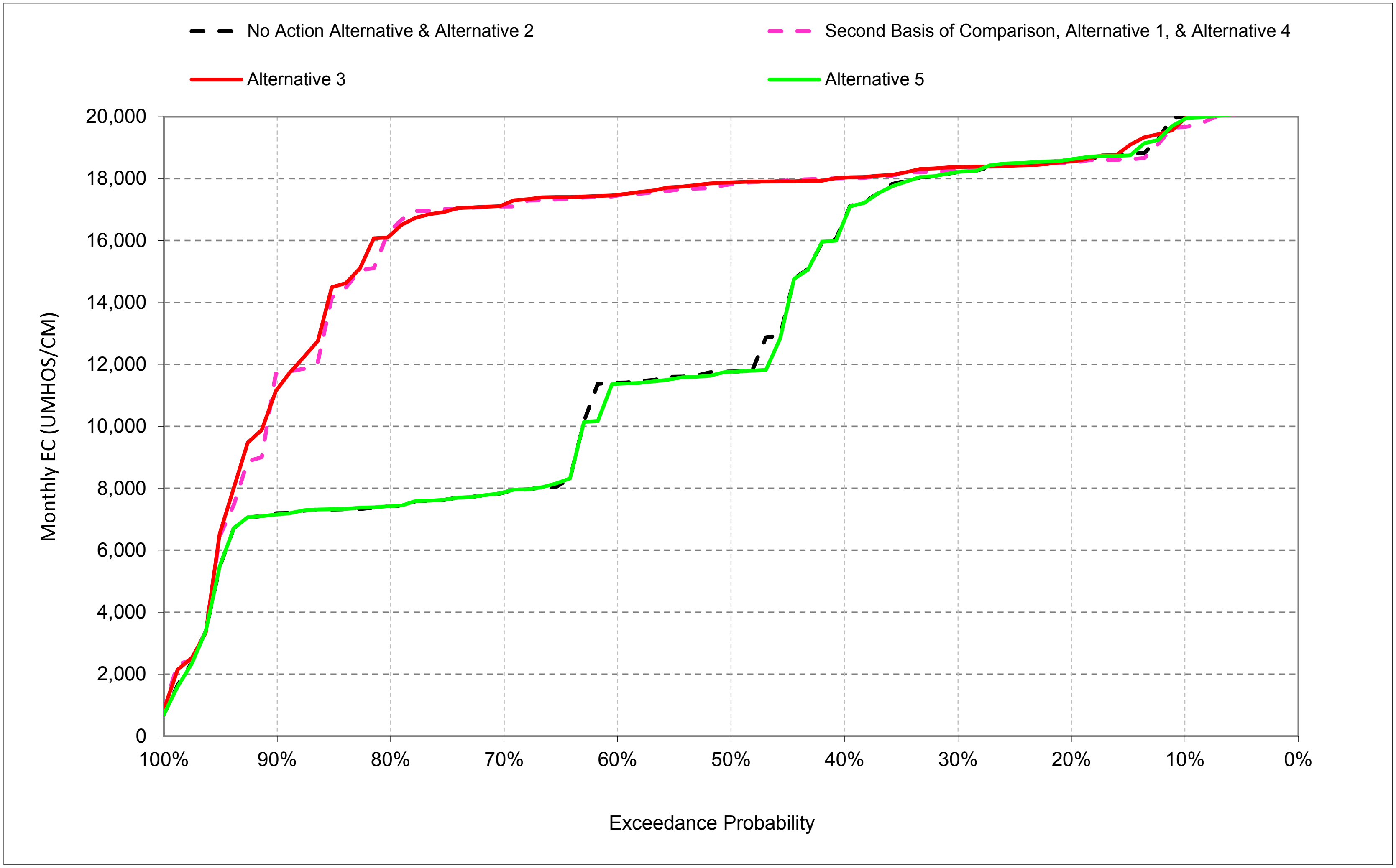
B.6. Sacramento River at Port Chicago Salinity

Figure 6E.B.6.1. Sacramento River at Port Chicago Salinity, Electrical Conductivity, October



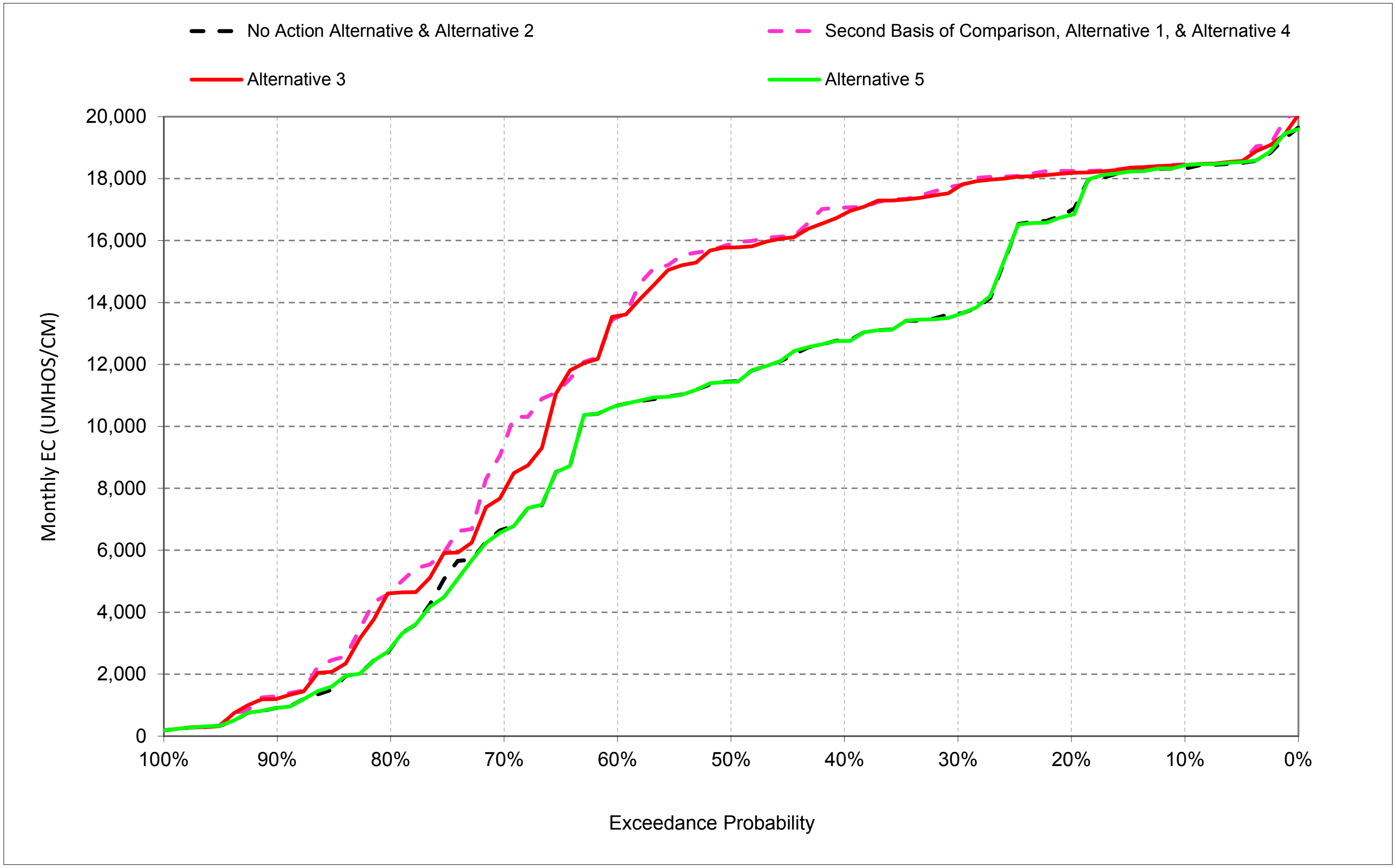
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.2. Sacramento River at Port Chicago Salinity, Electrical Conductivity, November



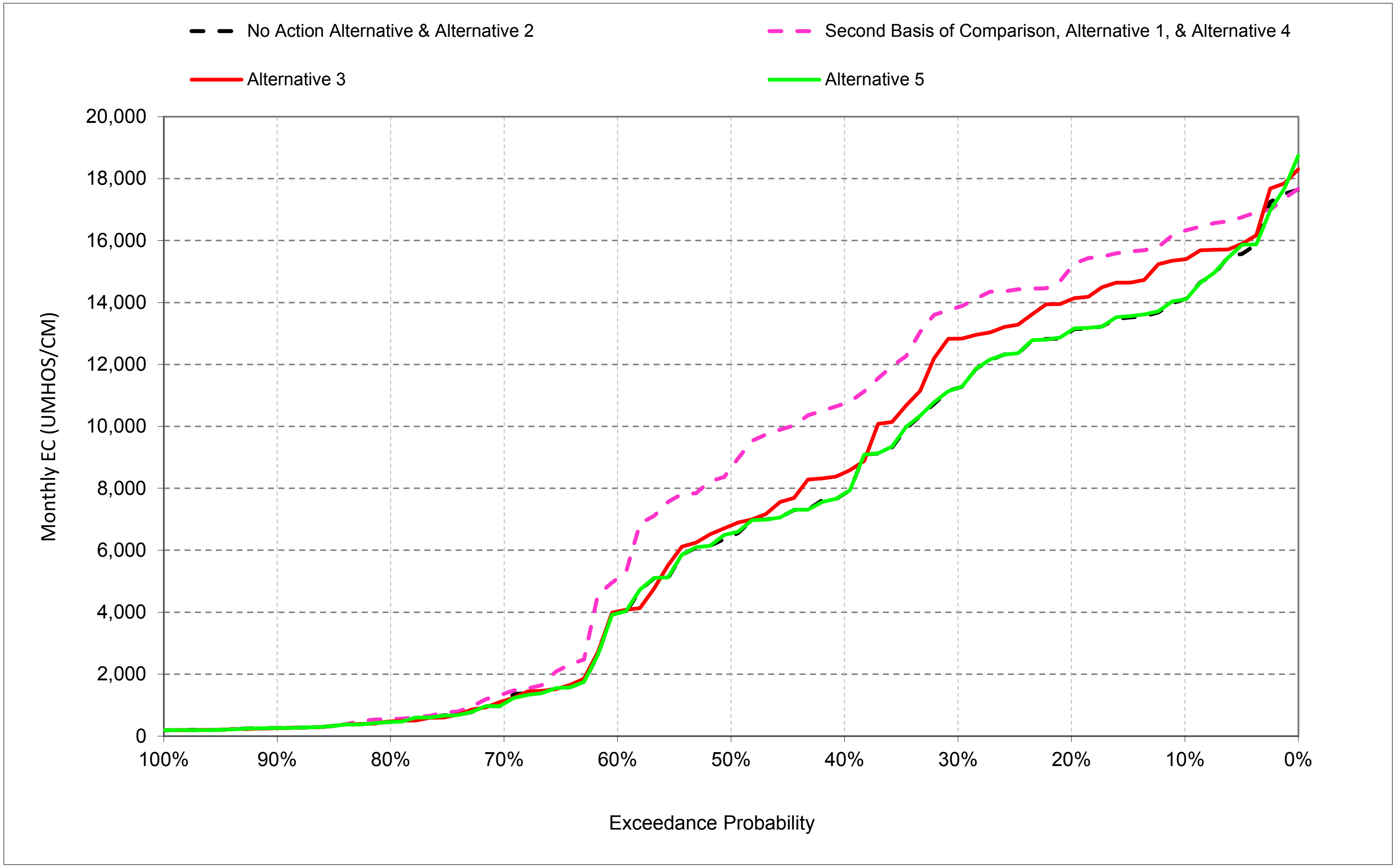
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.3. Sacramento River at Port Chicago Salinity, Electrical Conductivity, December



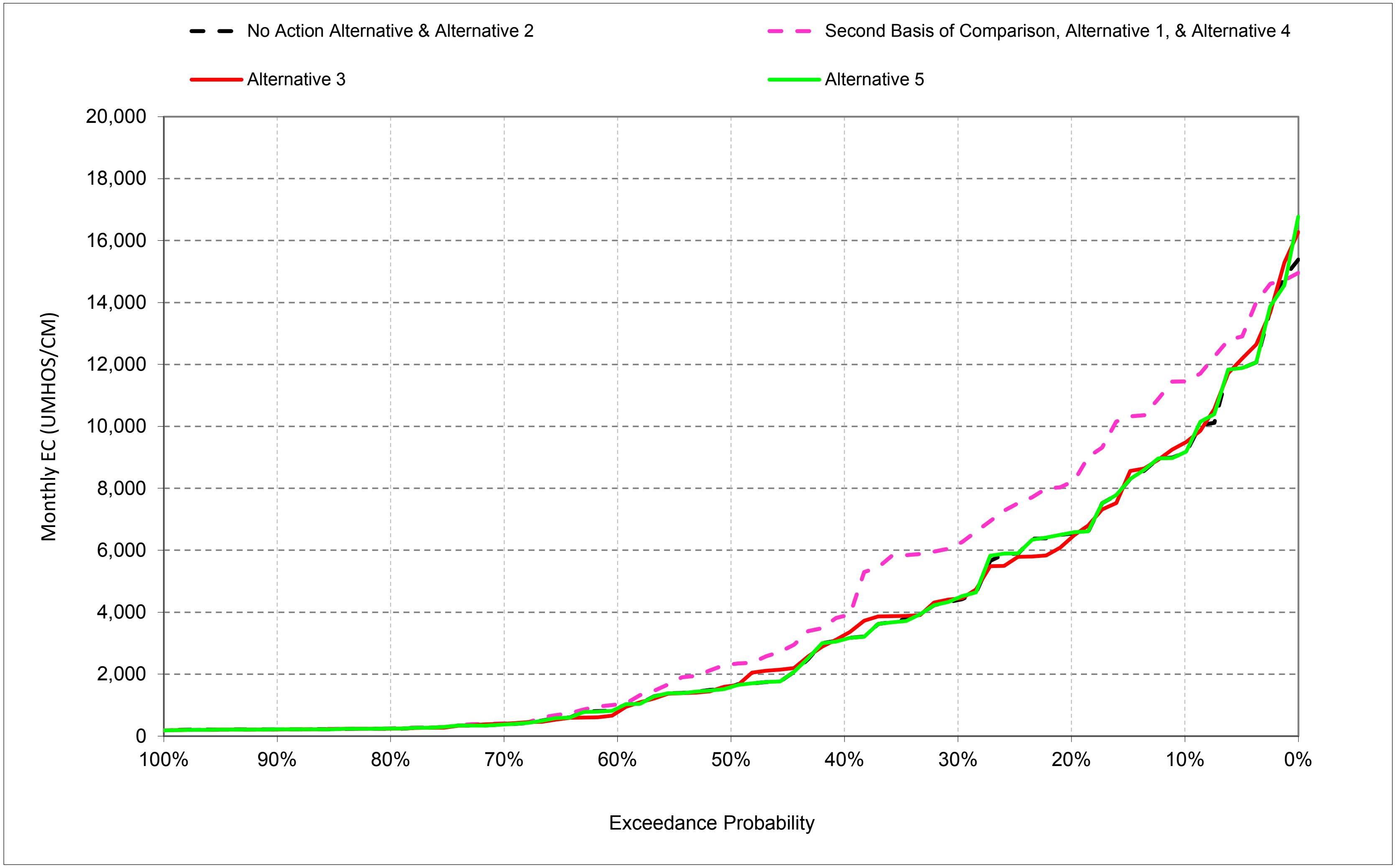
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.4. Sacramento River at Port Chicago Salinity, Electrical Conductivity, January



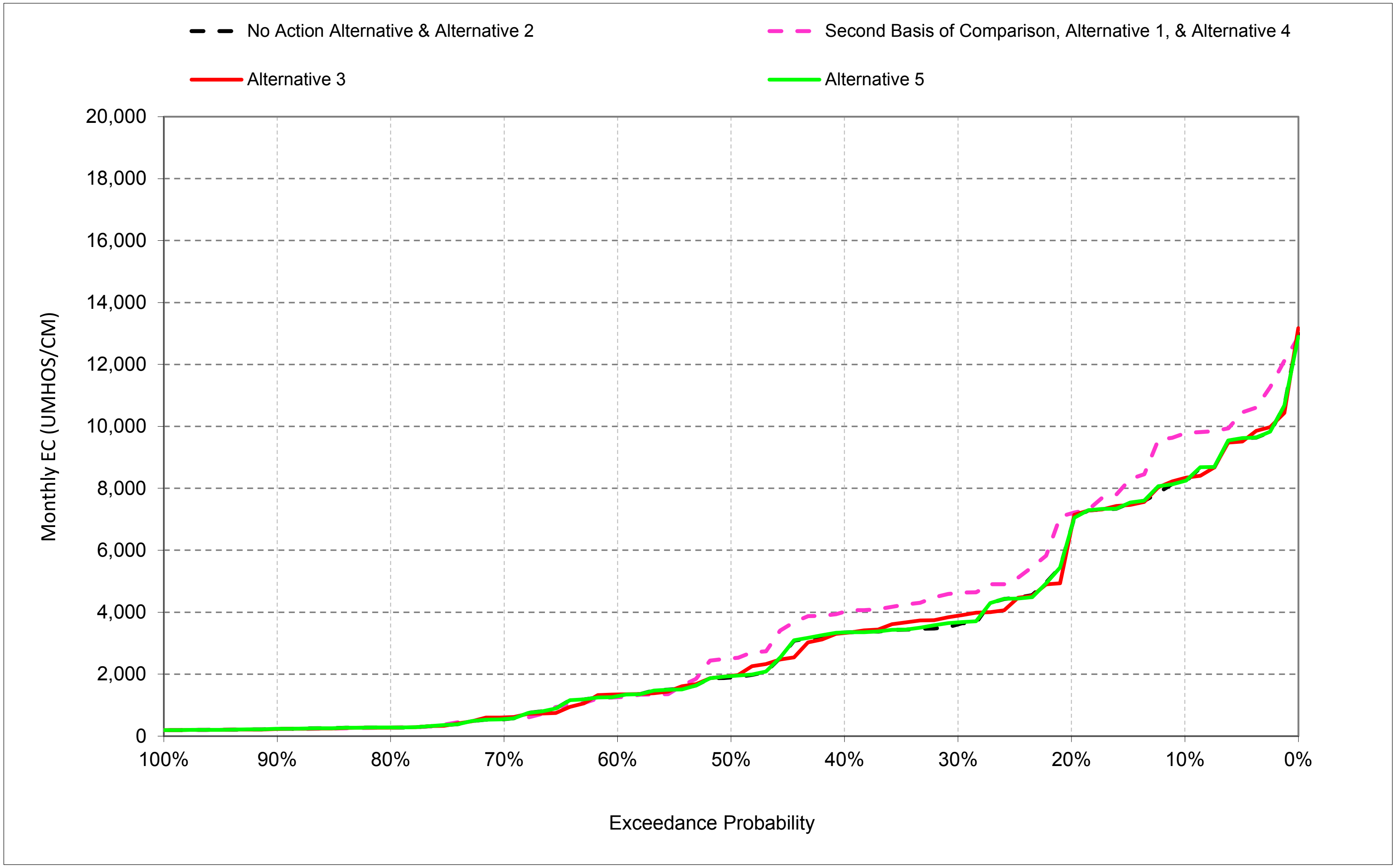
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.5. Sacramento River at Port Chicago Salinity, Electrical Conductivity, February



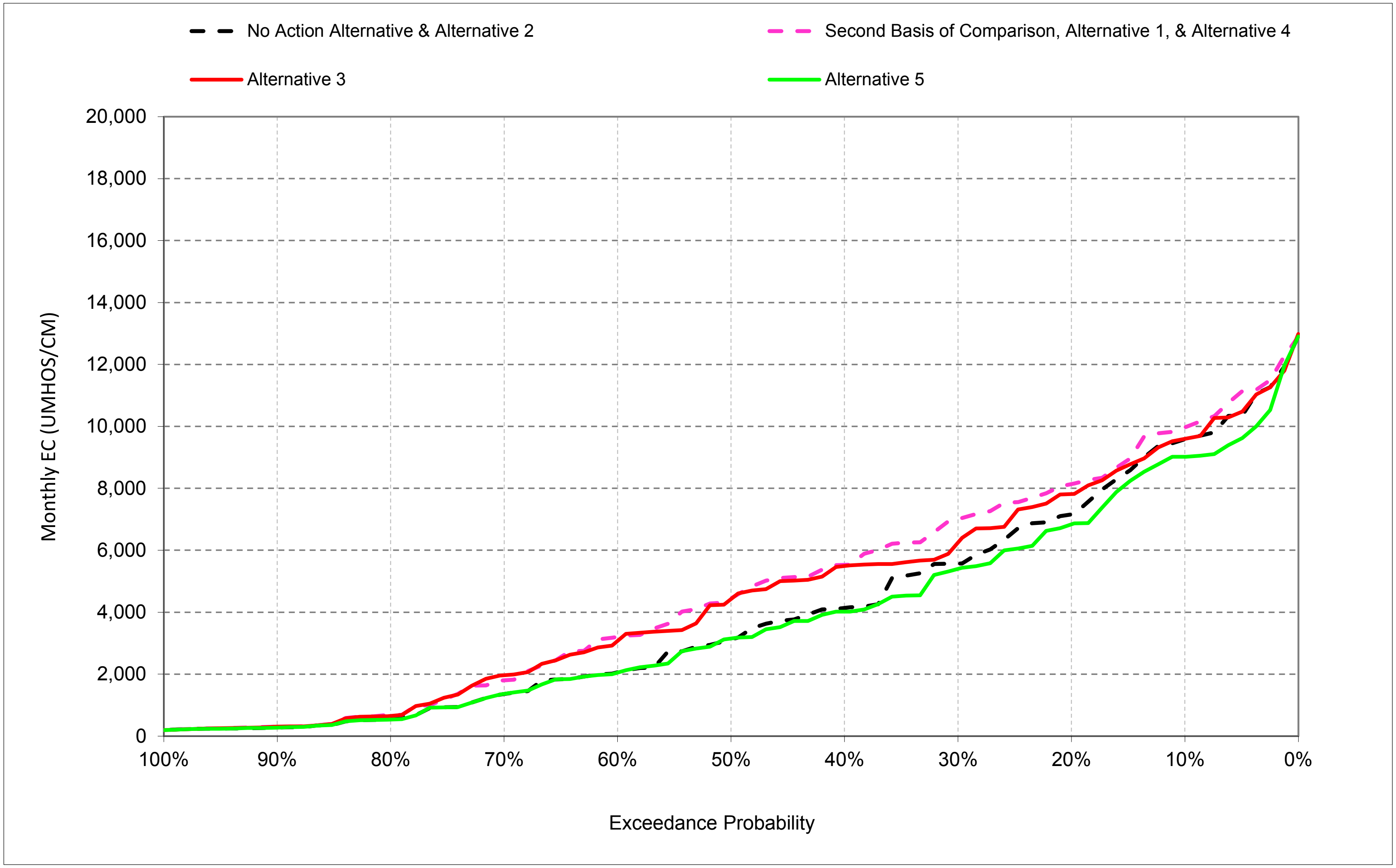
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.6. Sacramento River at Port Chicago Salinity, Electrical Conductivity, March



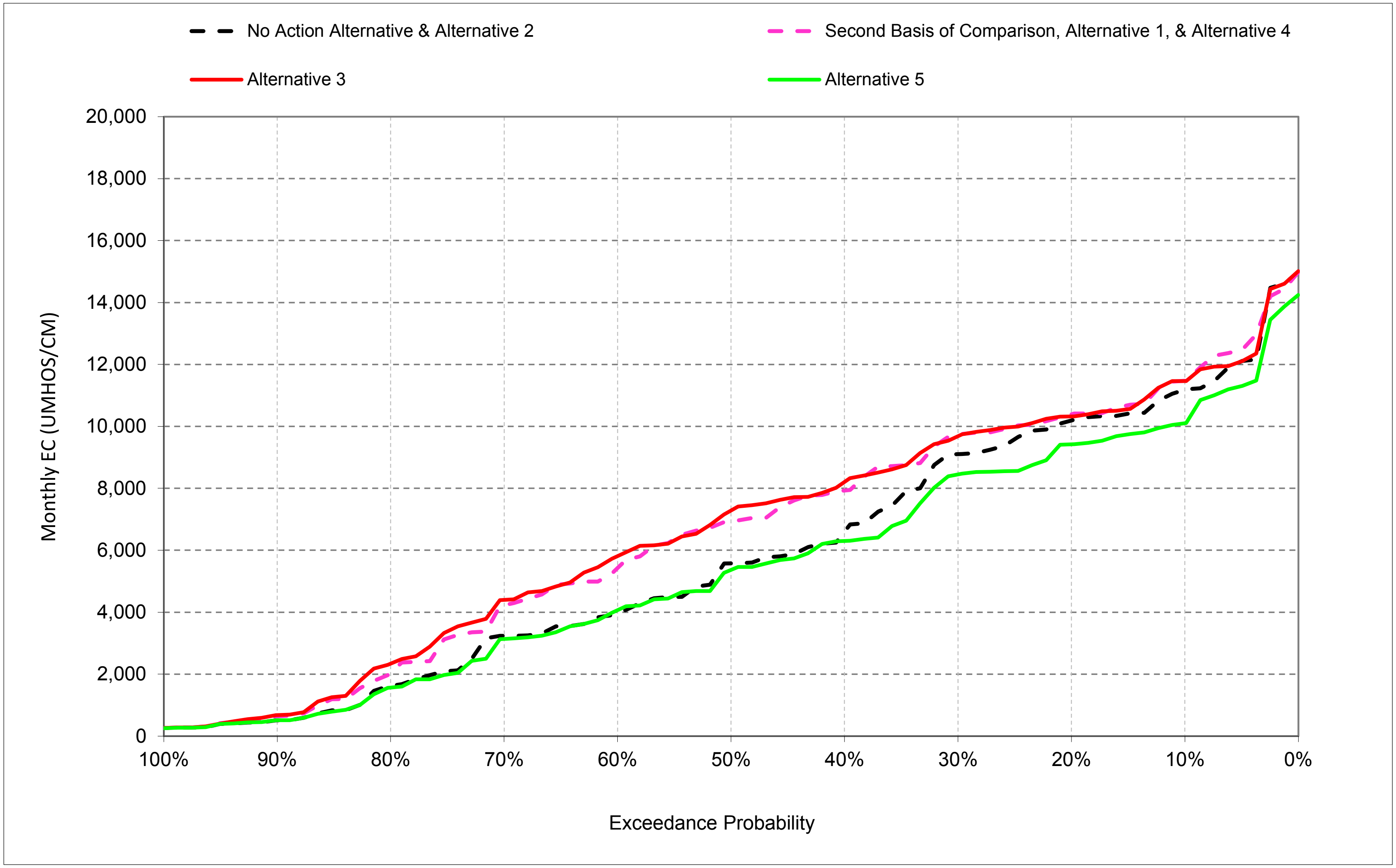
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.7. Sacramento River at Port Chicago Salinity, Electrical Conductivity, April



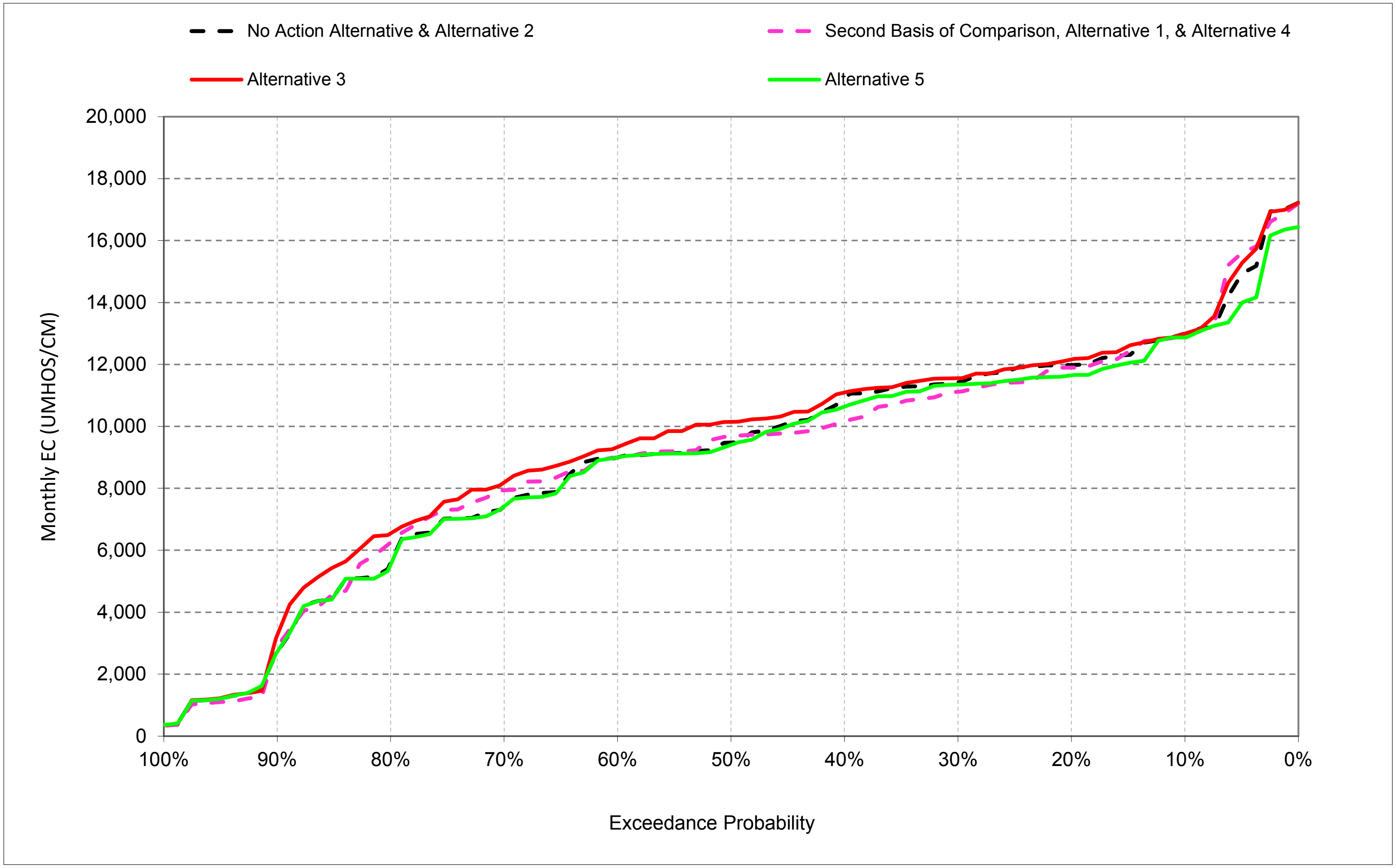
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.8. Sacramento River at Port Chicago Salinity, Electrical Conductivity, May



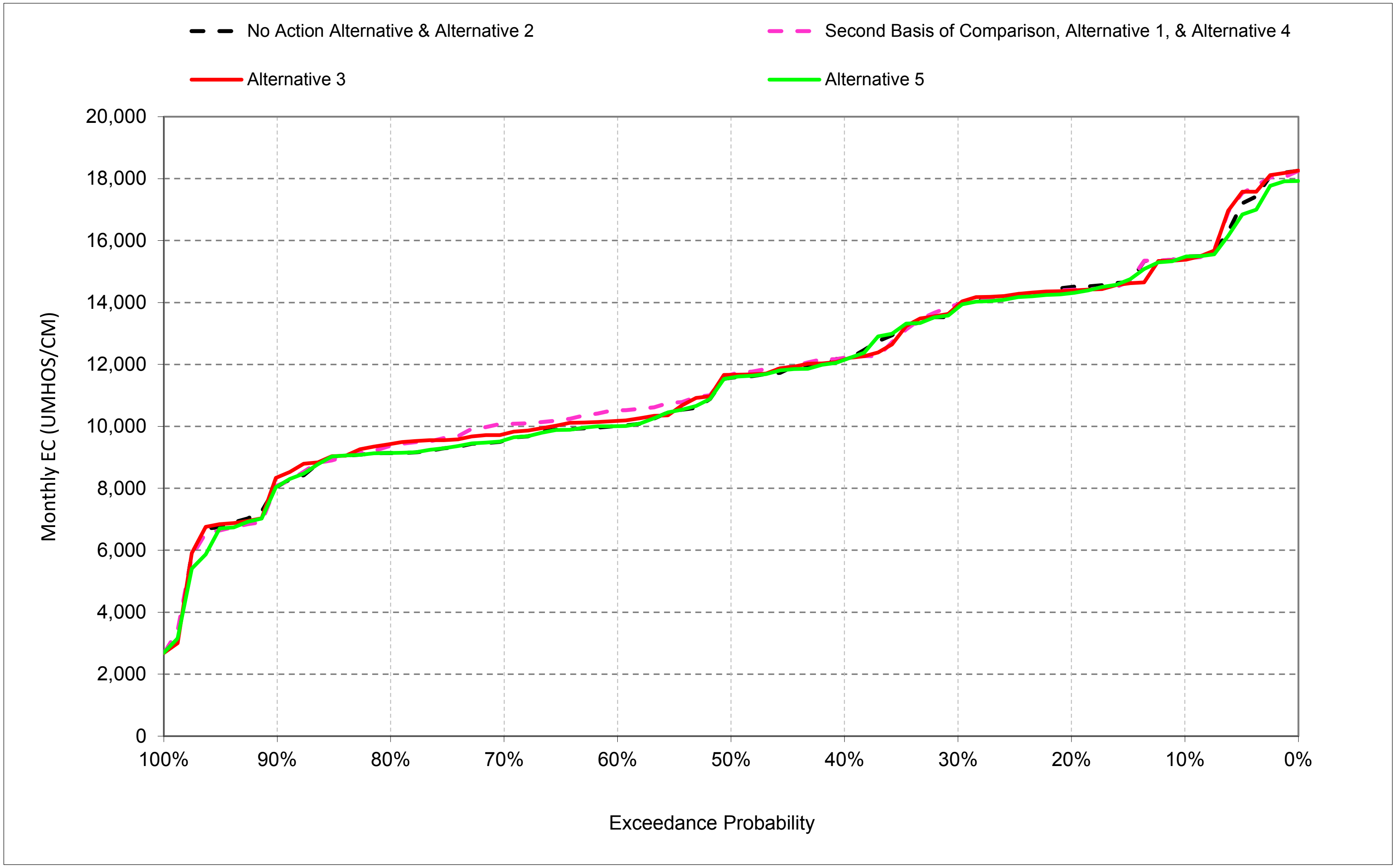
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.9. Sacramento River at Port Chicago Salinity, Electrical Conductivity, June



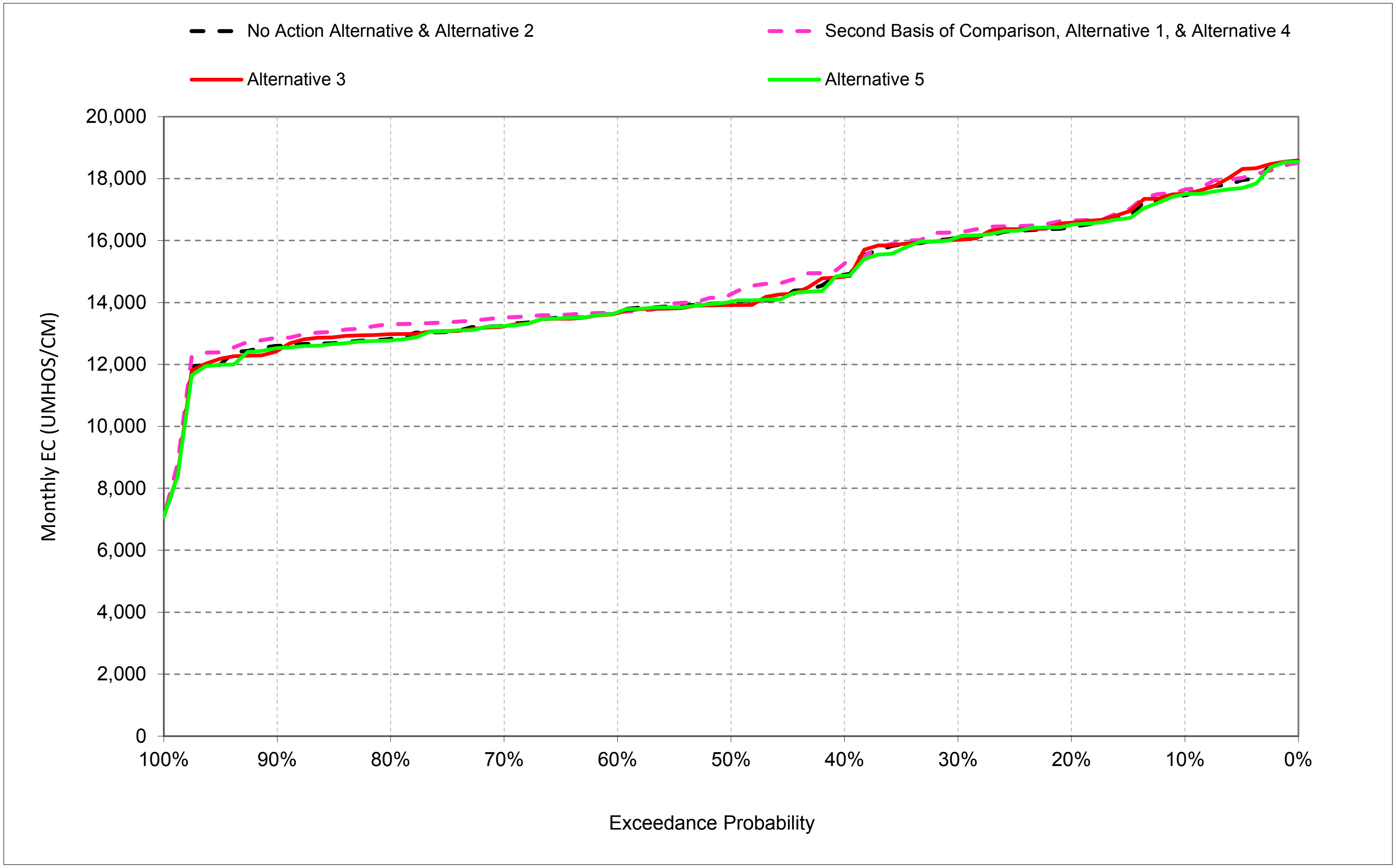
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.10. Sacramento River at Port Chicago Salinity, Electrical Conductivity, July



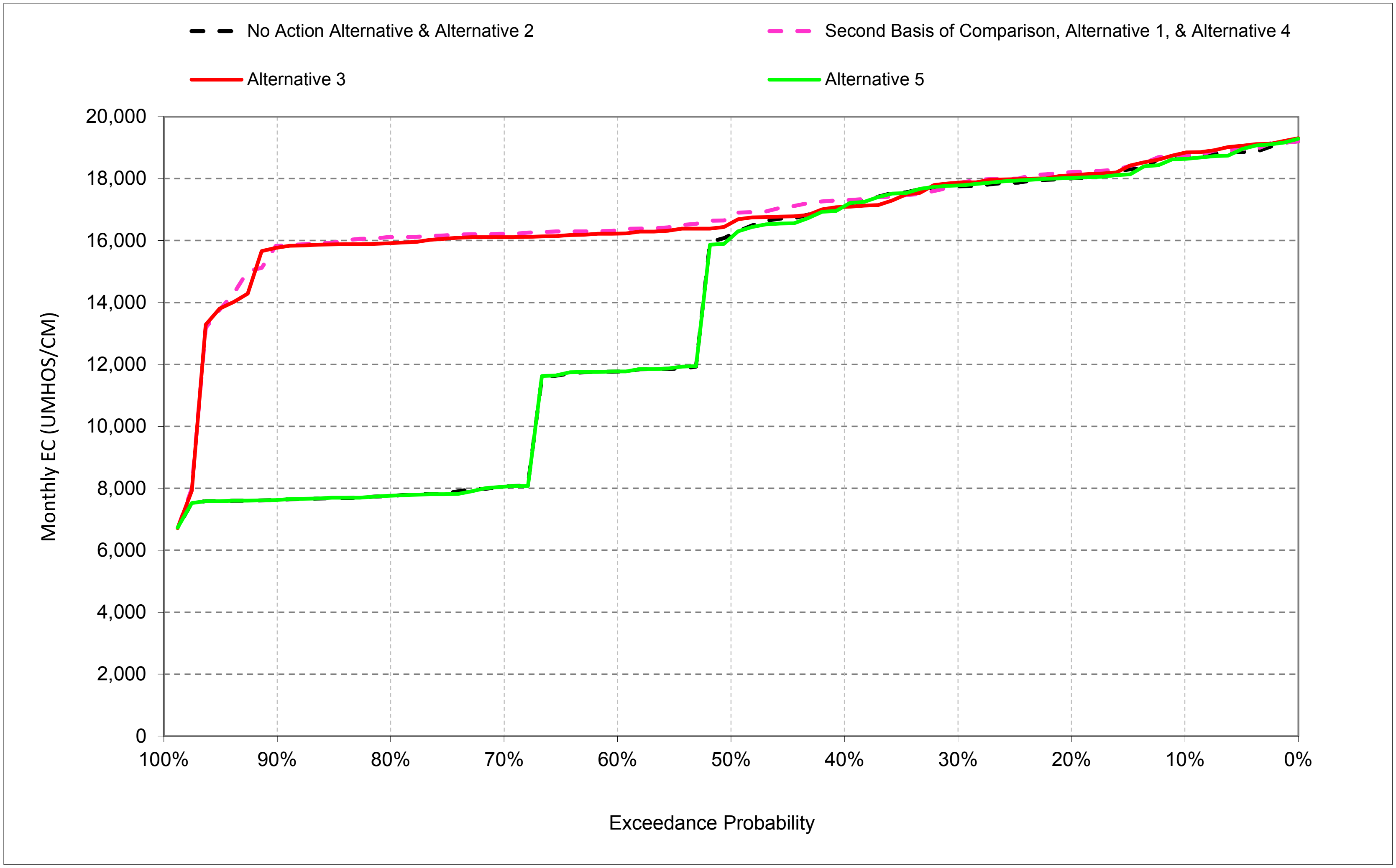
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.11. Sacramento River at Port Chicago Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.6.12. Sacramento River at Port Chicago Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.6.1. Sacramento River at Port Chicago Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,730	20,008	18,334	14,105	9,148	8,232	9,583	11,184	13,000	15,476	17,464	18,731
20%	18,797	18,624	16,981	13,083	6,541	6,730	7,154	10,189	11,980	14,499	16,437	18,010
30%	18,652	18,213	13,637	11,245	4,395	3,610	5,568	9,104	11,426	13,864	16,101	17,749
40%	18,408	16,690	12,775	7,827	3,132	3,345	4,140	6,598	10,912	12,195	14,895	17,115
50%	17,441	11,772	11,450	6,456	1,597	1,896	3,119	5,575	9,479	11,568	14,019	16,190
60%	11,807	11,409	10,666	3,956	900	1,287	2,061	3,971	8,998	10,011	13,690	11,771
70%	7,856	7,870	6,682	1,088	375	547	1,360	3,234	7,421	9,544	13,261	8,081
80%	7,557	7,426	2,822	458	241	279	544	1,621	5,586	9,137	12,824	7,783
90%	7,443	7,194	915	260	215	234	276	512	2,718	8,059	12,599	7,650
Long Term												
Full Simulation Period[b]	13,932	12,941	10,458	6,752	3,502	3,167	4,064	5,836	9,049	11,543	14,564	13,647
Water Year Types[c]												
Wet (32%)	11,516	9,834	4,617	1,723	522	765	1,130	1,968	5,080	8,188	12,707	7,719
Above Normal (16%)	15,746	13,225	9,834	3,584	1,351	1,149	1,906	3,817	8,398	9,863	12,993	11,773
Below Normal (13%)	11,574	11,366	11,569	8,740	4,248	4,587	5,295	7,050	10,345	11,789	14,262	16,789
Dry (24%)	14,829	14,641	14,088	10,509	5,269	3,952	5,345	7,867	10,901	13,987	16,209	17,737
Critical (15%)	17,869	17,972	16,718	12,998	8,663	7,945	9,498	11,908	14,079	16,331	17,826	18,823

Alternative 1

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,528	19,670	18,458	16,317	11,450	9,775	9,970	11,470	12,921	15,419	17,642	18,754
20%	18,781	18,511	18,245	15,143	8,208	7,192	8,137	10,389	11,899	14,408	16,644	18,212
30%	18,464	18,288	17,776	13,850	6,202	4,623	7,006	9,726	11,120	13,945	16,271	17,825
40%	18,276	18,012	17,064	10,736	3,882	4,015	5,531	7,929	10,159	12,220	15,257	17,306
50%	17,910	17,816	15,892	8,667	2,317	2,512	4,449	6,938	9,682	11,671	14,270	16,776
60%	17,639	17,453	13,522	5,086	1,023	1,254	3,202	5,427	8,989	10,521	13,690	16,338
70%	17,457	17,101	9,437	1,366	409	580	1,800	4,229	7,936	10,081	13,519	16,216
80%	17,169	16,331	4,663	552	250	280	684	2,048	6,252	9,363	13,299	16,111
90%	16,142	11,709	1,298	259	213	231	299	641	2,883	8,098	12,857	15,830
Long Term												
Full Simulation Period[b]	17,560	16,411	12,505	8,064	4,282	3,590	4,752	6,585	9,029	11,657	14,774	16,778
Water Year Types[c]												
Wet (32%)	16,378	14,448	6,247	2,204	618	796	1,551	2,617	5,097	8,394	12,877	15,144
Above Normal (16%)	18,219	16,129	12,396	4,832	1,758	1,190	2,668	5,003	8,342	10,048	13,307	16,244
Below Normal (13%)	17,333	16,030	14,313	11,108	5,397	5,006	6,359	8,011	9,893	11,859	14,672	16,968
Dry (24%)	18,060	17,861	16,486	12,568	6,575	4,754	6,193	8,509	10,937	13,951	16,360	17,883
Critical (15%)	18,781	18,899	17,889	13,966	10,113	9,008	10,068	12,383	14,322	16,464	17,923	18,883

Alternative 1 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-202	-337	124	2,212	2,301	1,543	387	287	-80	-57	178	23
20%	-16	-113	1,264	2,059	1,667	462	983	200	-80	-91	207	201
30%	-187	75	4,139	2,606	1,807	1,013	1,438	622	-306	81	171	76
40%	-131	1,322	4,288	2,909	750	670	1,391	1,331	-753	24	362	191
50%	469	6,044	4,442	2,211	721	616	1,330	1,363	202	103	251	586
60%	5,832	6,045	2,855	1,130	123	-33	1,141	1,457	-10	510	0	4,567
70%	9,601	9,231	2,755	279	34	33	440	994	515	537	258	8,135
80%	9,612	8,905	1,840	94	10	2	141	427	666	226	474	8,329
90%	8,699	4,515	383	0	-2	-3	24	129	165	39	258	8,180
Long Term												
Full Simulation Period[b]	3,628	3,470	2,047	1,312	780	424	687	749	-20	114	210	3,131
Water Year Types[c]												
Wet (32%)	4,862	4,614	1,630	481	96	31	421	649	17	206	170	7,425
Above Normal (16%)	2,473	2,904	2,562	1,248	407	41	762	1,186	-56	184	314	4,471
Below Normal (13%)	5,759	4,664	2,744	2,368	1,149	419	1,064	960	-453	70	410	178
Dry (24%)	3,231	3,221	2,397	2,059	1,306	801	848	642	36	-36	151	146
Critical (15%)	912	926	1,171	968	1,450	1,063	570	475	244	133	96	59

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.6.2. Sacramento River at Port Chicago Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,730	20,008	18,334	14,105	9,148	8,232	9,583	11,184	13,000	15,476	17,464	18,731
20%	18,797	18,624	16,981	13,083	6,541	6,730	7,154	10,189	11,980	14,499	16,437	18,010
30%	18,652	18,213	13,637	11,245	4,395	3,610	5,568	9,104	11,426	13,864	16,101	17,749
40%	18,408	16,690	12,775	7,827	3,132	3,345	4,140	6,598	10,912	12,195	14,895	17,115
50%	17,441	11,772	11,450	6,456	1,597	1,896	3,119	5,575	9,479	11,568	14,019	16,190
60%	11,807	11,409	10,666	3,956	900	1,287	2,061	3,971	8,998	10,011	13,690	11,771
70%	7,856	7,870	6,682	1,088	375	547	1,360	3,234	7,421	9,544	13,261	8,081
80%	7,557	7,426	2,822	458	241	279	544	1,621	5,586	9,137	12,824	7,783
90%	7,443	7,194	915	260	215	234	276	512	2,718	8,059	12,599	7,650
Long Term												
Full Simulation Period[b]	13,932	12,941	10,458	6,752	3,502	3,167	4,064	5,836	9,049	11,543	14,564	13,647
Water Year Types[c]												
Wet (32%)	11,516	9,834	4,617	1,723	522	765	1,130	1,968	5,080	8,188	12,707	7,719
Above Normal (16%)	15,746	13,225	9,834	3,584	1,351	1,149	1,906	3,817	8,398	9,863	12,993	11,773
Below Normal (13%)	11,574	11,366	11,569	8,740	4,248	4,587	5,295	7,050	10,345	11,789	14,262	16,789
Dry (24%)	14,829	14,641	14,088	10,509	5,269	3,952	5,345	7,867	10,901	13,987	16,209	17,737
Critical (15%)	17,869	17,972	16,718	12,998	8,663	7,945	9,498	11,908	14,079	16,331	17,826	18,823

Alternative 3

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,601	19,937	18,438	15,398	9,470	8,333	9,599	11,466	12,994	15,382	17,503	18,839
20%	18,862	18,556	18,182	14,100	6,405	6,703	7,815	10,318	12,163	14,385	16,580	18,110
30%	18,644	18,369	17,725	12,836	4,439	3,885	6,246	9,685	11,553	13,916	16,025	17,869
40%	18,234	18,034	16,863	8,500	3,261	3,326	5,492	8,203	11,095	12,157	14,832	17,086
50%	17,907	17,880	15,775	6,800	1,624	1,948	4,425	7,281	10,148	11,669	13,914	16,563
60%	17,591	17,474	13,564	4,021	776	1,348	3,075	5,812	9,331	10,176	13,662	16,225
70%	17,419	17,169	7,915	1,142	398	607	1,963	4,400	8,191	9,751	13,230	16,111
80%	17,176	16,182	4,611	474	241	276	654	2,337	6,542	9,430	12,977	15,940
90%	16,334	11,202	1,212	256	213	232	302	675	3,259	8,360	12,439	15,833
Long Term												
Full Simulation Period[b]	17,594	16,503	12,297	7,181	3,534	3,173	4,559	6,670	9,405	11,615	14,598	16,695
Water Year Types[c]												
Wet (32%)	16,321	14,503	5,956	1,838	556	821	1,566	2,800	5,549	8,332	12,662	15,076
Above Normal (16%)	18,382	16,247	11,996	3,877	1,315	1,117	2,572	5,187	8,889	9,989	13,111	16,172
Below Normal (13%)	17,464	16,252	14,340	9,380	4,209	4,509	6,025	8,066	10,735	11,815	14,246	16,646
Dry (24%)	18,017	17,906	16,397	11,276	5,292	3,963	5,852	8,586	11,134	13,928	16,268	17,842
Critical (15%)	18,909	19,009	17,657	13,499	8,845	7,956	9,697	12,188	14,217	16,449	17,943	18,901

Alternative 3 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-129	-71	104	1,292	322	101	15	282	-6	-94	39	109
20%	66	-68	1,201	1,017	-136	-28	660	129	183	-113	143	100
30%	-8	156	4,089	1,591	44	276	678	581	127	51	-76	119
40%	-174	1,344	4,088	673	129	-19	1,352	1,605	183	-39	-63	-29
50%	466	6,109	4,325	344	27	52	1,306	1,706	668	101	-104	373
60%	5,784	6,066	2,898	66	-124	62	1,014	1,842	333	164	-28	4,455
70%	9,562	9,299	1,233	55	23	60	603	1,166	770	207	-31	8,030
80%	9,619	8,756	1,789	16	0	-2	110	715	956	293	152	8,157
90%	8,890	4,008	298	-4	-2	-2	27	163	541	300	-160	8,184
Long Term												
Full Simulation Period[b]	3,661	3,563	1,839	429	32	7	494	833	356	72	34	3,048
Water Year Types[c]												
Wet (32%)	4,805	4,669	1,339	115	34	56	436	831	468	144	-45	7,357
Above Normal (16%)	2,636	3,022	2,162	292	-37	-32	665	1,370	491	125	118	4,399
Below Normal (13%)	5,891	4,887	2,771	640	-39	-77	730	1,016	390	26	-16	-143
Dry (24%)	3,188	3,265	2,308	767	23	11	507	719	233	-59	58	104
Critical (15%)	1,039	1,036	939	501	182	11	199	280	138	118	117	77

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.6.3. Sacramento River at Port Chicago Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,730	20,008	18,334	14,105	9,148	8,232	9,583	11,184	13,000	15,476	17,464	18,731
20%	18,797	18,624	16,981	13,083	6,541	6,730	7,154	10,189	11,980	14,499	16,437	18,010
30%	18,652	18,213	13,637	11,245	4,395	3,610	5,568	9,104	11,426	13,864	16,101	17,749
40%	18,408	16,690	12,775	7,827	3,132	3,345	4,140	6,598	10,912	12,195	14,895	17,115
50%	17,441	11,772	11,450	6,456	1,597	1,896	3,119	5,575	9,479	11,568	14,019	16,190
60%	11,807	11,409	10,666	3,956	900	1,287	2,061	3,971	8,998	10,011	13,690	11,771
70%	7,856	7,870	6,682	1,088	375	547	1,360	3,234	7,421	9,544	13,261	8,081
80%	7,557	7,426	2,822	458	241	279	544	1,621	5,586	9,137	12,824	7,783
90%	7,443	7,194	915	260	215	234	276	512	2,718	8,059	12,599	7,650
Long Term												
Full Simulation Period[b]	13,932	12,941	10,458	6,752	3,502	3,167	4,064	5,836	9,049	11,543	14,564	13,647
Water Year Types[c]												
Wet (32%)	11,516	9,834	4,617	1,723	522	765	1,130	1,968	5,080	8,188	12,707	7,719
Above Normal (16%)	15,746	13,225	9,834	3,584	1,351	1,149	1,906	3,817	8,398	9,863	12,993	11,773
Below Normal (13%)	11,574	11,366	11,569	8,740	4,248	4,587	5,295	7,050	10,345	11,789	14,262	16,789
Dry (24%)	14,829	14,641	14,088	10,509	5,269	3,952	5,345	7,867	10,901	13,987	16,209	17,737
Critical (15%)	17,869	17,972	16,718	12,998	8,663	7,945	9,498	11,908	14,079	16,331	17,826	18,823

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,671	19,928	18,427	14,102	9,160	8,238	9,021	10,101	12,872	15,473	17,497	18,640
20%	18,881	18,623	16,830	13,102	6,564	6,731	6,839	9,425	11,652	14,300	16,506	18,019
30%	18,675	18,214	13,606	11,246	4,461	3,671	5,402	8,451	11,347	13,834	16,111	17,778
40%	18,355	16,660	12,761	7,827	3,123	3,349	4,022	6,302	10,638	12,148	14,871	17,110
50%	17,303	11,760	11,441	6,544	1,586	1,937	3,151	5,365	9,405	11,573	14,025	16,097
60%	11,808	11,376	10,667	3,964	901	1,288	2,047	4,071	8,998	10,007	13,691	11,773
70%	7,855	7,870	6,629	1,050	374	549	1,361	3,141	7,415	9,553	13,240	8,077
80%	7,557	7,426	2,840	458	242	279	534	1,565	5,528	9,141	12,778	7,779
90%	7,421	7,158	918	260	215	234	276	512	2,720	8,060	12,527	7,654
Long Term												
Full Simulation Period[b]	13,926	12,905	10,448	6,773	3,525	3,175	3,856	5,492	8,886	11,483	14,521	13,637
Water Year Types[c]												
Wet (32%)	11,518	9,853	4,623	1,716	521	764	1,123	1,906	5,057	8,128	12,644	7,714
Above Normal (16%)	15,737	13,001	9,726	3,580	1,351	1,151	1,893	3,739	8,360	9,861	12,989	11,791
Below Normal (13%)	11,582	11,371	11,574	8,749	4,245	4,589	5,035	6,665	10,227	11,761	14,219	16,736
Dry (24%)	14,818	14,623	14,111	10,544	5,280	3,961	4,937	7,305	10,677	13,950	16,187	17,734
Critical (15%)	17,842	17,956	16,710	13,091	8,802	7,985	9,020	11,066	13,537	16,140	17,744	18,798

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-59	-80	93	-3	12	7	-563	-1,083	-128	-3	33	-90
20%	84	-1	-152	19	23	1	-315	-764	-328	-199	69	9
30%	23	1	-31	1	66	62	-165	-652	-79	-30	10	28
40%	-52	-30	-15	0	-10	4	-117	-297	-274	-48	-25	-5
50%	-138	-11	-9	89	-11	41	32	-210	-75	5	7	-93
60%	1	-33	0	8	1	1	-14	100	-1	-4	1	3
70%	-1	0	-53	-38	-1	2	1	-94	-6	9	-21	-4
80%	0	0	17	0	1	0	-10	-56	-58	4	-46	-4
90%	-22	-37	3	0	0	0	0	0	2	1	-72	4
Long Term												
Full Simulation Period[b]	-6	-36	-10	20	22	8	-208	-344	-163	-60	-44	-10
Water Year Types[c]												
Wet (32%)	2	19	6	-7	-1	-1	-7	-62	-24	-60	-64	-5
Above Normal (16%)	-9	-224	-108	-4	0	1	-13	-78	-38	-3	-4	18
Below Normal (13%)	8	5	5	9	-3	2	-260	-385	-119	-28	-43	-53
Dry (24%)	-11	-18	23	35	11	9	-408	-562	-224	-37	-22	-3
Critical (15%)	-27	-17	-8	93	140	41	-478	-842	-542	-191	-82	-26

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.6.4. Sacramento River at Port Chicago Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,528	19,670	18,458	16,317	11,450	9,775	9,970	11,470	12,921	15,419	17,642	18,754
20%	18,781	18,511	18,245	15,143	8,208	7,192	8,137	10,389	11,899	14,408	16,644	18,212
30%	18,464	18,288	17,776	13,850	6,202	4,623	7,006	9,726	11,120	13,945	16,271	17,825
40%	18,276	18,012	17,064	10,736	3,882	4,015	5,531	7,929	10,159	12,220	15,257	17,306
50%	17,910	17,816	15,892	8,667	2,317	2,512	4,449	6,938	9,682	11,671	14,270	16,776
60%	17,639	17,453	13,522	5,086	1,023	1,254	3,202	5,427	8,989	10,521	13,690	16,338
70%	17,457	17,101	9,437	1,366	409	580	1,800	4,229	7,936	10,081	13,519	16,216
80%	17,169	16,331	4,663	552	250	280	684	2,048	6,252	9,363	13,299	16,111
90%	16,142	11,709	1,298	259	213	231	299	641	2,883	8,098	12,857	15,830
Long Term												
Full Simulation Period[b]	17,560	16,411	12,505	8,064	4,282	3,590	4,752	6,585	9,029	11,657	14,774	16,778
Water Year Types[c]												
Wet (32%)	16,378	14,448	6,247	2,204	618	796	1,551	2,617	5,097	8,394	12,877	15,144
Above Normal (16%)	18,219	16,129	12,396	4,832	1,758	1,190	2,668	5,003	8,342	10,048	13,307	16,244
Below Normal (13%)	17,333	16,030	14,313	11,108	5,397	5,006	6,359	8,011	9,893	11,859	14,672	16,968
Dry (24%)	18,060	17,861	16,486	12,568	6,575	4,754	6,193	8,509	10,937	13,951	16,360	17,883
Critical (15%)	18,781	18,899	17,889	13,966	10,113	9,008	10,068	12,383	14,322	16,464	17,923	18,883

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,730	20,008	18,334	14,105	9,148	8,232	9,583	11,184	13,000	15,476	17,464	18,731
20%	18,797	18,624	16,981	13,083	6,541	6,730	7,154	10,189	11,980	14,499	16,437	18,010
30%	18,652	18,213	13,637	11,245	4,395	3,610	5,568	9,104	11,426	13,864	16,101	17,749
40%	18,408	16,690	12,775	7,827	3,132	3,345	4,140	6,598	10,912	12,195	14,895	17,115
50%	17,441	11,772	11,450	6,456	1,597	1,896	3,119	5,575	9,479	11,568	14,019	16,190
60%	11,807	11,409	10,666	3,956	900	1,287	2,061	3,971	8,998	10,011	13,690	11,771
70%	7,856	7,870	6,682	1,088	375	547	1,360	3,234	7,421	9,544	13,261	8,081
80%	7,557	7,426	2,822	458	241	279	544	1,621	5,586	9,137	12,824	7,783
90%	7,443	7,194	915	260	215	234	276	512	2,718	8,059	12,599	7,650
Long Term												
Full Simulation Period[b]	13,932	12,941	10,458	6,752	3,502	3,167	4,064	5,836	9,049	11,543	14,564	13,647
Water Year Types[c]												
Wet (32%)	11,516	9,834	4,617	1,723	522	765	1,130	1,968	5,080	8,188	12,707	7,719
Above Normal (16%)	15,746	13,225	9,834	3,584	1,351	1,149	1,906	3,817	8,398	9,863	12,993	11,773
Below Normal (13%)	11,574	11,366	11,569	8,740	4,248	4,587	5,295	7,050	10,345	11,789	14,262	16,789
Dry (24%)	14,829	14,641	14,088	10,509	5,269	3,952	5,345	7,867	10,901	13,987	16,209	17,737
Critical (15%)	17,869	17,972	16,718	12,998	8,663	7,945	9,498	11,908	14,079	16,331	17,826	18,823

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	202	337	-124	-2,212	-2,301	-1,543	-387	-287	80	57	-178	-23
20%	16	113	-1,264	-2,059	-1,667	-462	-983	-200	80	91	-207	-201
30%	187	-75	-4,139	-2,606	-1,807	-1,013	-1,438	-622	306	-81	-171	-76
40%	131	-1,322	-4,288	-2,909	-750	-670	-1,391	-1,331	753	-24	-362	-191
50%	-469	-6,044	-4,442	-2,211	-721	-616	-1,330	-1,363	-202	-103	-251	-586
60%	-5,832	-6,045	-2,855	-1,130	-123	33	-1,141	-1,457	10	-510	0	-4,567
70%	-9,601	-9,231	-2,755	-279	-34	-33	-440	-994	-515	-537	-258	-8,135
80%	-9,612	-8,905	-1,840	-94	-10	-2	-141	-427	-666	-226	-474	-8,329
90%	-8,699	-4,515	-383	0	2	3	-24	-129	-165	-39	-258	-8,180
Long Term												
Full Simulation Period[b]	-3,628	-3,470	-2,047	-1,312	-780	-424	-687	-749	20	-114	-210	-3,131
Water Year Types[c]												
Wet (32%)	-4,862	-4,614	-1,630	-481	-96	-31	-421	-649	-17	-206	-170	-7,425
Above Normal (16%)	-2,473	-2,904	-2,562	-1,248	-407	-41	-762	-1,186	56	-184	-314	-4,471
Below Normal (13%)	-5,759	-4,664	-2,744	-2,368	-1,149	-419	-1,064	-960	453	-70	-410	-178
Dry (24%)	-3,231	-3,221	-2,397	-2,059	-1,306	-801	-848	-642	-36	36	-151	-146
Critical (15%)	-912	-926	-1,171	-968	-1,450	-1,063	-570	-475	-244	-133	-96	-59

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.6.5. Sacramento River at Port Chicago Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,528	19,670	18,458	16,317	11,450	9,775	9,970	11,470	12,921	15,419	17,642	18,754
20%	18,781	18,511	18,245	15,143	8,208	7,192	8,137	10,389	11,899	14,408	16,644	18,212
30%	18,464	18,288	17,776	13,850	6,202	4,623	7,006	9,726	11,120	13,945	16,271	17,825
40%	18,276	18,012	17,064	10,736	3,882	4,015	5,531	7,929	10,159	12,220	15,257	17,306
50%	17,910	17,816	15,892	8,667	2,317	2,512	4,449	6,938	9,682	11,671	14,270	16,776
60%	17,639	17,453	13,522	5,086	1,023	1,254	3,202	5,427	8,989	10,521	13,690	16,338
70%	17,457	17,101	9,437	1,366	409	580	1,800	4,229	7,936	10,081	13,519	16,216
80%	17,169	16,331	4,663	552	250	280	684	2,048	6,252	9,363	13,299	16,111
90%	16,142	11,709	1,298	259	213	231	299	641	2,883	8,098	12,857	15,830
Long Term												
Full Simulation Period[b]	17,560	16,411	12,505	8,064	4,282	3,590	4,752	6,585	9,029	11,657	14,774	16,778
Water Year Types[c]												
Wet (32%)	16,378	14,448	6,247	2,204	618	796	1,551	2,617	5,097	8,394	12,877	15,144
Above Normal (16%)	18,219	16,129	12,396	4,832	1,758	1,190	2,668	5,003	8,342	10,048	13,307	16,244
Below Normal (13%)	17,333	16,030	14,313	11,108	5,397	5,006	6,359	8,011	9,893	11,859	14,672	16,968
Dry (24%)	18,060	17,861	16,486	12,568	6,575	4,754	6,193	8,509	10,937	13,951	16,360	17,883
Critical (15%)	18,781	18,899	17,889	13,966	10,113	9,008	10,068	12,383	14,322	16,464	17,923	18,883

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,601	19,937	18,438	15,398	9,470	8,333	9,599	11,466	12,994	15,382	17,503	18,839
20%	18,862	18,556	18,182	14,100	6,405	6,703	7,815	10,318	12,163	14,385	16,580	18,110
30%	18,644	18,369	17,725	12,836	4,439	3,885	6,246	9,685	11,553	13,916	16,025	17,869
40%	18,234	18,034	16,863	8,500	3,261	3,326	5,492	8,203	11,095	12,157	14,832	17,086
50%	17,907	17,880	15,775	6,800	1,624	1,948	4,425	7,281	10,148	11,669	13,914	16,563
60%	17,591	17,474	13,564	4,021	776	1,348	3,075	5,812	9,331	10,176	13,662	16,225
70%	17,419	17,169	7,915	1,142	398	607	1,963	4,400	8,191	9,751	13,230	16,111
80%	17,176	16,182	4,611	474	241	276	654	2,337	6,542	9,430	12,977	15,940
90%	16,334	11,202	1,212	256	213	232	302	675	3,259	8,360	12,439	15,833
Long Term												
Full Simulation Period[b]	17,594	16,503	12,297	7,181	3,534	3,173	4,559	6,670	9,405	11,615	14,598	16,695
Water Year Types[c]												
Wet (32%)	16,321	14,503	5,956	1,838	556	821	1,566	2,800	5,549	8,332	12,662	15,076
Above Normal (16%)	18,382	16,247	11,996	3,877	1,315	1,117	2,572	5,187	8,889	9,989	13,111	16,172
Below Normal (13%)	17,464	16,252	14,340	9,380	4,209	4,509	6,025	8,066	10,735	11,815	14,246	16,646
Dry (24%)	18,017	17,906	16,397	11,276	5,292	3,963	5,852	8,586	11,134	13,928	16,268	17,842
Critical (15%)	18,909	19,009	17,657	13,499	8,845	7,956	9,697	12,188	14,217	16,449	17,943	18,901

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	74	266	-20	-919	-1,979	-1,442	-371	-5	73	-37	-139	85
20%	81	45	-63	-1,043	-1,803	-490	-323	-71	263	-23	-64	-101
30%	180	81	-51	-1,015	-1,763	-738	-760	-40	433	-30	-247	43
40%	-43	22	-201	-2,236	-621	-689	-39	274	936	-63	-425	-220
50%	-3	65	-117	-1,867	-694	-564	-23	343	466	-2	-356	-213
60%	-48	21	42	-1,065	-248	94	-127	385	342	-345	-28	-113
70%	-38	67	-1,522	-224	-11	27	163	172	255	-330	-289	-105
80%	7	-149	-52	-78	-9	-4	-31	289	290	67	-322	-171
90%	192	-507	-86	-3	0	1	3	34	376	261	-418	3
Long Term												
Full Simulation Period[b]	34	93	-208	-883	-748	-417	-193	85	375	-42	-176	-83
Water Year Types[c]												
Wet (32%)	-57	55	-291	-367	-62	25	15	182	452	-62	-215	-68
Above Normal (16%)	163	118	-400	-955	-444	-73	-97	184	547	-59	-196	-71
Below Normal (13%)	132	223	27	-1,728	-1,188	-496	-334	56	842	-44	-426	-321
Dry (24%)	-42	44	-89	-1,292	-1,283	-790	-341	77	197	-23	-93	-42
Critical (15%)	127	110	-232	-467	-1,268	-1,052	-371	-194	-106	-15	21	18

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.6.6. Sacramento River at Port Chicago Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,528	19,670	18,458	16,317	11,450	9,775	9,970	11,470	12,921	15,419	17,642	18,754
20%	18,781	18,511	18,245	15,143	8,208	7,192	8,137	10,389	11,899	14,408	16,644	18,212
30%	18,464	18,288	17,776	13,850	6,202	4,623	7,006	9,726	11,120	13,945	16,271	17,825
40%	18,276	18,012	17,064	10,736	3,882	4,015	5,531	7,929	10,159	12,220	15,257	17,306
50%	17,910	17,816	15,892	8,667	2,317	2,512	4,449	6,938	9,682	11,671	14,270	16,776
60%	17,639	17,453	13,522	5,086	1,023	1,254	3,202	5,427	8,989	10,521	13,690	16,338
70%	17,457	17,101	9,437	1,366	409	580	1,800	4,229	7,936	10,081	13,519	16,216
80%	17,169	16,331	4,663	552	250	280	684	2,048	6,252	9,363	13,299	16,111
90%	16,142	11,709	1,298	259	213	231	299	641	2,883	8,098	12,857	15,830
Long Term												
Full Simulation Period[b]	17,560	16,411	12,505	8,064	4,282	3,590	4,752	6,585	9,029	11,657	14,774	16,778
Water Year Types[c]												
Wet (32%)	16,378	14,448	6,247	2,204	618	796	1,551	2,617	5,097	8,394	12,877	15,144
Above Normal (16%)	18,219	16,129	12,396	4,832	1,758	1,190	2,668	5,003	8,342	10,048	13,307	16,244
Below Normal (13%)	17,333	16,030	14,313	11,108	5,397	5,006	6,359	8,011	9,893	11,859	14,672	16,968
Dry (24%)	18,060	17,861	16,486	12,568	6,575	4,754	6,193	8,509	10,937	13,951	16,360	17,883
Critical (15%)	18,781	18,899	17,889	13,966	10,113	9,008	10,068	12,383	14,322	16,464	17,923	18,883

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	19,671	19,928	18,427	14,102	9,160	8,238	9,021	10,101	12,872	15,473	17,497	18,640
20%	18,881	18,623	16,830	13,102	6,564	6,731	6,839	9,425	11,652	14,300	16,506	18,019
30%	18,675	18,214	13,606	11,246	4,461	3,671	5,402	8,451	11,347	13,834	16,111	17,778
40%	18,355	16,660	12,761	7,827	3,123	3,349	4,022	6,302	10,638	12,148	14,871	17,110
50%	17,303	11,760	11,441	6,544	1,586	1,937	3,151	5,365	9,405	11,573	14,025	16,097
60%	11,808	11,376	10,667	3,964	901	1,288	2,047	4,071	8,998	10,007	13,691	11,773
70%	7,855	7,870	6,629	1,050	374	549	1,361	3,141	7,415	9,553	13,240	8,077
80%	7,557	7,426	2,840	458	242	279	534	1,565	5,528	9,141	12,778	7,779
90%	7,421	7,158	918	260	215	234	276	512	2,720	8,060	12,527	7,654
Long Term												
Full Simulation Period[b]	13,926	12,905	10,448	6,773	3,525	3,175	3,856	5,492	8,886	11,483	14,521	13,637
Water Year Types[c]												
Wet (32%)	11,518	9,853	4,623	1,716	521	764	1,123	1,906	5,057	8,128	12,644	7,714
Above Normal (16%)	15,737	13,001	9,726	3,580	1,351	1,151	1,893	3,739	8,360	9,861	12,989	11,791
Below Normal (13%)	11,582	11,371	11,574	8,749	4,245	4,589	5,035	6,665	10,227	11,761	14,219	16,736
Dry (24%)	14,818	14,623	14,111	10,544	5,280	3,961	4,937	7,305	10,677	13,950	16,187	17,734
Critical (15%)	17,842	17,956	16,710	13,091	8,802	7,985	9,020	11,066	13,537	16,140	17,744	18,798

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	143	257	-31	-2,215	-2,289	-1,537	-949	-1,370	-48	54	-146	-113
20%	100	112	-1,416	-2,041	-1,644	-461	-1,298	-964	-248	-108	-138	-192
30%	211	-74	-4,170	-2,604	-1,741	-952	-1,603	-1,274	227	-111	-161	-48
40%	79	-1,352	-4,303	-2,909	-759	-666	-1,508	-1,628	479	-72	-386	-196
50%	-607	-6,055	-4,451	-2,122	-731	-575	-1,298	-1,573	-277	-98	-245	-679
60%	-5,831	-6,077	-2,855	-1,122	-122	34	-1,155	-1,356	9	-514	1	-4,565
70%	-9,602	-9,232	-2,808	-317	-35	-31	-439	-1,088	-521	-528	-279	-8,139
80%	-9,612	-8,904	-1,823	-94	-9	-1	-151	-482	-724	-222	-520	-8,332
90%	-8,721	-4,551	-380	0	2	3	-24	-129	-163	-38	-330	-8,176
Long Term												
Full Simulation Period[b]	-3,634	-3,506	-2,057	-1,291	-758	-415	-896	-1,093	-144	-175	-253	-3,142
Water Year Types[c]												
Wet (32%)	-4,860	-4,595	-1,624	-488	-97	-32	-428	-712	-40	-266	-233	-7,430
Above Normal (16%)	-2,482	-3,128	-2,670	-1,252	-407	-40	-775	-1,264	18	-187	-318	-4,452
Below Normal (13%)	-5,751	-4,659	-2,739	-2,359	-1,152	-417	-1,324	-1,346	334	-98	-453	-231
Dry (24%)	-3,241	-3,239	-2,374	-2,024	-1,295	-793	-1,256	-1,204	-260	-1	-173	-149
Critical (15%)	-939	-943	-1,179	-876	-1,311	-1,023	-1,048	-1,317	-786	-324	-178	-85

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

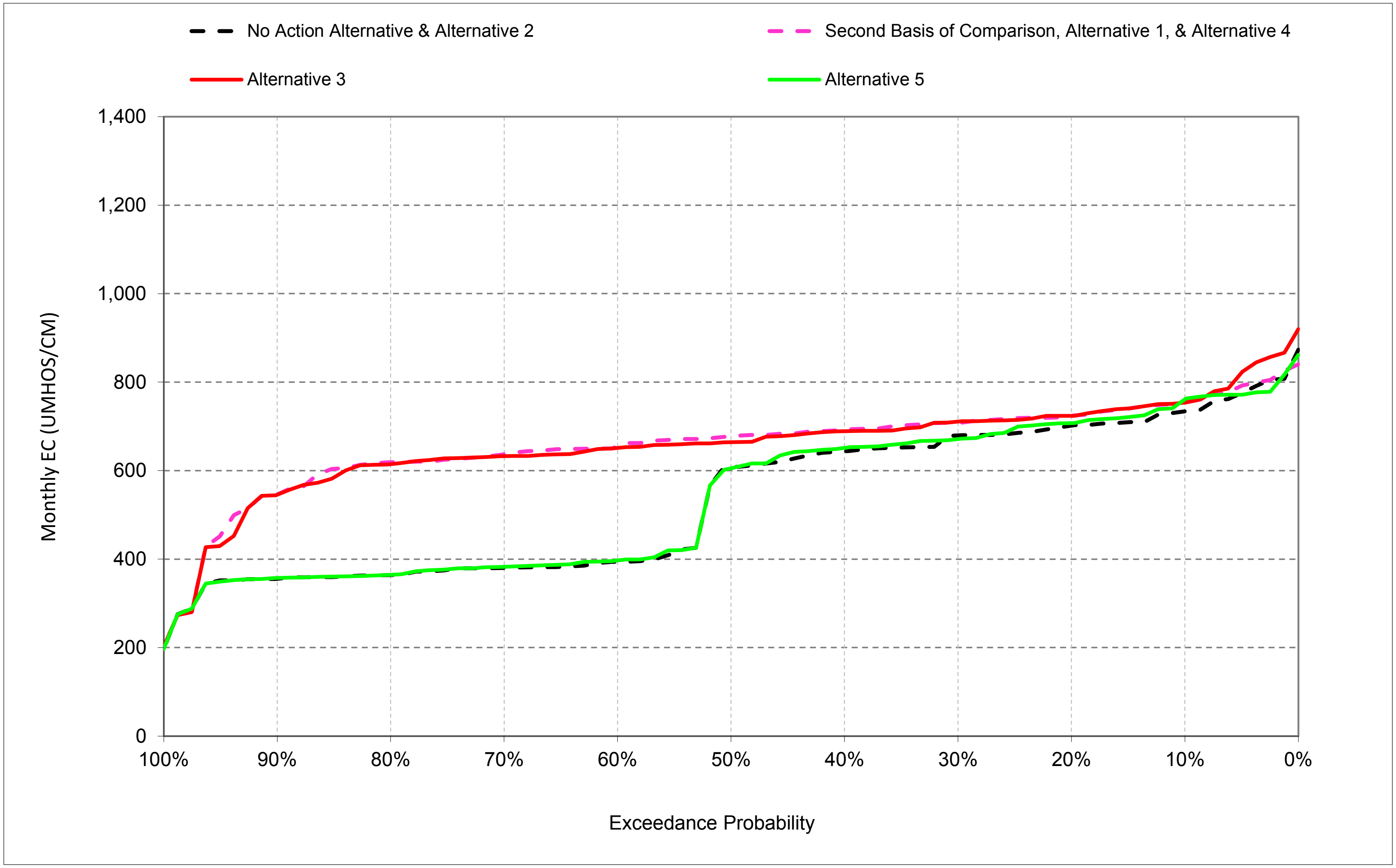
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

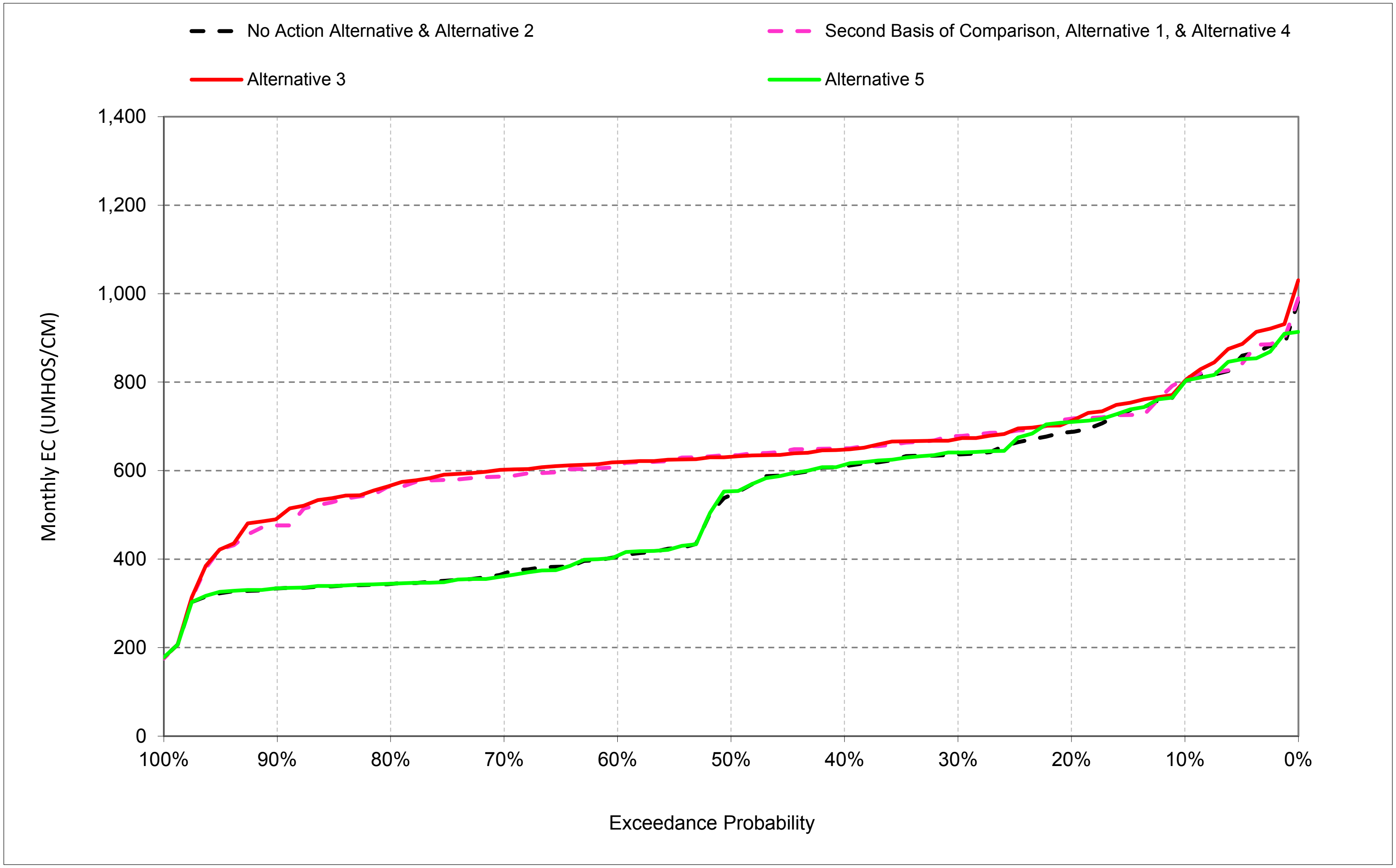
B.7. Jones Pumping Plant Salinity

Figure 6E.B.7.1. Jones Pumping Plant Salinity, Electrical Conductivity, October



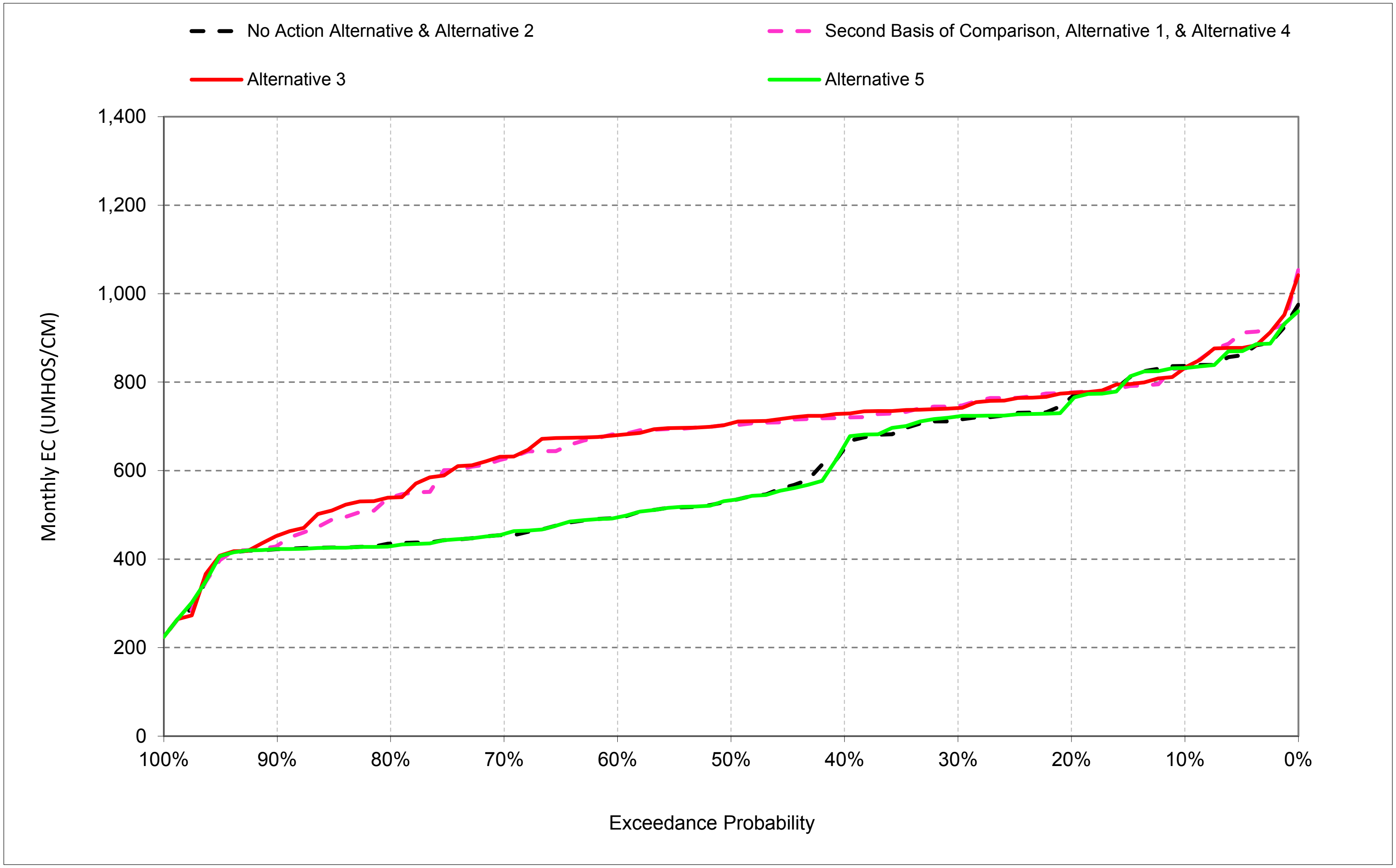
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.2. Jones Pumping Plant Salinity, Electrical Conductivity, November



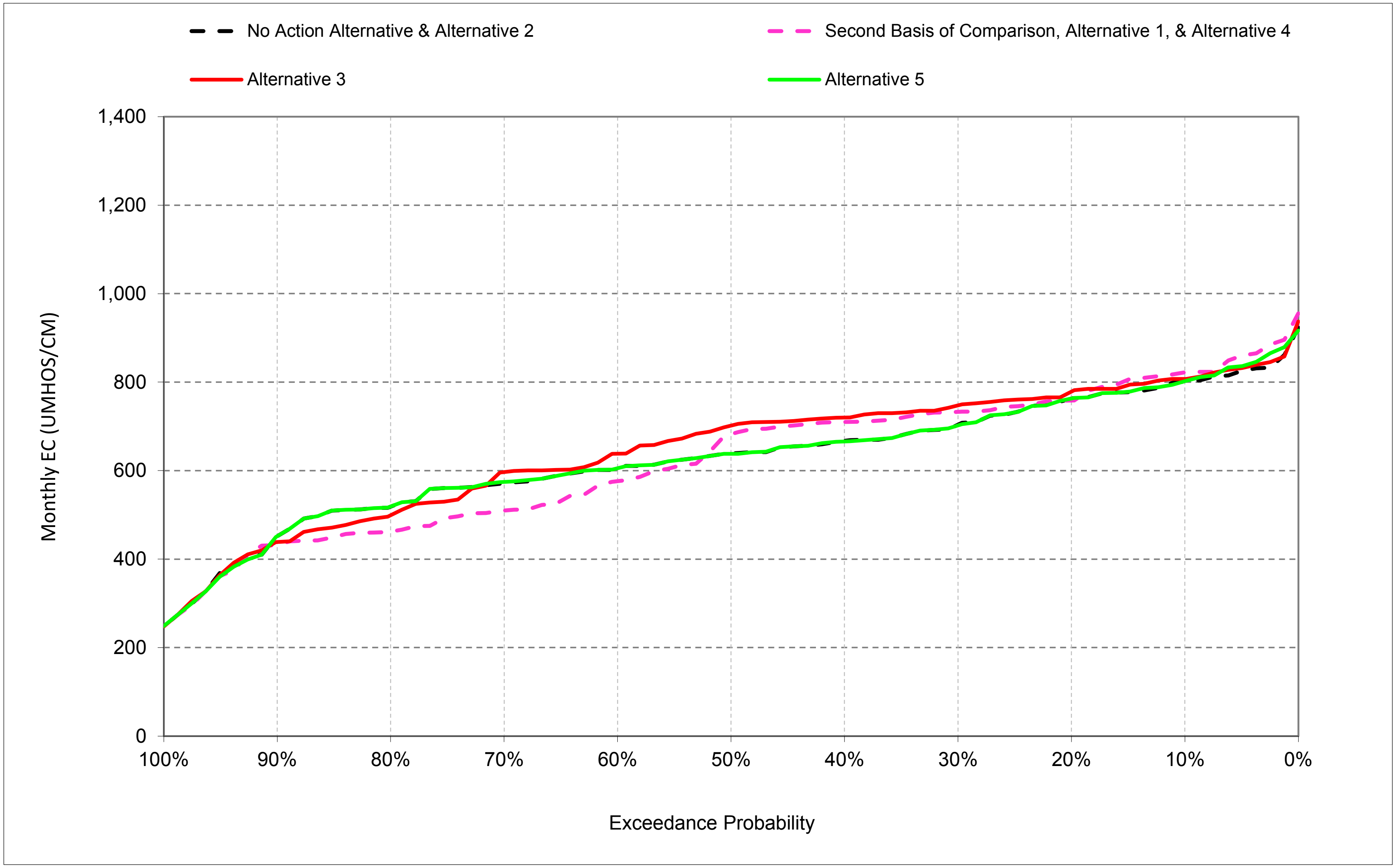
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.3. Jones Pumping Plant Salinity, Electrical Conductivity, December



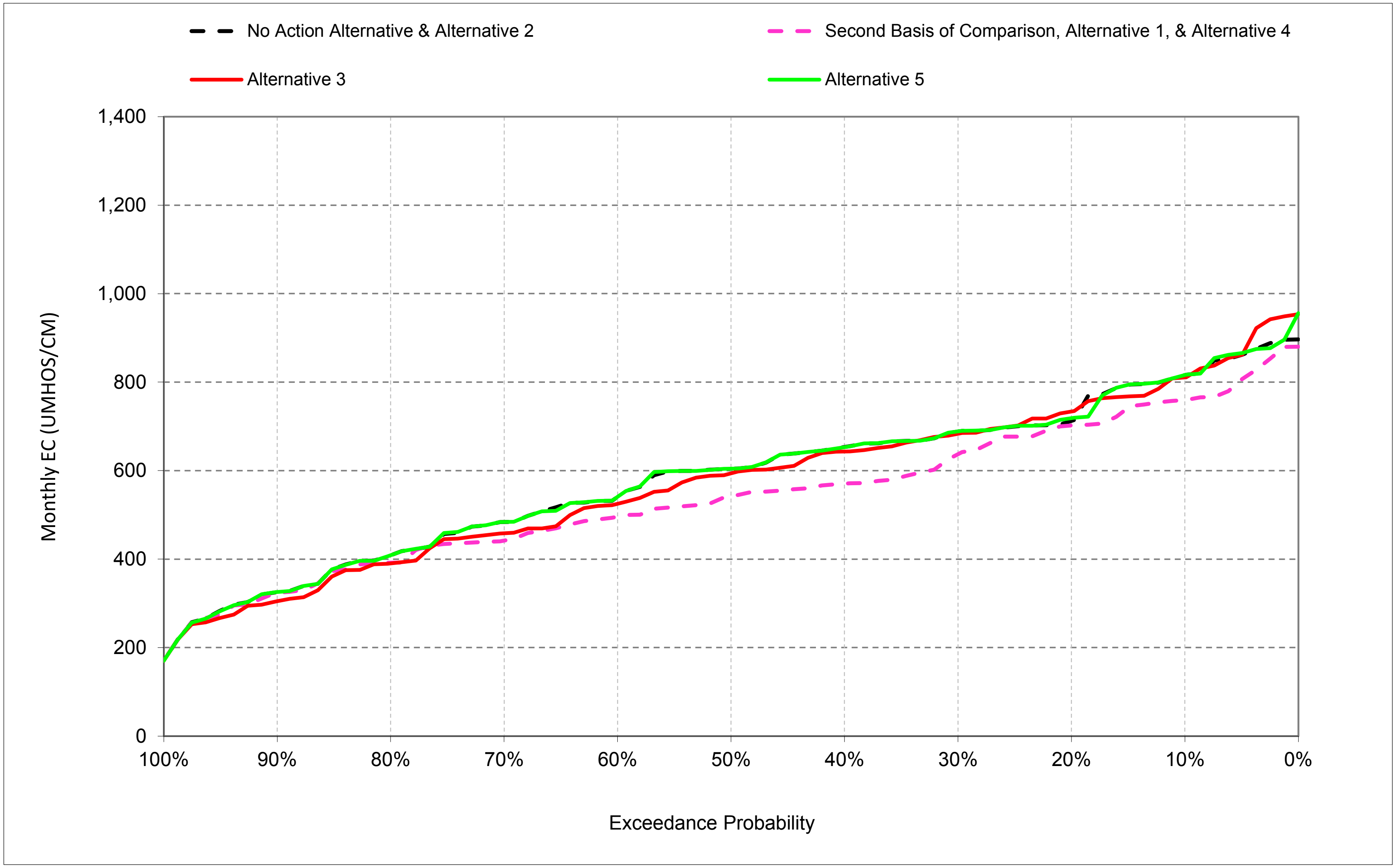
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.4. Jones Pumping Plant Salinity, Electrical Conductivity, January



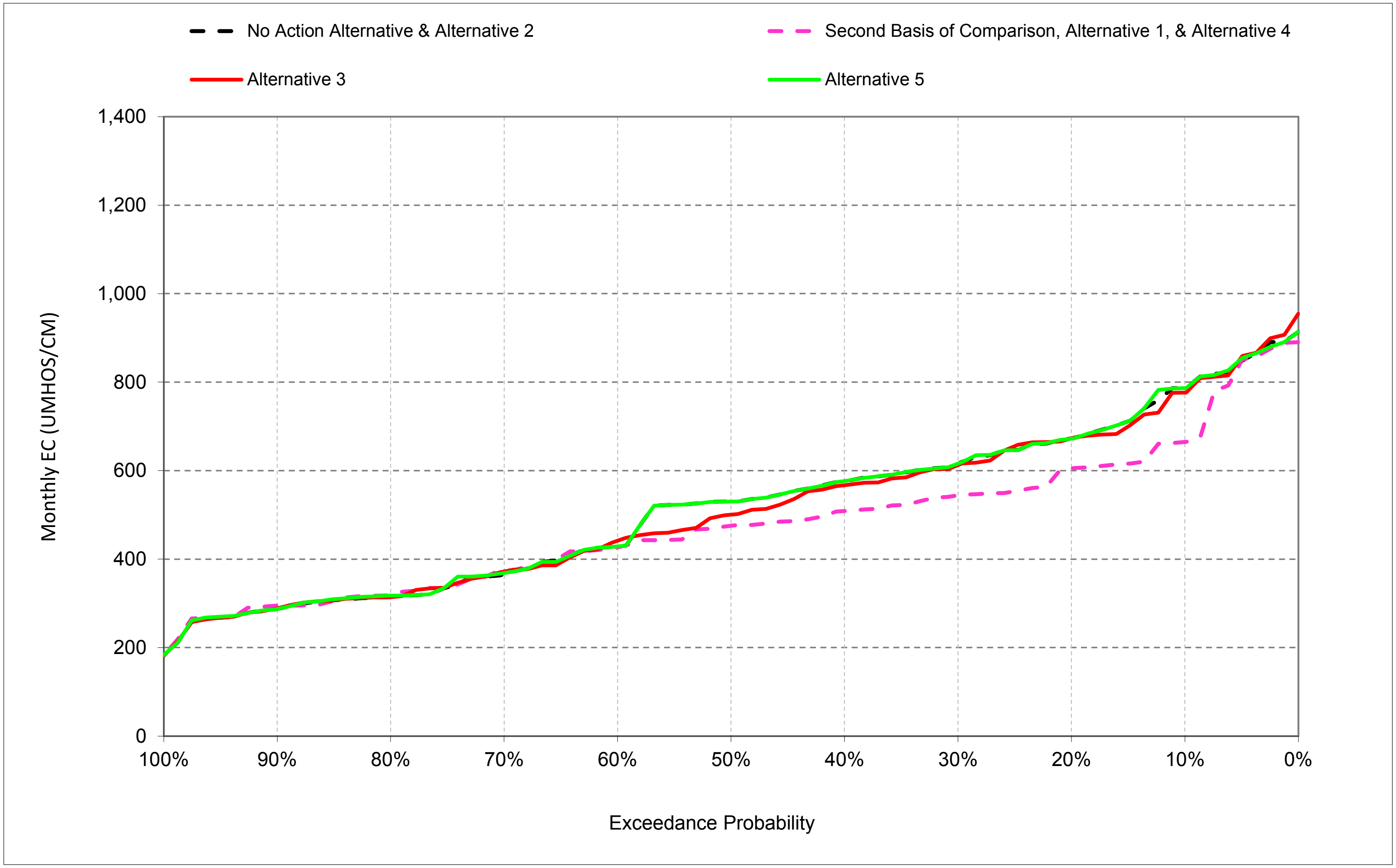
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.5. Jones Pumping Plant Salinity, Electrical Conductivity, February



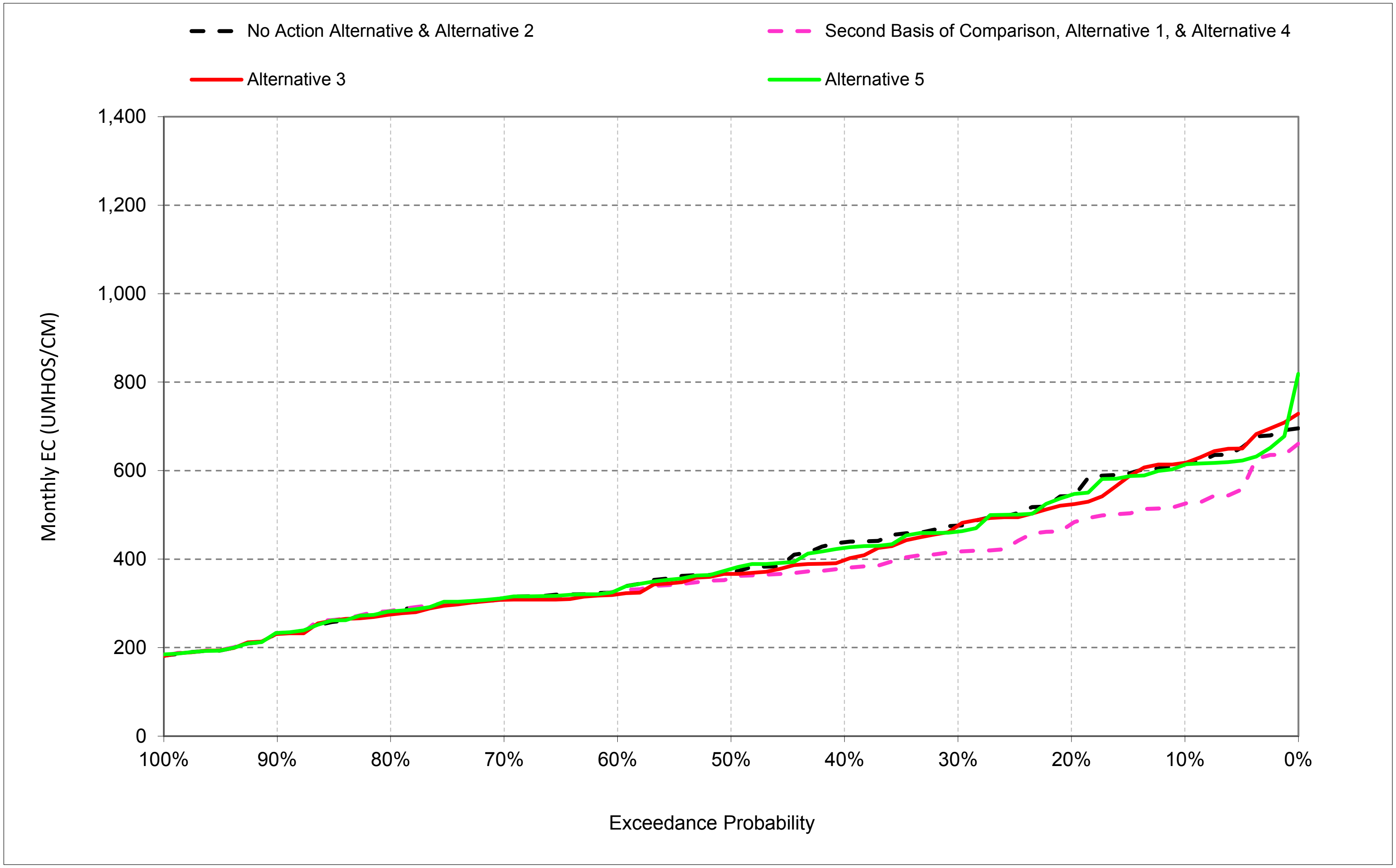
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.6. Jones Pumping Plant Salinity, Electrical Conductivity, March



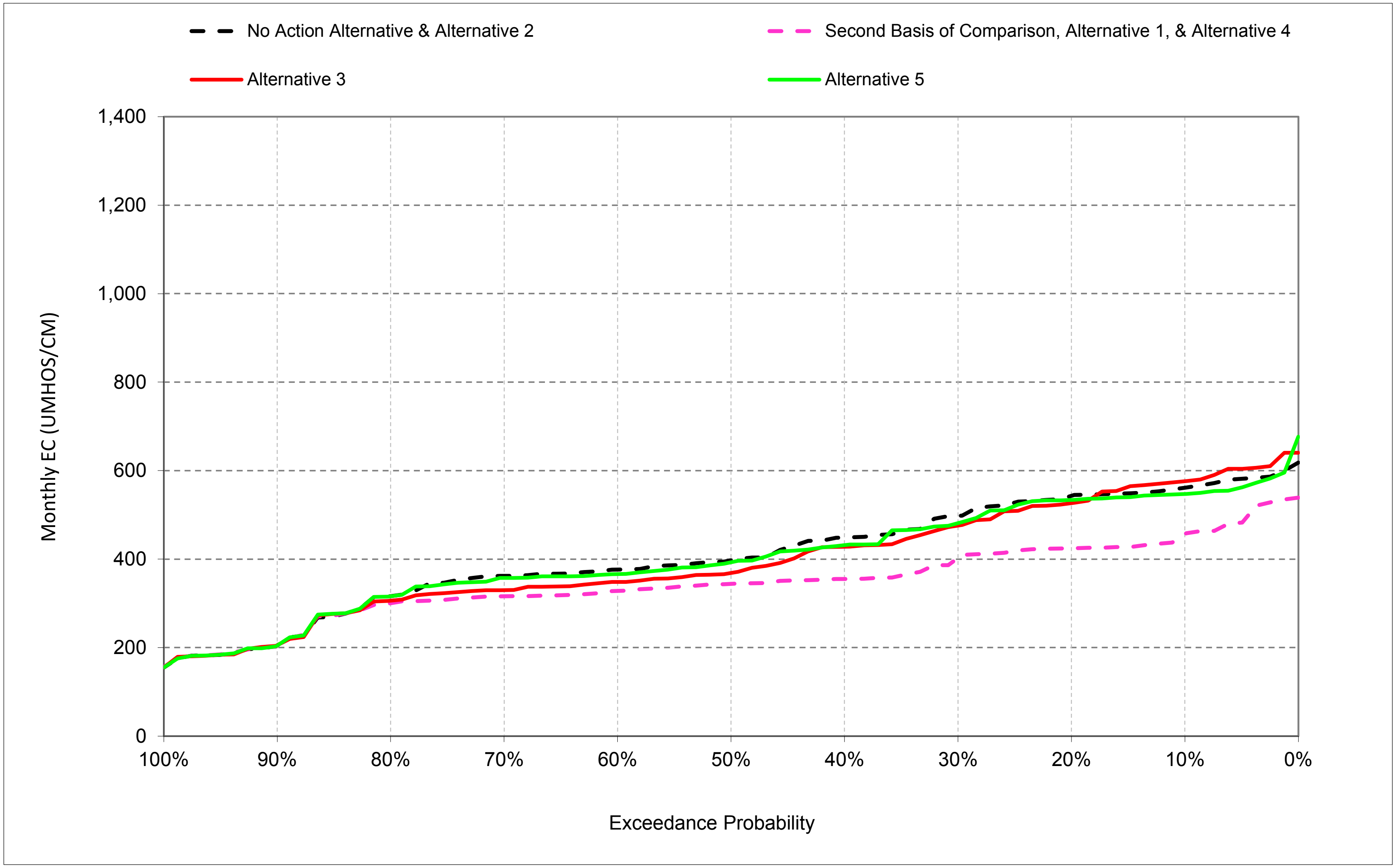
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.7. Jones Pumping Plant Salinity, Electrical Conductivity, April



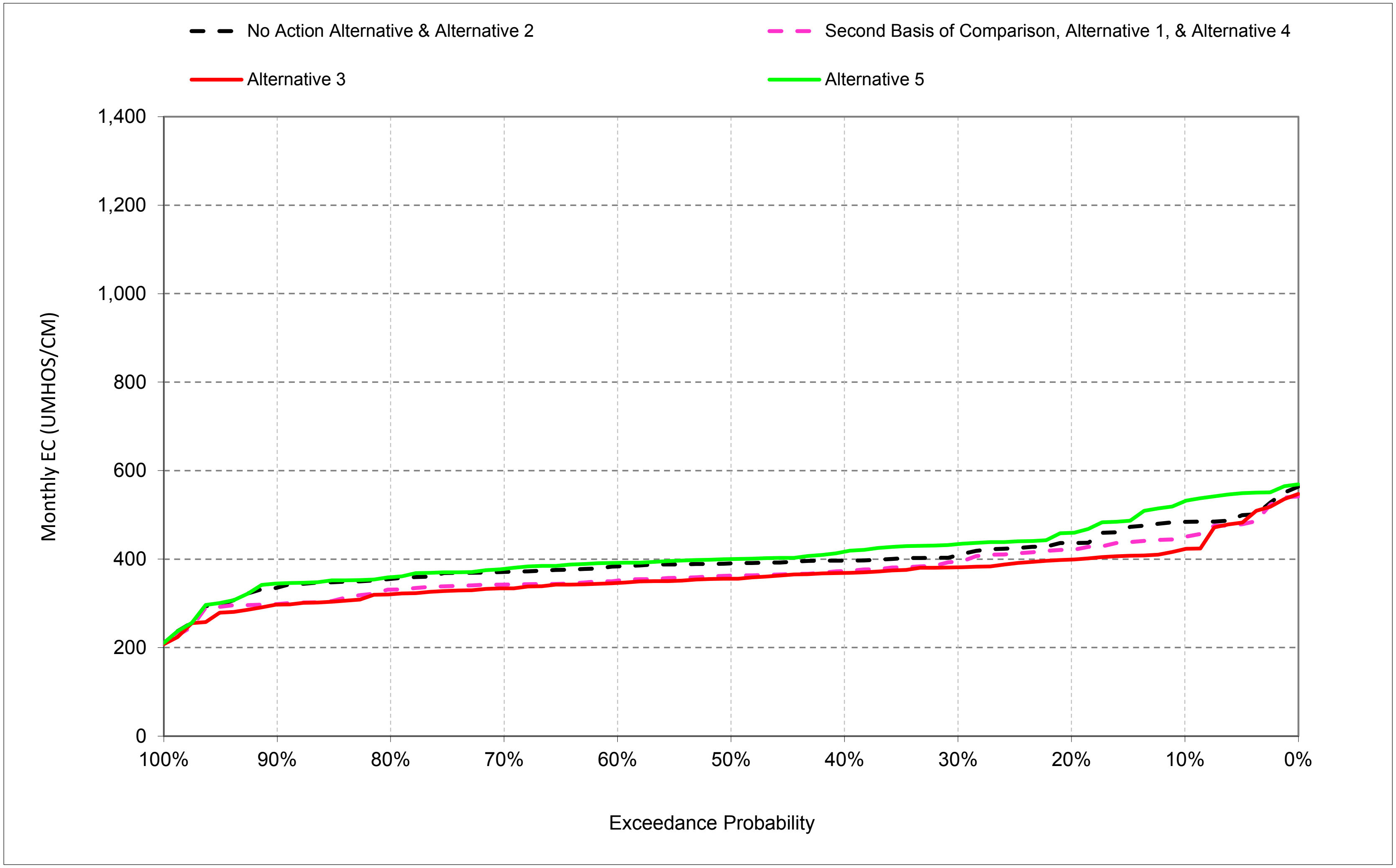
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.8. Jones Pumping Plant Salinity, Electrical Conductivity, May



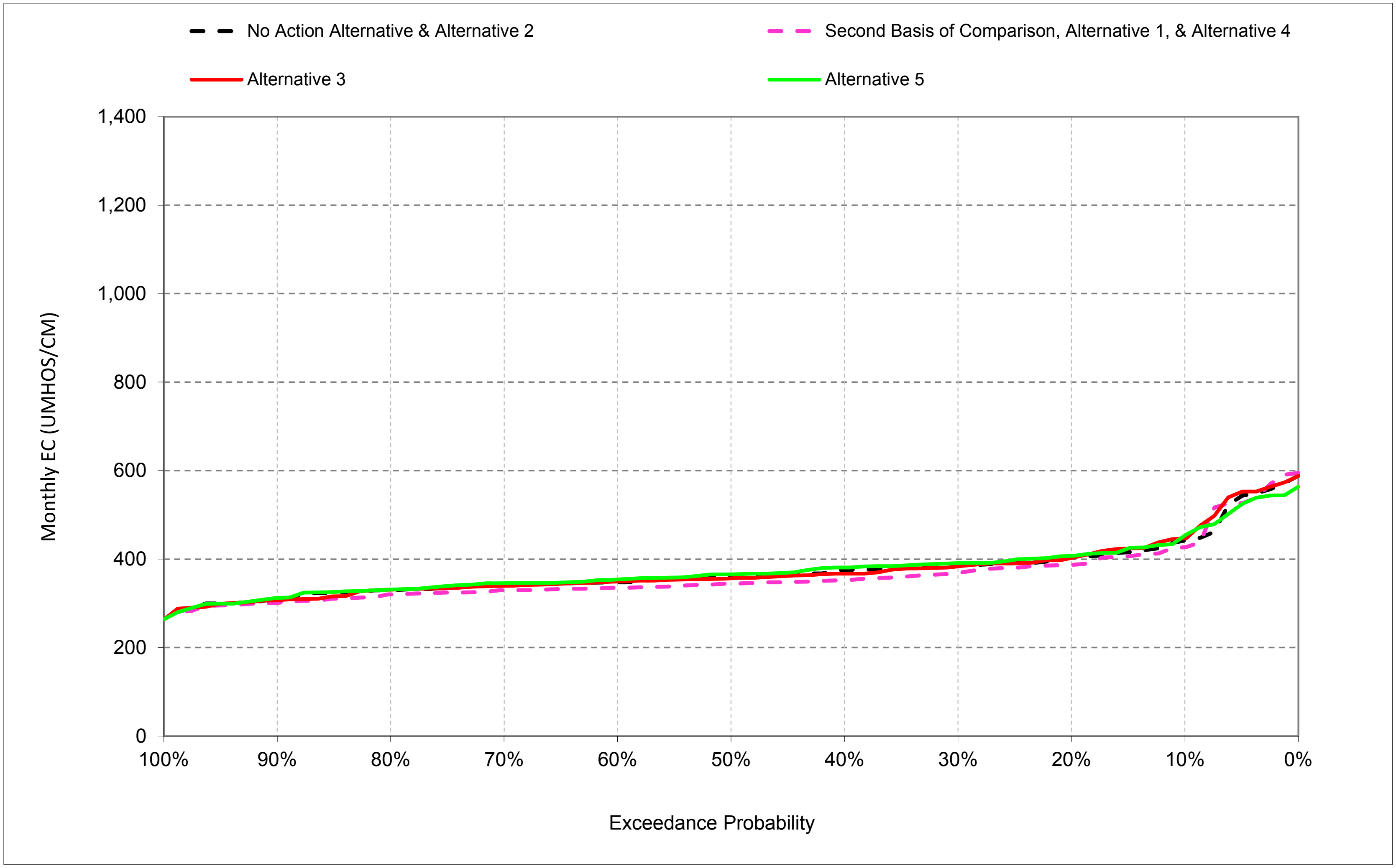
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.9. Jones Pumping Plant Salinity, Electrical Conductivity, June



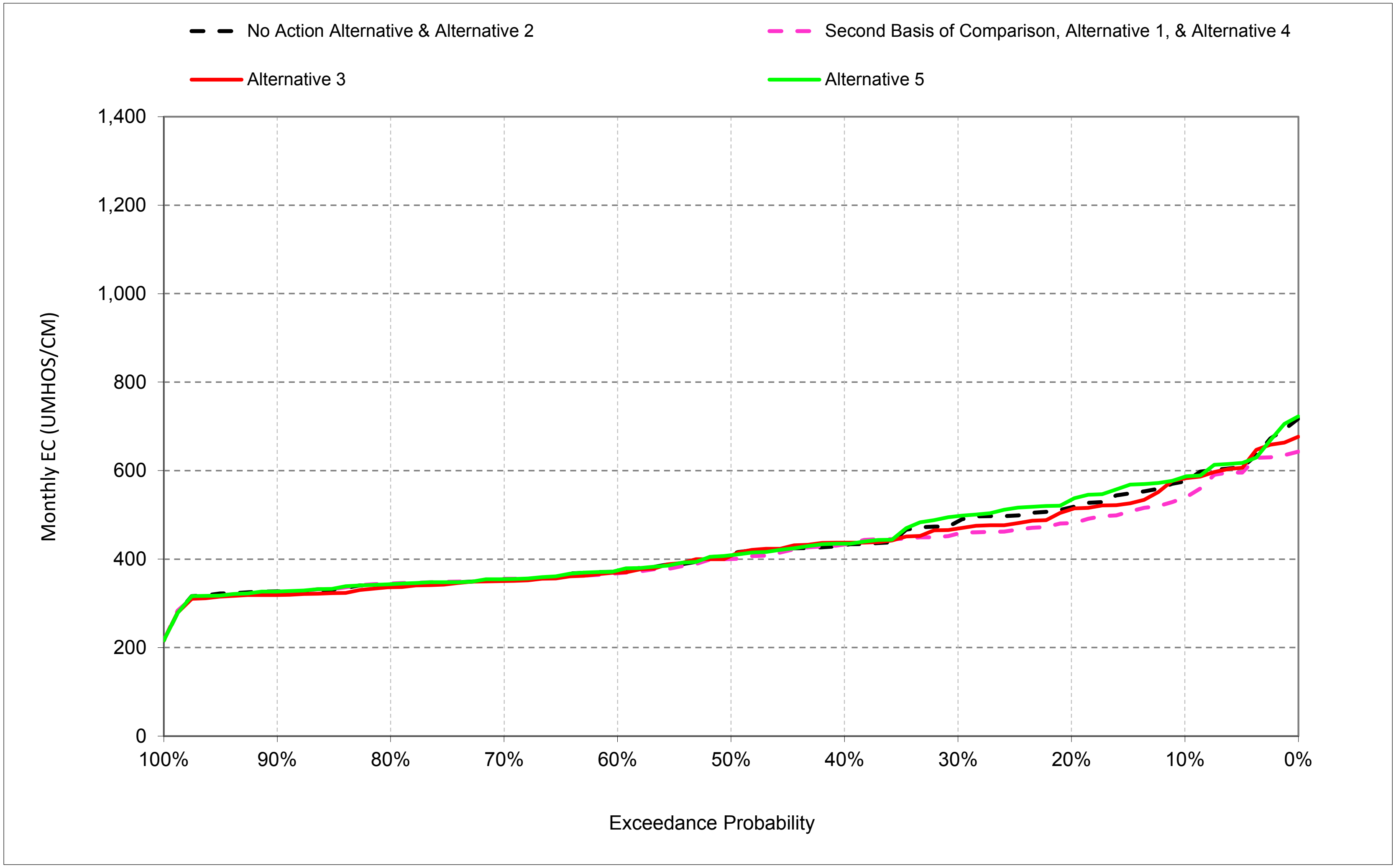
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.10. Jones Pumping Plant Salinity, Electrical Conductivity, July



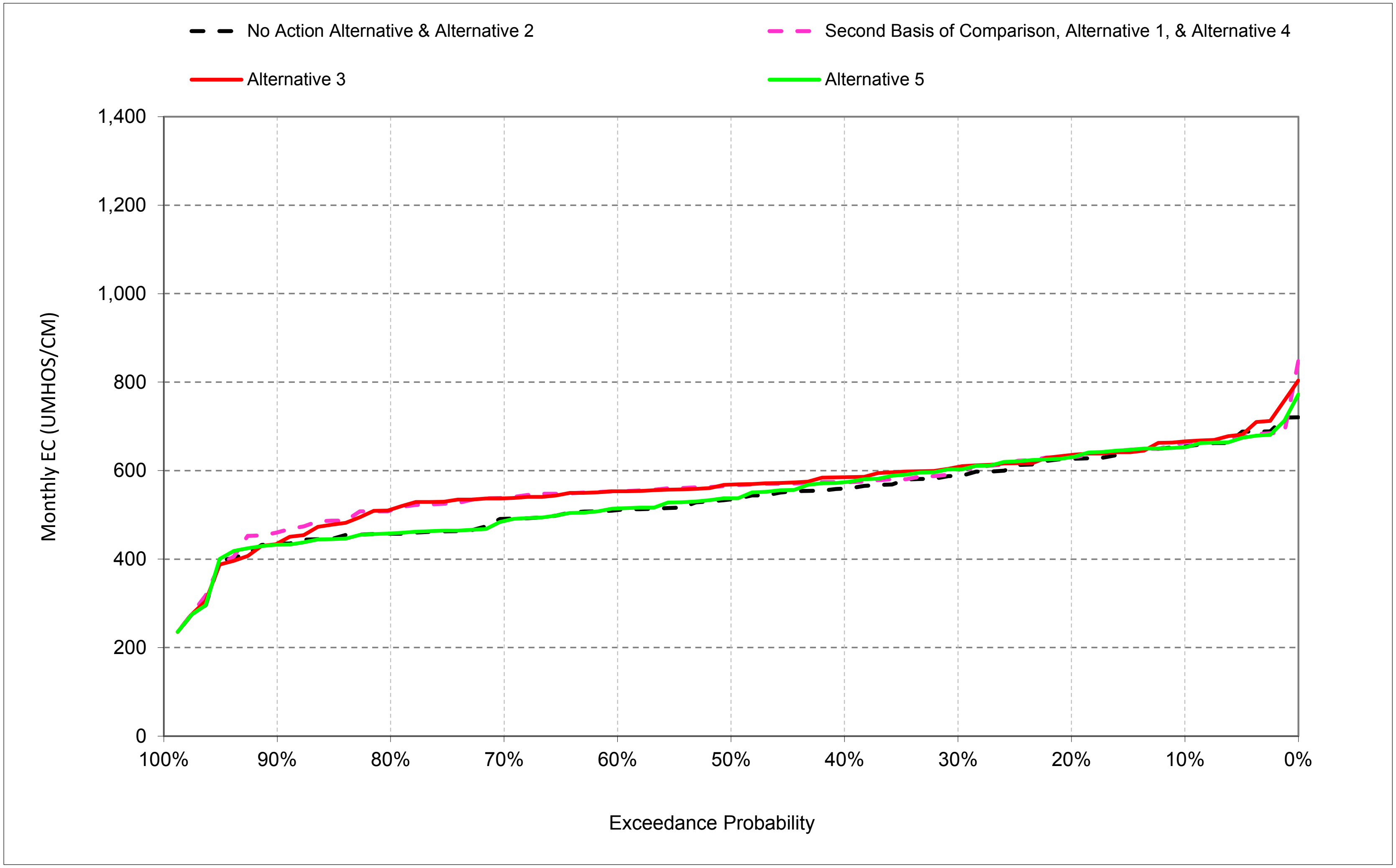
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.11. Jones Pumping Plant Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.7.12. Jones Pumping Plant Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.7.1. Jones Pumping Plant Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	734	805	837	801	816	786	617	561	484	442	576	655
20%	702	688	766	763	712	673	543	543	436	403	517	627
30%	680	637	715	704	688	616	476	498	409	386	485	588
40%	644	610	650	667	653	576	438	449	397	376	432	559
50%	608	545	532	639	604	530	371	397	390	361	411	535
60%	394	406	494	605	541	429	330	376	384	347	374	511
70%	380	367	454	571	484	366	312	362	371	344	353	491
80%	364	344	435	518	409	316	282	316	355	330	341	457
90%	356	334	423	452	326	288	231	205	335	311	327	436
Long Term												
Full Simulation Period[b]	536	529	590	629	583	518	404	410	396	374	430	536
Water Year Types[c]												
Wet (32%)	472	446	495	518	408	337	264	288	352	349	340	462
Above Normal (16%)	606	595	600	624	574	451	353	375	388	343	355	448
Below Normal (13%)	478	460	561	630	621	534	407	433	403	343	418	591
Dry (24%)	537	546	628	692	673	623	486	482	406	384	520	588
Critical (15%)	649	673	745	768	789	792	626	571	476	474	571	652

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	755	807	831	822	759	665	525	456	450	427	539	664
20%	724	718	777	759	702	605	479	425	421	387	481	630
30%	708	678	747	733	637	544	417	402	394	369	458	601
40%	692	650	720	710	570	509	379	355	373	353	433	574
50%	678	635	703	682	542	475	358	344	363	345	400	568
60%	655	611	682	576	496	426	328	328	352	335	368	554
70%	637	587	626	510	442	375	309	316	342	330	356	542
80%	619	563	539	462	392	320	283	300	331	320	345	519
90%	546	476	431	432	324	295	233	204	298	301	326	469
Long Term												
Full Simulation Period[b]	657	630	668	627	541	478	372	348	372	363	418	563
Water Year Types[c]												
Wet (32%)	608	578	569	481	380	339	261	264	335	341	336	484
Above Normal (16%)	704	657	665	620	512	417	327	319	357	331	358	565
Below Normal (13%)	619	579	670	673	599	500	393	363	348	331	418	568
Dry (24%)	673	644	723	703	613	534	428	394	385	359	479	598
Critical (15%)	724	734	796	779	750	735	545	471	465	481	559	665

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	21	1	-6	21	-57	-122	-92	-105	-34	-15	-37	9
20%	22	30	11	-4	-10	-68	-63	-119	-15	-16	-36	4
30%	29	42	32	29	-51	-72	-59	-95	-15	-17	-27	13
40%	49	41	70	43	-83	-67	-59	-94	-24	-23	1	15
50%	70	90	171	44	-62	-55	-13	-53	-28	-16	-11	33
60%	261	205	188	-29	-45	-2	-3	-48	-32	-12	-6	43
70%	257	220	172	-62	-42	9	-3	-46	-29	-14	2	51
80%	255	219	104	-56	-17	4	1	-16	-25	-10	4	62
90%	190	143	8	-20	-1	7	2	-1	-37	-10	-1	33
Long Term												
Full Simulation Period[b]	122	101	79	-2	-42	-40	-33	-62	-24	-11	-13	27
Water Year Types[c]												
Wet (32%)	136	132	73	-37	-28	1	-3	-24	-16	-8	-4	22
Above Normal (16%)	98	61	65	-4	-61	-34	-25	-56	-31	-13	3	117
Below Normal (13%)	141	120	109	43	-22	-34	-14	-70	-55	-12	0	-22
Dry (24%)	136	98	95	11	-59	-89	-58	-88	-21	-25	-41	10
Critical (15%)	75	61	51	11	-39	-58	-81	-99	-11	7	-12	13

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.7.2. Jones Pumping Plant Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	734	805	837	801	816	786	617	561	484	442	576	655
20%	702	688	766	763	712	673	543	543	436	403	517	627
30%	680	637	715	704	688	616	476	498	409	386	485	588
40%	644	610	650	667	653	576	438	449	397	376	432	559
50%	608	545	532	639	604	530	371	397	390	361	411	535
60%	394	406	494	605	541	429	330	376	384	347	374	511
70%	380	367	454	571	484	366	312	362	371	344	353	491
80%	364	344	435	518	409	316	282	316	355	330	341	457
90%	356	334	423	452	326	288	231	205	335	311	327	436
Long Term												
Full Simulation Period[b]	536	529	590	629	583	518	404	410	396	374	430	536
Water Year Types[c]												
Wet (32%)	472	446	495	518	408	337	264	288	352	349	340	462
Above Normal (16%)	606	595	600	624	574	451	353	375	388	343	355	448
Below Normal (13%)	478	460	561	630	621	534	407	433	403	343	418	591
Dry (24%)	537	546	628	692	673	623	486	482	406	384	520	588
Critical (15%)	649	673	745	768	789	792	626	571	476	474	571	652

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	754	802	832	807	811	776	617	576	423	447	582	666
20%	724	713	776	778	734	673	524	526	399	403	513	635
30%	711	672	741	747	683	612	476	476	381	384	469	612
40%	689	647	729	720	643	567	397	428	369	367	437	586
50%	664	631	707	702	594	501	367	369	355	356	407	569
60%	651	619	680	638	525	441	321	348	346	349	370	553
70%	633	602	631	597	458	372	308	330	334	340	351	539
80%	614	566	539	499	390	314	275	306	321	331	337	522
90%	546	492	453	439	305	289	231	205	297	307	319	451
Long Term												
Full Simulation Period[b]	656	637	672	647	574	511	397	399	362	374	424	564
Water Year Types[c]												
Wet (32%)	603	585	580	517	388	337	260	275	328	349	332	473
Above Normal (16%)	715	676	678	661	551	431	335	344	340	342	357	570
Below Normal (13%)	618	576	674	685	615	521	408	431	350	350	428	603
Dry (24%)	665	655	729	720	675	613	477	469	368	378	501	596
Critical (15%)	729	734	771	760	796	798	620	578	460	477	566	664

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	20	-3	-5	6	-5	-10	0	15	-61	4	7	11
20%	22	25	10	16	21	0	-19	-17	-37	0	-5	9
30%	31	35	26	44	-5	-4	0	-22	-27	-2	-16	23
40%	45	38	78	53	-10	-9	-41	-21	-28	-8	5	26
50%	56	86	175	63	-10	-30	-4	-29	-35	-4	-4	34
60%	257	213	186	33	-16	13	-10	-28	-37	2	-4	42
70%	252	235	177	25	-25	6	-4	-32	-37	-4	-3	48
80%	250	222	104	-19	-18	-2	-8	-10	-35	1	-5	64
90%	190	159	30	-13	-21	1	0	0	-38	-4	-8	15
Long Term												
Full Simulation Period[b]	121	108	83	19	-10	-7	-7	-11	-34	0	-6	28
Water Year Types[c]												
Wet (32%)	131	139	85	-2	-21	-1	-5	-13	-24	1	-8	11
Above Normal (16%)	109	80	78	37	-23	-20	-18	-31	-48	-2	2	122
Below Normal (13%)	140	116	113	55	-6	-14	1	-2	-53	7	11	13
Dry (24%)	128	109	101	29	2	-10	-10	-12	-38	-6	-18	8
Critical (15%)	80	61	26	-7	7	5	-5	7	-16	4	-5	12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.7.3. Jones Pumping Plant Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	734	805	837	801	816	786	617	561	484	442	576	655
20%	702	688	766	763	712	673	543	543	436	403	517	627
30%	680	637	715	704	688	616	476	498	409	386	485	588
40%	644	610	650	667	653	576	438	449	397	376	432	559
50%	608	545	532	639	604	530	371	397	390	361	411	535
60%	394	406	494	605	541	429	330	376	384	347	374	511
70%	380	367	454	571	484	366	312	362	371	344	353	491
80%	364	344	435	518	409	316	282	316	355	330	341	457
90%	356	334	423	452	326	288	231	205	335	311	327	436
Long Term												
Full Simulation Period[b]	536	529	590	629	583	518	404	410	396	374	430	536
Water Year Types[c]												
Wet (32%)	472	446	495	518	408	337	264	288	352	349	340	462
Above Normal (16%)	606	595	600	624	574	451	353	375	388	343	355	448
Below Normal (13%)	478	460	561	630	621	534	407	433	403	343	418	591
Dry (24%)	537	546	628	692	673	623	486	482	406	384	520	588
Critical (15%)	649	673	745	768	789	792	626	571	476	474	571	652

Alternative 5

	Monthly EC (UMHOS/CM)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	761	800	832	802	816	786	613	547	531	453	586	653
20%	708	710	758	763	718	673	546	534	459	408	534	630
30%	671	641	722	702	689	616	462	481	434	391	497	603
40%	651	613	656	666	653	576	425	431	417	381	435	574
50%	605	553	533	638	604	530	378	393	400	366	409	538
60%	397	408	495	606	541	429	330	366	391	354	375	515
70%	383	361	457	574	484	369	312	357	378	345	355	486
80%	364	345	429	519	409	317	282	316	359	331	343	458
90%	358	334	423	452	325	288	233	205	345	312	327	433
Long Term												
Full Simulation Period[b]	540	530	589	630	584	519	401	404	411	376	435	540
Water Year Types[c]												
Wet (32%)	474	449	497	518	408	339	265	283	352	350	341	462
Above Normal (16%)	617	593	596	623	574	451	350	364	390	344	355	448
Below Normal (13%)	477	461	561	630	620	534	406	434	416	345	419	596
Dry (24%)	541	545	626	697	675	623	481	486	437	394	535	600
Critical (15%)	653	674	745	769	789	794	617	544	514	468	573	659

Alternative 5 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	27	-5	-5	1	0	0	-4	-14	47	11	10	-2
20%	6	22	-7	0	6	0	3	-9	23	5	17	4
30%	-8	5	8	-1	1	0	-14	-16	25	5	12	15
40%	8	3	6	-1	0	0	-13	-17	20	5	3	14
50%	-3	8	1	-1	0	0	7	-4	10	5	-2	3
60%	3	2	0	0	0	0	0	-10	8	7	1	4
70%	2	-6	3	3	0	3	0	-5	7	2	1	-5
80%	1	1	-6	0	0	1	-1	0	4	1	2	1
90%	2	0	0	0	0	0	2	0	10	1	0	-2
Long Term												
Full Simulation Period[b]	4	1	0	1	0	1	-3	-6	15	2	4	5
Water Year Types[c]												
Wet (32%)	2	4	2	0	0	2	0	-5	0	1	1	0
Above Normal (16%)	11	-3	-5	-1	0	0	-3	-11	2	0	0	0
Below Normal (13%)	0	2	0	0	-1	0	-1	1	12	3	1	5
Dry (24%)	5	-1	-1	5	2	0	-5	4	31	10	15	12
Critical (15%)	4	1	1	1	0	1	-9	-26	38	-5	2	7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.7.4. Jones Pumping Plant Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	755	807	831	822	759	665	525	456	450	427	539	664
20%	724	718	777	759	702	605	479	425	421	387	481	630
30%	708	678	747	733	637	544	417	402	394	369	458	601
40%	692	650	720	710	570	509	379	355	373	353	433	574
50%	678	635	703	682	542	475	358	344	363	345	400	568
60%	655	611	682	576	496	426	328	328	352	335	368	554
70%	637	587	626	510	442	375	309	316	342	330	356	542
80%	619	563	539	462	392	320	283	300	331	320	345	519
90%	546	476	431	432	324	295	233	204	298	301	326	469
Long Term												
Full Simulation Period[b]	657	630	668	627	541	478	372	348	372	363	418	563
Water Year Types[c]												
Wet (32%)	608	578	569	481	380	339	261	264	335	341	336	484
Above Normal (16%)	704	657	665	620	512	417	327	319	357	331	358	565
Below Normal (13%)	619	579	670	673	599	500	393	363	348	331	418	568
Dry (24%)	673	644	723	703	613	534	428	394	385	359	479	598
Critical (15%)	724	734	796	779	750	735	545	471	465	481	559	665

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	734	805	837	801	816	786	617	561	484	442	576	655
20%	702	688	766	763	712	673	543	543	436	403	517	627
30%	680	637	715	704	688	616	476	498	409	386	485	588
40%	644	610	650	667	653	576	438	449	397	376	432	559
50%	608	545	532	639	604	530	371	397	390	361	411	535
60%	394	406	494	605	541	429	330	376	384	347	374	511
70%	380	367	454	571	484	366	312	362	371	344	353	491
80%	364	344	435	518	409	316	282	316	355	330	341	457
90%	356	334	423	452	326	288	231	205	335	311	327	436
Long Term												
Full Simulation Period[b]	536	529	590	629	583	518	404	410	396	374	430	536
Water Year Types[c]												
Wet (32%)	472	446	495	518	408	337	264	288	352	349	340	462
Above Normal (16%)	606	595	600	624	574	451	353	375	388	343	355	448
Below Normal (13%)	478	460	561	630	621	534	407	433	403	343	418	591
Dry (24%)	537	546	628	692	673	623	486	482	406	384	520	588
Critical (15%)	649	673	745	768	789	792	626	571	476	474	571	652

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-21	-1	6	-21	57	122	92	105	34	15	37	-9
20%	-22	-30	-11	4	10	68	63	119	15	16	36	-4
30%	-29	-42	-32	-29	51	72	59	95	15	17	27	-13
40%	-49	-41	-70	-43	83	67	59	94	24	23	-1	-15
50%	-70	-90	-171	-44	62	55	13	53	28	16	11	-33
60%	-261	-205	-188	29	45	2	3	48	32	12	6	-43
70%	-257	-220	-172	62	42	-9	3	46	29	14	-2	-51
80%	-255	-219	-104	56	17	-4	-1	16	25	10	-4	-62
90%	-190	-143	-8	20	1	-7	-2	1	37	10	1	-33
Long Term												
Full Simulation Period[b]	-122	-101	-79	2	42	40	33	62	24	11	13	-27
Water Year Types[c]												
Wet (32%)	-136	-132	-73	37	28	-1	3	24	16	8	4	-22
Above Normal (16%)	-98	-61	-65	4	61	34	25	56	31	13	-3	-117
Below Normal (13%)	-141	-120	-109	-43	22	34	14	70	55	12	0	22
Dry (24%)	-136	-98	-95	-11	59	89	58	88	21	25	41	-10
Critical (15%)	-75	-61	-51	-11	39	58	81	99	11	-7	12	-13

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.7.5. Jones Pumping Plant Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	755	807	831	822	759	665	525	456	450	427	539	664
20%	724	718	777	759	702	605	479	425	421	387	481	630
30%	708	678	747	733	637	544	417	402	394	369	458	601
40%	692	650	720	710	570	509	379	355	373	353	433	574
50%	678	635	703	682	542	475	358	344	363	345	400	568
60%	655	611	682	576	496	426	328	328	352	335	368	554
70%	637	587	626	510	442	375	309	316	342	330	356	542
80%	619	563	539	462	392	320	283	300	331	320	345	519
90%	546	476	431	432	324	295	233	204	298	301	326	469
Long Term												
Full Simulation Period[b]	657	630	668	627	541	478	372	348	372	363	418	563
Water Year Types[c]												
Wet (32%)	608	578	569	481	380	339	261	264	335	341	336	484
Above Normal (16%)	704	657	665	620	512	417	327	319	357	331	358	565
Below Normal (13%)	619	579	670	673	599	500	393	363	348	331	418	568
Dry (24%)	673	644	723	703	613	534	428	394	385	359	479	598
Critical (15%)	724	734	796	779	750	735	545	471	465	481	559	665

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	754	802	832	807	811	776	617	576	423	447	582	666
20%	724	713	776	778	734	673	524	526	399	403	513	635
30%	711	672	741	747	683	612	476	476	381	384	469	612
40%	689	647	729	720	643	567	397	428	369	367	437	586
50%	664	631	707	702	594	501	367	369	355	356	407	569
60%	651	619	680	638	525	441	321	348	346	349	370	553
70%	633	602	631	597	458	372	308	330	334	340	351	539
80%	614	566	539	499	390	314	275	306	321	331	337	522
90%	546	492	453	439	305	289	231	205	297	307	319	451
Long Term												
Full Simulation Period[b]	656	637	672	647	574	511	397	399	362	374	424	564
Water Year Types[c]												
Wet (32%)	603	585	580	517	388	337	260	275	328	349	332	473
Above Normal (16%)	715	676	678	661	551	431	335	344	340	342	357	570
Below Normal (13%)	618	576	674	685	615	521	408	431	350	350	428	603
Dry (24%)	665	655	729	720	675	613	477	469	368	378	501	596
Critical (15%)	729	734	771	760	796	798	620	578	460	477	566	664

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1	-5	1	-14	52	112	92	120	-27	20	43	2
20%	0	-5	-1	20	31	68	44	102	-22	15	31	5
30%	2	-6	-5	15	46	68	59	74	-13	15	11	11
40%	-3	-3	9	10	73	58	18	73	-4	14	4	12
50%	-13	-4	4	19	52	25	9	24	-7	12	7	1
60%	-4	8	-2	62	29	15	-7	20	-5	14	1	-1
70%	-4	15	5	87	16	-3	-1	14	-8	10	-5	-3
80%	-4	3	0	37	-1	-5	-8	6	-10	11	-8	3
90%	0	16	22	6	-19	-6	-2	2	-1	6	-7	-18
Long Term												
Full Simulation Period[b]	-1	7	4	21	32	33	26	51	-10	11	6	1
Water Year Types[c]												
Wet (32%)	-5	7	11	35	8	-2	-2	11	-7	8	-4	-11
Above Normal (16%)	11	19	13	41	38	14	7	25	-18	11	-1	4
Below Normal (13%)	-1	-3	4	12	15	21	15	68	3	19	10	35
Dry (24%)	-8	11	6	18	61	79	49	76	-17	19	23	-2
Critical (15%)	5	0	-25	-19	46	63	76	107	-5	-3	7	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.7.6. Jones Pumping Plant Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	755	807	831	822	759	665	525	456	450	427	539	664
20%	724	718	777	759	702	605	479	425	421	387	481	630
30%	708	678	747	733	637	544	417	402	394	369	458	601
40%	692	650	720	710	570	509	379	355	373	353	433	574
50%	678	635	703	682	542	475	358	344	363	345	400	568
60%	655	611	682	576	496	426	328	328	352	335	368	554
70%	637	587	626	510	442	375	309	316	342	330	356	542
80%	619	563	539	462	392	320	283	300	331	320	345	519
90%	546	476	431	432	324	295	233	204	298	301	326	469
Long Term												
Full Simulation Period[b]	657	630	668	627	541	478	372	348	372	363	418	563
Water Year Types[c]												
Wet (32%)	608	578	569	481	380	339	261	264	335	341	336	484
Above Normal (16%)	704	657	665	620	512	417	327	319	357	331	358	565
Below Normal (13%)	619	579	670	673	599	500	393	363	348	331	418	568
Dry (24%)	673	644	723	703	613	534	428	394	385	359	479	598
Critical (15%)	724	734	796	779	750	735	545	471	465	481	559	665

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	761	800	832	802	816	786	613	547	531	453	586	653
20%	708	710	758	763	718	673	546	534	459	408	534	630
30%	671	641	722	702	689	616	462	481	434	391	497	603
40%	651	613	656	666	653	576	425	431	417	381	435	574
50%	605	553	533	638	604	530	378	393	400	366	409	538
60%	397	408	495	606	541	429	330	366	391	354	375	515
70%	383	361	457	574	484	369	312	357	378	345	355	486
80%	364	345	429	519	409	317	282	316	359	331	343	458
90%	358	334	423	452	325	288	233	205	345	312	327	433
Long Term												
Full Simulation Period[b]	540	530	589	630	584	519	401	404	411	376	435	540
Water Year Types[c]												
Wet (32%)	474	449	497	518	408	339	265	283	352	350	341	462
Above Normal (16%)	617	593	596	623	574	451	350	364	390	344	355	448
Below Normal (13%)	477	461	561	630	620	534	406	434	416	345	419	596
Dry (24%)	541	545	626	697	675	623	481	486	437	394	535	600
Critical (15%)	653	674	745	769	789	794	617	544	514	468	573	659

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	-7	1	-20	57	122	88	91	81	26	47	-11
20%	-16	-8	-18	5	16	68	66	109	38	20	53	0
30%	-37	-37	-24	-31	52	72	46	79	40	22	40	2
40%	-41	-37	-64	-44	83	67	46	76	44	28	1	0
50%	-73	-81	-170	-45	62	55	20	49	37	21	9	-31
60%	-258	-203	-188	29	45	2	3	38	40	19	7	-40
70%	-255	-226	-170	65	42	-6	3	41	36	16	-1	-56
80%	-254	-219	-110	56	17	-2	-1	16	28	11	-1	-61
90%	-188	-142	-8	20	1	-7	0	1	47	11	1	-35
Long Term												
Full Simulation Period[b]	-118	-100	-79	4	42	40	30	56	39	14	17	-22
Water Year Types[c]												
Wet (32%)	-134	-129	-71	37	28	0	3	19	17	9	5	-22
Above Normal (16%)	-87	-64	-69	3	61	34	22	45	33	13	-3	-117
Below Normal (13%)	-142	-118	-109	-43	21	34	13	71	68	15	0	28
Dry (24%)	-132	-98	-96	-5	62	89	53	92	52	35	56	2
Critical (15%)	-71	-60	-51	-10	39	59	72	73	48	-12	14	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

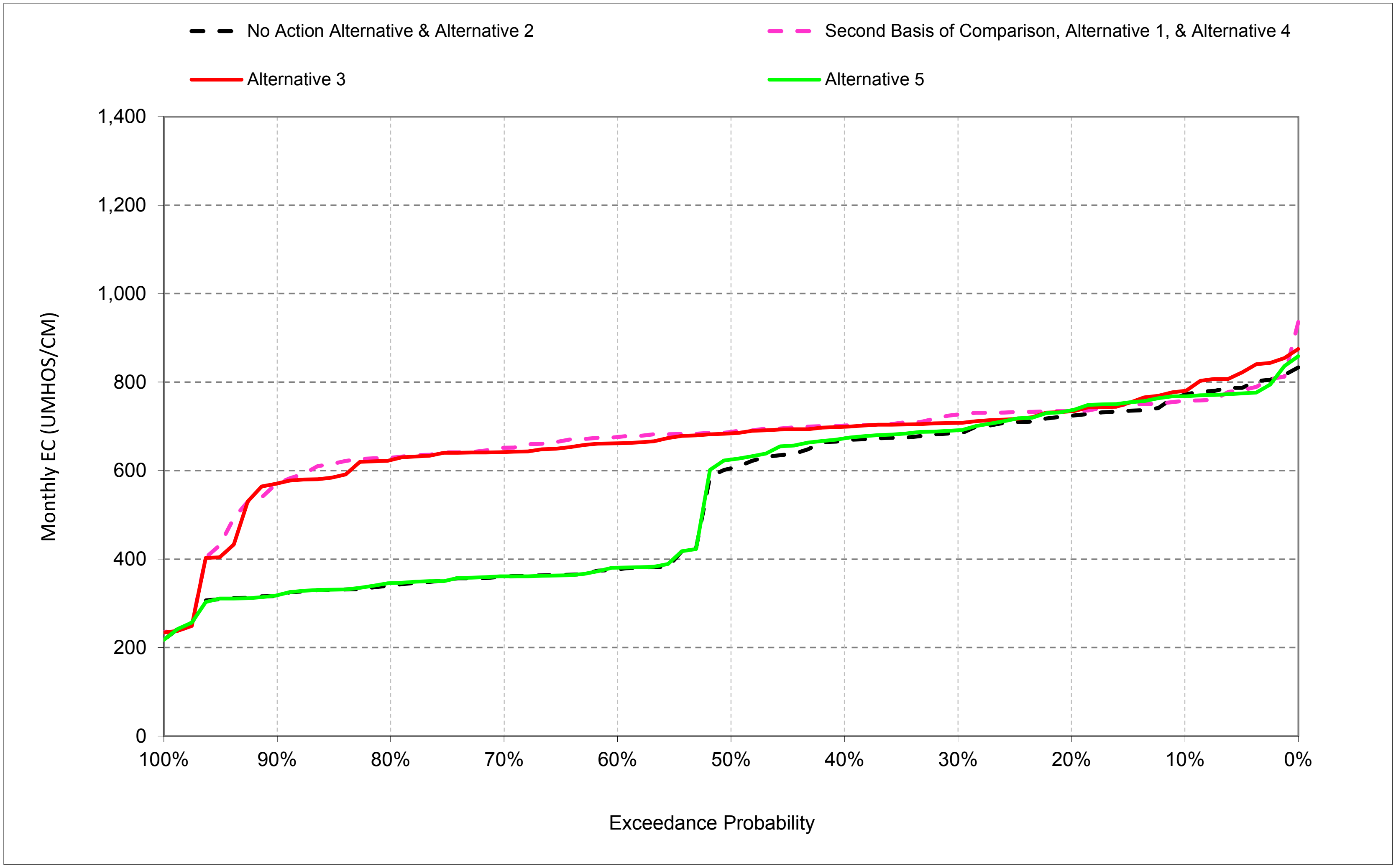
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

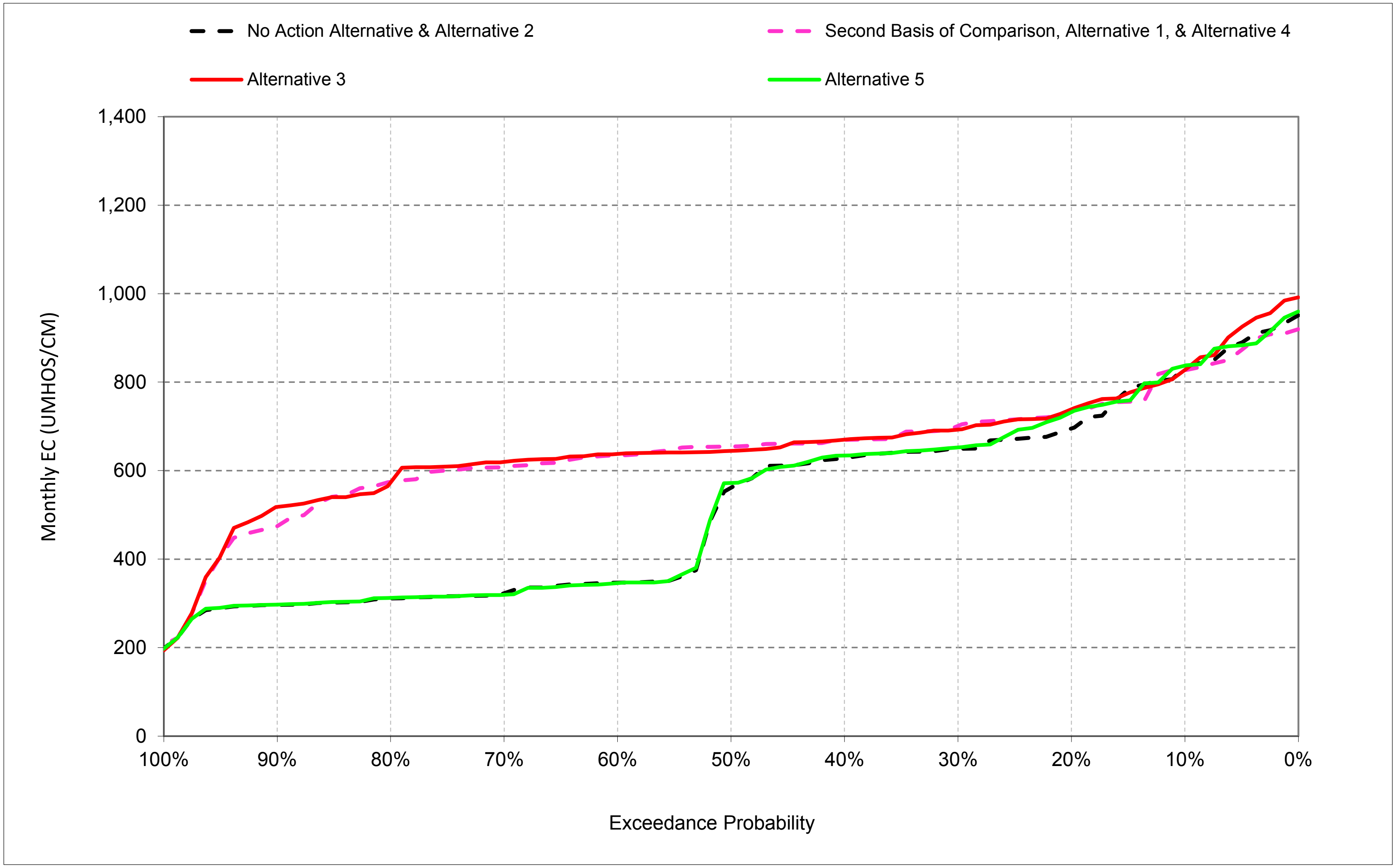
B.8. Banks Pumping Plant Salinity

Figure 6E.B.8.1. Banks Pumping Plant Salinity, Electrical Conductivity, October



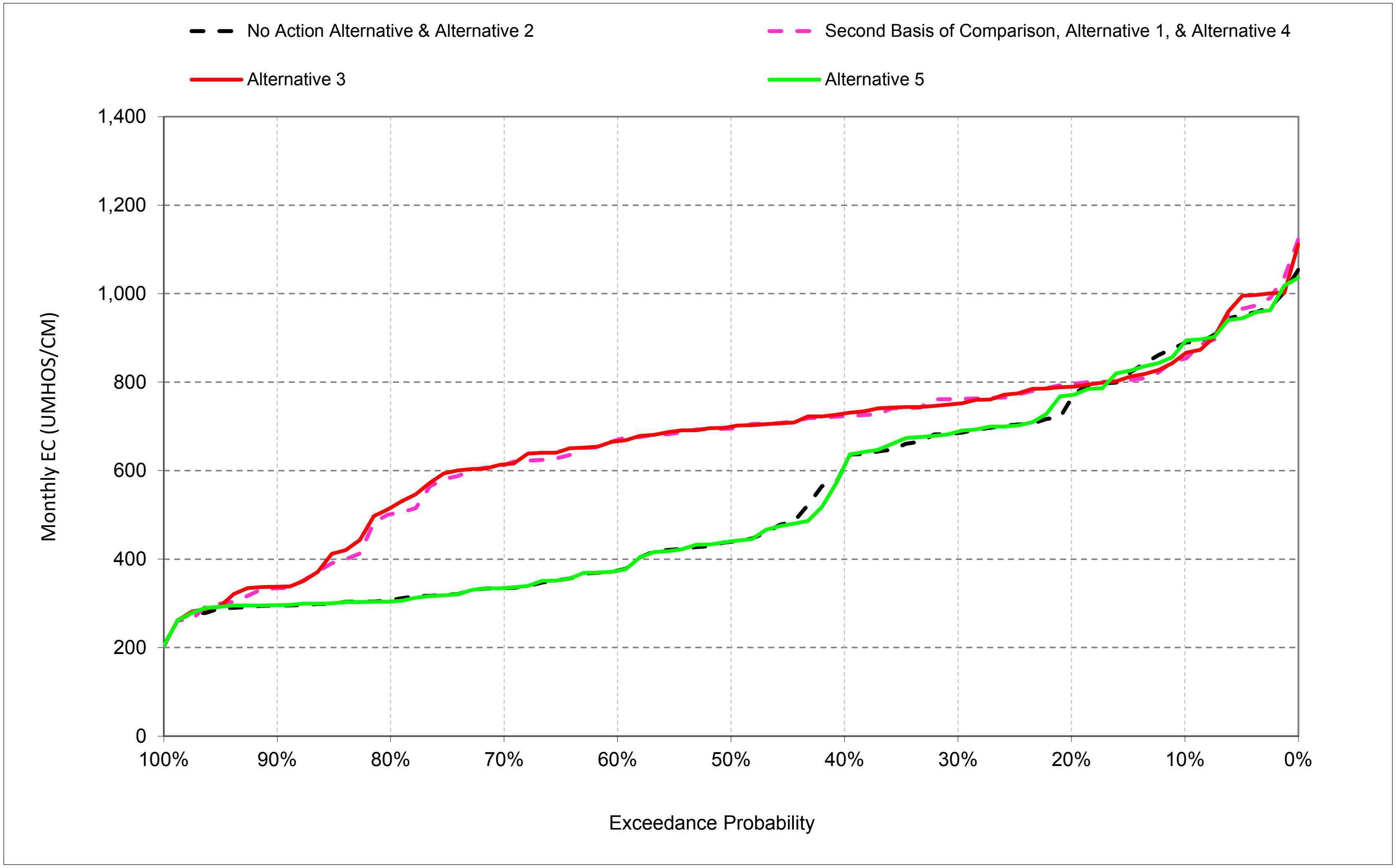
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.2. Banks Pumping Plant Salinity, Electrical Conductivity, November



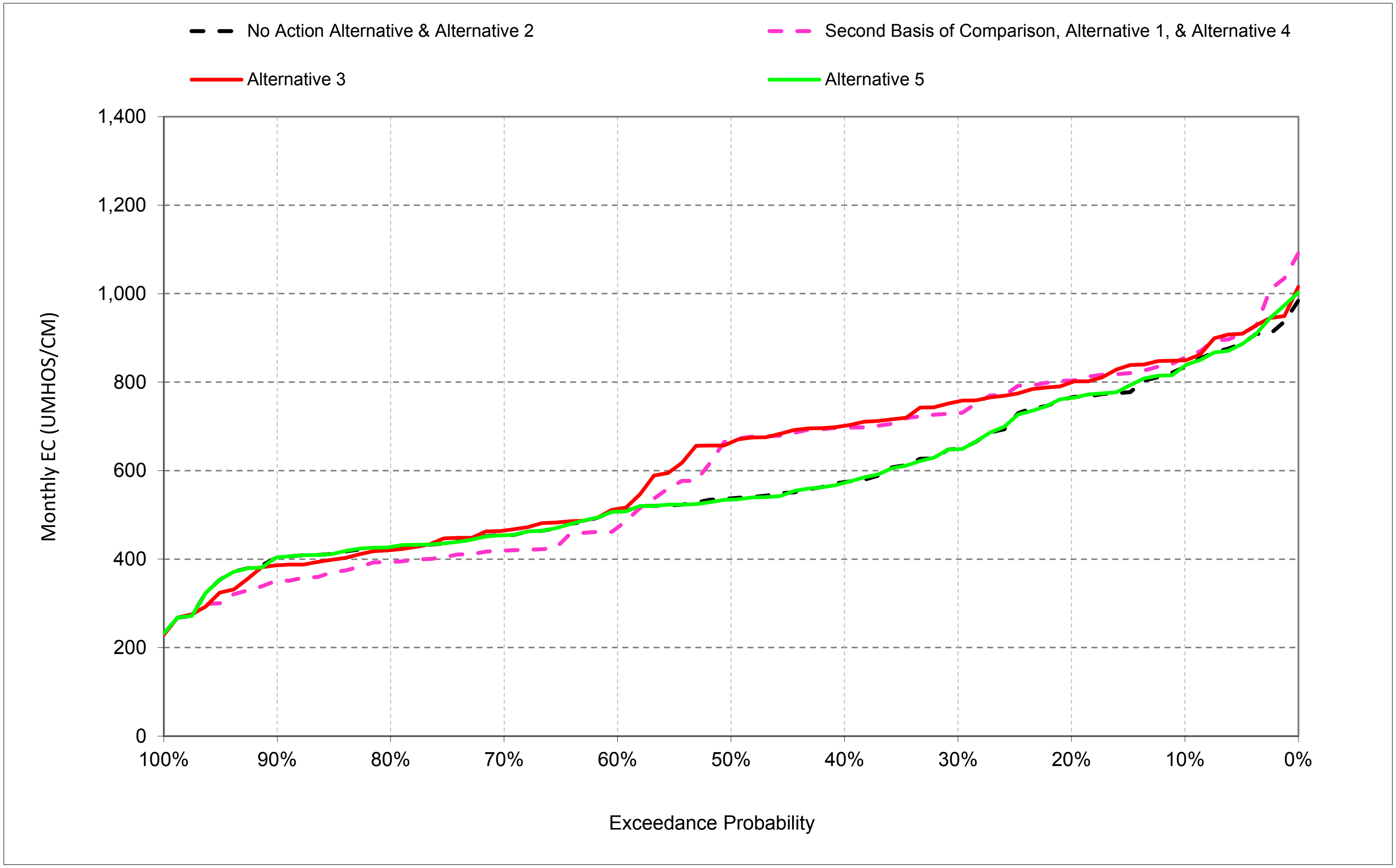
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.3. Banks Pumping Plant Salinity, Electrical Conductivity, December



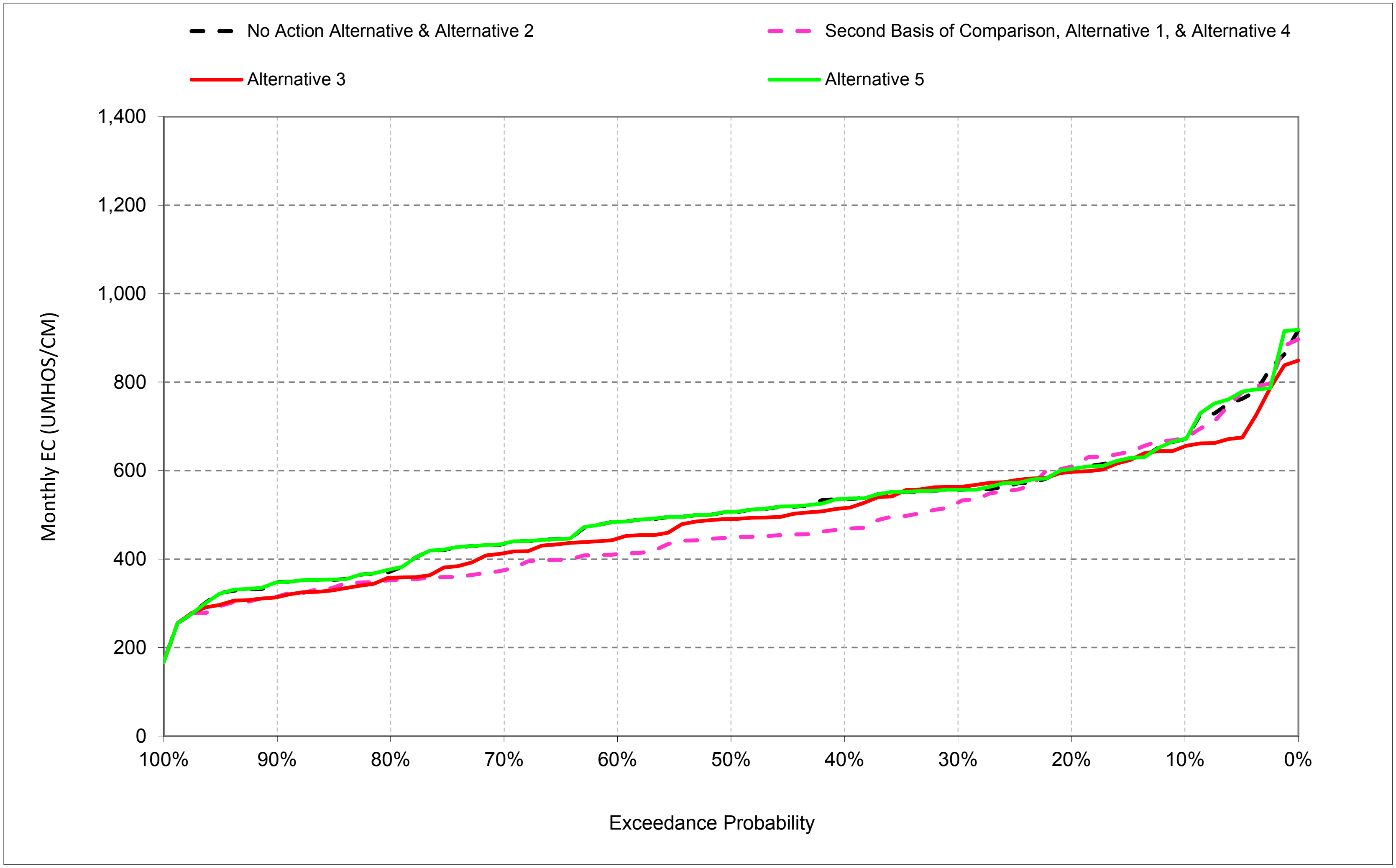
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.4. Banks Pumping Plant Salinity, Electrical Conductivity, January



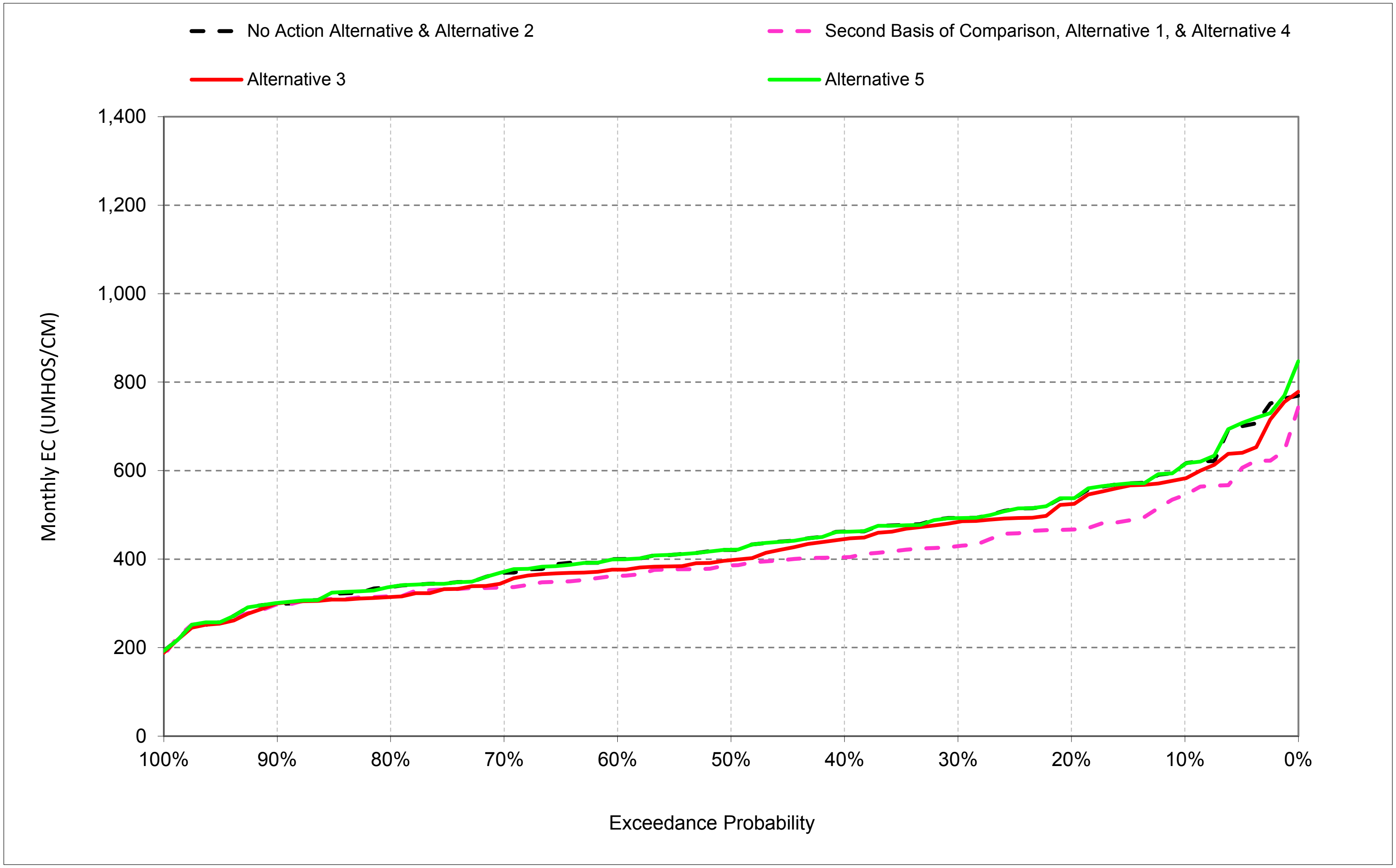
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.5. Banks Pumping Plant Salinity, Electrical Conductivity, February



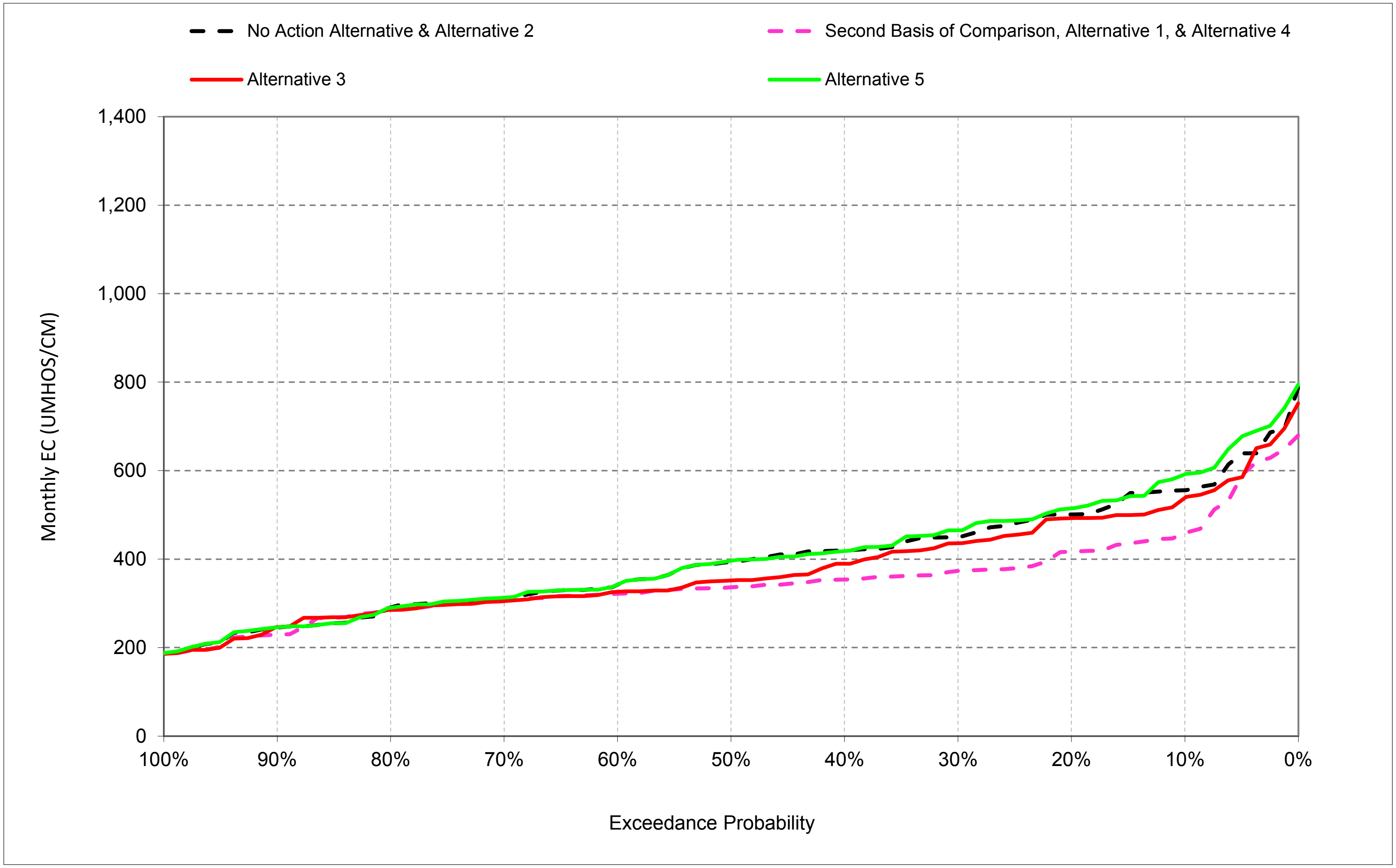
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.6. Banks Pumping Plant Salinity, Electrical Conductivity, March



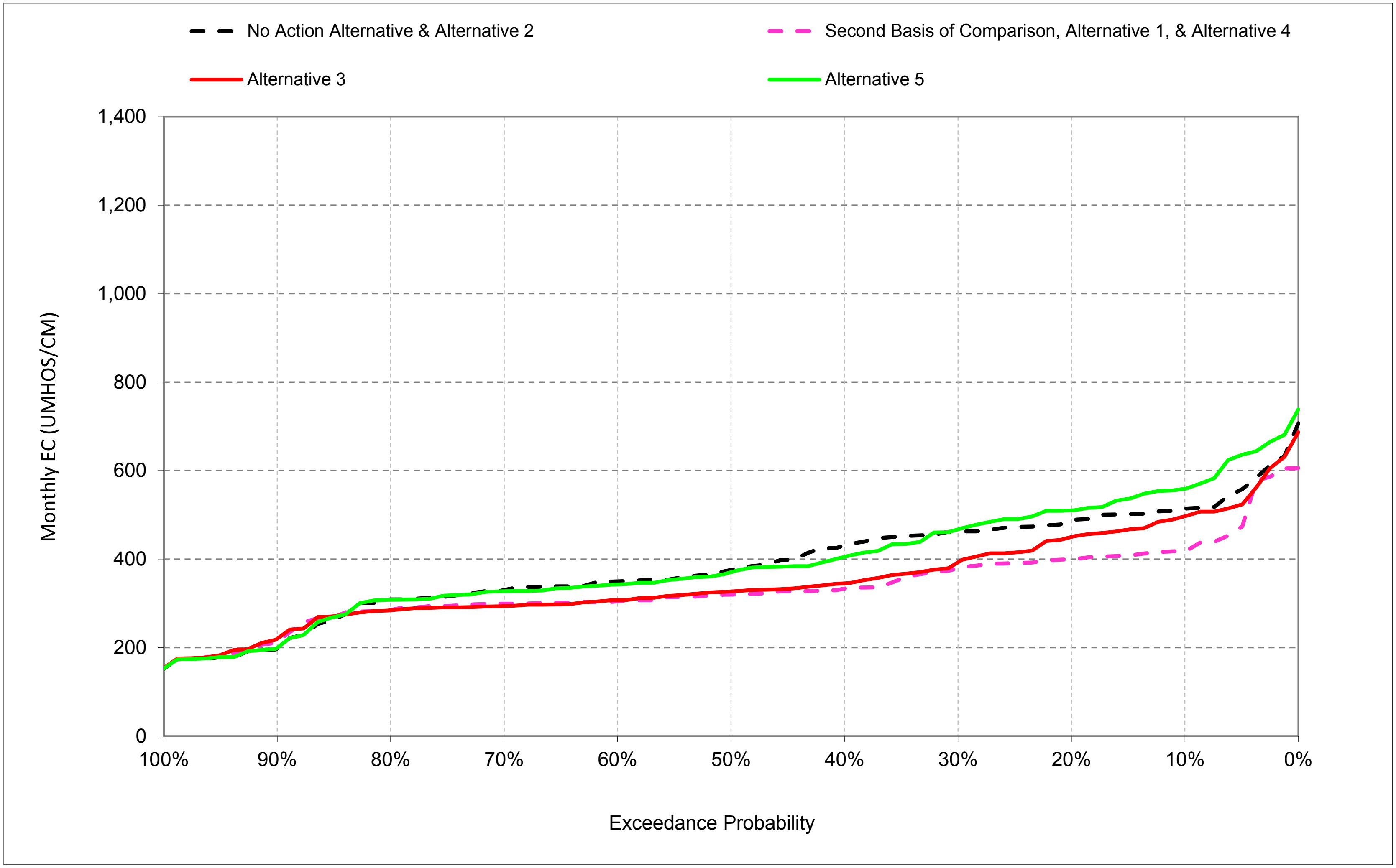
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.7. Banks Pumping Plant Salinity, Electrical Conductivity, April



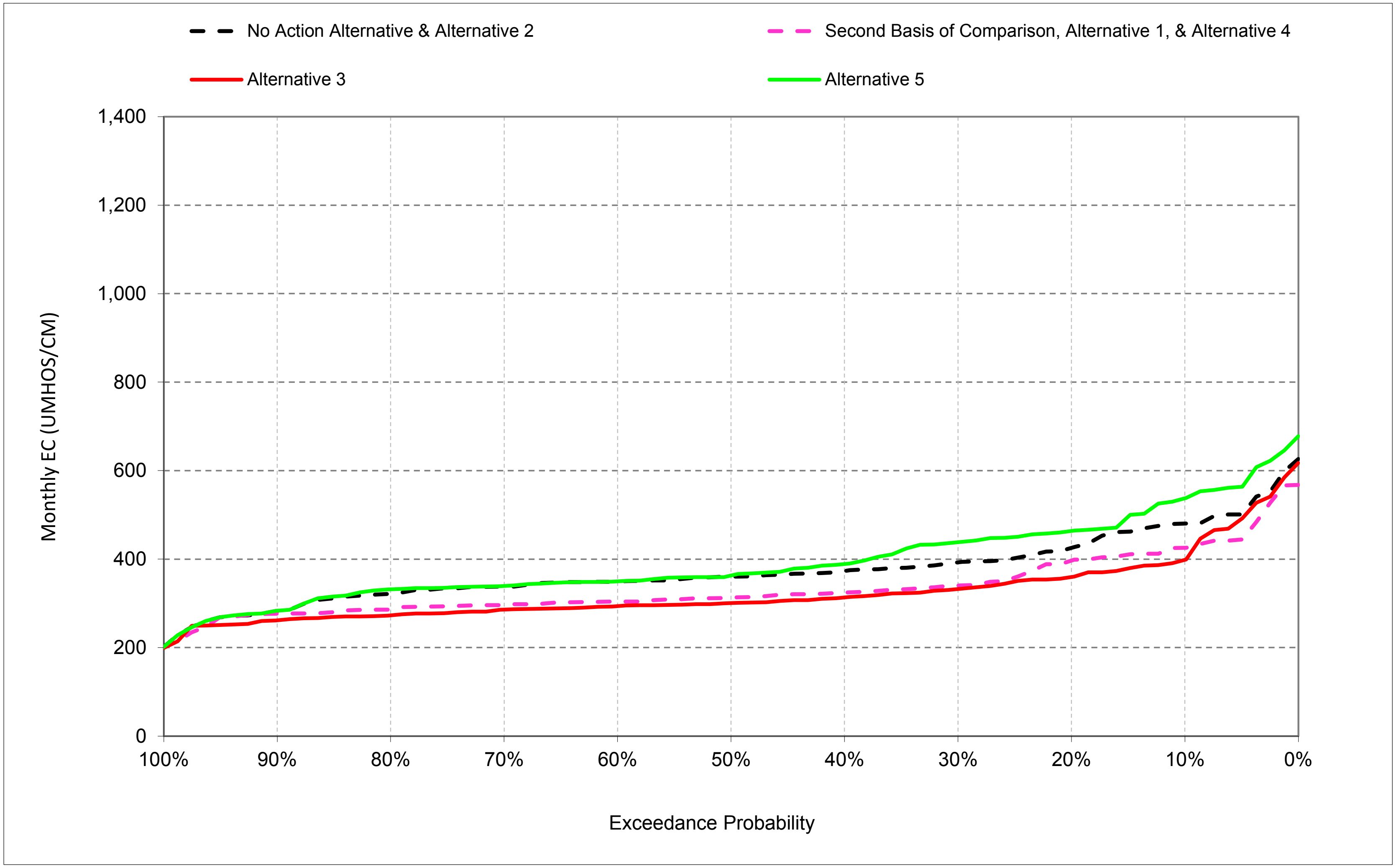
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.8. Banks Pumping Plant Salinity, Electrical Conductivity, May



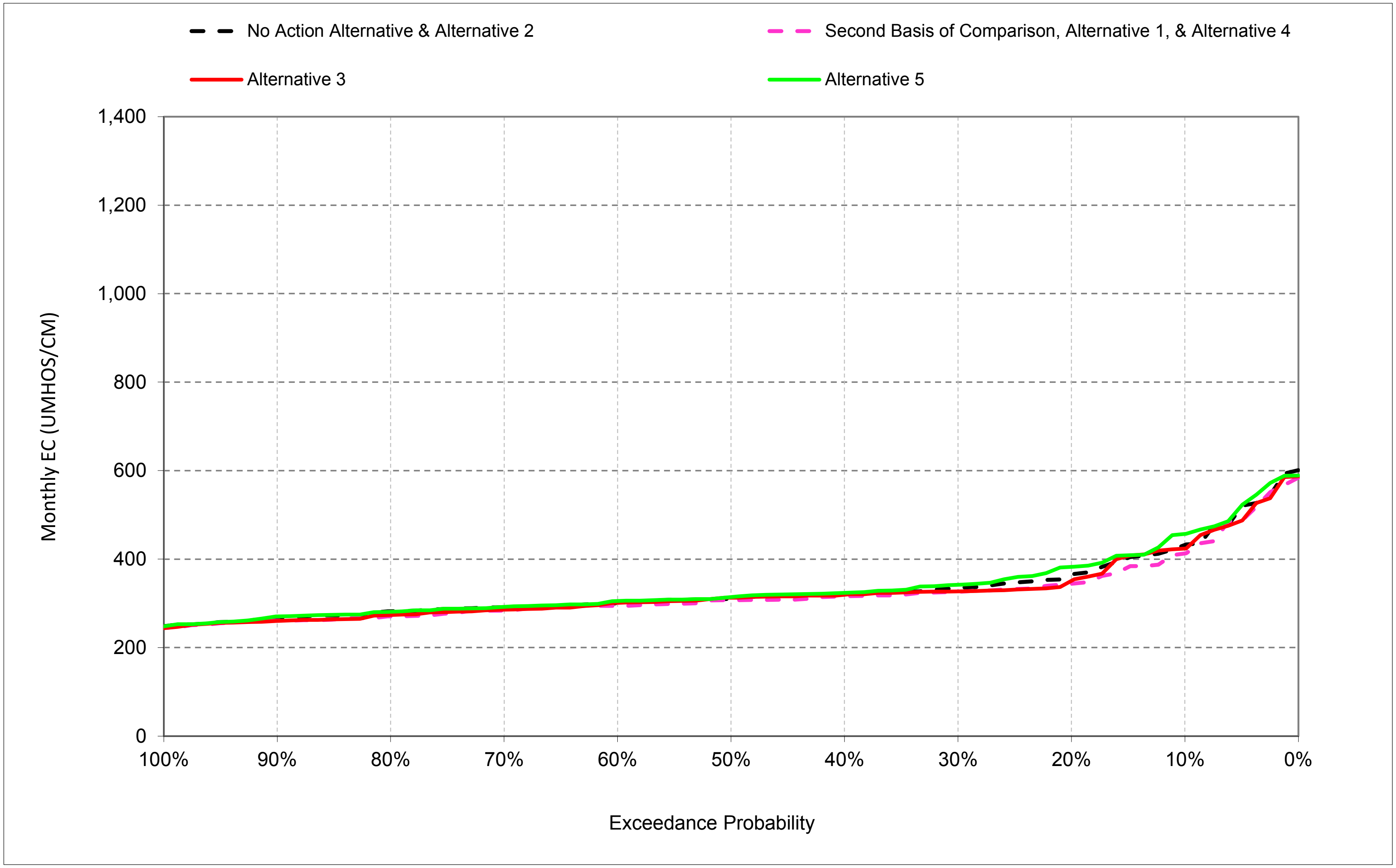
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.9. Banks Pumping Plant Salinity, Electrical Conductivity, June



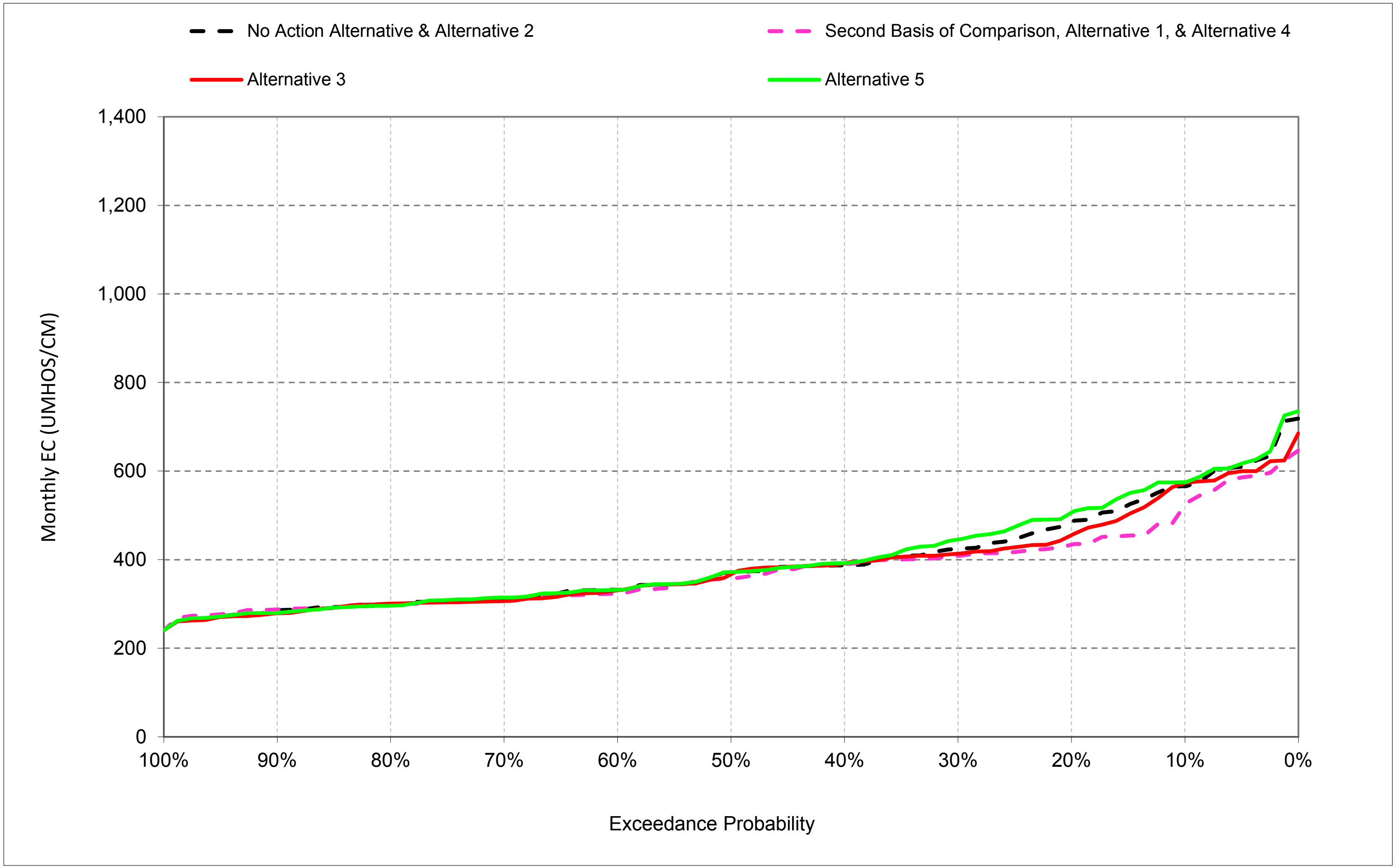
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.10. Banks Pumping Plant Salinity, Electrical Conductivity, July



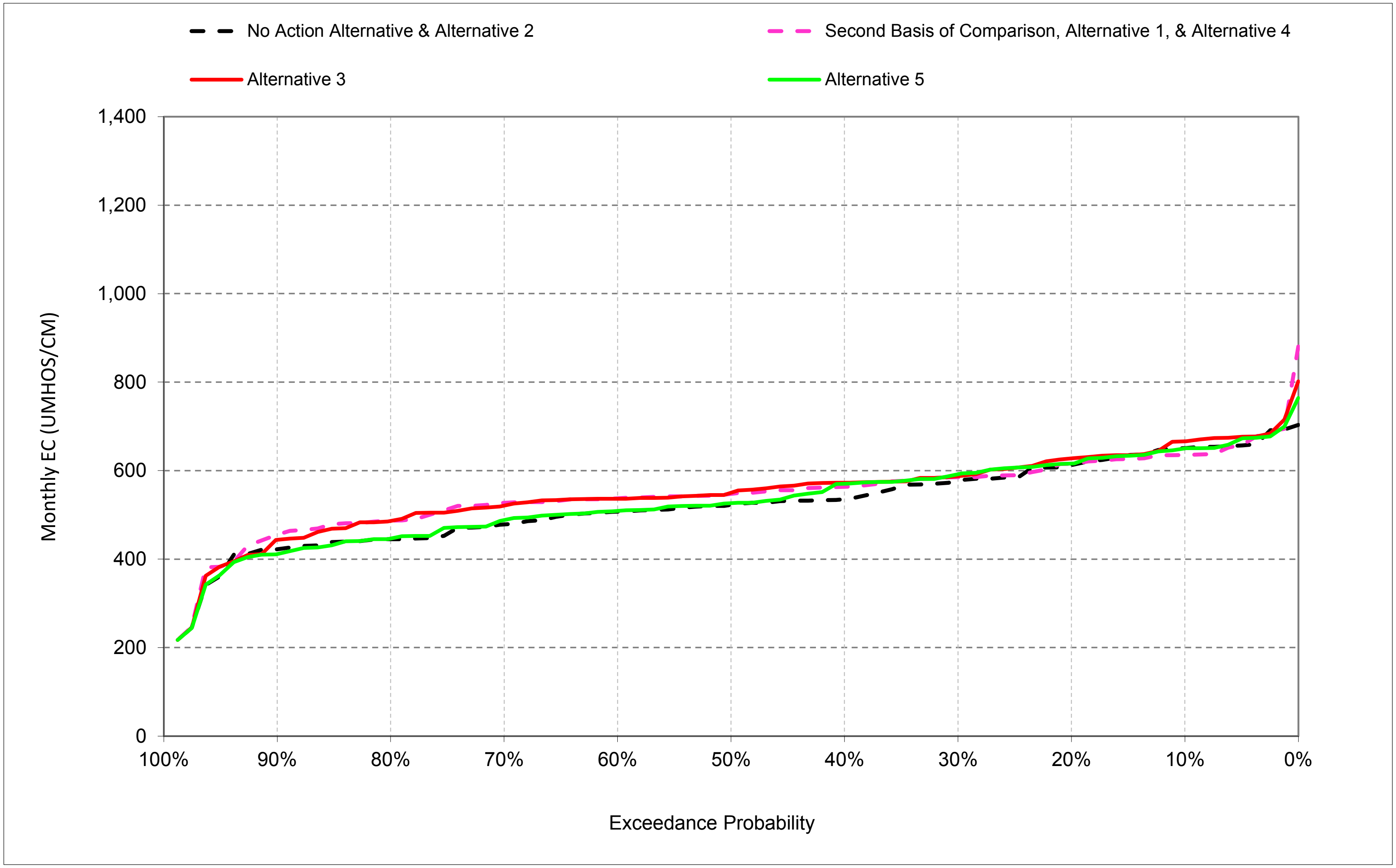
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.11. Banks Pumping Plant Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.8.12. Banks Pumping Plant Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.8.1. Banks Pumping Plant Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	771	833	888	834	671	615	556	514	481	432	566	651
20%	724	695	763	765	603	538	501	487	425	364	485	612
30%	684	649	685	649	557	493	451	462	393	335	424	577
40%	668	628	610	574	536	462	420	431	373	322	387	536
50%	605	561	439	537	506	421	394	376	361	311	371	523
60%	377	347	374	507	484	400	342	350	349	301	332	507
70%	360	323	334	454	435	369	312	330	338	292	314	478
80%	340	311	307	427	372	337	291	309	322	282	299	445
90%	317	296	295	403	348	299	245	198	283	268	286	422
Long Term												
Full Simulation Period[b]	534	521	532	575	508	442	398	386	374	333	394	525
Water Year Types[c]												
Wet (32%)	468	426	410	443	392	329	272	270	310	290	304	463
Above Normal (16%)	611	599	557	558	501	406	357	355	352	283	309	434
Below Normal (13%)	478	438	485	568	528	464	417	417	393	309	378	582
Dry (24%)	529	538	572	654	557	495	464	444	388	349	489	575
Critical (15%)	654	689	745	754	667	618	587	548	501	475	535	619

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	758	827	853	856	674	545	459	419	426	413	523	635
20%	735	734	796	804	609	467	417	399	397	344	434	616
30%	727	701	762	730	528	429	374	379	340	326	409	585
40%	702	670	723	697	468	404	354	333	324	316	391	564
50%	688	655	695	668	449	386	336	320	313	307	358	549
60%	676	634	669	472	411	362	322	304	304	294	324	539
70%	652	609	613	419	375	336	306	299	297	284	310	528
80%	629	575	502	393	352	316	286	285	287	271	300	488
90%	571	474	334	351	315	297	229	213	277	261	287	464
Long Term												
Full Simulation Period[b]	668	646	658	603	475	400	352	336	335	324	378	548
Water Year Types[c]												
Wet (32%)	620	594	548	421	349	319	264	254	292	289	300	479
Above Normal (16%)	708	667	649	593	442	368	319	304	300	274	312	554
Below Normal (13%)	634	594	649	654	561	443	379	347	305	293	381	553
Dry (24%)	684	664	722	700	519	414	377	371	354	333	436	583
Critical (15%)	731	755	809	802	635	546	512	477	460	465	521	631

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-14	-5	-35	21	3	-70	-97	-95	-55	-19	-43	-15
20%	10	39	33	38	6	-71	-84	-87	-29	-20	-51	3
30%	43	52	77	81	-29	-63	-77	-83	-52	-9	-16	8
40%	33	41	113	123	-68	-58	-66	-98	-49	-6	4	28
50%	83	93	256	131	-58	-35	-58	-56	-48	-4	-13	26
60%	299	288	295	-36	-73	-38	-20	-45	-45	-6	-8	32
70%	291	286	279	-35	-60	-33	-5	-31	-41	-8	-4	50
80%	289	264	194	-33	-20	-21	-4	-24	-35	-12	1	43
90%	254	178	39	-52	-32	-2	-16	15	-6	-7	1	42
Long Term												
Full Simulation Period[b]	134	125	126	28	-33	-43	-46	-51	-40	-9	-16	24
Water Year Types[c]												
Wet (32%)	152	168	137	-22	-43	-11	-8	-16	-18	-1	-5	15
Above Normal (16%)	97	69	92	35	-59	-38	-38	-51	-52	-9	2	120
Below Normal (13%)	157	156	164	86	33	-21	-38	-70	-88	-17	3	-29
Dry (24%)	155	126	149	46	-38	-81	-87	-72	-34	-16	-53	8
Critical (15%)	78	66	64	48	-32	-72	-76	-70	-40	-10	-14	11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.8.2. Banks Pumping Plant Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	771	833	888	834	671	615	556	514	481	432	566	651
20%	724	695	763	765	603	538	501	487	425	364	485	612
30%	684	649	685	649	557	493	451	462	393	335	424	577
40%	668	628	610	574	536	462	420	431	373	322	387	536
50%	605	561	439	537	506	421	394	376	361	311	371	523
60%	377	347	374	507	484	400	342	350	349	301	332	507
70%	360	323	334	454	435	369	312	330	338	292	314	478
80%	340	311	307	427	372	337	291	309	322	282	299	445
90%	317	296	295	403	348	299	245	198	283	268	286	422
Long Term												
Full Simulation Period[b]	534	521	532	575	508	442	398	386	374	333	394	525
Water Year Types[c]												
Wet (32%)	468	426	410	443	392	329	272	270	310	290	304	463
Above Normal (16%)	611	599	557	558	501	406	357	355	352	283	309	434
Below Normal (13%)	478	438	485	568	528	464	417	417	393	309	378	582
Dry (24%)	529	538	572	654	557	495	464	444	388	349	489	575
Critical (15%)	654	689	745	754	667	618	587	548	501	475	535	619

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	780	827	864	849	655	582	538	497	398	424	573	666
20%	734	739	790	799	597	525	493	450	360	351	455	628
30%	708	693	751	756	563	484	436	393	333	327	413	591
40%	699	670	729	701	515	445	390	345	313	319	392	573
50%	684	644	699	664	491	398	352	327	301	313	367	556
60%	662	638	667	514	447	376	326	308	294	301	331	537
70%	642	620	614	465	414	348	305	294	286	286	307	527
80%	624	573	516	420	358	314	285	285	273	274	301	494
90%	571	518	338	386	314	300	247	220	261	260	279	446
Long Term												
Full Simulation Period[b]	665	654	662	618	487	426	379	351	325	328	386	551
Water Year Types[c]												
Wet (32%)	615	600	561	459	364	318	267	255	275	287	298	468
Above Normal (16%)	718	690	662	631	482	379	325	303	286	275	310	560
Below Normal (13%)	634	588	650	676	534	447	396	372	318	310	392	598
Dry (24%)	671	674	729	713	543	479	437	393	332	344	465	581
Critical (15%)	732	759	783	738	625	603	570	524	468	463	522	630

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9	-6	-24	15	-16	-33	-18	-17	-82	-8	7	15
20%	10	43	26	34	-6	-13	-8	-37	-66	-13	-30	15
30%	24	44	66	107	7	-9	-15	-69	-60	-8	-11	14
40%	31	42	119	128	-21	-17	-30	-86	-60	-3	5	38
50%	79	83	260	126	-16	-23	-42	-49	-60	1	-4	33
60%	285	291	293	6	-38	-24	-16	-42	-56	0	-1	30
70%	282	297	280	11	-21	-21	-7	-36	-52	-6	-8	48
80%	284	262	209	-6	-14	-23	-6	-24	-49	-9	2	49
90%	254	222	43	-17	-33	1	1	22	-21	-8	-7	24
Long Term												
Full Simulation Period[b]	131	133	130	43	-21	-17	-19	-35	-50	-5	-8	27
Water Year Types[c]												
Wet (32%)	147	174	151	17	-28	-12	-6	-15	-34	-3	-6	5
Above Normal (16%)	107	92	105	72	-20	-27	-32	-52	-66	-7	1	126
Below Normal (13%)	156	150	165	108	6	-17	-21	-45	-75	0	14	16
Dry (24%)	143	136	157	59	-13	-16	-27	-51	-56	-6	-25	6
Critical (15%)	78	70	38	-16	-42	-16	-18	-24	-33	-12	-13	11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.8.3. Banks Pumping Plant Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	771	833	888	834	671	615	556	514	481	432	566	651
20%	724	695	763	765	603	538	501	487	425	364	485	612
30%	684	649	685	649	557	493	451	462	393	335	424	577
40%	668	628	610	574	536	462	420	431	373	322	387	536
50%	605	561	439	537	506	421	394	376	361	311	371	523
60%	377	347	374	507	484	400	342	350	349	301	332	507
70%	360	323	334	454	435	369	312	330	338	292	314	478
80%	340	311	307	427	372	337	291	309	322	282	299	445
90%	317	296	295	403	348	299	245	198	283	268	286	422
Long Term												
Full Simulation Period[b]	534	521	532	575	508	442	398	386	374	333	394	525
Water Year Types[c]												
Wet (32%)	468	426	410	443	392	329	272	270	310	290	304	463
Above Normal (16%)	611	599	557	558	501	406	357	355	352	283	309	434
Below Normal (13%)	478	438	485	568	528	464	417	417	393	309	378	582
Dry (24%)	529	538	572	654	557	495	464	444	388	349	489	575
Critical (15%)	654	689	745	754	667	618	587	548	501	475	535	619

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	768	837	890	837	671	615	591	559	537	457	575	650
20%	737	732	771	764	604	538	515	510	464	383	506	616
30%	691	652	688	649	557	493	465	467	438	342	446	592
40%	673	634	610	572	536	462	418	405	389	324	392	570
50%	625	572	440	535	507	421	396	370	363	314	372	526
60%	381	346	374	507	484	400	342	343	350	305	332	509
70%	361	320	335	454	435	371	313	328	339	292	314	488
80%	346	312	304	427	377	337	290	308	332	281	296	447
90%	319	297	296	404	348	301	246	200	284	270	280	418
Long Term												
Full Simulation Period[b]	538	524	532	576	509	444	404	394	394	338	400	531
Water Year Types[c]												
Wet (32%)	470	430	416	443	392	331	273	266	309	290	304	462
Above Normal (16%)	624	606	550	556	501	406	355	346	351	284	309	433
Below Normal (13%)	477	440	486	567	527	463	416	403	400	313	379	589
Dry (24%)	535	538	569	662	561	497	476	466	430	360	512	591
Critical (15%)	659	690	745	752	668	624	613	594	561	486	541	631

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-3	4	2	3	0	0	36	45	57	25	9	-1
20%	12	37	8	-1	1	0	14	23	39	19	21	4
30%	7	3	3	0	0	0	14	5	46	7	21	15
40%	5	6	0	-2	1	0	-1	-26	16	2	5	35
50%	20	11	1	-3	1	0	2	-5	2	3	1	3
60%	4	-1	0	0	0	0	0	-7	0	5	0	2
70%	1	-3	1	0	0	2	1	-3	1	1	0	10
80%	5	1	-3	1	5	0	-1	-1	10	-1	-3	2
90%	1	1	1	1	0	2	1	1	1	3	-6	-4
Long Term												
Full Simulation Period[b]	5	3	0	1	1	1	6	8	20	5	6	6
Water Year Types[c]												
Wet (32%)	2	5	6	0	1	1	1	-3	-1	0	0	-1
Above Normal (16%)	13	7	-6	-2	0	0	-2	-9	-1	1	0	-1
Below Normal (13%)	-1	2	1	-1	-1	-1	-1	-15	7	3	1	6
Dry (24%)	6	0	-4	7	4	1	12	22	42	11	23	16
Critical (15%)	5	1	-1	-2	1	5	25	46	61	10	6	12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.8.4. Banks Pumping Plant Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	758	827	853	856	674	545	459	419	426	413	523	635
20%	735	734	796	804	609	467	417	399	397	344	434	616
30%	727	701	762	730	528	429	374	379	340	326	409	585
40%	702	670	723	697	468	404	354	333	324	316	391	564
50%	688	655	695	668	449	386	336	320	313	307	358	549
60%	676	634	669	472	411	362	322	304	304	294	324	539
70%	652	609	613	419	375	336	306	299	297	284	310	528
80%	629	575	502	393	352	316	286	285	287	271	300	488
90%	571	474	334	351	315	297	229	213	277	261	287	464
Long Term												
Full Simulation Period[b]	668	646	658	603	475	400	352	336	335	324	378	548
Water Year Types[c]												
Wet (32%)	620	594	548	421	349	319	264	254	292	289	300	479
Above Normal (16%)	708	667	649	593	442	368	319	304	300	274	312	554
Below Normal (13%)	634	594	649	654	561	443	379	347	305	293	381	553
Dry (24%)	684	664	722	700	519	414	377	371	354	333	436	583
Critical (15%)	731	755	809	802	635	546	512	477	460	465	521	631

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	771	833	888	834	671	615	556	514	481	432	566	651
20%	724	695	763	765	603	538	501	487	425	364	485	612
30%	684	649	685	649	557	493	451	462	393	335	424	577
40%	668	628	610	574	536	462	420	431	373	322	387	536
50%	605	561	439	537	506	421	394	376	361	311	371	523
60%	377	347	374	507	484	400	342	350	349	301	332	507
70%	360	323	334	454	435	369	312	330	338	292	314	478
80%	340	311	307	427	372	337	291	309	322	282	299	445
90%	317	296	295	403	348	299	245	198	283	268	286	422
Long Term												
Full Simulation Period[b]	534	521	532	575	508	442	398	386	374	333	394	525
Water Year Types[c]												
Wet (32%)	468	426	410	443	392	329	272	270	310	290	304	463
Above Normal (16%)	611	599	557	558	501	406	357	355	352	283	309	434
Below Normal (13%)	478	438	485	568	528	464	417	417	393	309	378	582
Dry (24%)	529	538	572	654	557	495	464	444	388	349	489	575
Critical (15%)	654	689	745	754	667	618	587	548	501	475	535	619

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14	5	35	-21	-3	70	97	95	55	19	43	15
20%	-10	-39	-33	-38	-6	71	84	87	29	20	51	-3
30%	-43	-52	-77	-81	29	63	77	83	52	9	16	-8
40%	-33	-41	-113	-123	68	58	66	98	49	6	-4	-28
50%	-83	-93	-256	-131	58	35	58	56	48	4	13	-26
60%	-299	-288	-295	36	73	38	20	45	45	6	8	-32
70%	-291	-286	-279	35	60	33	5	31	41	8	4	-50
80%	-289	-264	-194	33	20	21	4	24	35	12	-1	-43
90%	-254	-178	-39	52	32	2	16	-15	6	7	-1	-42
Long Term												
Full Simulation Period[b]	-134	-125	-126	-28	33	43	46	51	40	9	16	-24
Water Year Types[c]												
Wet (32%)	-152	-168	-137	22	43	11	8	16	18	1	5	-15
Above Normal (16%)	-97	-69	-92	-35	59	38	38	51	52	9	-2	-120
Below Normal (13%)	-157	-156	-164	-86	-33	21	38	70	88	17	-3	29
Dry (24%)	-155	-126	-149	-46	38	81	87	72	34	16	53	-8
Critical (15%)	-78	-66	-64	-48	32	72	76	70	40	10	14	-11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.8.5. Banks Pumping Plant Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	758	827	853	856	674	545	459	419	426	413	523	635
20%	735	734	796	804	609	467	417	399	397	344	434	616
30%	727	701	762	730	528	429	374	379	340	326	409	585
40%	702	670	723	697	468	404	354	333	324	316	391	564
50%	688	655	695	668	449	386	336	320	313	307	358	549
60%	676	634	669	472	411	362	322	304	304	294	324	539
70%	652	609	613	419	375	336	306	299	297	284	310	528
80%	629	575	502	393	352	316	286	285	287	271	300	488
90%	571	474	334	351	315	297	229	213	277	261	287	464
Long Term												
Full Simulation Period[b]	668	646	658	603	475	400	352	336	335	324	378	548
Water Year Types[c]												
Wet (32%)	620	594	548	421	349	319	264	254	292	289	300	479
Above Normal (16%)	708	667	649	593	442	368	319	304	300	274	312	554
Below Normal (13%)	634	594	649	654	561	443	379	347	305	293	381	553
Dry (24%)	684	664	722	700	519	414	377	371	354	333	436	583
Critical (15%)	731	755	809	802	635	546	512	477	460	465	521	631

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	780	827	864	849	655	582	538	497	398	424	573	666
20%	734	739	790	799	597	525	493	450	360	351	455	628
30%	708	693	751	756	563	484	436	393	333	327	413	591
40%	699	670	729	701	515	445	390	345	313	319	392	573
50%	684	644	699	664	491	398	352	327	301	313	367	556
60%	662	638	667	514	447	376	326	308	294	301	331	537
70%	642	620	614	465	414	348	305	294	286	286	307	527
80%	624	573	516	420	358	314	285	285	273	274	301	494
90%	571	518	338	386	314	300	247	220	261	260	279	446
Long Term												
Full Simulation Period[b]	665	654	662	618	487	426	379	351	325	328	386	551
Water Year Types[c]												
Wet (32%)	615	600	561	459	364	318	267	255	275	287	298	468
Above Normal (16%)	718	690	662	631	482	379	325	303	286	275	310	560
Below Normal (13%)	634	588	650	676	534	447	396	372	318	310	392	598
Dry (24%)	671	674	729	713	543	479	437	393	332	344	465	581
Critical (15%)	732	759	783	738	625	603	570	524	468	463	522	630

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	22	0	11	-6	-19	37	79	78	-27	11	50	31
20%	0	4	-6	-4	-12	58	76	51	-37	7	22	12
30%	-19	-8	-11	26	36	55	62	13	-8	1	5	6
40%	-2	0	6	4	47	41	36	12	-11	3	1	10
50%	-4	-10	4	-5	42	12	16	7	-12	5	9	7
60%	-14	3	-3	42	35	14	4	3	-10	7	7	-2
70%	-10	11	1	46	38	12	-2	-5	-11	2	-4	-2
80%	-5	-1	14	27	6	-2	-1	0	-14	3	1	6
90%	0	44	4	35	-1	3	17	7	-15	-1	-8	-18
Long Term												
Full Simulation Period[b]	-3	8	4	15	12	26	27	16	-10	4	8	3
Water Year Types[c]												
Wet (32%)	-5	6	13	39	15	-1	2	1	-16	-1	-2	-11
Above Normal (16%)	10	23	13	38	40	11	6	-1	-14	1	-1	5
Below Normal (13%)	0	-6	1	21	-27	4	17	25	13	17	11	45
Dry (24%)	-13	10	8	13	25	65	61	22	-22	10	29	-2
Critical (15%)	0	5	-26	-64	-10	57	58	47	8	-1	2	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.8.6. Banks Pumping Plant Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	758	827	853	856	674	545	459	419	426	413	523	635
20%	735	734	796	804	609	467	417	399	397	344	434	616
30%	727	701	762	730	528	429	374	379	340	326	409	585
40%	702	670	723	697	468	404	354	333	324	316	391	564
50%	688	655	695	668	449	386	336	320	313	307	358	549
60%	676	634	669	472	411	362	322	304	304	294	324	539
70%	652	609	613	419	375	336	306	299	297	284	310	528
80%	629	575	502	393	352	316	286	285	287	271	300	488
90%	571	474	334	351	315	297	229	213	277	261	287	464
Long Term												
Full Simulation Period[b]	668	646	658	603	475	400	352	336	335	324	378	548
Water Year Types[c]												
Wet (32%)	620	594	548	421	349	319	264	254	292	289	300	479
Above Normal (16%)	708	667	649	593	442	368	319	304	300	274	312	554
Below Normal (13%)	634	594	649	654	561	443	379	347	305	293	381	553
Dry (24%)	684	664	722	700	519	414	377	371	354	333	436	583
Critical (15%)	731	755	809	802	635	546	512	477	460	465	521	631

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	768	837	890	837	671	615	591	559	537	457	575	650
20%	737	732	771	764	604	538	515	510	464	383	506	616
30%	691	652	688	649	557	493	465	467	438	342	446	592
40%	673	634	610	572	536	462	418	405	389	324	392	570
50%	625	572	440	535	507	421	396	370	363	314	372	526
60%	381	346	374	507	484	400	342	343	350	305	332	509
70%	361	320	335	454	435	371	313	328	339	292	314	488
80%	346	312	304	427	377	337	290	308	332	281	296	447
90%	319	297	296	404	348	301	246	200	284	270	280	418
Long Term												
Full Simulation Period[b]	538	524	532	576	509	444	404	394	394	338	400	531
Water Year Types[c]												
Wet (32%)	470	430	416	443	392	331	273	266	309	290	304	462
Above Normal (16%)	624	606	550	556	501	406	355	346	351	284	309	433
Below Normal (13%)	477	440	486	567	527	463	416	403	400	313	379	589
Dry (24%)	535	538	569	662	561	497	476	466	430	360	512	591
Critical (15%)	659	690	745	752	668	624	613	594	561	486	541	631

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	10	10	37	-19	-3	70	133	140	112	44	52	15
20%	2	-2	-25	-39	-5	71	98	111	67	38	72	1
30%	-36	-49	-74	-81	29	64	92	88	98	16	37	7
40%	-29	-36	-113	-125	68	58	64	72	65	8	2	7
50%	-63	-82	-255	-134	58	35	60	50	50	7	14	-23
60%	-295	-289	-295	36	73	38	20	38	46	11	8	-30
70%	-291	-289	-278	35	60	35	6	28	43	8	4	-40
80%	-283	-262	-197	34	25	21	4	23	45	10	-4	-41
90%	-252	-178	-38	53	32	4	17	-13	7	10	-7	-46
Long Term												
Full Simulation Period[b]	-129	-122	-126	-27	34	44	52	58	60	14	22	-18
Water Year Types[c]												
Wet (32%)	-150	-164	-132	22	44	12	9	12	17	1	4	-16
Above Normal (16%)	-85	-61	-99	-36	59	38	36	42	51	10	-3	-121
Below Normal (13%)	-158	-154	-164	-87	-34	20	37	56	95	20	-2	35
Dry (24%)	-149	-126	-153	-38	42	82	99	94	76	27	76	8
Critical (15%)	-73	-64	-64	-50	33	78	101	117	101	21	20	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

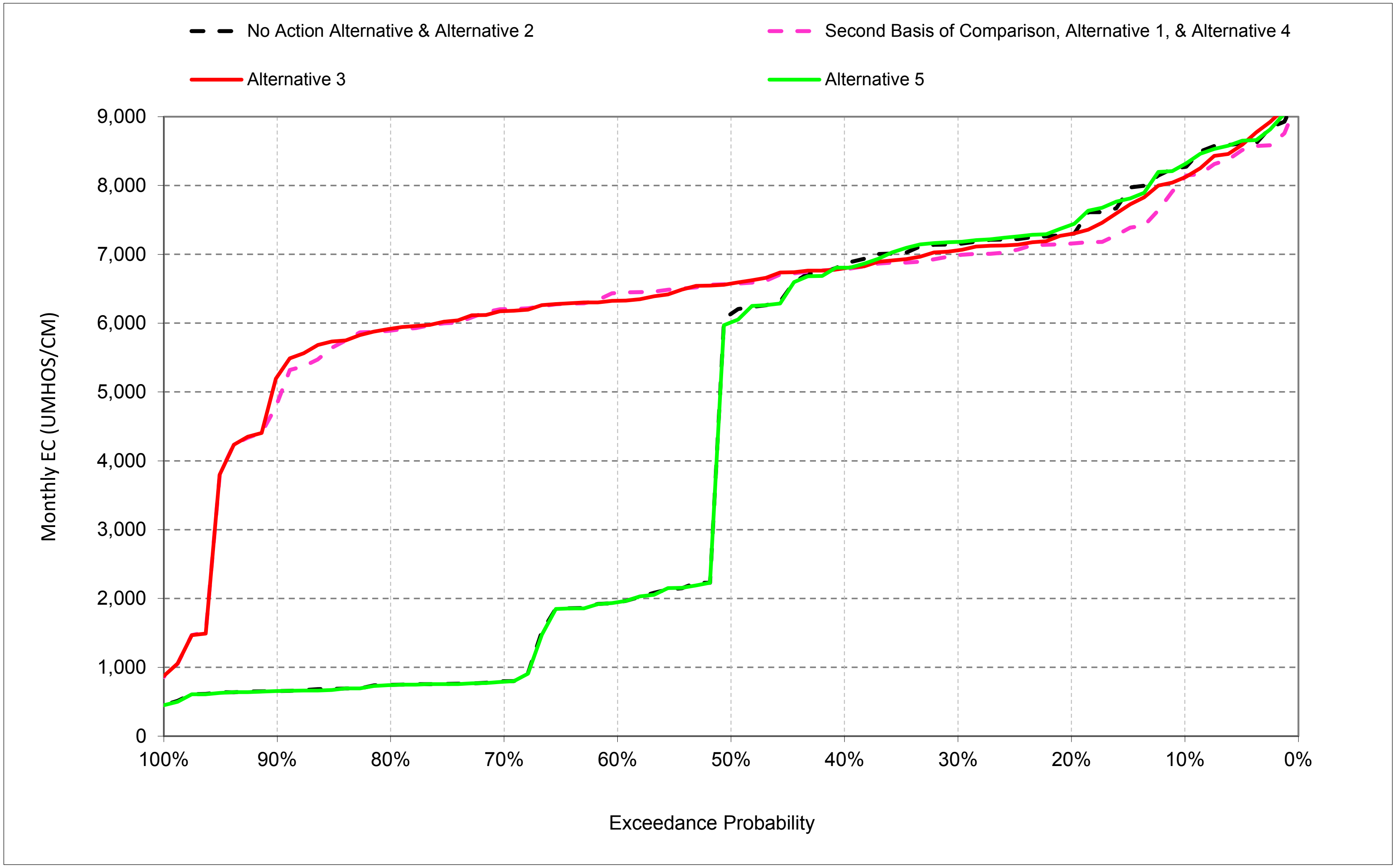
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

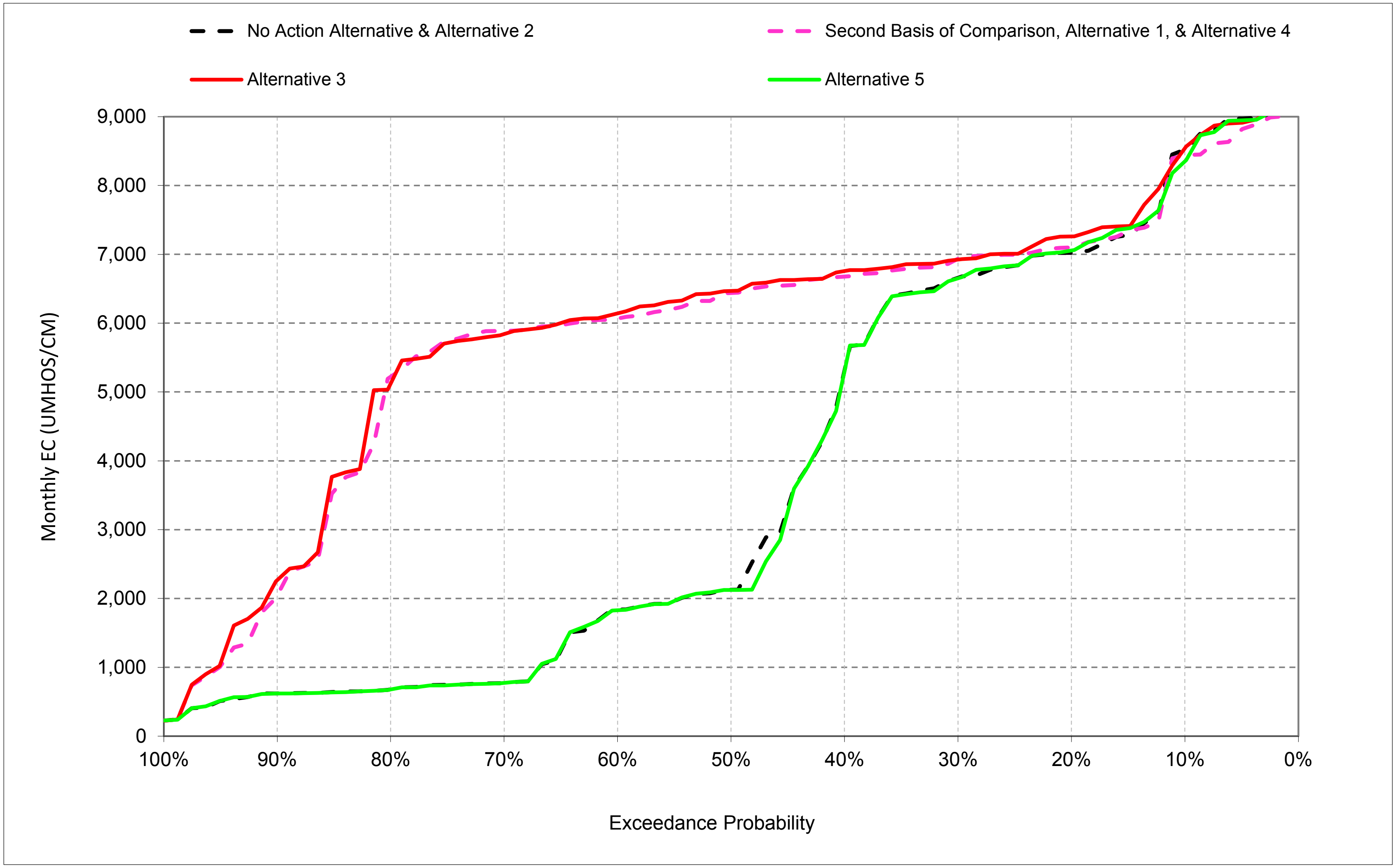
B.9. Antioch Salinity

Figure 6E.B.9.1. Antioch Salinity, Electrical Conductivity, October



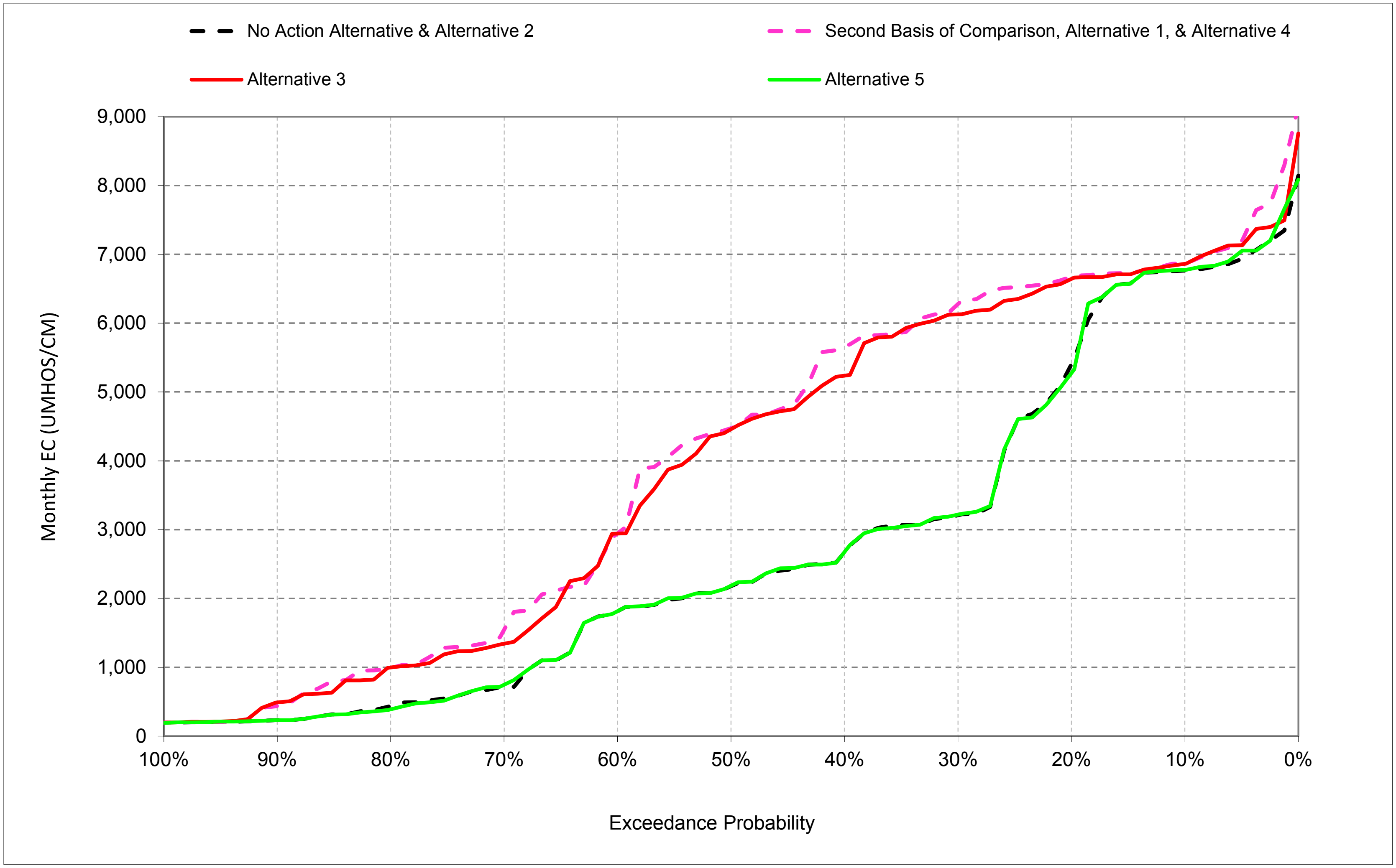
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.2. Antioch Salinity, Electrical Conductivity, November



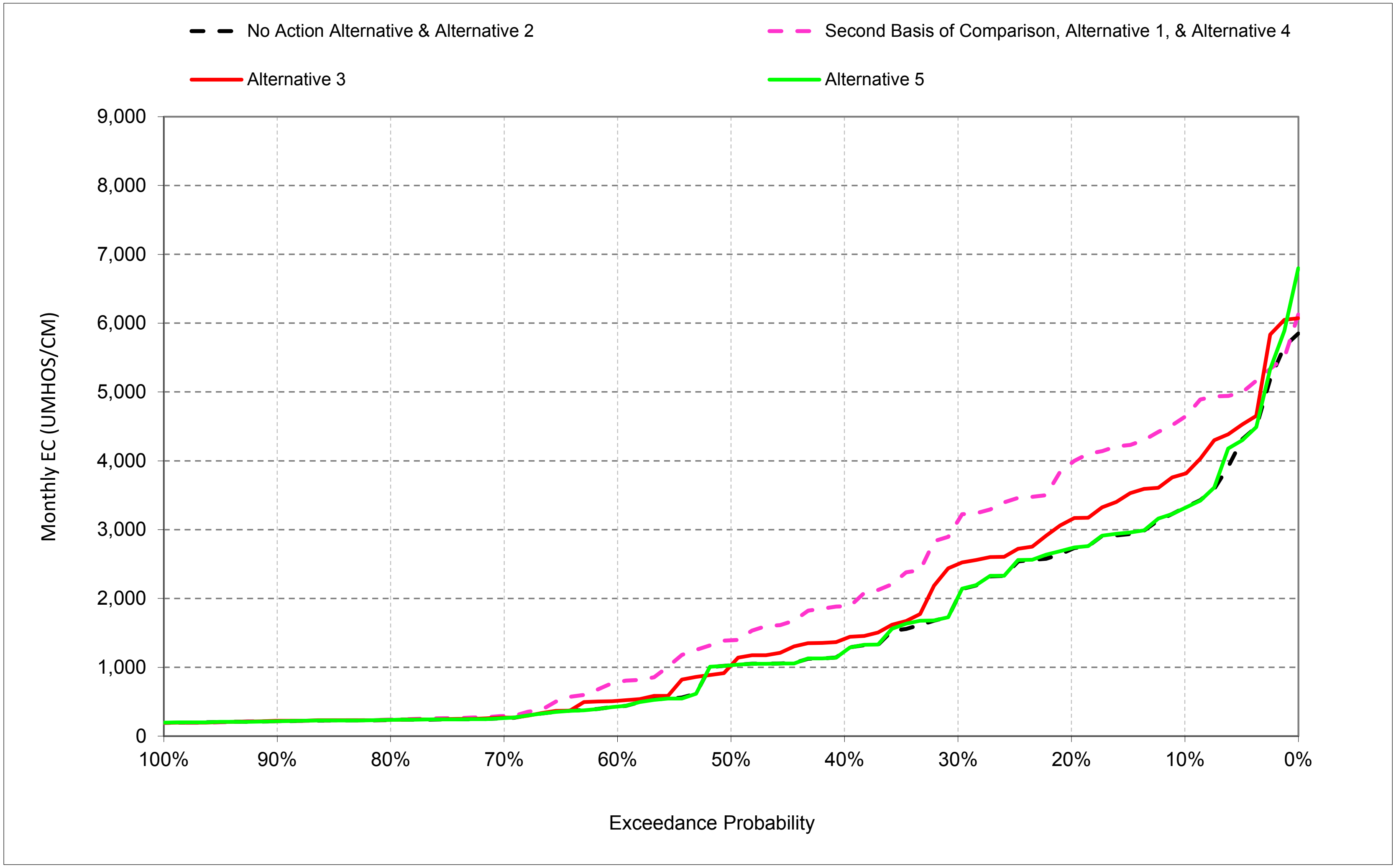
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.3. Antioch Salinity, Electrical Conductivity, December



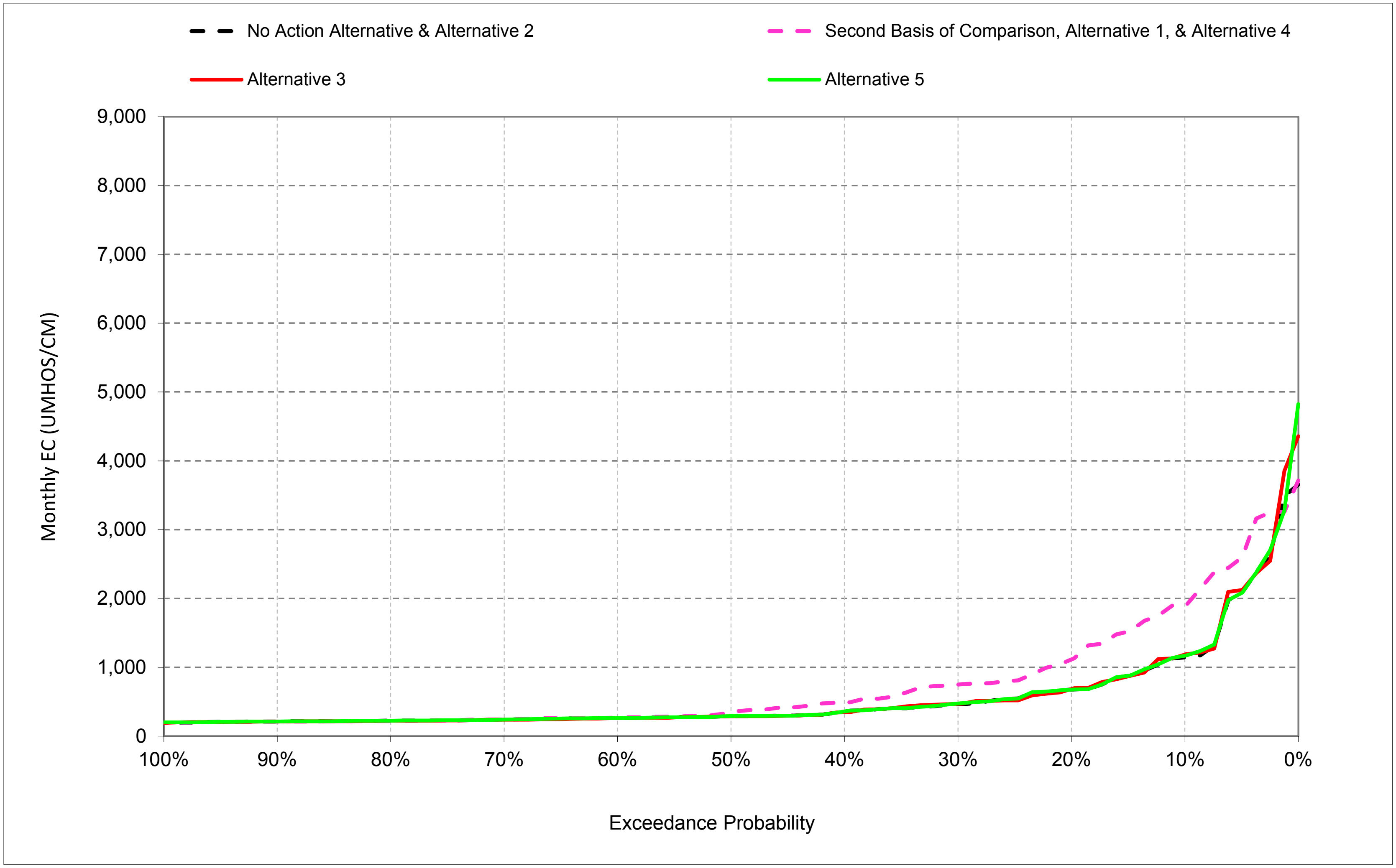
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.4. Antioch Salinity, Electrical Conductivity, January



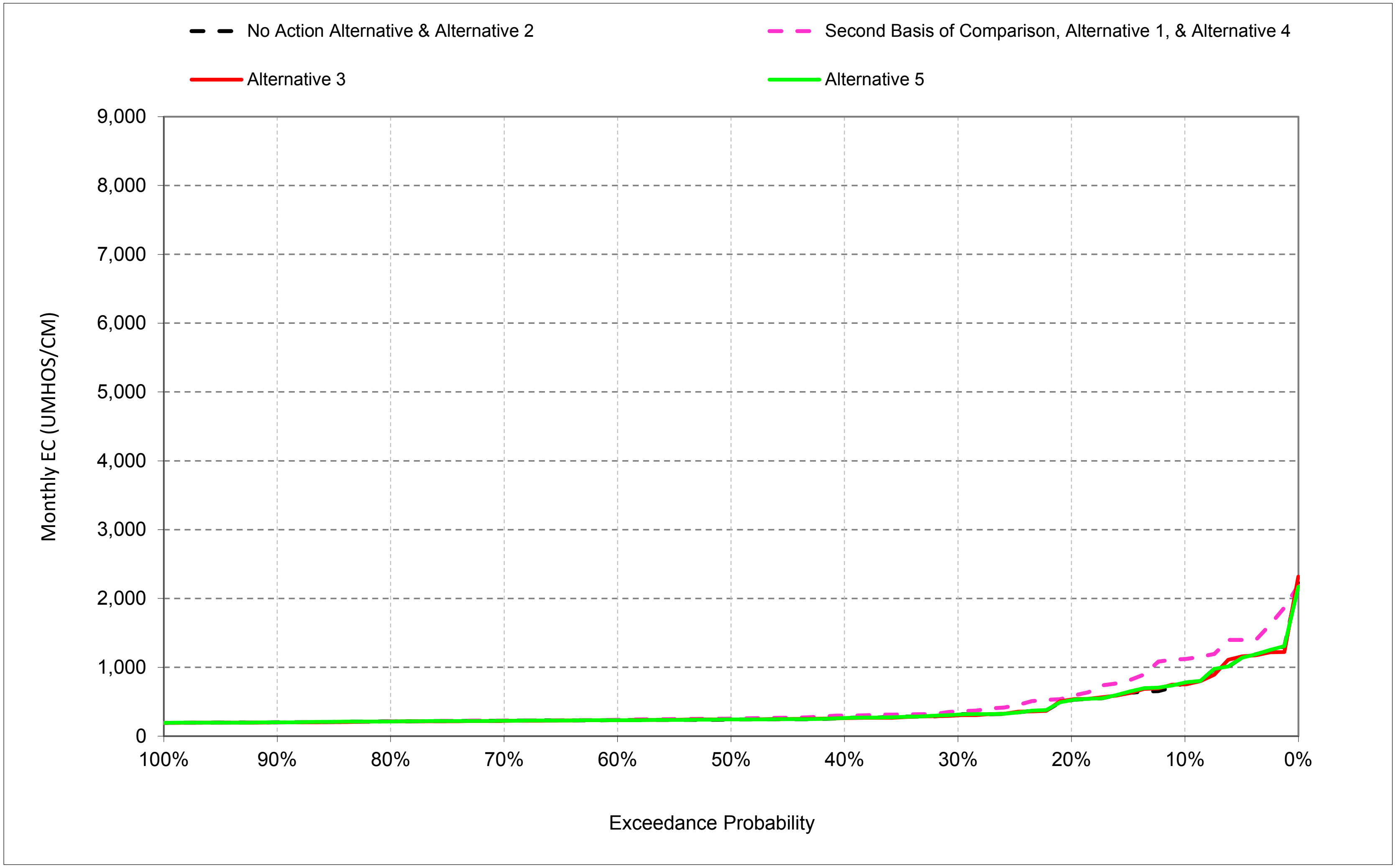
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.5. Antioch Salinity, Electrical Conductivity, February



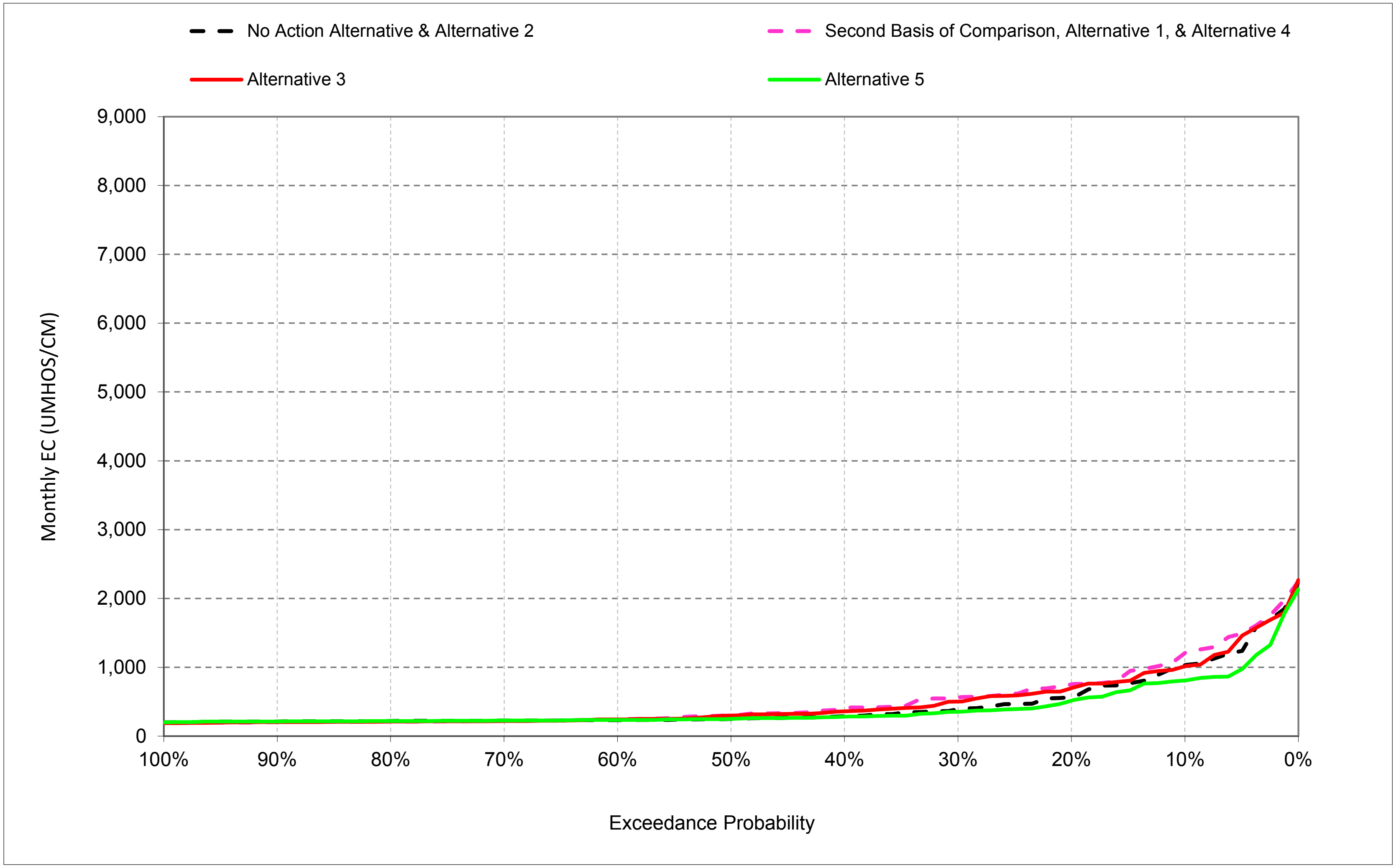
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.6. Antioch Salinity, Electrical Conductivity, March



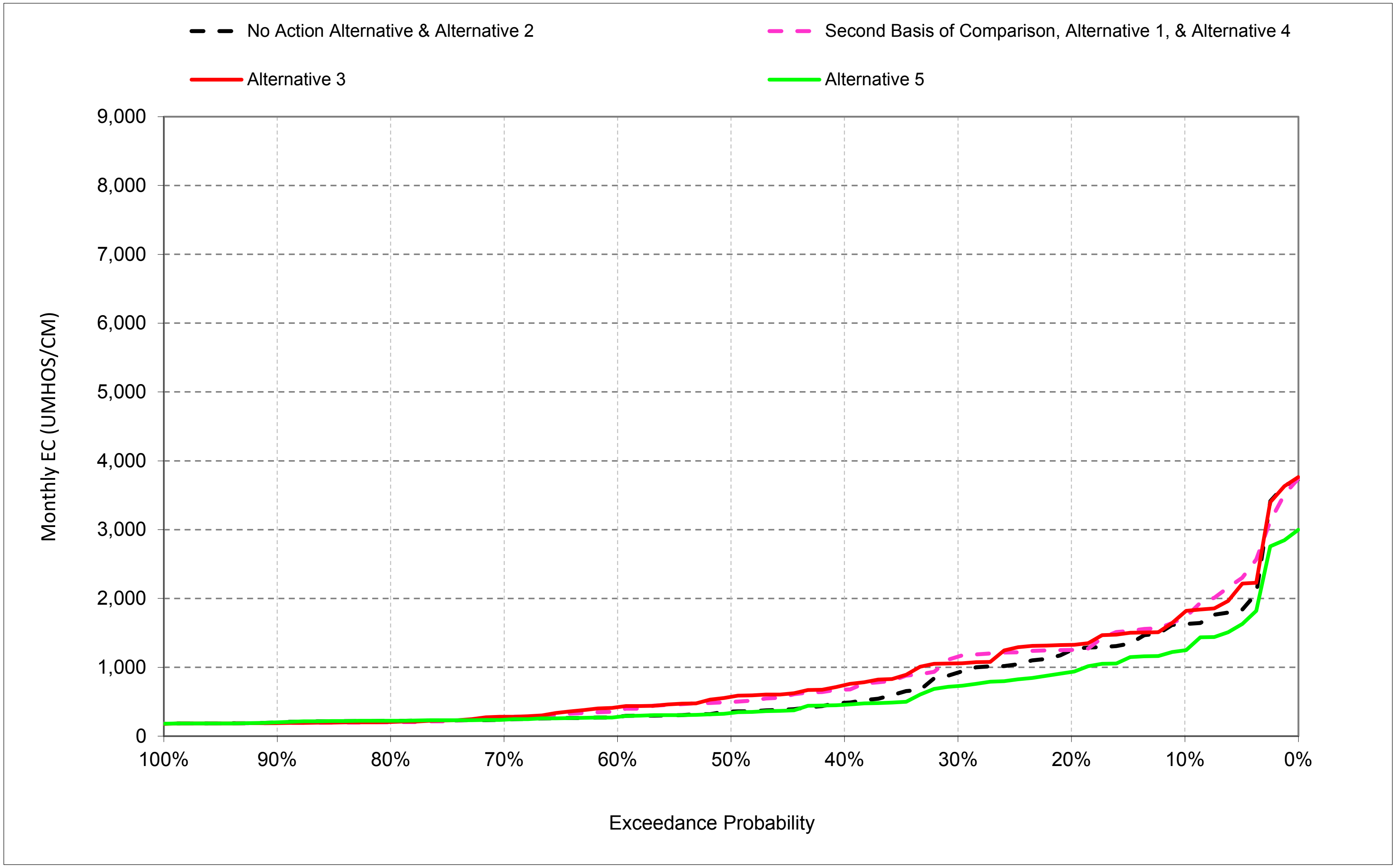
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.7. Antioch Salinity, Electrical Conductivity, April



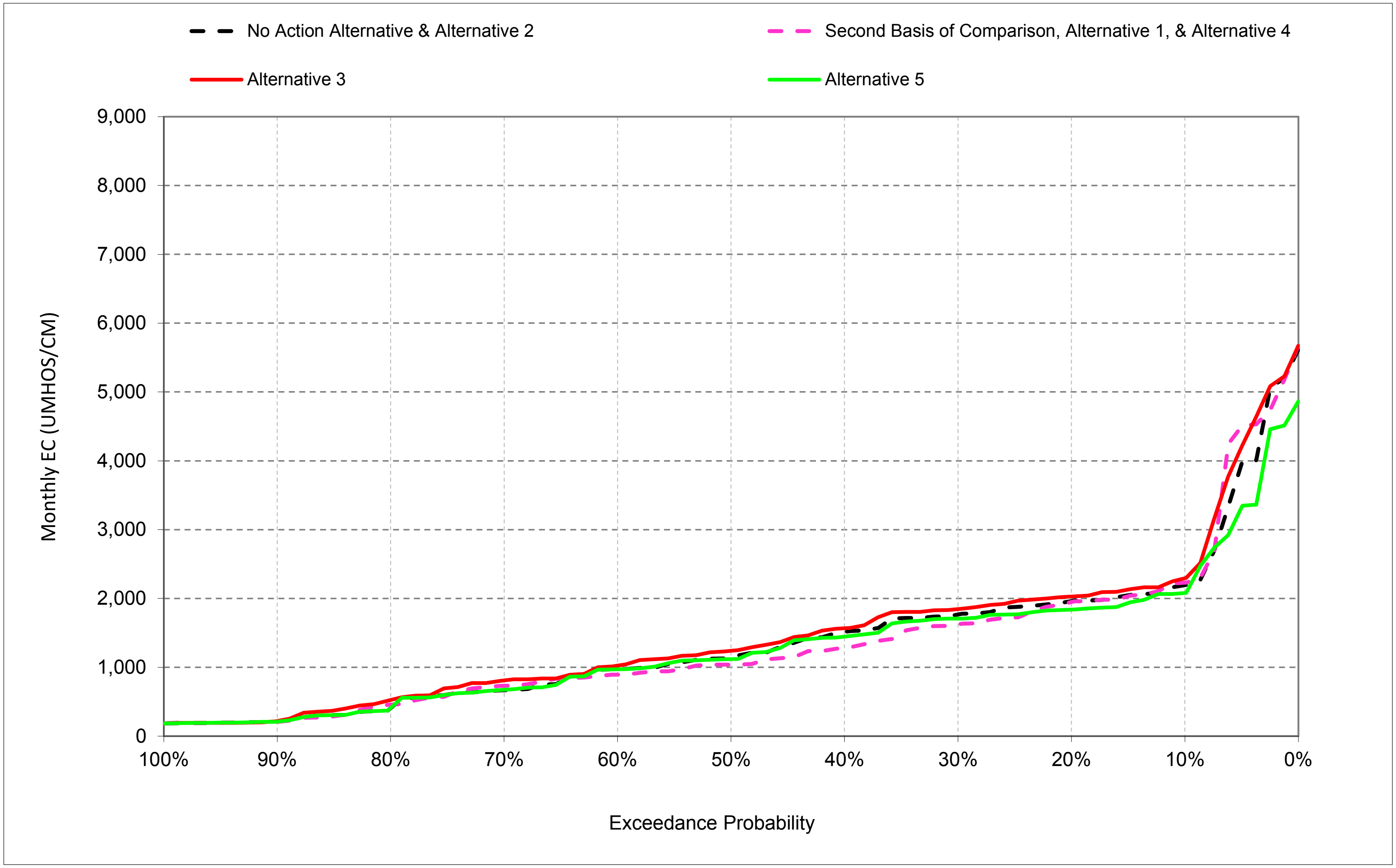
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.8. Antioch Salinity, Electrical Conductivity, May



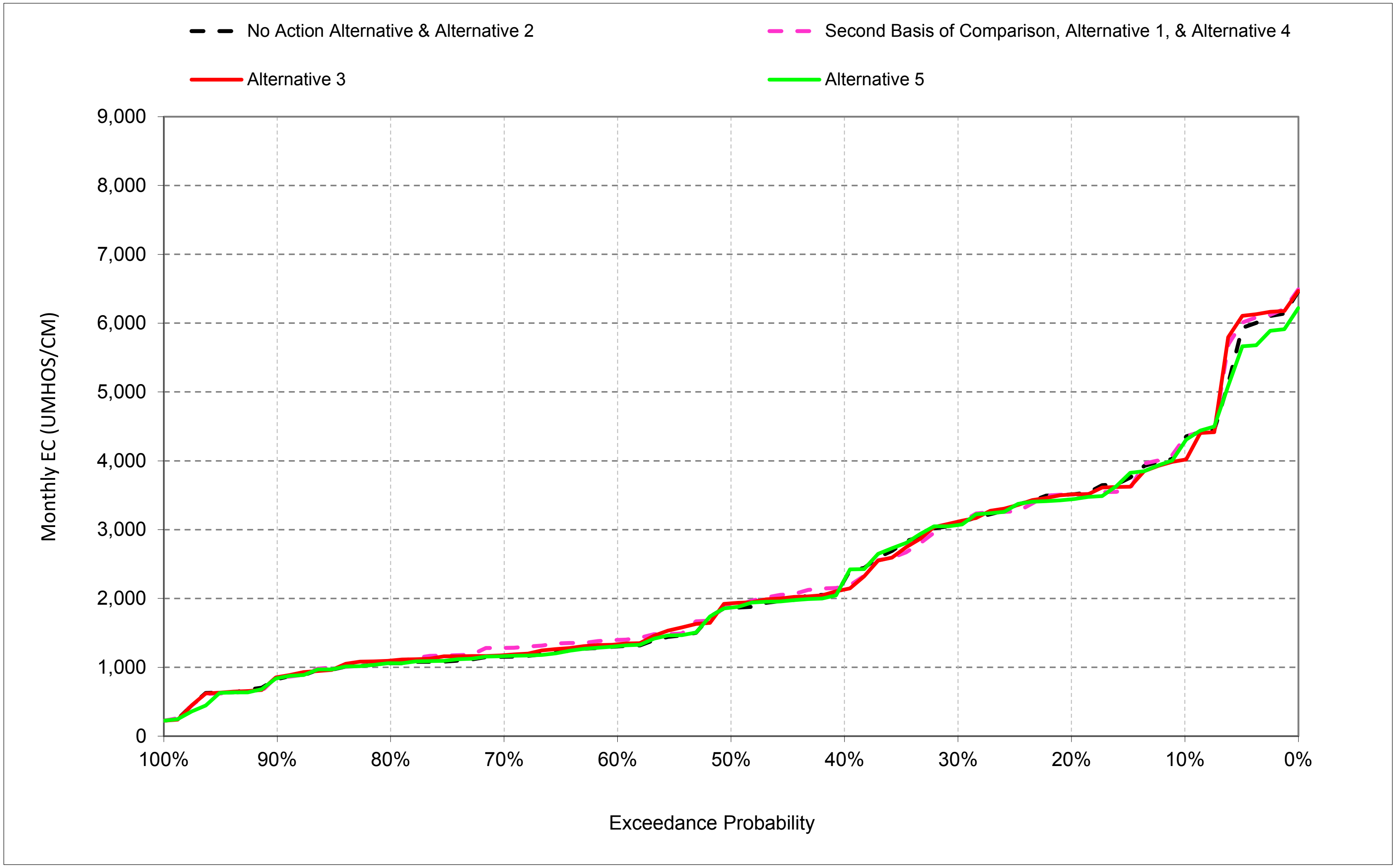
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.9. Antioch Salinity, Electrical Conductivity, June



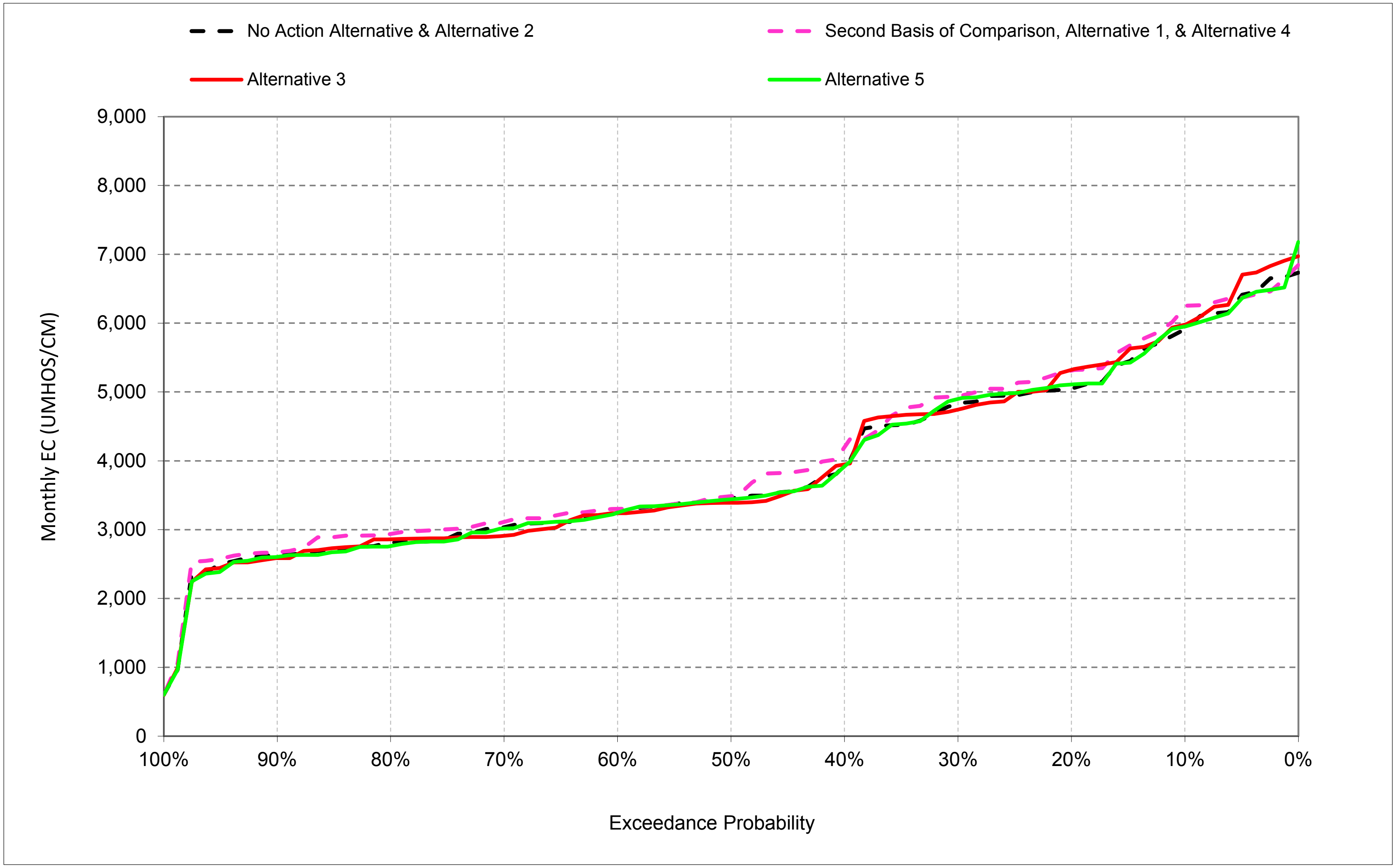
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.10. Antioch Salinity, Electrical Conductivity, July



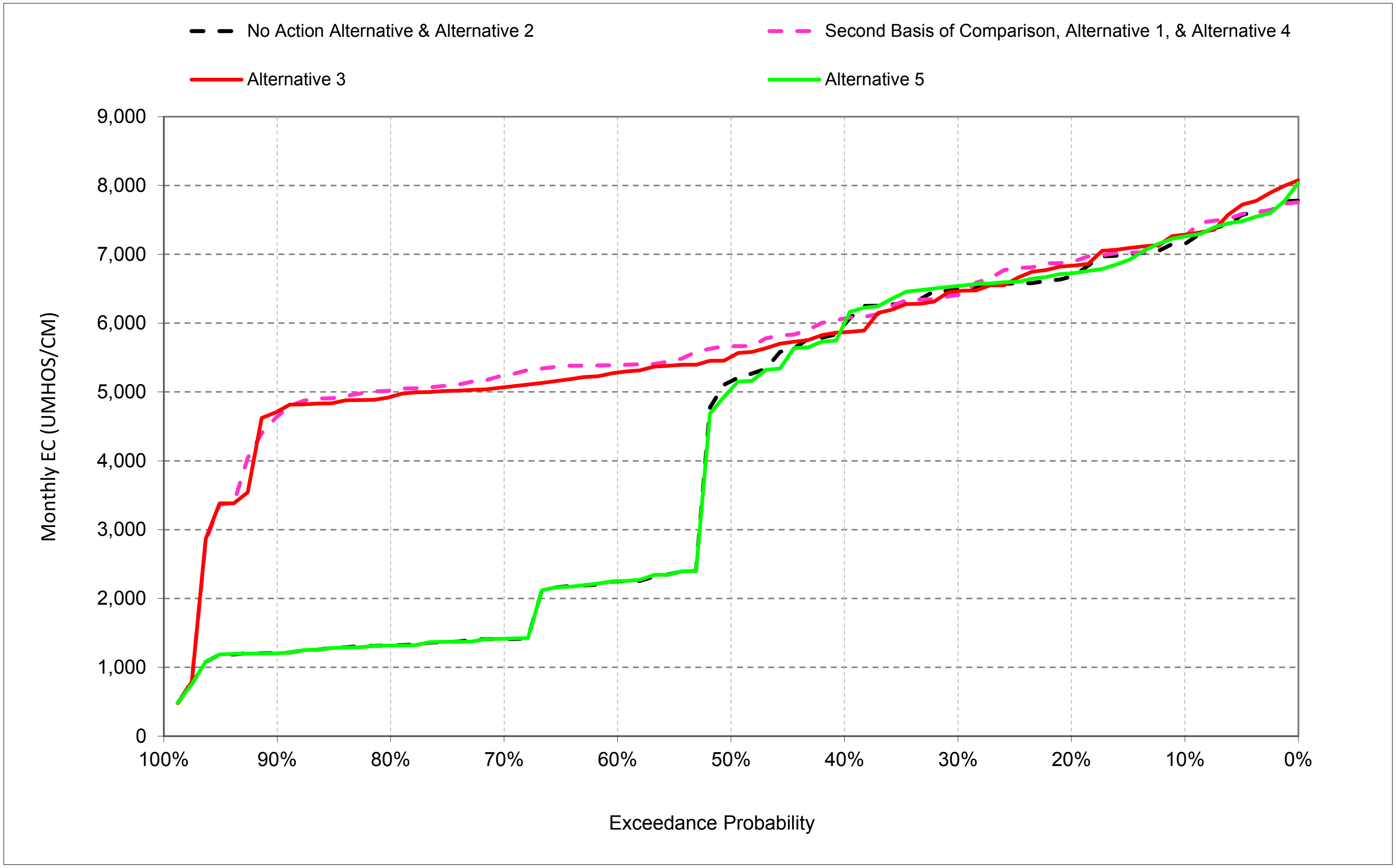
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.11. Antioch Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.9.12. Antioch Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.9.1. Antioch Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,269	8,523	6,763	3,320	1,142	771	1,029	1,628	2,192	4,322	5,909	7,163
20%	7,297	7,021	5,403	2,716	676	521	564	1,250	1,960	3,511	5,054	6,677
30%	7,151	6,658	3,210	2,015	462	313	392	922	1,767	3,094	4,825	6,497
40%	6,852	5,310	2,674	1,230	357	262	288	485	1,514	2,268	3,930	5,981
50%	6,136	2,127	2,179	1,030	289	241	250	356	1,150	1,863	3,459	5,157
60%	1,944	1,839	1,814	430	264	232	232	281	974	1,303	3,247	2,247
70%	797	774	712	261	238	223	225	238	667	1,153	3,035	1,414
80%	745	678	437	234	224	214	219	221	406	1,057	2,812	1,322
90%	655	621	231	215	212	200	213	200	209	829	2,632	1,219
Long Term												
Full Simulation Period[b]	4,357	3,817	2,769	1,427	569	384	449	722	1,384	2,278	3,917	4,173
Water Year Types[c]												
Wet (32%)	2,942	2,175	861	374	241	221	223	241	545	919	2,804	1,244
Above Normal (16%)	5,638	4,065	2,362	727	275	225	233	298	963	1,247	2,878	2,243
Below Normal (13%)	3,018	2,846	2,728	1,564	576	397	430	669	1,448	1,961	3,512	5,704
Dry (24%)	4,693	4,494	3,908	2,128	741	403	471	830	1,609	3,290	4,892	6,457
Critical (15%)	6,705	6,865	5,485	3,174	1,303	867	1,153	2,093	3,225	4,943	6,200	7,400

Alternative 1

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,123	8,439	6,868	4,639	1,903	1,120	1,205	1,726	2,229	4,336	6,230	7,278
20%	7,156	7,100	6,677	3,967	1,113	581	751	1,252	1,947	3,509	5,312	6,895
30%	6,985	6,934	6,276	3,125	748	361	563	1,154	1,625	3,100	4,945	6,407
40%	6,786	6,677	5,659	1,885	489	298	402	676	1,283	2,177	4,198	6,066
50%	6,571	6,439	4,473	1,391	345	255	302	497	1,039	1,890	3,486	5,666
60%	6,439	6,067	2,944	784	269	238	242	371	893	1,398	3,302	5,393
70%	6,203	5,888	1,546	292	242	227	220	278	730	1,281	3,112	5,241
80%	5,892	5,219	989	238	219	214	210	203	456	1,058	2,936	5,022
90%	4,839	2,042	438	215	210	199	205	190	208	853	2,670	4,657
Long Term												
Full Simulation Period[b]	6,379	5,877	4,016	1,934	755	454	513	821	1,354	2,307	4,038	5,739
Water Year Types[c]												
Wet (32%)	5,652	4,968	1,663	482	248	222	231	277	510	969	2,846	4,539
Above Normal (16%)	6,900	5,688	3,849	1,169	338	228	255	394	864	1,288	3,015	5,204
Below Normal (13%)	5,956	5,206	4,384	2,752	1,026	505	550	839	1,245	2,015	3,765	5,818
Dry (24%)	6,661	6,582	5,503	2,942	1,004	481	560	933	1,607	3,240	5,044	6,588
Critical (15%)	7,307	7,494	6,481	3,480	1,639	1,112	1,291	2,258	3,390	5,021	6,298	7,433

Alternative 1 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-147	-84	104	1,318	760	349	177	98	36	13	321	115
20%	-141	79	1,274	1,251	437	60	187	2	-13	-2	258	218
30%	-166	276	3,067	1,110	287	47	171	231	-143	5	119	-90
40%	-66	1,367	2,985	655	132	36	114	191	-231	-91	268	85
50%	435	4,312	2,294	362	56	14	52	141	-111	27	27	509
60%	4,495	4,228	1,131	354	5	6	10	90	-82	94	55	3,146
70%	5,406	5,115	835	31	4	4	-5	39	64	128	78	3,827
80%	5,147	4,540	552	4	-5	-1	-9	-18	50	1	124	3,700
90%	4,184	1,422	206	0	-2	-1	-8	-10	-1	24	38	3,438
Long Term												
Full Simulation Period[b]	2,022	2,061	1,247	507	186	70	64	99	-30	29	121	1,566
Water Year Types[c]												
Wet (32%)	2,709	2,793	802	108	7	1	9	36	-36	50	42	3,295
Above Normal (16%)	1,262	1,622	1,488	442	64	4	22	96	-99	42	138	2,961
Below Normal (13%)	2,938	2,360	1,656	1,188	449	107	120	170	-203	54	253	114
Dry (24%)	1,968	2,088	1,595	813	262	79	89	103	-2	-50	153	132
Critical (15%)	603	629	996	306	336	245	138	164	166	78	98	32

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.9.2. Antioch Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,269	8,523	6,763	3,320	1,142	771	1,029	1,628	2,192	4,322	5,909	7,163
20%	7,297	7,021	5,403	2,716	676	521	564	1,250	1,960	3,511	5,054	6,677
30%	7,151	6,658	3,210	2,015	462	313	392	922	1,767	3,094	4,825	6,497
40%	6,852	5,310	2,674	1,230	357	262	288	485	1,514	2,268	3,930	5,981
50%	6,136	2,127	2,179	1,030	289	241	250	356	1,150	1,863	3,459	5,157
60%	1,944	1,839	1,814	430	264	232	232	281	974	1,303	3,247	2,247
70%	797	774	712	261	238	223	225	238	667	1,153	3,035	1,414
80%	745	678	437	234	224	214	219	221	406	1,057	2,812	1,322
90%	655	621	231	215	212	200	213	200	209	829	2,632	1,219
Long Term												
Full Simulation Period[b]	4,357	3,817	2,769	1,427	569	384	449	722	1,384	2,278	3,917	4,173
Water Year Types[c]												
Wet (32%)	2,942	2,175	861	374	241	221	223	241	545	919	2,804	1,244
Above Normal (16%)	5,638	4,065	2,362	727	275	225	233	298	963	1,247	2,878	2,243
Below Normal (13%)	3,018	2,846	2,728	1,564	576	397	430	669	1,448	1,961	3,512	5,704
Dry (24%)	4,693	4,494	3,908	2,128	741	403	471	830	1,609	3,290	4,892	6,457
Critical (15%)	6,705	6,865	5,485	3,174	1,303	867	1,153	2,093	3,225	4,943	6,200	7,400

Alternative 3

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,118	8,539	6,862	3,812	1,184	752	1,013	1,802	2,292	4,016	5,977	7,286
20%	7,295	7,260	6,644	3,146	683	530	695	1,327	2,027	3,511	5,322	6,834
30%	7,057	6,924	6,126	2,499	470	300	502	1,056	1,846	3,116	4,744	6,466
40%	6,798	6,757	5,238	1,413	345	259	361	742	1,566	2,128	3,948	5,868
50%	6,576	6,468	4,459	1,027	287	242	298	571	1,240	1,929	3,389	5,510
60%	6,325	6,142	2,942	511	261	231	242	421	1,025	1,334	3,240	5,284
70%	6,176	5,841	1,343	269	239	220	217	281	808	1,175	2,910	5,068
80%	5,918	5,120	997	237	222	212	210	205	525	1,098	2,860	4,930
90%	5,223	2,265	488	223	210	199	203	189	218	856	2,585	4,796
Long Term												
Full Simulation Period[b]	6,445	5,963	3,907	1,606	582	384	482	831	1,476	2,294	3,940	5,678
Water Year Types[c]												
Wet (32%)	5,617	5,033	1,607	415	238	221	229	299	610	950	2,741	4,498
Above Normal (16%)	7,143	5,772	3,619	868	270	220	248	412	1,002	1,270	2,928	5,152
Below Normal (13%)	6,062	5,318	4,395	1,974	614	404	512	863	1,593	1,980	3,488	5,527
Dry (24%)	6,669	6,676	5,442	2,367	731	400	514	954	1,716	3,234	4,967	6,559
Critical (15%)	7,462	7,590	6,198	3,380	1,391	871	1,202	2,205	3,354	5,038	6,338	7,470

Alternative 3 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-152	16	98	492	42	-19	-16	175	100	-306	68	123
20%	-2	239	1,240	430	7	9	131	77	67	0	269	157
30%	-93	266	2,917	484	8	-13	110	134	78	21	-82	-31
40%	-54	1,447	2,564	183	-12	-3	73	257	52	-140	18	-113
50%	440	4,341	2,279	-2	-3	0	48	215	90	66	-70	353
60%	4,381	4,303	1,128	81	-2	-1	10	140	50	31	-7	3,036
70%	5,379	5,068	631	8	1	-2	-7	42	141	22	-125	3,654
80%	5,173	4,441	560	3	-2	-2	-9	-16	118	41	48	3,607
90%	4,568	1,645	257	8	-2	-1	-10	-11	8	27	-47	3,576
Long Term												
Full Simulation Period[b]	2,088	2,147	1,138	179	13	0	33	109	91	16	23	1,505
Water Year Types[c]												
Wet (32%)	2,674	2,857	746	41	-3	1	6	58	65	31	-63	3,255
Above Normal (16%)	1,506	1,706	1,257	140	-5	-5	16	114	39	23	50	2,909
Below Normal (13%)	3,045	2,472	1,667	410	37	7	81	194	145	19	-24	-176
Dry (24%)	1,976	2,182	1,535	238	-11	-2	43	124	108	-56	76	102
Critical (15%)	757	725	713	206	88	4	49	112	130	95	139	70

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.9.3. Antioch Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,269	8,523	6,763	3,320	1,142	771	1,029	1,628	2,192	4,322	5,909	7,163
20%	7,297	7,021	5,403	2,716	676	521	564	1,250	1,960	3,511	5,054	6,677
30%	7,151	6,658	3,210	2,015	462	313	392	922	1,767	3,094	4,825	6,497
40%	6,852	5,310	2,674	1,230	357	262	288	485	1,514	2,268	3,930	5,981
50%	6,136	2,127	2,179	1,030	289	241	250	356	1,150	1,863	3,459	5,157
60%	1,944	1,839	1,814	430	264	232	232	281	974	1,303	3,247	2,247
70%	797	774	712	261	238	223	225	238	667	1,153	3,035	1,414
80%	745	678	437	234	224	214	219	221	406	1,057	2,812	1,322
90%	655	621	231	215	212	200	213	200	209	829	2,632	1,219
Long Term												
Full Simulation Period[b]	4,357	3,817	2,769	1,427	569	384	449	722	1,384	2,278	3,917	4,173
Water Year Types[c]												
Wet (32%)	2,942	2,175	861	374	241	221	223	241	545	919	2,804	1,244
Above Normal (16%)	5,638	4,065	2,362	727	275	225	233	298	963	1,247	2,878	2,243
Below Normal (13%)	3,018	2,846	2,728	1,564	576	397	430	669	1,448	1,961	3,512	5,704
Dry (24%)	4,693	4,494	3,908	2,128	741	403	471	830	1,609	3,290	4,892	6,457
Critical (15%)	6,705	6,865	5,485	3,174	1,303	867	1,153	2,093	3,225	4,943	6,200	7,400

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,310	8,347	6,774	3,316	1,168	776	809	1,248	2,079	4,277	5,950	7,261
20%	7,429	7,056	5,276	2,730	676	521	514	934	1,839	3,441	5,107	6,724
30%	7,180	6,651	3,218	2,018	474	314	354	729	1,708	3,068	4,899	6,540
40%	6,806	5,293	2,673	1,230	357	262	283	454	1,445	2,272	3,917	5,998
50%	6,010	2,123	2,185	1,029	290	241	250	337	1,119	1,868	3,442	5,041
60%	1,945	1,828	1,814	429	263	231	235	279	970	1,306	3,246	2,250
70%	791	774	746	261	238	222	225	238	674	1,162	3,014	1,421
80%	740	678	389	235	224	213	219	223	409	1,057	2,762	1,317
90%	655	619	230	215	212	200	213	200	209	841	2,603	1,219
Long Term												
Full Simulation Period[b]	4,354	3,805	2,775	1,450	584	385	402	613	1,315	2,254	3,907	4,172
Water Year Types[c]												
Wet (32%)	2,940	2,202	867	374	242	221	223	237	545	911	2,774	1,242
Above Normal (16%)	5,635	3,991	2,336	725	275	225	233	295	961	1,248	2,876	2,248
Below Normal (13%)	3,027	2,852	2,730	1,567	576	397	390	580	1,424	1,957	3,488	5,658
Dry (24%)	4,687	4,467	3,935	2,152	746	404	404	692	1,547	3,278	4,902	6,474
Critical (15%)	6,688	6,848	5,494	3,292	1,395	876	982	1,673	2,877	4,821	6,202	7,403

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	41	-175	10	-5	26	5	-220	-380	-113	-46	41	98
20%	132	35	-127	14	0	0	-49	-317	-121	-70	54	47
30%	29	-7	8	2	13	0	-37	-194	-60	-26	73	43
40%	-46	-16	0	-1	0	0	-5	-31	-69	4	-13	17
50%	-126	-4	6	-1	0	0	0	-20	-32	5	-17	-116
60%	1	-10	0	-1	-1	0	2	-2	-4	3	-1	3
70%	-6	0	34	0	0	-1	1	0	7	9	-20	7
80%	-5	0	-49	1	0	-1	0	2	3	0	-50	-5
90%	0	-2	-1	0	0	0	0	0	0	12	-29	0
Long Term												
Full Simulation Period[b]	-4	-12	6	23	15	2	-47	-109	-69	-24	-10	-1
Water Year Types[c]												
Wet (32%)	-2	27	5	0	0	0	0	-4	0	-8	-31	-2
Above Normal (16%)	-3	-75	-26	-2	0	0	1	-2	-2	1	-2	5
Below Normal (13%)	9	6	1	3	-1	-1	-41	-89	-24	-4	-24	-46
Dry (24%)	-6	-27	28	24	5	1	-67	-137	-61	-12	11	17
Critical (15%)	-17	-17	9	118	92	9	-171	-420	-348	-122	2	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.9.4. Antioch Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,123	8,439	6,868	4,639	1,903	1,120	1,205	1,726	2,229	4,336	6,230	7,278
20%	7,156	7,100	6,677	3,967	1,113	581	751	1,252	1,947	3,509	5,312	6,895
30%	6,985	6,934	6,276	3,125	748	361	563	1,154	1,625	3,100	4,945	6,407
40%	6,786	6,677	5,659	1,885	489	298	402	676	1,283	2,177	4,198	6,066
50%	6,571	6,439	4,473	1,391	345	255	302	497	1,039	1,890	3,486	5,666
60%	6,439	6,067	2,944	784	269	238	242	371	893	1,398	3,302	5,393
70%	6,203	5,888	1,546	292	242	227	220	278	730	1,281	3,112	5,241
80%	5,892	5,219	989	238	219	214	210	203	456	1,058	2,936	5,022
90%	4,839	2,042	438	215	210	199	205	190	208	853	2,670	4,657
Long Term												
Full Simulation Period[b]	6,379	5,877	4,016	1,934	755	454	513	821	1,354	2,307	4,038	5,739
Water Year Types[c]												
Wet (32%)	5,652	4,968	1,663	482	248	222	231	277	510	969	2,846	4,539
Above Normal (16%)	6,900	5,688	3,849	1,169	338	228	255	394	864	1,288	3,015	5,204
Below Normal (13%)	5,956	5,206	4,384	2,752	1,026	505	550	839	1,245	2,015	3,765	5,818
Dry (24%)	6,661	6,582	5,503	2,942	1,004	481	560	933	1,607	3,240	5,044	6,588
Critical (15%)	7,307	7,494	6,481	3,480	1,639	1,112	1,291	2,258	3,390	5,021	6,298	7,433

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,269	8,523	6,763	3,320	1,142	771	1,029	1,628	2,192	4,322	5,909	7,163
20%	7,297	7,021	5,403	2,716	676	521	564	1,250	1,960	3,511	5,054	6,677
30%	7,151	6,658	3,210	2,015	462	313	392	922	1,767	3,094	4,825	6,497
40%	6,852	5,310	2,674	1,230	357	262	288	485	1,514	2,268	3,930	5,981
50%	6,136	2,127	2,179	1,030	289	241	250	356	1,150	1,863	3,459	5,157
60%	1,944	1,839	1,814	430	264	232	232	281	974	1,303	3,247	2,247
70%	797	774	712	261	238	223	225	238	667	1,153	3,035	1,414
80%	745	678	437	234	224	214	219	221	406	1,057	2,812	1,322
90%	655	621	231	215	212	200	213	200	209	829	2,632	1,219
Long Term												
Full Simulation Period[b]	4,357	3,817	2,769	1,427	569	384	449	722	1,384	2,278	3,917	4,173
Water Year Types[c]												
Wet (32%)	2,942	2,175	861	374	241	221	223	241	545	919	2,804	1,244
Above Normal (16%)	5,638	4,065	2,362	727	275	225	233	298	963	1,247	2,878	2,243
Below Normal (13%)	3,018	2,846	2,728	1,564	576	397	430	669	1,448	1,961	3,512	5,704
Dry (24%)	4,693	4,494	3,908	2,128	741	403	471	830	1,609	3,290	4,892	6,457
Critical (15%)	6,705	6,865	5,485	3,174	1,303	867	1,153	2,093	3,225	4,943	6,200	7,400

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	147	84	-104	-1,318	-760	-349	-177	-98	-36	-13	-321	-115
20%	141	-79	-1,274	-1,251	-437	-60	-187	-2	13	2	-258	-218
30%	166	-276	-3,067	-1,110	-287	-47	-171	-231	143	-5	-119	90
40%	66	-1,367	-2,985	-655	-132	-36	-114	-191	231	91	-268	-85
50%	-435	-4,312	-2,294	-362	-56	-14	-52	-141	111	-27	-27	-509
60%	-4,495	-4,228	-1,131	-354	-5	-6	-10	-90	82	-94	-55	-3,146
70%	-5,406	-5,115	-835	-31	-4	-4	5	-39	-64	-128	-78	-3,827
80%	-5,147	-4,540	-552	-4	5	1	9	18	-50	-1	-124	-3,700
90%	-4,184	-1,422	-206	0	2	1	8	10	1	-24	-38	-3,438
Long Term												
Full Simulation Period[b]	-2,022	-2,061	-1,247	-507	-186	-70	-64	-99	30	-29	-121	-1,566
Water Year Types[c]												
Wet (32%)	-2,709	-2,793	-802	-108	-7	-1	-9	-36	36	-50	-42	-3,295
Above Normal (16%)	-1,262	-1,622	-1,488	-442	-64	-4	-22	-96	99	-42	-138	-2,961
Below Normal (13%)	-2,938	-2,360	-1,656	-1,188	-449	-107	-120	-170	203	-54	-253	-114
Dry (24%)	-1,968	-2,088	-1,595	-813	-262	-79	-89	-103	2	50	-153	-132
Critical (15%)	-603	-629	-996	-306	-336	-245	-138	-164	-166	-78	-98	-32

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.9.5. Antioch Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	8,123	8,439	6,868	4,639	1,903	1,120	1,205	1,726	2,229	4,336	6,230	7,278
20%	7,156	7,100	6,677	3,967	1,113	581	751	1,252	1,947	3,509	5,312	6,895
30%	6,985	6,934	6,276	3,125	748	361	563	1,154	1,625	3,100	4,945	6,407
40%	6,786	6,677	5,659	1,885	489	298	402	676	1,283	2,177	4,198	6,066
50%	6,571	6,439	4,473	1,391	345	255	302	497	1,039	1,890	3,486	5,666
60%	6,439	6,067	2,944	784	269	238	242	371	893	1,398	3,302	5,393
70%	6,203	5,888	1,546	292	242	227	220	278	730	1,281	3,112	5,241
80%	5,892	5,219	989	238	219	214	210	203	456	1,058	2,936	5,022
90%	4,839	2,042	438	215	210	199	205	190	208	853	2,670	4,657
Long Term												
Full Simulation Period[b]	6,379	5,877	4,016	1,934	755	454	513	821	1,354	2,307	4,038	5,739
Water Year Types[c]												
Wet (32%)	5,652	4,968	1,663	482	248	222	231	277	510	969	2,846	4,539
Above Normal (16%)	6,900	5,688	3,849	1,169	338	228	255	394	864	1,288	3,015	5,204
Below Normal (13%)	5,956	5,206	4,384	2,752	1,026	505	550	839	1,245	2,015	3,765	5,818
Dry (24%)	6,661	6,582	5,503	2,942	1,004	481	560	933	1,607	3,240	5,044	6,588
Critical (15%)	7,307	7,494	6,481	3,480	1,639	1,112	1,291	2,258	3,390	5,021	6,298	7,433

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	8,118	8,539	6,862	3,812	1,184	752	1,013	1,802	2,292	4,016	5,977	7,286
20%	7,295	7,260	6,644	3,146	683	530	695	1,327	2,027	3,511	5,322	6,834
30%	7,057	6,924	6,126	2,499	470	300	502	1,056	1,846	3,116	4,744	6,466
40%	6,798	6,757	5,238	1,413	345	259	361	742	1,566	2,128	3,948	5,868
50%	6,576	6,468	4,459	1,027	287	242	298	571	1,240	1,929	3,389	5,510
60%	6,325	6,142	2,942	511	261	231	242	421	1,025	1,334	3,240	5,284
70%	6,176	5,841	1,343	269	239	220	217	281	808	1,175	2,910	5,068
80%	5,918	5,120	997	237	222	212	210	205	525	1,098	2,860	4,930
90%	5,223	2,265	488	223	210	199	203	189	218	856	2,585	4,796
Long Term												
Full Simulation Period[b]	6,445	5,963	3,907	1,606	582	384	482	831	1,476	2,294	3,940	5,678
Water Year Types[c]												
Wet (32%)	5,617	5,033	1,607	415	238	221	229	299	610	950	2,741	4,498
Above Normal (16%)	7,143	5,772	3,619	868	270	220	248	412	1,002	1,270	2,928	5,152
Below Normal (13%)	6,062	5,318	4,395	1,974	614	404	512	863	1,593	1,980	3,488	5,527
Dry (24%)	6,669	6,676	5,442	2,367	731	400	514	954	1,716	3,234	4,967	6,559
Critical (15%)	7,462	7,590	6,198	3,380	1,391	871	1,202	2,205	3,354	5,038	6,338	7,470

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-5	100	-6	-827	-718	-368	-193	77	63	-320	-253	8
20%	139	160	-33	-821	-430	-51	-56	75	80	2	10	-61
30%	73	-11	-150	-627	-279	-60	-61	-97	221	16	-201	59
40%	12	79	-421	-472	-144	-39	-41	66	284	-49	-250	-199
50%	5	29	-15	-364	-59	-14	-4	74	201	38	-97	-155
60%	-114	75	-2	-273	-7	-7	0	50	132	-63	-62	-109
70%	-27	-47	-203	-23	-3	-6	-2	3	78	-106	-202	-173
80%	25	-99	8	-1	3	-1	-1	2	69	40	-76	-92
90%	384	223	50	8	0	0	-2	0	10	3	-85	138
Long Term												
Full Simulation Period[b]	66	86	-109	-328	-172	-70	-31	10	122	-13	-97	-62
Water Year Types[c]												
Wet (32%)	-35	64	-56	-67	-10	0	-2	22	100	-19	-105	-40
Above Normal (16%)	243	84	-230	-302	-68	-9	-6	18	139	-18	-88	-52
Below Normal (13%)	106	112	11	-779	-412	-100	-39	24	348	-35	-277	-291
Dry (24%)	8	95	-60	-575	-273	-81	-45	21	109	-6	-77	-29
Critical (15%)	154	96	-283	-100	-248	-241	-89	-53	-36	17	40	38

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.9.6. Antioch Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,123	8,439	6,868	4,639	1,903	1,120	1,205	1,726	2,229	4,336	6,230	7,278
20%	7,156	7,100	6,677	3,967	1,113	581	751	1,252	1,947	3,509	5,312	6,895
30%	6,985	6,934	6,276	3,125	748	361	563	1,154	1,625	3,100	4,945	6,407
40%	6,786	6,677	5,659	1,885	489	298	402	676	1,283	2,177	4,198	6,066
50%	6,571	6,439	4,473	1,391	345	255	302	497	1,039	1,890	3,486	5,666
60%	6,439	6,067	2,944	784	269	238	242	371	893	1,398	3,302	5,393
70%	6,203	5,888	1,546	292	242	227	220	278	730	1,281	3,112	5,241
80%	5,892	5,219	989	238	219	214	210	203	456	1,058	2,936	5,022
90%	4,839	2,042	438	215	210	199	205	190	208	853	2,670	4,657
Long Term												
Full Simulation Period[b]	6,379	5,877	4,016	1,934	755	454	513	821	1,354	2,307	4,038	5,739
Water Year Types[c]												
Wet (32%)	5,652	4,968	1,663	482	248	222	231	277	510	969	2,846	4,539
Above Normal (16%)	6,900	5,688	3,849	1,169	338	228	255	394	864	1,288	3,015	5,204
Below Normal (13%)	5,956	5,206	4,384	2,752	1,026	505	550	839	1,245	2,015	3,765	5,818
Dry (24%)	6,661	6,582	5,503	2,942	1,004	481	560	933	1,607	3,240	5,044	6,588
Critical (15%)	7,307	7,494	6,481	3,480	1,639	1,112	1,291	2,258	3,390	5,021	6,298	7,433

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8,310	8,347	6,774	3,316	1,168	776	809	1,248	2,079	4,277	5,950	7,261
20%	7,429	7,056	5,276	2,730	676	521	514	934	1,839	3,441	5,107	6,724
30%	7,180	6,651	3,218	2,018	474	314	354	729	1,708	3,068	4,899	6,540
40%	6,806	5,293	2,673	1,230	357	262	283	454	1,445	2,272	3,917	5,998
50%	6,010	2,123	2,185	1,029	290	241	250	337	1,119	1,868	3,442	5,041
60%	1,945	1,828	1,814	429	263	231	235	279	970	1,306	3,246	2,250
70%	791	774	746	261	238	222	225	238	674	1,162	3,014	1,421
80%	740	678	389	235	224	213	219	223	409	1,057	2,762	1,317
90%	655	619	230	215	212	200	213	200	209	841	2,603	1,219
Long Term												
Full Simulation Period[b]	4,354	3,805	2,775	1,450	584	385	402	613	1,315	2,254	3,907	4,172
Water Year Types[c]												
Wet (32%)	2,940	2,202	867	374	242	221	223	237	545	911	2,774	1,242
Above Normal (16%)	5,635	3,991	2,336	725	275	225	233	295	961	1,248	2,876	2,248
Below Normal (13%)	3,027	2,852	2,730	1,567	576	397	390	580	1,424	1,957	3,488	5,658
Dry (24%)	4,687	4,467	3,935	2,152	746	404	404	692	1,547	3,278	4,902	6,474
Critical (15%)	6,688	6,848	5,494	3,292	1,395	876	982	1,673	2,877	4,821	6,202	7,403

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	187	-91	-94	-1,323	-735	-344	-397	-478	-149	-59	-280	-17
20%	272	-45	-1,401	-1,237	-437	-60	-237	-318	-108	-68	-205	-171
30%	195	-283	-3,059	-1,108	-274	-47	-208	-425	83	-32	-46	133
40%	20	-1,384	-2,985	-656	-132	-36	-119	-222	162	96	-281	-69
50%	-561	-4,316	-2,288	-362	-56	-14	-52	-161	79	-23	-44	-625
60%	-4,494	-4,238	-1,131	-355	-6	-6	-8	-92	77	-91	-56	-3,142
70%	-5,412	-5,114	-800	-30	-4	-5	6	-40	-57	-119	-98	-3,820
80%	-5,152	-4,540	-600	-4	5	0	9	20	-47	-1	-174	-3,705
90%	-4,184	-1,424	-208	0	2	1	8	10	2	-12	-66	-3,438
Long Term												
Full Simulation Period[b]	-2,025	-2,072	-1,241	-484	-171	-69	-111	-207	-39	-53	-131	-1,568
Water Year Types[c]												
Wet (32%)	-2,711	-2,767	-796	-108	-7	-1	-9	-41	35	-58	-73	-3,297
Above Normal (16%)	-1,265	-1,697	-1,513	-444	-64	-3	-21	-98	98	-40	-140	-2,956
Below Normal (13%)	-2,929	-2,354	-1,655	-1,185	-450	-108	-161	-259	179	-58	-277	-160
Dry (24%)	-1,975	-2,115	-1,567	-789	-257	-78	-156	-241	-60	37	-142	-114
Critical (15%)	-620	-646	-987	-188	-244	-235	-309	-584	-513	-200	-96	-29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

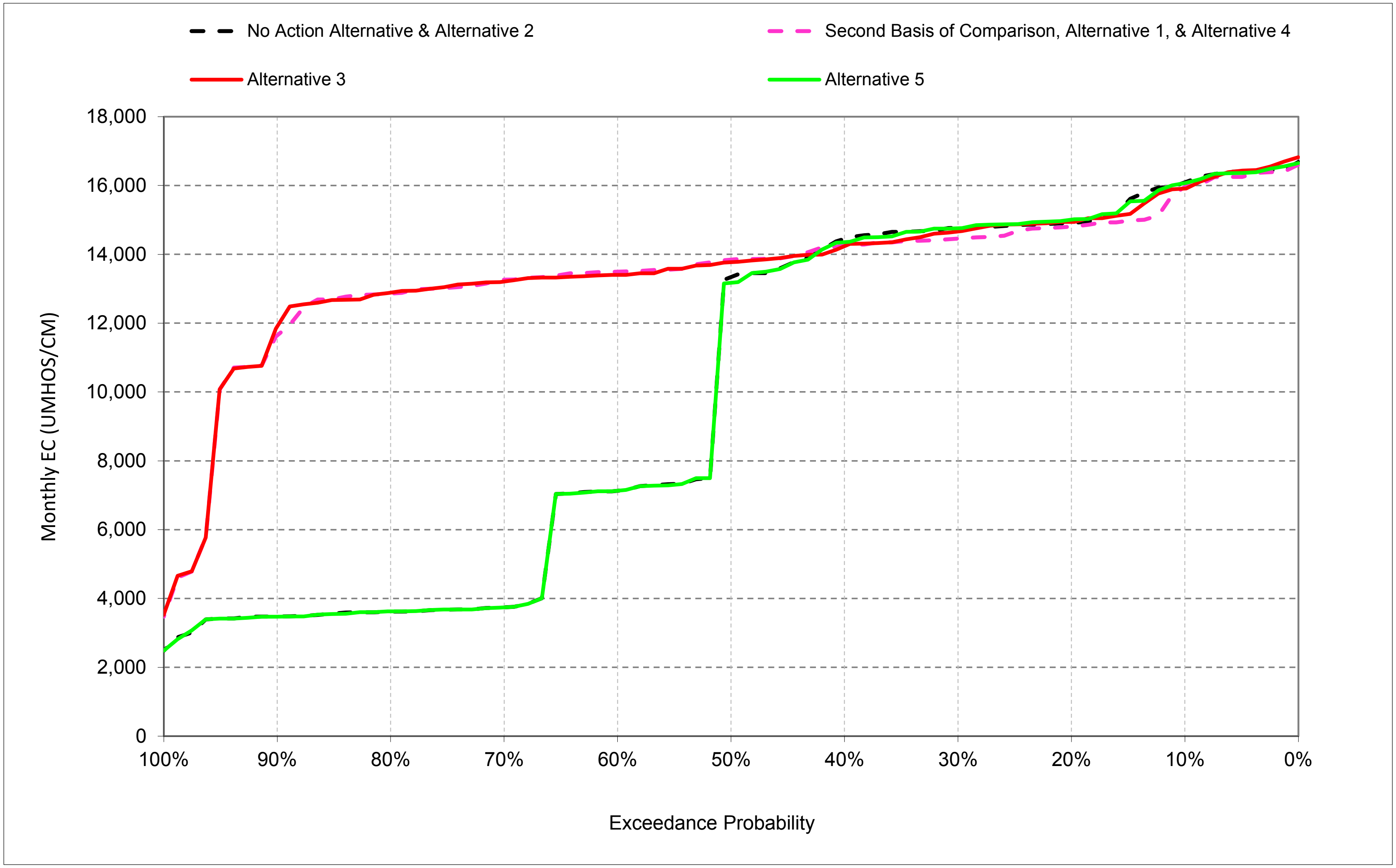
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

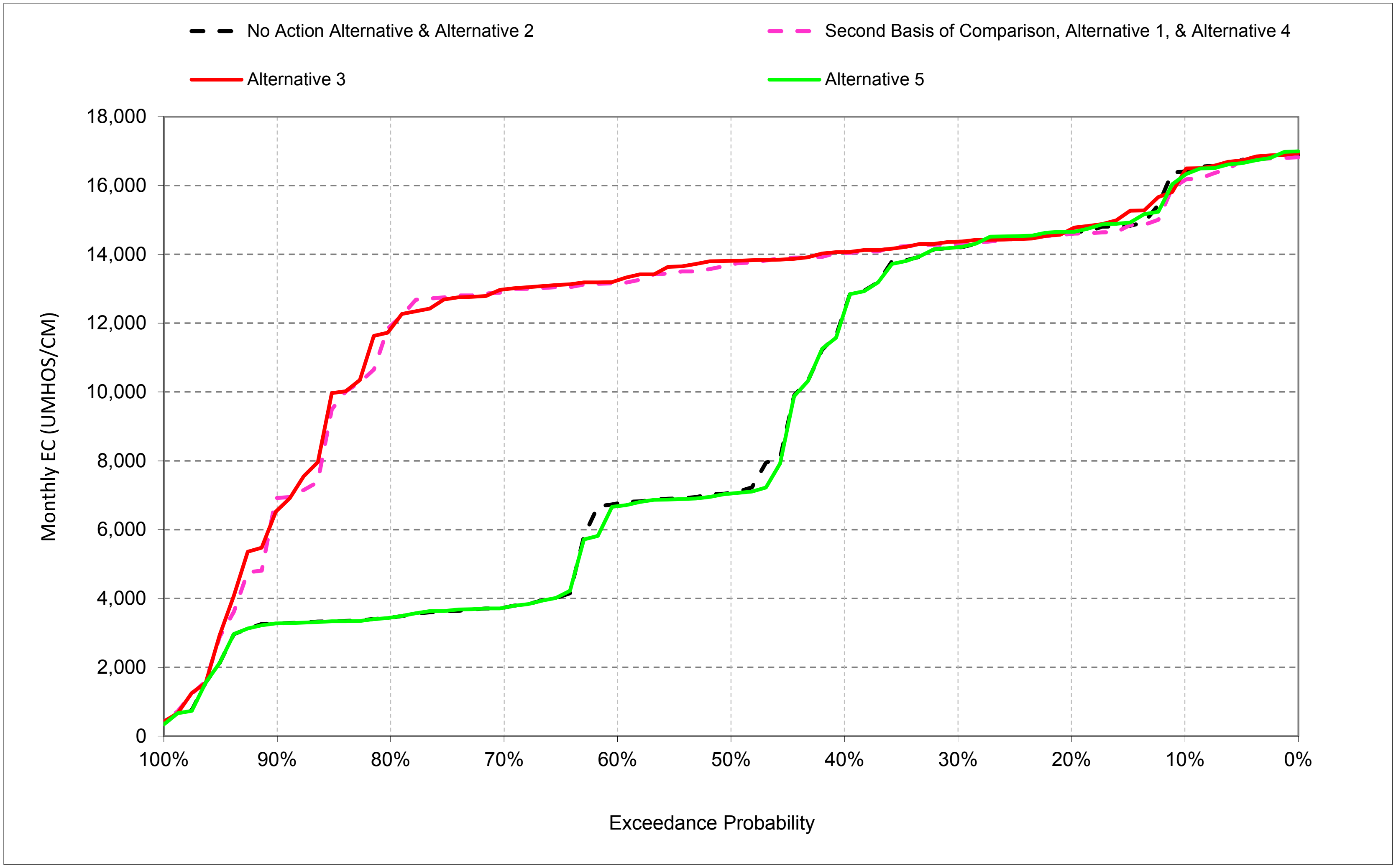
B.10.1 Chipps Island North Channel Salinity

Figure 6E.B.10.1.1. Chipps Island North Channel Salinity, Electrical Conductivity, October



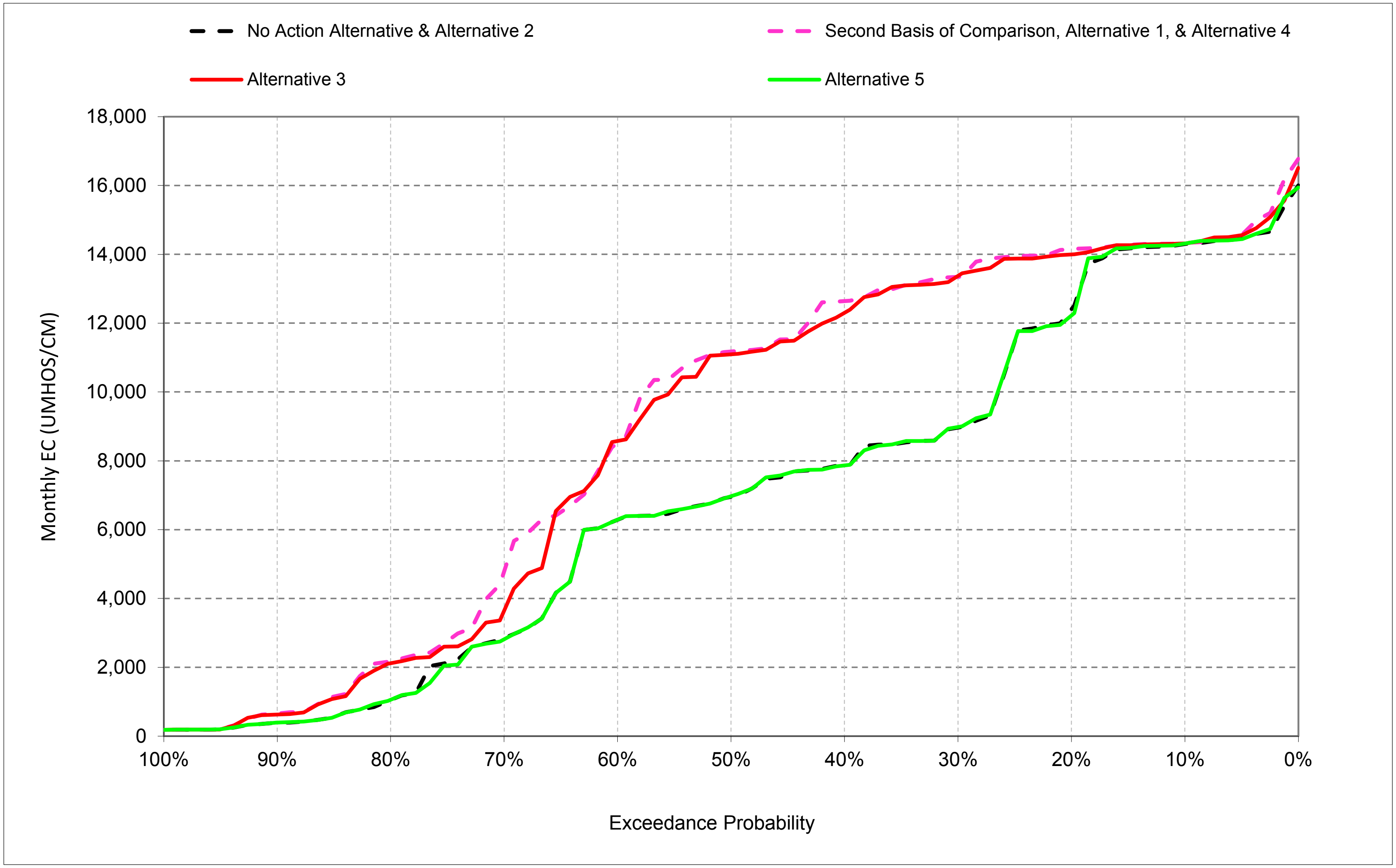
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.2. Chipps Island North Channel Salinity, Electrical Conductivity, November



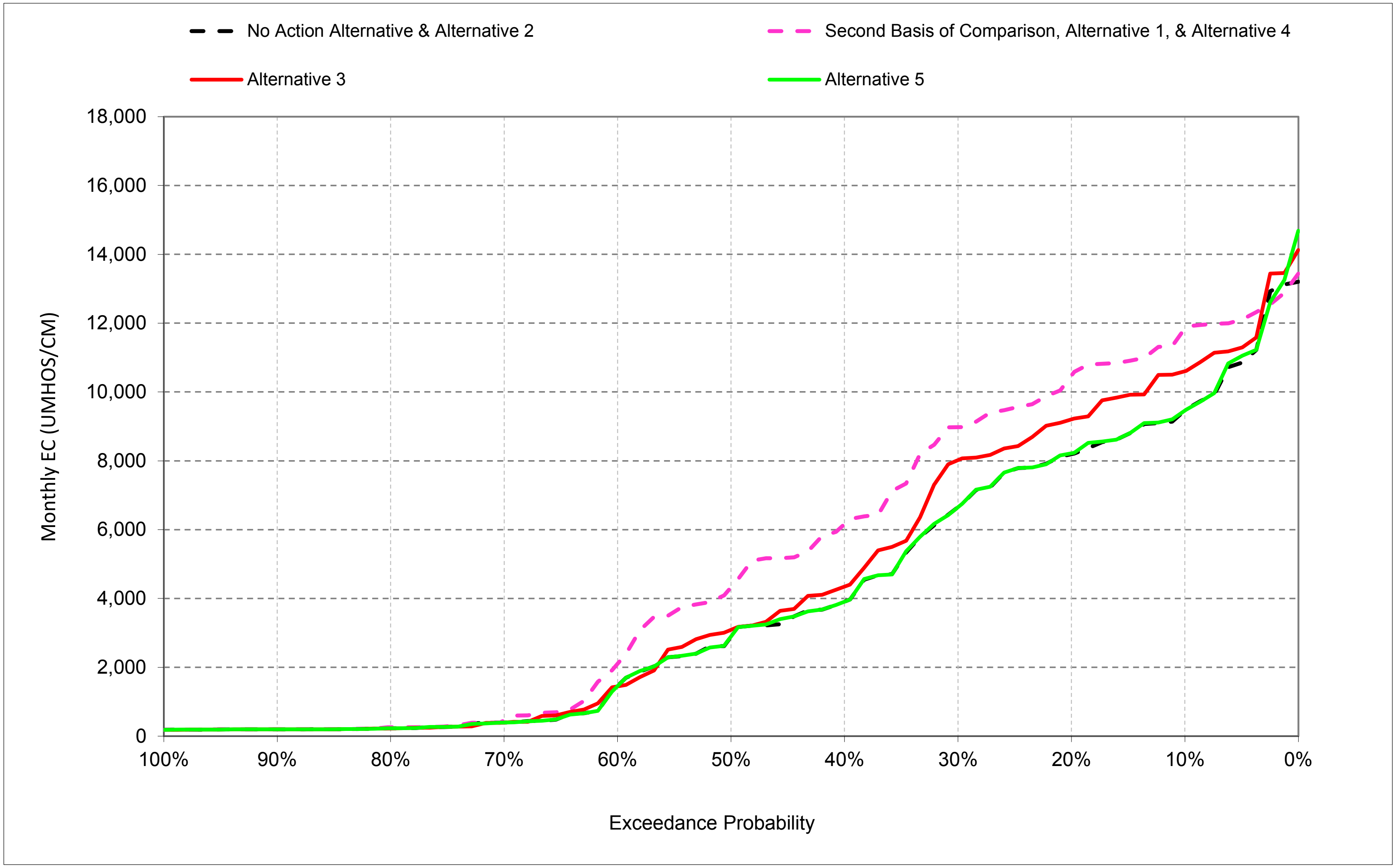
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.3. Chipps Island North Channel Salinity, Electrical Conductivity, December



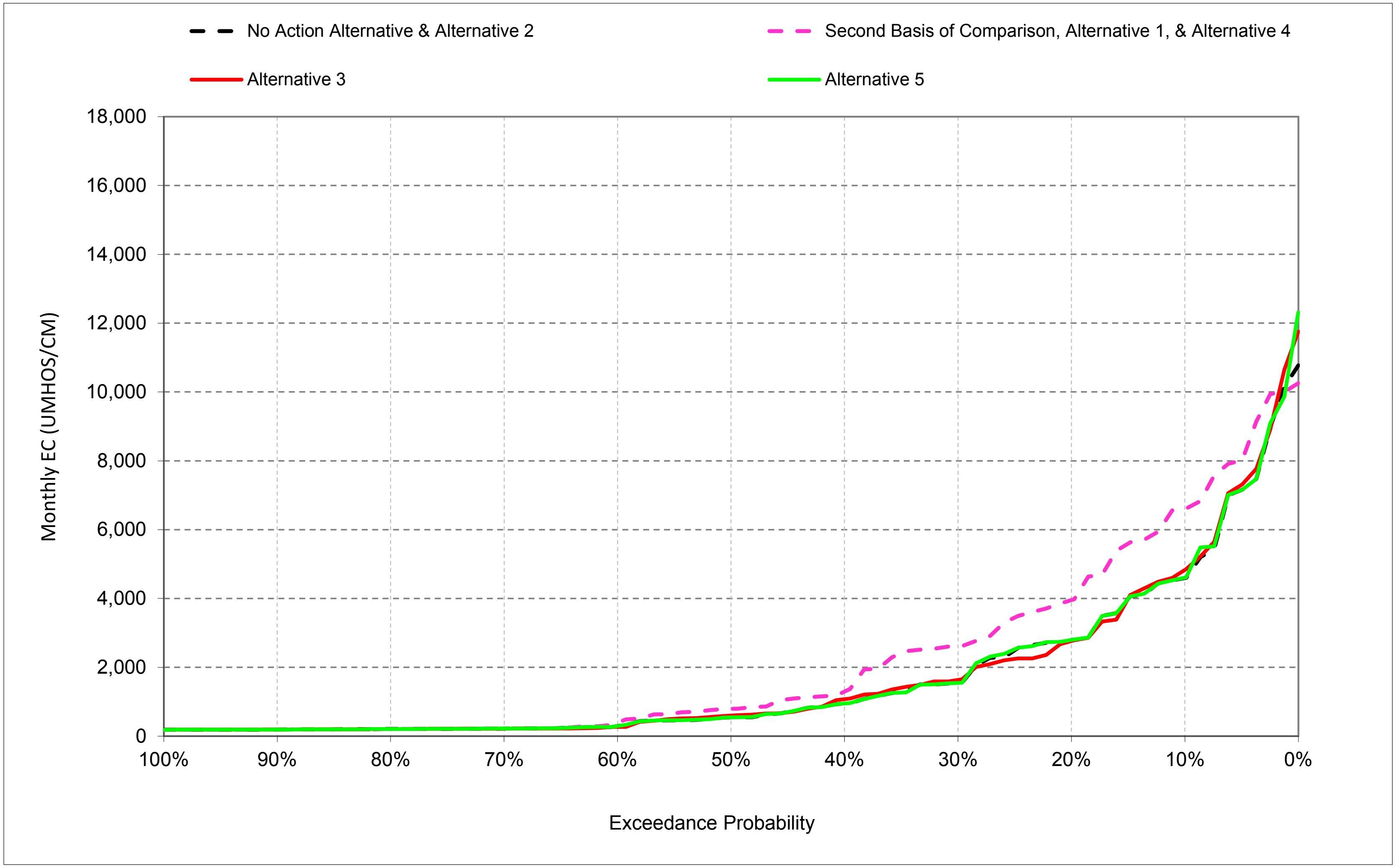
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.4. Chipps Island North Channel Salinity, Electrical Conductivity, January



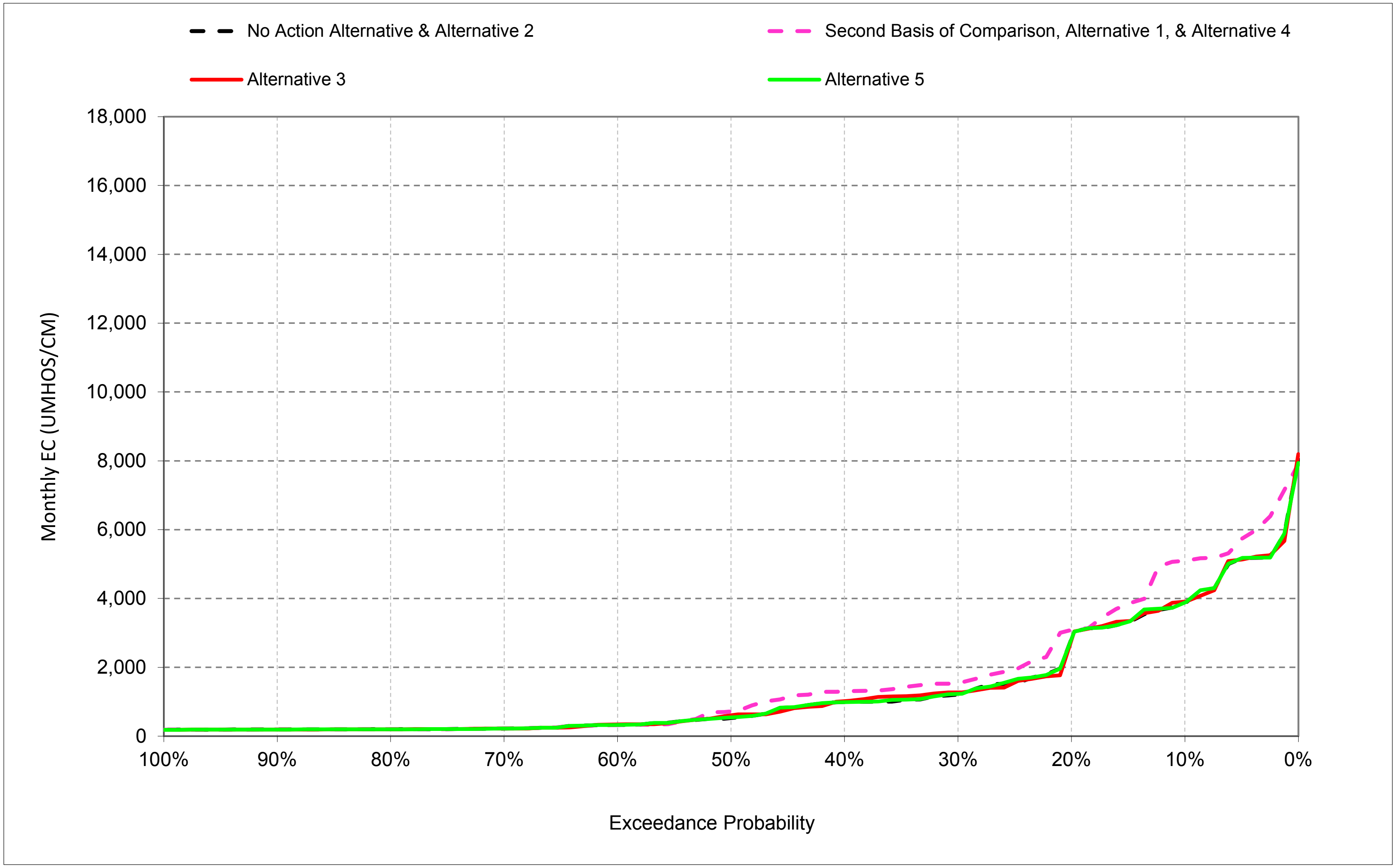
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.5. Chipps Island North Channel Salinity, Electrical Conductivity, February



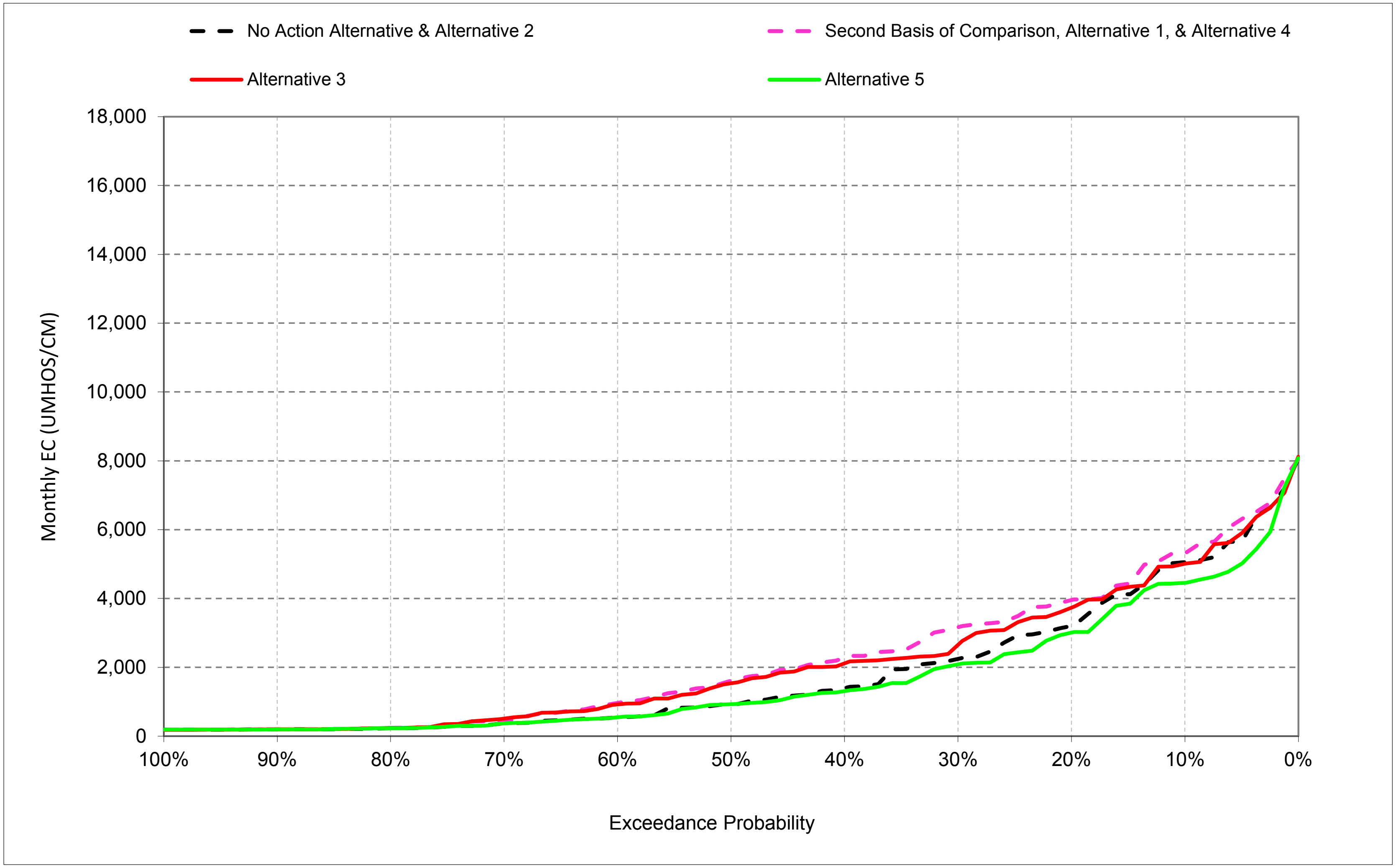
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.6. Chipps Island North Channel Salinity, Electrical Conductivity, March



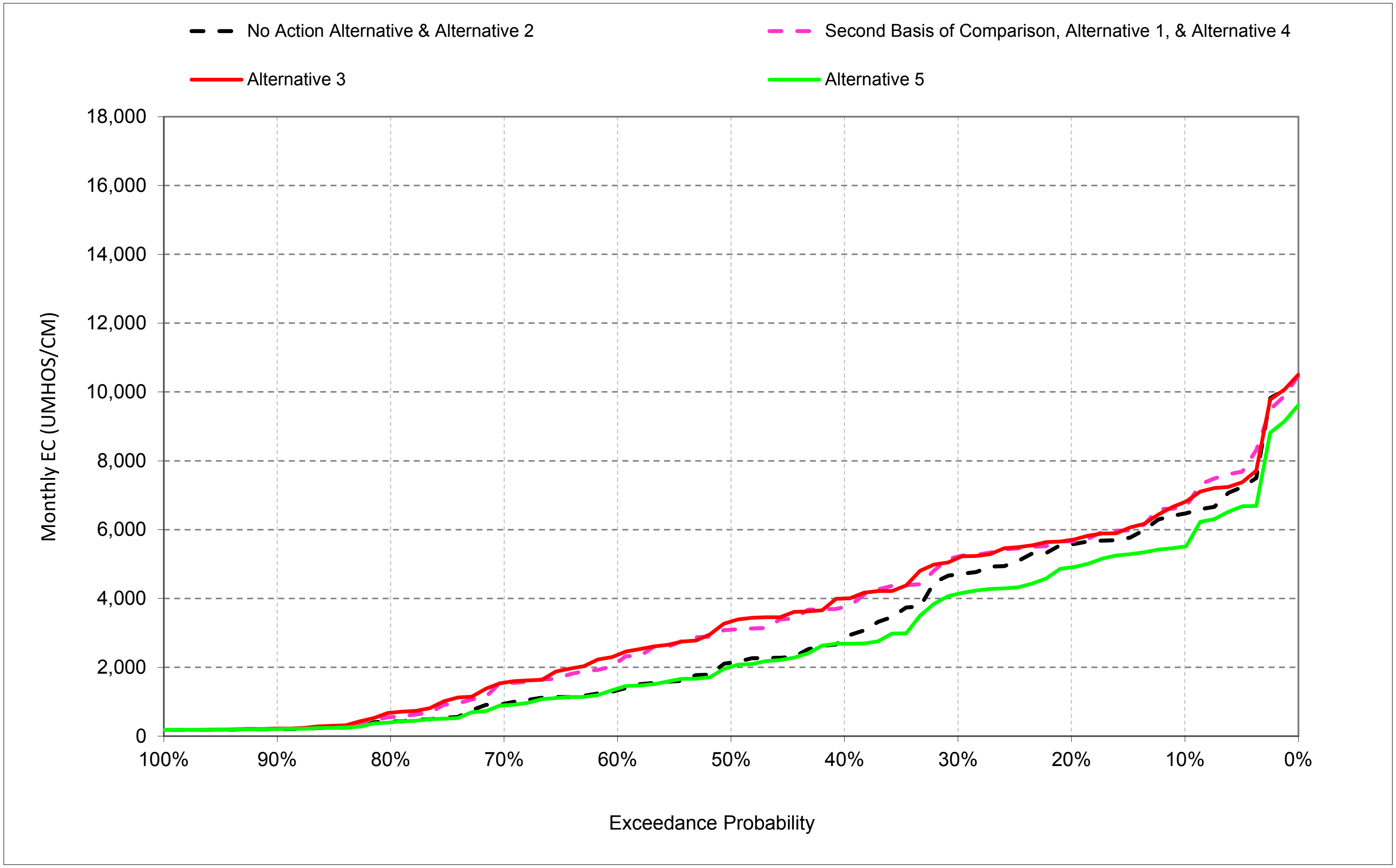
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.7. Chipps Island North Channel Salinity, Electrical Conductivity, April



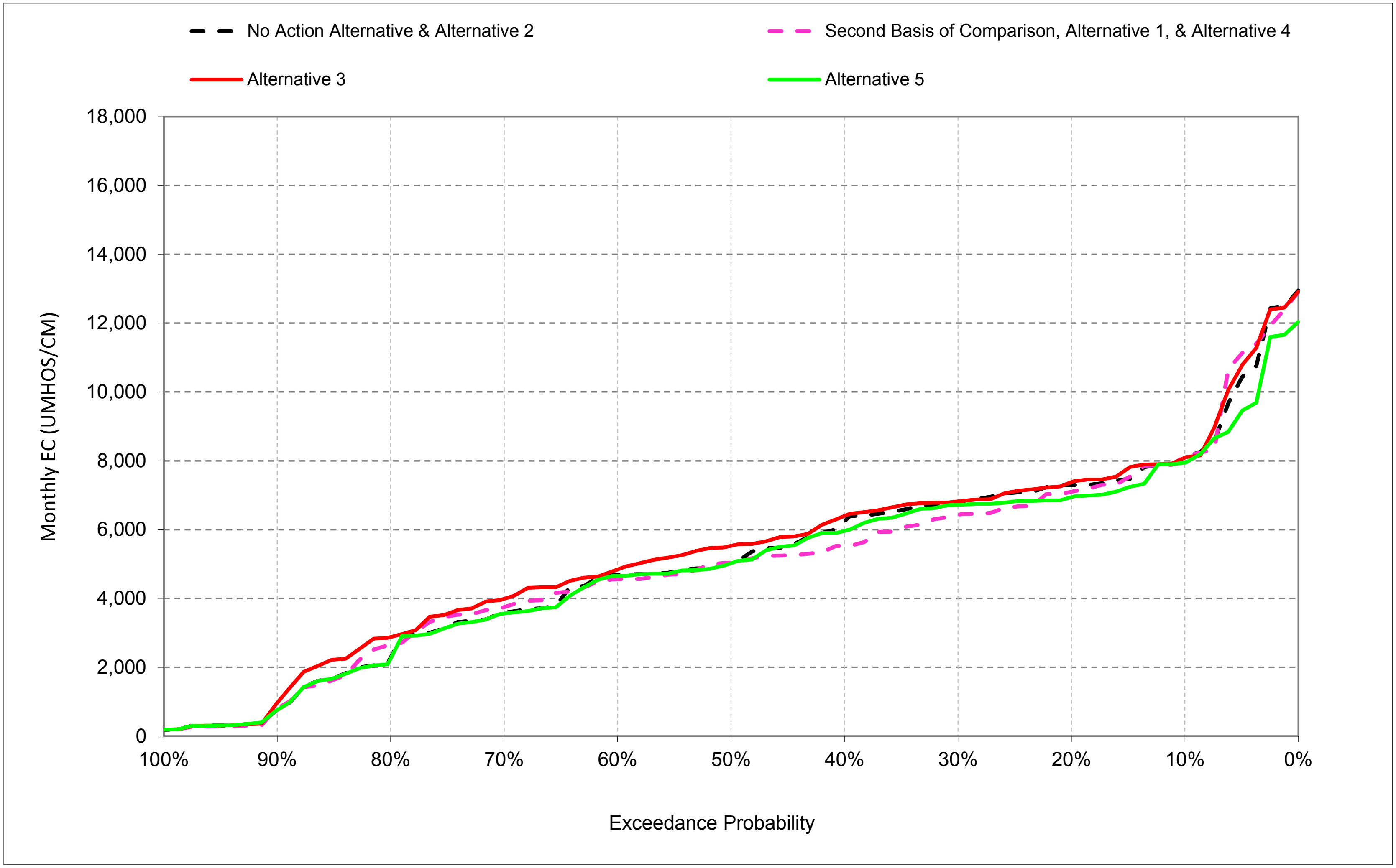
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.8. Chipps Island North Channel Salinity, Electrical Conductivity, May



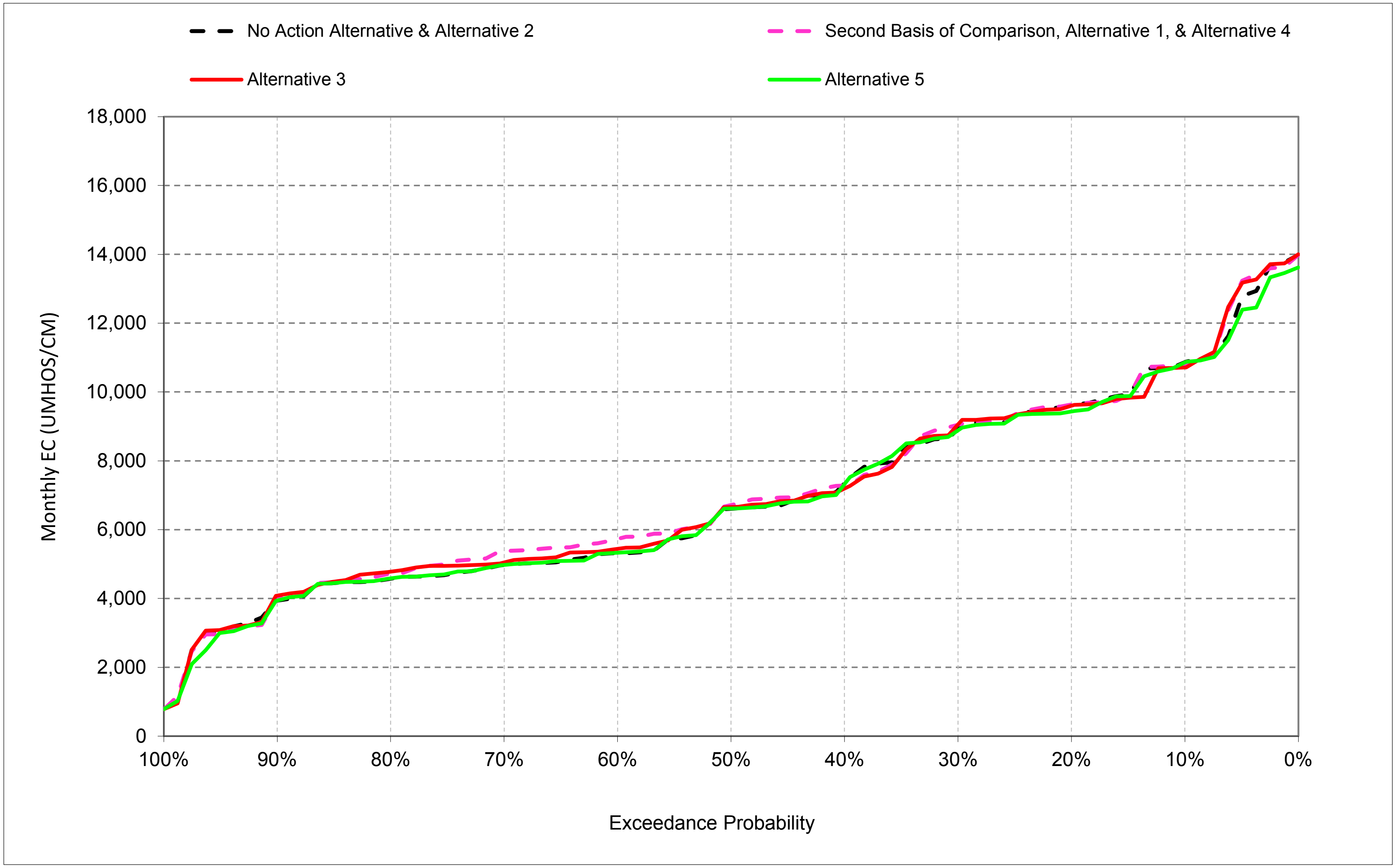
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.9. Chipps Island North Channel Salinity, Electrical Conductivity, June



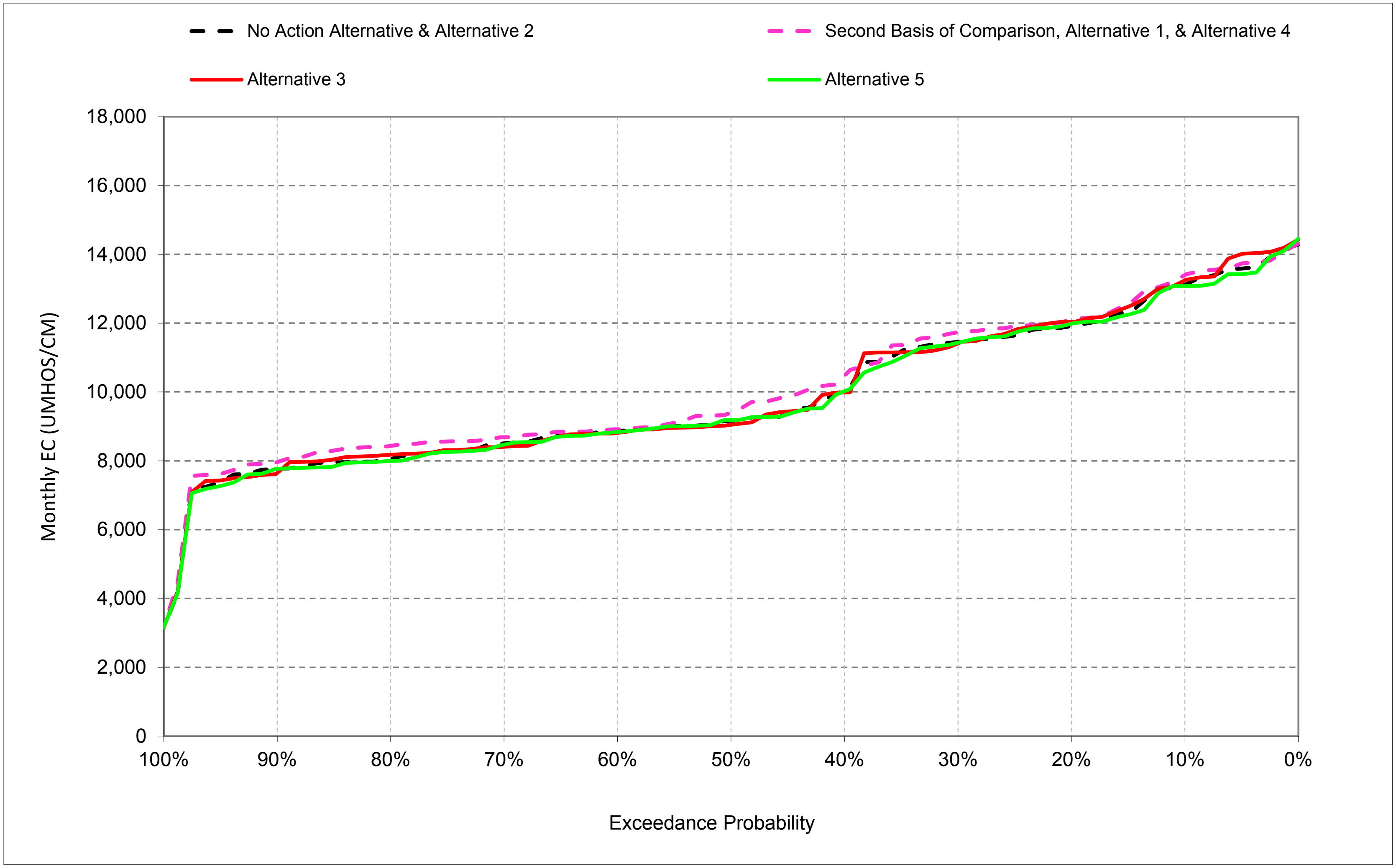
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.10. Chipps Island North Channel Salinity, Electrical Conductivity, July



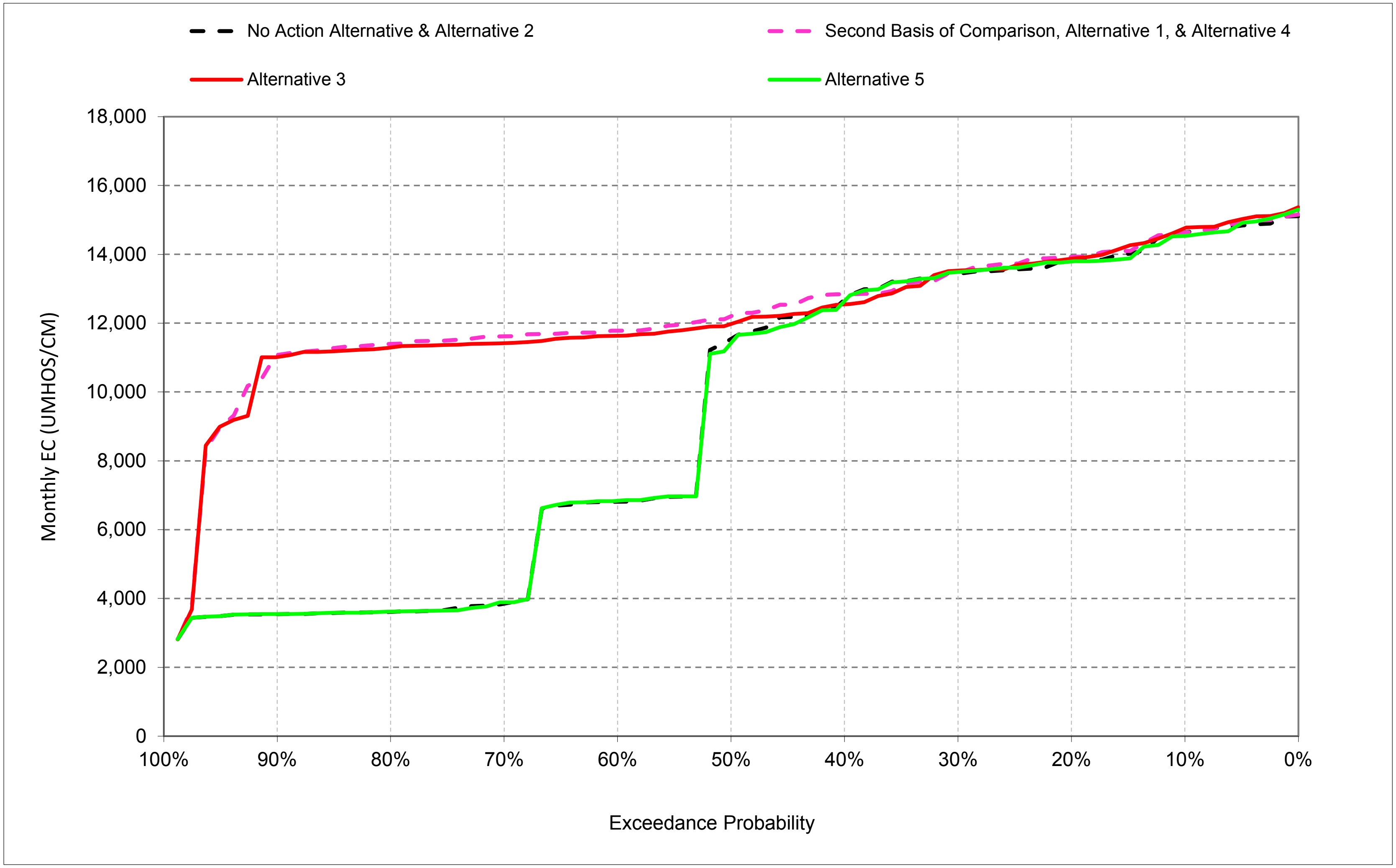
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.11. Chipps Island North Channel Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.1.12. Chipps Island North Channel Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.1.1. Chipps Island North Channel Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16,091	16,410	14,299	9,461	4,594	3,874	5,056	6,466	8,102	10,866	13,118	14,635
20%	14,910	14,654	12,403	8,195	2,790	2,822	3,202	5,574	7,296	9,620	11,914	13,816
30%	14,772	14,200	8,965	6,650	1,543	1,207	2,243	4,702	6,807	8,917	11,452	13,448
40%	14,450	12,367	7,870	3,908	946	991	1,395	2,830	6,240	7,347	10,052	12,678
50%	13,338	7,076	6,955	2,892	544	529	931	2,133	5,033	6,606	9,166	11,541
60%	7,131	6,762	6,284	1,461	291	326	541	1,331	4,686	5,315	8,862	6,808
70%	3,743	3,734	2,848	396	218	220	367	938	3,585	4,973	8,504	3,923
80%	3,619	3,443	1,049	229	206	201	226	423	2,273	4,576	8,046	3,626
90%	3,476	3,273	390	196	192	192	195	204	755	3,933	7,763	3,547
Long Term												
Full Simulation Period[b]	9,942	8,989	6,959	4,015	1,732	1,360	1,818	2,921	5,139	6,966	9,887	9,289
Water Year Types[c]												
Wet (32%)	7,505	6,020	2,479	856	256	293	391	718	2,367	4,039	7,978	3,597
Above Normal (16%)	11,854	9,256	6,254	1,827	537	411	586	1,368	4,321	5,149	8,193	6,812
Below Normal (13%)	7,604	7,339	7,403	4,923	2,016	1,846	2,203	3,361	5,869	6,803	9,374	12,271
Dry (24%)	10,759	10,494	9,724	6,326	2,523	1,552	2,290	3,929	6,302	9,154	11,603	13,394
Critical (15%)	13,934	14,136	12,413	8,549	4,648	3,936	5,109	7,293	9,421	11,781	13,470	14,728

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,961	16,152	14,331	11,845	6,611	5,098	5,332	6,664	8,134	10,775	13,396	14,633
20%	14,806	14,596	14,156	10,477	3,954	3,083	3,952	5,660	7,103	9,633	12,108	13,927
30%	14,458	14,288	13,345	8,975	2,610	1,554	3,162	5,215	6,426	9,044	11,737	13,478
40%	14,255	14,041	12,641	6,162	1,291	1,300	2,276	3,751	5,531	7,277	10,469	12,838
50%	13,846	13,701	11,175	4,328	793	716	1,610	3,093	5,039	6,713	9,402	12,201
60%	13,497	13,166	8,523	2,101	389	323	963	2,145	4,558	5,729	8,914	11,781
70%	13,263	12,918	4,786	454	222	220	453	1,546	3,749	5,378	8,683	11,614
80%	12,860	11,919	2,181	256	206	203	240	555	2,650	4,714	8,429	11,397
90%	11,641	6,920	655	199	191	193	197	215	807	3,971	7,962	11,076
Long Term												
Full Simulation Period[b]	13,474	12,472	8,946	5,099	2,233	1,613	2,197	3,378	5,058	7,093	10,105	12,315
Water Year Types[c]												
Wet (32%)	12,231	10,658	3,836	1,189	287	308	569	1,037	2,348	4,229	8,134	10,527
Above Normal (16%)	14,219	12,183	8,747	2,689	736	441	937	2,047	4,162	5,316	8,503	11,606
Below Normal (13%)	13,062	11,765	10,141	7,079	2,941	2,139	2,821	3,991	5,330	6,912	9,825	12,457
Dry (24%)	14,004	13,831	12,203	8,117	3,282	1,938	2,785	4,349	6,272	9,155	11,778	13,544
Critical (15%)	14,855	15,096	13,712	9,339	5,676	4,683	5,538	7,708	9,629	11,950	13,581	14,776

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-130	-259	32	2,384	2,017	1,224	277	198	31	-91	279	-2
20%	-104	-59	1,753	2,282	1,164	261	750	86	-193	13	193	111
30%	-313	88	4,381	2,325	1,068	347	919	514	-381	127	285	30
40%	-196	1,674	4,771	2,254	344	309	881	921	-709	-70	417	160
50%	508	6,625	4,220	1,436	249	188	679	960	6	107	236	660
60%	6,366	6,404	2,239	641	98	-2	422	814	-128	414	53	4,973
70%	9,521	9,183	1,938	58	4	0	86	608	163	405	179	7,691
80%	9,241	8,476	1,132	27	0	2	14	132	377	138	384	7,772
90%	8,165	3,648	265	2	-1	1	1	11	52	38	198	7,529
Long Term												
Full Simulation Period[b]	3,532	3,483	1,988	1,084	501	252	379	457	-80	126	218	3,026
Water Year Types[c]												
Wet (32%)	4,726	4,639	1,357	333	31	15	178	320	-19	191	156	6,930
Above Normal (16%)	2,366	2,927	2,493	861	199	30	351	678	-158	167	310	4,794
Below Normal (13%)	5,458	4,426	2,739	2,156	925	293	619	630	-539	109	451	186
Dry (24%)	3,245	3,337	2,479	1,791	759	386	495	421	-30	1	175	150
Critical (15%)	922	960	1,298	790	1,028	747	430	415	208	169	111	47

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.1.2. Chipps Island North Channel Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16,091	16,410	14,299	9,461	4,594	3,874	5,056	6,466	8,102	10,866	13,118	14,635
20%	14,910	14,654	12,403	8,195	2,790	2,822	3,202	5,574	7,296	9,620	11,914	13,816
30%	14,772	14,200	8,965	6,650	1,543	1,207	2,243	4,702	6,807	8,917	11,452	13,448
40%	14,450	12,367	7,870	3,908	946	991	1,395	2,830	6,240	7,347	10,052	12,678
50%	13,338	7,076	6,955	2,892	544	529	931	2,133	5,033	6,606	9,166	11,541
60%	7,131	6,762	6,284	1,461	291	326	541	1,331	4,686	5,315	8,862	6,808
70%	3,743	3,734	2,848	396	218	220	367	938	3,585	4,973	8,504	3,923
80%	3,619	3,443	1,049	229	206	201	226	423	2,273	4,576	8,046	3,626
90%	3,476	3,273	390	196	192	192	195	204	755	3,933	7,763	3,547
Long Term												
Full Simulation Period[b]	9,942	8,989	6,959	4,015	1,732	1,360	1,818	2,921	5,139	6,966	9,887	9,289
Water Year Types[c]												
Wet (32%)	7,505	6,020	2,479	856	256	293	391	718	2,367	4,039	7,978	3,597
Above Normal (16%)	11,854	9,256	6,254	1,827	537	411	586	1,368	4,321	5,149	8,193	6,812
Below Normal (13%)	7,604	7,339	7,403	4,923	2,016	1,846	2,203	3,361	5,869	6,803	9,374	12,271
Dry (24%)	10,759	10,494	9,724	6,326	2,523	1,552	2,290	3,929	6,302	9,154	11,603	13,394
Critical (15%)	13,934	14,136	12,413	8,549	4,648	3,936	5,109	7,293	9,421	11,781	13,470	14,728

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,908	16,423	14,317	10,601	4,830	3,905	5,008	6,802	8,094	10,711	13,243	14,758
20%	14,942	14,734	13,994	9,206	2,759	2,788	3,732	5,704	7,376	9,598	12,036	13,872
30%	14,664	14,371	13,373	8,020	1,632	1,268	2,650	5,173	6,821	9,053	11,410	13,527
40%	14,234	14,068	12,298	4,344	1,072	1,014	2,111	3,997	6,393	7,192	9,989	12,543
50%	13,771	13,812	11,095	3,088	599	605	1,535	3,331	5,529	6,657	9,044	11,979
60%	13,399	13,246	8,573	1,444	264	337	920	2,362	4,843	5,441	8,812	11,631
70%	13,207	12,984	3,639	394	218	220	507	1,554	3,989	5,043	8,407	11,417
80%	12,888	11,831	2,119	223	206	199	233	681	2,875	4,776	8,173	11,292
90%	11,906	6,565	624	197	191	193	195	218	969	4,083	7,647	11,079
Long Term												
Full Simulation Period[b]	13,533	12,580	8,776	4,415	1,757	1,365	2,070	3,425	5,364	7,025	9,924	12,227
Water Year Types[c]												
Wet (32%)	12,172	10,724	3,661	955	264	316	570	1,138	2,652	4,152	7,934	10,469
Above Normal (16%)	14,446	12,291	8,376	2,055	507	403	886	2,142	4,595	5,243	8,311	11,531
Below Normal (13%)	13,235	11,993	10,165	5,620	2,046	1,830	2,629	4,066	6,146	6,810	9,331	12,053
Dry (24%)	13,970	13,908	12,118	7,005	2,519	1,552	2,567	4,407	6,458	9,091	11,671	13,510
Critical (15%)	15,043	15,240	13,449	9,050	4,810	3,940	5,261	7,543	9,534	11,937	13,613	14,808

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-184	13	18	1,139	236	31	-48	336	-8	-156	126	123
20%	32	79	1,592	1,011	-31	-34	530	129	80	-22	121	56
30%	-108	171	4,409	1,370	89	61	408	471	14	136	-42	79
40%	-216	1,701	4,428	436	126	23	716	1,167	154	-155	-64	-135
50%	433	6,736	4,140	196	55	77	604	1,198	496	51	-122	438
60%	6,268	6,484	2,290	-17	-27	12	379	1,031	157	126	-50	4,824
70%	9,465	9,249	791	-2	0	0	140	616	403	70	-97	7,494
80%	9,269	8,388	1,070	-6	0	-1	7	258	602	200	128	7,666
90%	8,430	3,293	234	1	-1	1	-1	15	214	150	-116	7,533
Long Term												
Full Simulation Period[b]	3,591	3,591	1,817	400	24	5	252	504	226	59	36	2,938
Water Year Types[c]												
Wet (32%)	4,667	4,704	1,181	99	7	23	179	420	285	114	-44	6,871
Above Normal (16%)	2,592	3,035	2,122	228	-30	-8	300	773	275	94	118	4,720
Below Normal (13%)	5,631	4,653	2,762	697	30	-16	426	705	277	6	-43	-218
Dry (24%)	3,210	3,414	2,395	679	-4	1	277	479	156	-63	67	116
Critical (15%)	1,109	1,105	1,035	501	162	4	153	250	113	156	143	80

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.1.3. Chipps Island North Channel Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16,091	16,410	14,299	9,461	4,594	3,874	5,056	6,466	8,102	10,866	13,118	14,635
20%	14,910	14,654	12,403	8,195	2,790	2,822	3,202	5,574	7,296	9,620	11,914	13,816
30%	14,772	14,200	8,965	6,650	1,543	1,207	2,243	4,702	6,807	8,917	11,452	13,448
40%	14,450	12,367	7,870	3,908	946	991	1,395	2,830	6,240	7,347	10,052	12,678
50%	13,338	7,076	6,955	2,892	544	529	931	2,133	5,033	6,606	9,166	11,541
60%	7,131	6,762	6,284	1,461	291	326	541	1,331	4,686	5,315	8,862	6,808
70%	3,743	3,734	2,848	396	218	220	367	938	3,585	4,973	8,504	3,923
80%	3,619	3,443	1,049	229	206	201	226	423	2,273	4,576	8,046	3,626
90%	3,476	3,273	390	196	192	192	195	204	755	3,933	7,763	3,547
Long Term												
Full Simulation Period[b]	9,942	8,989	6,959	4,015	1,732	1,360	1,818	2,921	5,139	6,966	9,887	9,289
Water Year Types[c]												
Wet (32%)	7,505	6,020	2,479	856	256	293	391	718	2,367	4,039	7,978	3,597
Above Normal (16%)	11,854	9,256	6,254	1,827	537	411	586	1,368	4,321	5,149	8,193	6,812
Below Normal (13%)	7,604	7,339	7,403	4,923	2,016	1,846	2,203	3,361	5,869	6,803	9,374	12,271
Dry (24%)	10,759	10,494	9,724	6,326	2,523	1,552	2,290	3,929	6,302	9,154	11,603	13,394
Critical (15%)	13,934	14,136	12,413	8,549	4,648	3,936	5,109	7,293	9,421	11,781	13,470	14,728

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16,072	16,300	14,315	9,456	4,605	3,878	4,451	5,504	7,949	10,854	13,079	14,538
20%	15,007	14,656	12,224	8,219	2,795	2,823	3,004	4,902	6,943	9,430	11,983	13,788
30%	14,756	14,204	8,981	6,650	1,543	1,225	2,086	4,133	6,724	8,883	11,431	13,488
40%	14,353	12,335	7,867	3,907	946	989	1,308	2,686	5,965	7,316	10,023	12,642
50%	13,173	7,048	6,970	2,894	545	544	929	2,018	5,023	6,612	9,183	11,422
60%	7,133	6,680	6,286	1,458	290	324	549	1,378	4,653	5,331	8,836	6,841
70%	3,742	3,734	2,811	394	218	220	367	897	3,561	4,972	8,470	3,919
80%	3,622	3,444	1,057	226	206	201	227	400	2,250	4,586	7,997	3,627
90%	3,472	3,274	393	196	192	192	196	204	756	3,937	7,771	3,546
Long Term												
Full Simulation Period[b]	9,934	8,958	6,956	4,041	1,755	1,364	1,666	2,647	4,989	6,908	9,837	9,276
Water Year Types[c]												
Wet (32%)	7,503	6,041	2,482	854	256	293	387	683	2,353	3,997	7,917	3,595
Above Normal (16%)	11,839	9,063	6,185	1,825	537	411	583	1,330	4,297	5,147	8,190	6,831
Below Normal (13%)	7,615	7,345	7,409	4,930	2,014	1,845	2,019	3,071	5,776	6,777	9,327	12,200
Dry (24%)	10,748	10,473	9,753	6,359	2,533	1,556	2,012	3,503	6,110	9,107	11,564	13,388
Critical (15%)	13,904	14,115	12,412	8,670	4,791	3,960	4,708	6,511	8,860	11,576	13,371	14,700

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-20	-110	16	-5	11	3	-604	-962	-154	-13	-39	-97
20%	98	2	-178	24	6	1	-198	-673	-353	-190	68	-28
30%	-15	4	16	0	0	18	-157	-569	-84	-34	-22	40
40%	-97	-31	-3	-1	0	-2	-87	-144	-274	-32	-29	-36
50%	-165	-27	15	3	1	15	-2	-115	-10	6	17	-119
60%	2	-82	2	-3	-1	-1	8	47	-33	16	-26	33
70%	-1	-1	-37	-2	0	0	0	-41	-24	-1	-34	-5
80%	4	1	8	-3	0	0	1	-23	-23	10	-49	1
90%	-4	1	3	0	0	0	0	0	1	4	7	0
Long Term												
Full Simulation Period[b]	-8	-31	-2	26	23	4	-153	-274	-150	-58	-50	-13
Water Year Types[c]												
Wet (32%)	-2	21	2	-1	0	0	-4	-34	-14	-42	-62	-2
Above Normal (16%)	-15	-193	-69	-3	0	0	-3	-39	-24	-2	-2	20
Below Normal (13%)	11	6	6	7	-2	-1	-183	-290	-94	-26	-47	-72
Dry (24%)	-11	-21	29	33	10	4	-278	-425	-192	-46	-40	-6
Critical (15%)	-29	-21	-1	121	143	24	-401	-782	-561	-205	-99	-29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.1.4. Chipps Island North Channel Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,961	16,152	14,331	11,845	6,611	5,098	5,332	6,664	8,134	10,775	13,396	14,633
20%	14,806	14,596	14,156	10,477	3,954	3,083	3,952	5,660	7,103	9,633	12,108	13,927
30%	14,458	14,288	13,345	8,975	2,610	1,554	3,162	5,215	6,426	9,044	11,737	13,478
40%	14,255	14,041	12,641	6,162	1,291	1,300	2,276	3,751	5,531	7,277	10,469	12,838
50%	13,846	13,701	11,175	4,328	793	716	1,610	3,093	5,039	6,713	9,402	12,201
60%	13,497	13,166	8,523	2,101	389	323	963	2,145	4,558	5,729	8,914	11,781
70%	13,263	12,918	4,786	454	222	220	453	1,546	3,749	5,378	8,683	11,614
80%	12,860	11,919	2,181	256	206	203	240	555	2,650	4,714	8,429	11,397
90%	11,641	6,920	655	199	191	193	197	215	807	3,971	7,962	11,076
Long Term												
Full Simulation Period[b]	13,474	12,472	8,946	5,099	2,233	1,613	2,197	3,378	5,058	7,093	10,105	12,315
Water Year Types[c]												
Wet (32%)	12,231	10,658	3,836	1,189	287	308	569	1,037	2,348	4,229	8,134	10,527
Above Normal (16%)	14,219	12,183	8,747	2,689	736	441	937	2,047	4,162	5,316	8,503	11,606
Below Normal (13%)	13,062	11,765	10,141	7,079	2,941	2,139	2,821	3,991	5,330	6,912	9,825	12,457
Dry (24%)	14,004	13,831	12,203	8,117	3,282	1,938	2,785	4,349	6,272	9,155	11,778	13,544
Critical (15%)	14,855	15,096	13,712	9,339	5,676	4,683	5,538	7,708	9,629	11,950	13,581	14,776

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16,091	16,410	14,299	9,461	4,594	3,874	5,056	6,466	8,102	10,866	13,118	14,635
20%	14,910	14,654	12,403	8,195	2,790	2,822	3,202	5,574	7,296	9,620	11,914	13,816
30%	14,772	14,200	8,965	6,650	1,543	1,207	2,243	4,702	6,807	8,917	11,452	13,448
40%	14,450	12,367	7,870	3,908	946	991	1,395	2,830	6,240	7,347	10,052	12,678
50%	13,338	7,076	6,955	2,892	544	529	931	2,133	5,033	6,606	9,166	11,541
60%	7,131	6,762	6,284	1,461	291	326	541	1,331	4,686	5,315	8,862	6,808
70%	3,743	3,734	2,848	396	218	220	367	938	3,585	4,973	8,504	3,923
80%	3,619	3,443	1,049	229	206	201	226	423	2,273	4,576	8,046	3,626
90%	3,476	3,273	390	196	192	192	195	204	755	3,933	7,763	3,547
Long Term												
Full Simulation Period[b]	9,942	8,989	6,959	4,015	1,732	1,360	1,818	2,921	5,139	6,966	9,887	9,289
Water Year Types[c]												
Wet (32%)	7,505	6,020	2,479	856	256	293	391	718	2,367	4,039	7,978	3,597
Above Normal (16%)	11,854	9,256	6,254	1,827	537	411	586	1,368	4,321	5,149	8,193	6,812
Below Normal (13%)	7,604	7,339	7,403	4,923	2,016	1,846	2,203	3,361	5,869	6,803	9,374	12,271
Dry (24%)	10,759	10,494	9,724	6,326	2,523	1,552	2,290	3,929	6,302	9,154	11,603	13,394
Critical (15%)	13,934	14,136	12,413	8,549	4,648	3,936	5,109	7,293	9,421	11,781	13,470	14,728

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	130	259	-32	-2,384	-2,017	-1,224	-277	-198	-31	91	-279	2
20%	104	59	-1,753	-2,282	-1,164	-261	-750	-86	193	-13	-193	-111
30%	313	-88	-4,381	-2,325	-1,068	-347	-919	-514	381	-127	-285	-30
40%	196	-1,674	-4,771	-2,254	-344	-309	-881	-921	709	70	-417	-160
50%	-508	-6,625	-4,220	-1,436	-249	-188	-679	-960	-6	-107	-236	-660
60%	-6,366	-6,404	-2,239	-641	-98	2	-422	-814	128	-414	-53	-4,973
70%	-9,521	-9,183	-1,938	-58	-4	0	-86	-608	-163	-405	-179	-7,691
80%	-9,241	-8,476	-1,132	-27	0	-2	-14	-132	-377	-138	-384	-7,772
90%	-8,165	-3,648	-265	-2	1	-1	-1	-11	-52	-38	-198	-7,529
Long Term												
Full Simulation Period[b]	-3,532	-3,483	-1,988	-1,084	-501	-252	-379	-457	80	-126	-218	-3,026
Water Year Types[c]												
Wet (32%)	-4,726	-4,639	-1,357	-333	-31	-15	-178	-320	19	-191	-156	-6,930
Above Normal (16%)	-2,366	-2,927	-2,493	-861	-199	-30	-351	-678	158	-167	-310	-4,794
Below Normal (13%)	-5,458	-4,426	-2,739	-2,156	-925	-293	-619	-630	539	-109	-451	-186
Dry (24%)	-3,245	-3,337	-2,479	-1,791	-759	-386	-495	-421	30	-1	-175	-150
Critical (15%)	-922	-960	-1,298	-790	-1,028	-747	-430	-415	-208	-169	-111	-47

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.1.5. Chipps Island North Channel Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,961	16,152	14,331	11,845	6,611	5,098	5,332	6,664	8,134	10,775	13,396	14,633
20%	14,806	14,596	14,156	10,477	3,954	3,083	3,952	5,660	7,103	9,633	12,108	13,927
30%	14,458	14,288	13,345	8,975	2,610	1,554	3,162	5,215	6,426	9,044	11,737	13,478
40%	14,255	14,041	12,641	6,162	1,291	1,300	2,276	3,751	5,531	7,277	10,469	12,838
50%	13,846	13,701	11,175	4,328	793	716	1,610	3,093	5,039	6,713	9,402	12,201
60%	13,497	13,166	8,523	2,101	389	323	963	2,145	4,558	5,729	8,914	11,781
70%	13,263	12,918	4,786	454	222	220	453	1,546	3,749	5,378	8,683	11,614
80%	12,860	11,919	2,181	256	206	203	240	555	2,650	4,714	8,429	11,397
90%	11,641	6,920	655	199	191	193	197	215	807	3,971	7,962	11,076
Long Term												
Full Simulation Period[b]	13,474	12,472	8,946	5,099	2,233	1,613	2,197	3,378	5,058	7,093	10,105	12,315
Water Year Types[c]												
Wet (32%)	12,231	10,658	3,836	1,189	287	308	569	1,037	2,348	4,229	8,134	10,527
Above Normal (16%)	14,219	12,183	8,747	2,689	736	441	937	2,047	4,162	5,316	8,503	11,606
Below Normal (13%)	13,062	11,765	10,141	7,079	2,941	2,139	2,821	3,991	5,330	6,912	9,825	12,457
Dry (24%)	14,004	13,831	12,203	8,117	3,282	1,938	2,785	4,349	6,272	9,155	11,778	13,544
Critical (15%)	14,855	15,096	13,712	9,339	5,676	4,683	5,538	7,708	9,629	11,950	13,581	14,776

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	15,908	16,423	14,317	10,601	4,830	3,905	5,008	6,802	8,094	10,711	13,243	14,758
20%	14,942	14,734	13,994	9,206	2,759	2,788	3,732	5,704	7,376	9,598	12,036	13,872
30%	14,664	14,371	13,373	8,020	1,632	1,268	2,650	5,173	6,821	9,053	11,410	13,527
40%	14,234	14,068	12,298	4,344	1,072	1,014	2,111	3,997	6,393	7,192	9,989	12,543
50%	13,771	13,812	11,095	3,088	599	605	1,535	3,331	5,529	6,657	9,044	11,979
60%	13,399	13,246	8,573	1,444	264	337	920	2,362	4,843	5,441	8,812	11,631
70%	13,207	12,984	3,639	394	218	220	507	1,554	3,989	5,043	8,407	11,417
80%	12,888	11,831	2,119	223	206	199	233	681	2,875	4,776	8,173	11,292
90%	11,906	6,565	624	197	191	193	195	218	969	4,083	7,647	11,079
Long Term												
Full Simulation Period[b]	13,533	12,580	8,776	4,415	1,757	1,365	2,070	3,425	5,364	7,025	9,924	12,227
Water Year Types[c]												
Wet (32%)	12,172	10,724	3,661	955	264	316	570	1,138	2,652	4,152	7,934	10,469
Above Normal (16%)	14,446	12,291	8,376	2,055	507	403	886	2,142	4,595	5,243	8,311	11,531
Below Normal (13%)	13,235	11,993	10,165	5,620	2,046	1,830	2,629	4,066	6,146	6,810	9,331	12,053
Dry (24%)	13,970	13,908	12,118	7,005	2,519	1,552	2,567	4,407	6,458	9,091	11,671	13,510
Critical (15%)	15,043	15,240	13,449	9,050	4,810	3,940	5,261	7,543	9,534	11,937	13,613	14,808

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-54	272	-14	-1,245	-1,781	-1,193	-324	138	-40	-64	-153	125
20%	136	138	-162	-1,271	-1,195	-295	-220	44	274	-35	-72	-56
30%	205	83	28	-954	-978	-286	-511	-42	395	8	-327	49
40%	-21	26	-343	-1,818	-219	-286	-165	246	863	-85	-481	-295
50%	-75	112	-80	-1,240	-194	-111	-75	238	490	-56	-358	-222
60%	-98	80	51	-657	-125	14	-43	217	285	-288	-102	-149
70%	-56	66	-1,147	-60	-4	0	54	9	240	-335	-276	-197
80%	28	-88	-62	-33	1	-3	-7	126	225	63	-256	-106
90%	265	-355	-31	-1	0	-1	-2	3	162	112	-315	4
Long Term												
Full Simulation Period[b]	59	108	-170	-684	-477	-248	-127	47	306	-67	-182	-88
Water Year Types[c]												
Wet (32%)	-60	65	-175	-234	-23	8	1	101	304	-77	-200	-58
Above Normal (16%)	226	107	-371	-634	-229	-38	-51	95	433	-73	-192	-74
Below Normal (13%)	173	228	23	-1,459	-895	-309	-192	75	816	-103	-494	-404
Dry (24%)	-34	77	-85	-1,112	-763	-385	-218	58	186	-64	-108	-34
Critical (15%)	187	145	-263	-289	-866	-743	-277	-166	-95	-13	32	32

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.1.6. Chipps Island North Channel Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	15,961	16,152	14,331	11,845	6,611	5,098	5,332	6,664	8,134	10,775	13,396	14,633
20%	14,806	14,596	14,156	10,477	3,954	3,083	3,952	5,660	7,103	9,633	12,108	13,927
30%	14,458	14,288	13,345	8,975	2,610	1,554	3,162	5,215	6,426	9,044	11,737	13,478
40%	14,255	14,041	12,641	6,162	1,291	1,300	2,276	3,751	5,531	7,277	10,469	12,838
50%	13,846	13,701	11,175	4,328	793	716	1,610	3,093	5,039	6,713	9,402	12,201
60%	13,497	13,166	8,523	2,101	389	323	963	2,145	4,558	5,729	8,914	11,781
70%	13,263	12,918	4,786	454	222	220	453	1,546	3,749	5,378	8,683	11,614
80%	12,860	11,919	2,181	256	206	203	240	555	2,650	4,714	8,429	11,397
90%	11,641	6,920	655	199	191	193	197	215	807	3,971	7,962	11,076
Long Term												
Full Simulation Period[b]	13,474	12,472	8,946	5,099	2,233	1,613	2,197	3,378	5,058	7,093	10,105	12,315
Water Year Types[c]												
Wet (32%)	12,231	10,658	3,836	1,189	287	308	569	1,037	2,348	4,229	8,134	10,527
Above Normal (16%)	14,219	12,183	8,747	2,689	736	441	937	2,047	4,162	5,316	8,503	11,606
Below Normal (13%)	13,062	11,765	10,141	7,079	2,941	2,139	2,821	3,991	5,330	6,912	9,825	12,457
Dry (24%)	14,004	13,831	12,203	8,117	3,282	1,938	2,785	4,349	6,272	9,155	11,778	13,544
Critical (15%)	14,855	15,096	13,712	9,339	5,676	4,683	5,538	7,708	9,629	11,950	13,581	14,776

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16,072	16,300	14,315	9,456	4,605	3,878	4,451	5,504	7,949	10,854	13,079	14,538
20%	15,007	14,656	12,224	8,219	2,795	2,823	3,004	4,902	6,943	9,430	11,983	13,788
30%	14,756	14,204	8,981	6,650	1,543	1,225	2,086	4,133	6,724	8,883	11,431	13,488
40%	14,353	12,335	7,867	3,907	946	989	1,308	2,686	5,965	7,316	10,023	12,642
50%	13,173	7,048	6,970	2,894	545	544	929	2,018	5,023	6,612	9,183	11,422
60%	7,133	6,680	6,286	1,458	290	324	549	1,378	4,653	5,331	8,836	6,841
70%	3,742	3,734	2,811	394	218	220	367	897	3,561	4,972	8,470	3,919
80%	3,622	3,444	1,057	226	206	201	227	400	2,250	4,586	7,997	3,627
90%	3,472	3,274	393	196	192	192	196	204	756	3,937	7,771	3,546
Long Term												
Full Simulation Period[b]	9,934	8,958	6,956	4,041	1,755	1,364	1,666	2,647	4,989	6,908	9,837	9,276
Water Year Types[c]												
Wet (32%)	7,503	6,041	2,482	854	256	293	387	683	2,353	3,997	7,917	3,595
Above Normal (16%)	11,839	9,063	6,185	1,825	537	411	583	1,330	4,297	5,147	8,190	6,831
Below Normal (13%)	7,615	7,345	7,409	4,930	2,014	1,845	2,019	3,071	5,776	6,777	9,327	12,200
Dry (24%)	10,748	10,473	9,753	6,359	2,533	1,556	2,012	3,503	6,110	9,107	11,564	13,388
Critical (15%)	13,904	14,115	12,412	8,670	4,791	3,960	4,708	6,511	8,860	11,576	13,371	14,700

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	110	149	-16	-2,389	-2,006	-1,221	-881	-1,159	-185	79	-317	-96
20%	202	60	-1,932	-2,258	-1,158	-260	-948	-759	-160	-203	-125	-139
30%	298	-84	-4,364	-2,324	-1,068	-329	-1,076	-1,082	297	-161	-306	10
40%	98	-1,706	-4,774	-2,255	-344	-311	-968	-1,065	435	38	-446	-196
50%	-673	-6,652	-4,206	-1,434	-248	-173	-681	-1,075	-16	-101	-219	-779
60%	-6,364	-6,486	-2,237	-644	-99	1	-415	-766	95	-398	-79	-4,940
70%	-9,522	-9,184	-1,975	-60	-4	0	-86	-649	-187	-406	-214	-7,696
80%	-9,237	-8,475	-1,124	-30	1	-2	-13	-155	-401	-127	-432	-7,770
90%	-8,168	-3,647	-262	-2	1	-1	-1	-11	-51	-34	-191	-7,529
Long Term												
Full Simulation Period[b]	-3,541	-3,514	-1,990	-1,058	-478	-248	-532	-731	-70	-185	-268	-3,039
Water Year Types[c]												
Wet (32%)	-4,728	-4,618	-1,354	-334	-31	-15	-182	-354	5	-233	-217	-6,932
Above Normal (16%)	-2,381	-3,120	-2,562	-864	-199	-30	-354	-717	134	-169	-313	-4,775
Below Normal (13%)	-5,447	-4,420	-2,733	-2,149	-927	-294	-802	-921	446	-135	-498	-258
Dry (24%)	-3,256	-3,358	-2,450	-1,758	-749	-382	-774	-846	-162	-47	-215	-156
Critical (15%)	-951	-981	-1,299	-670	-885	-724	-830	-1,197	-769	-374	-210	-76

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

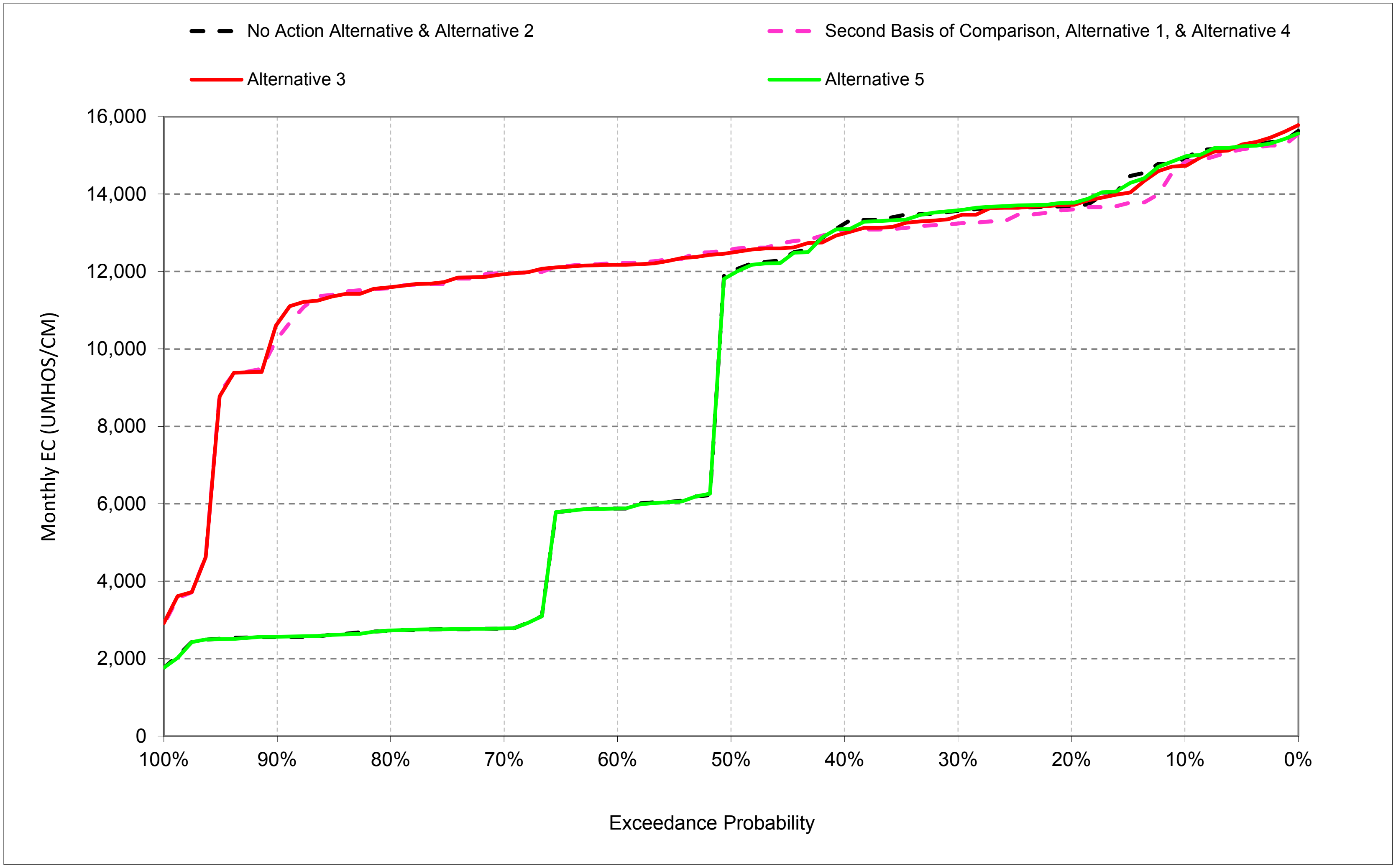
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

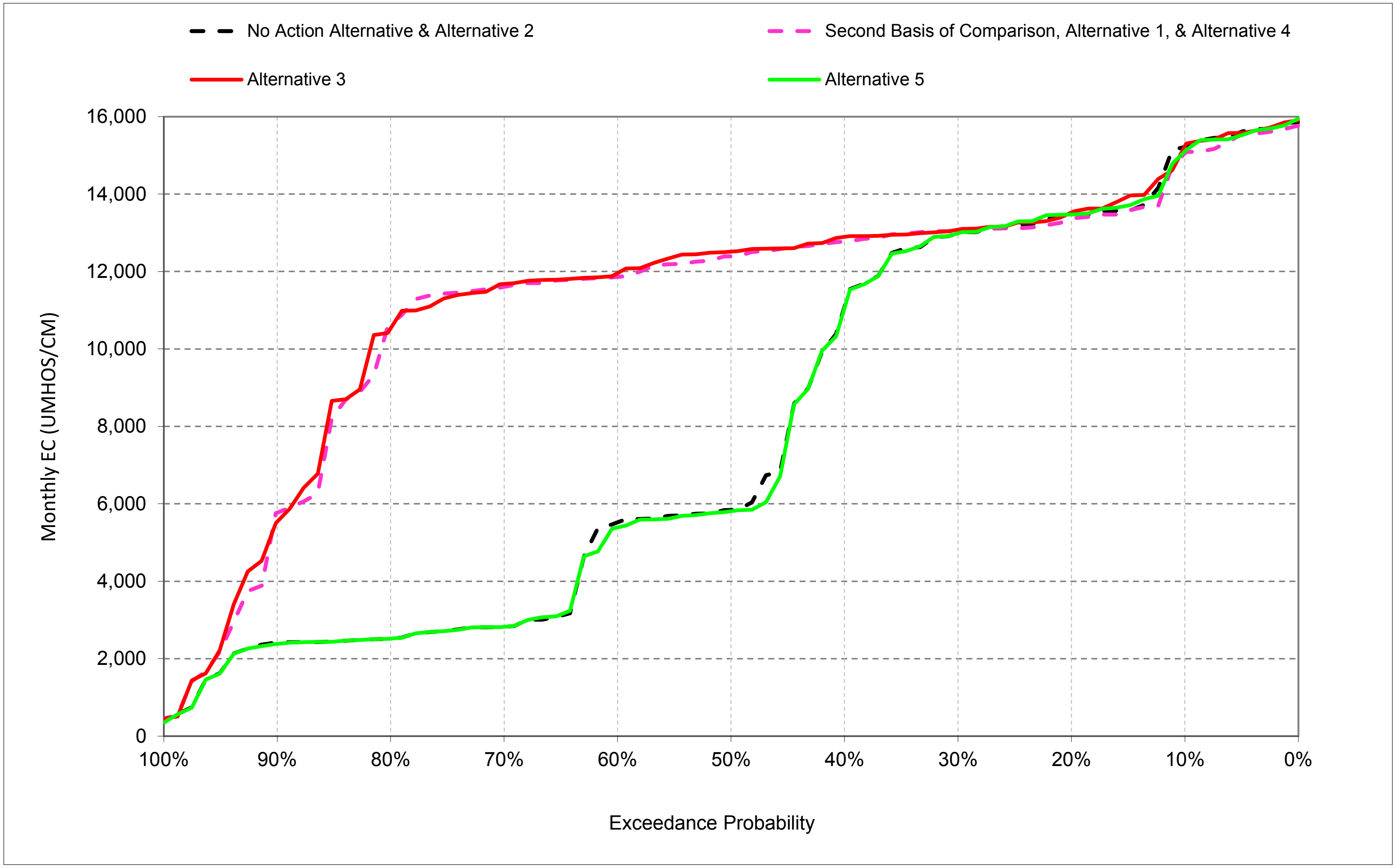
B.10.2 Chipps Island South Channel Salinity

Figure 6E.B.10.2.1. Chipps Island South Channel Salinity, Electrical Conductivity, October



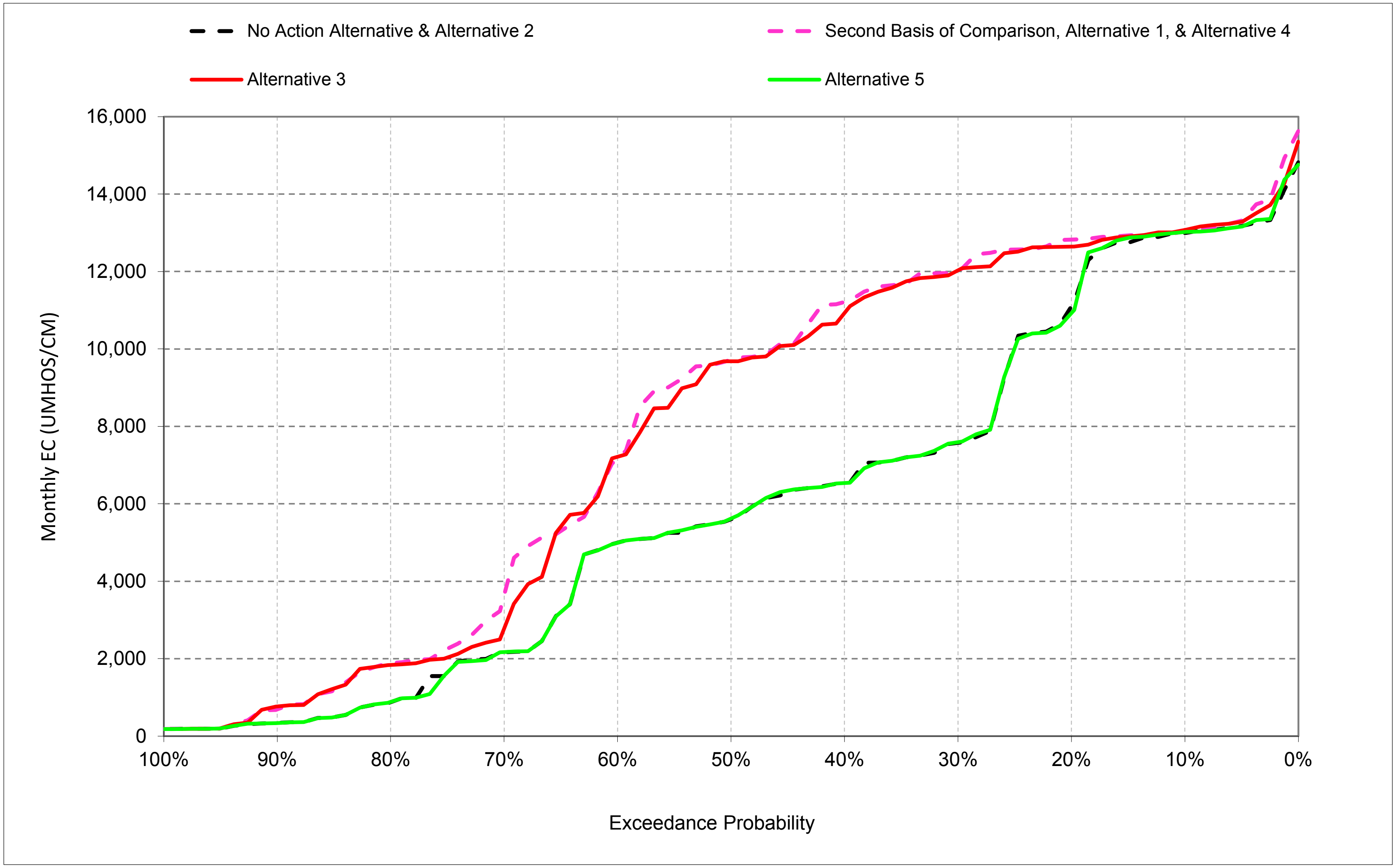
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.2. Chipps Island South Channel Salinity, Electrical Conductivity, November



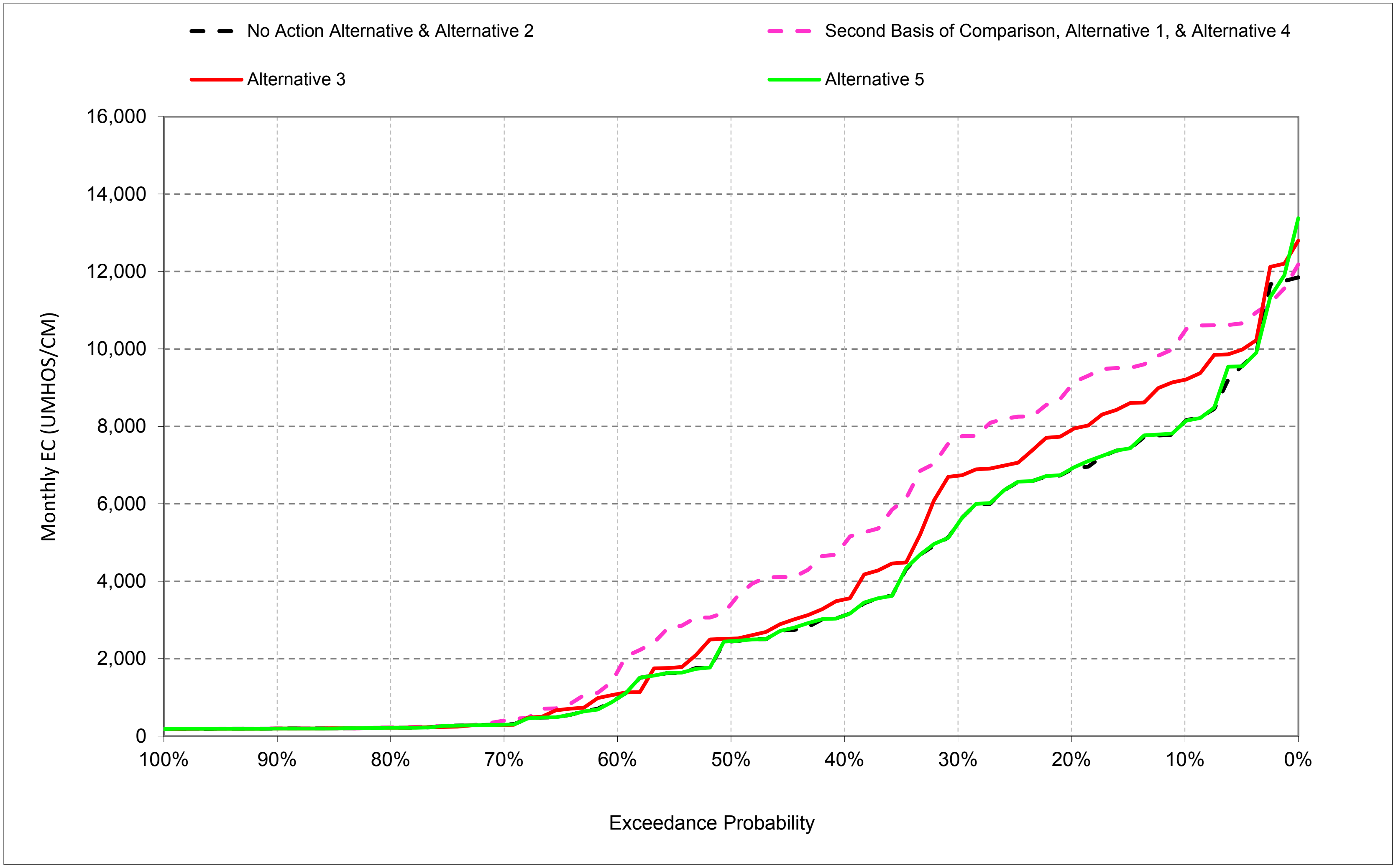
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.3. Chipps Island South Channel Salinity, Electrical Conductivity, December



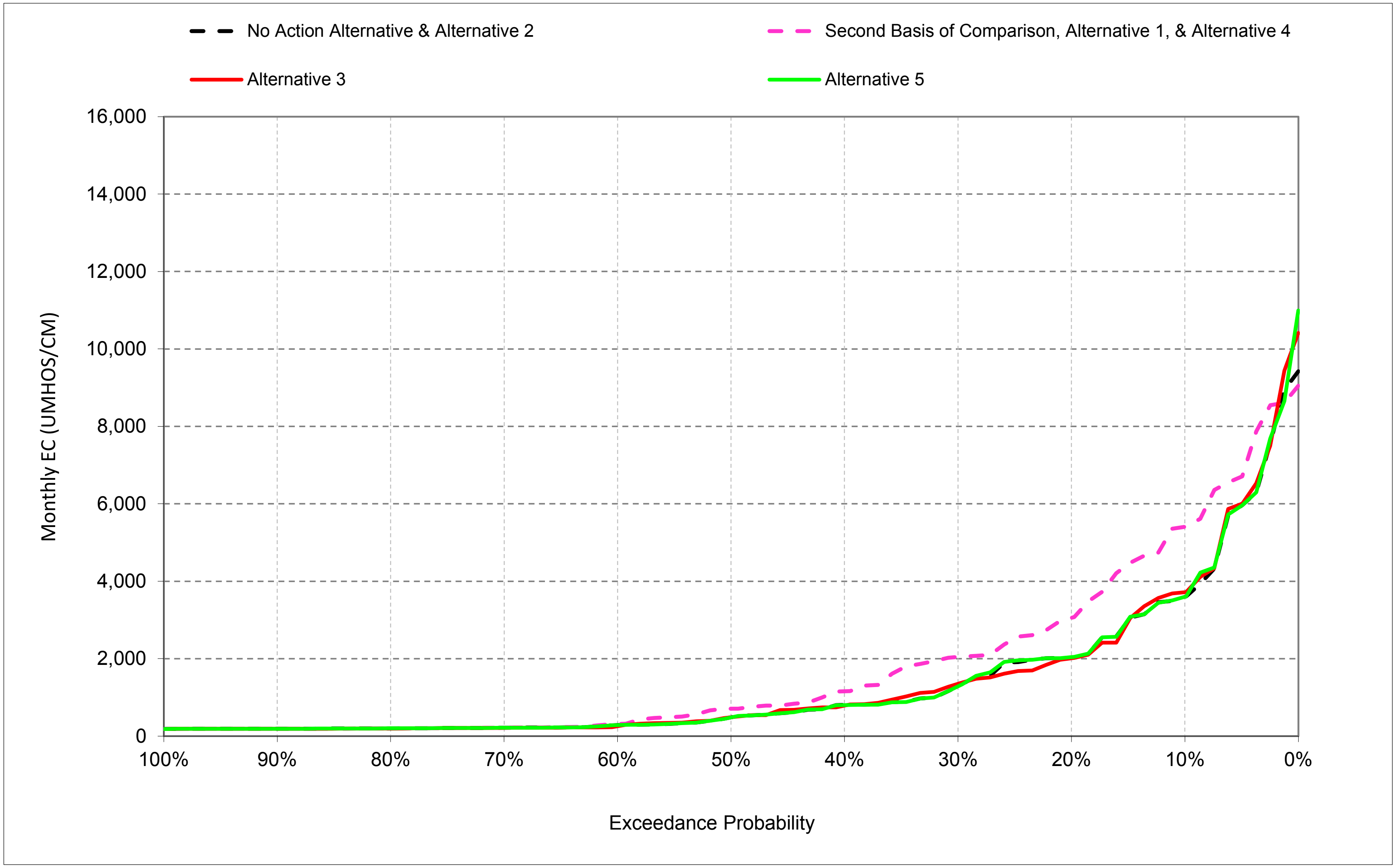
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.4. Chipps Island South Channel Salinity, Electrical Conductivity, January



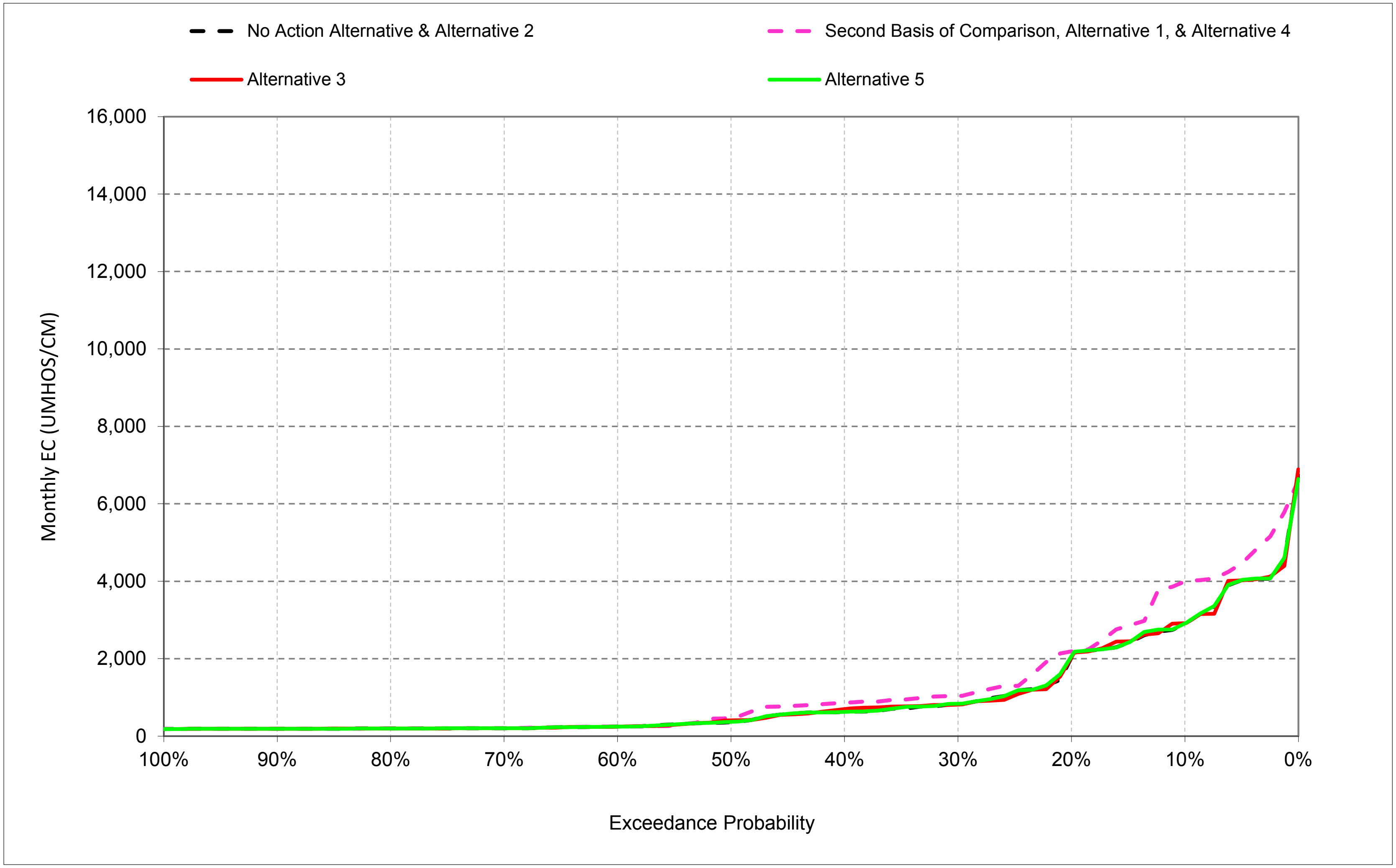
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.5. Chipps Island South Channel Salinity, Electrical Conductivity, February



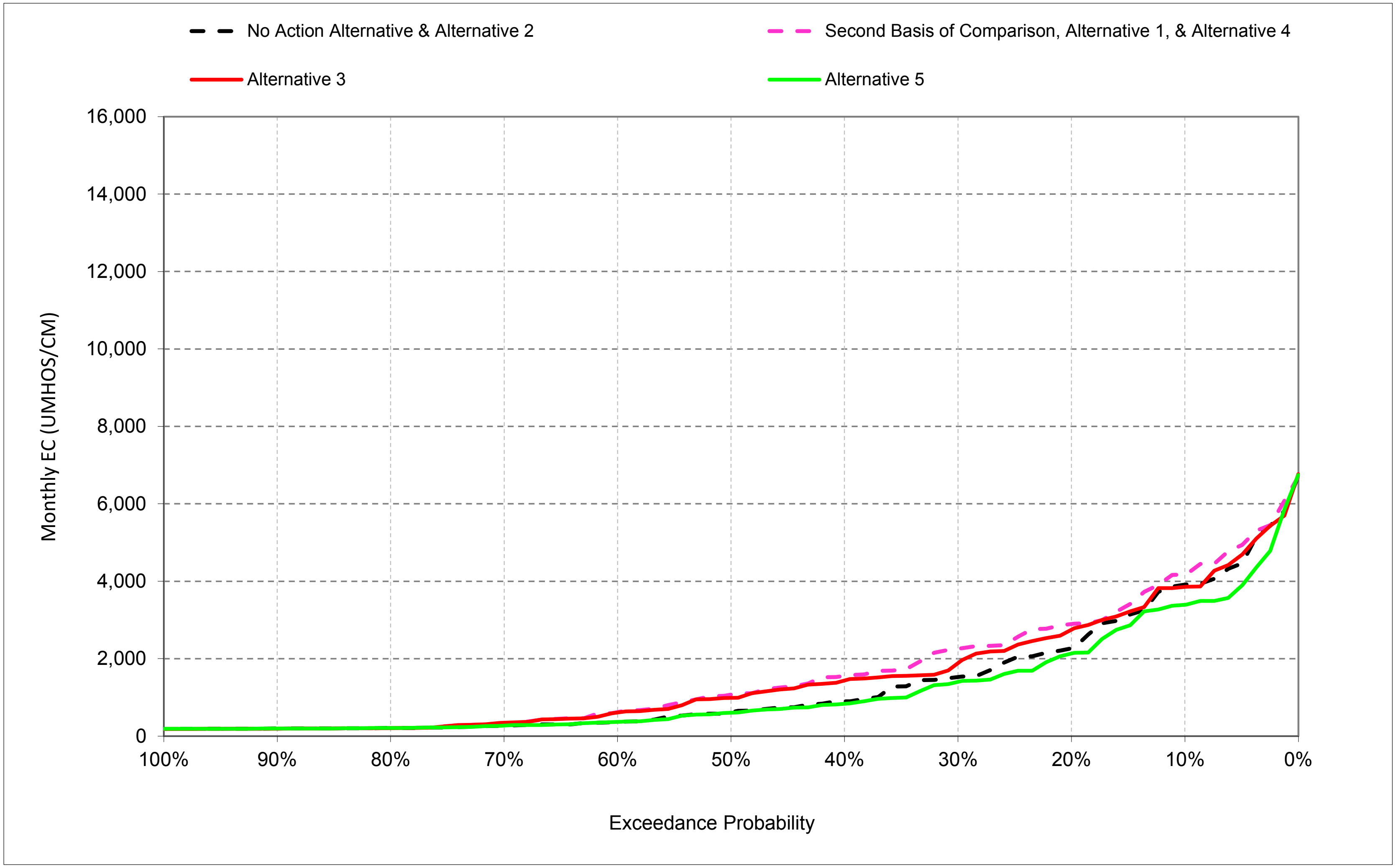
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.6. Chipps Island South Channel Salinity, Electrical Conductivity, March



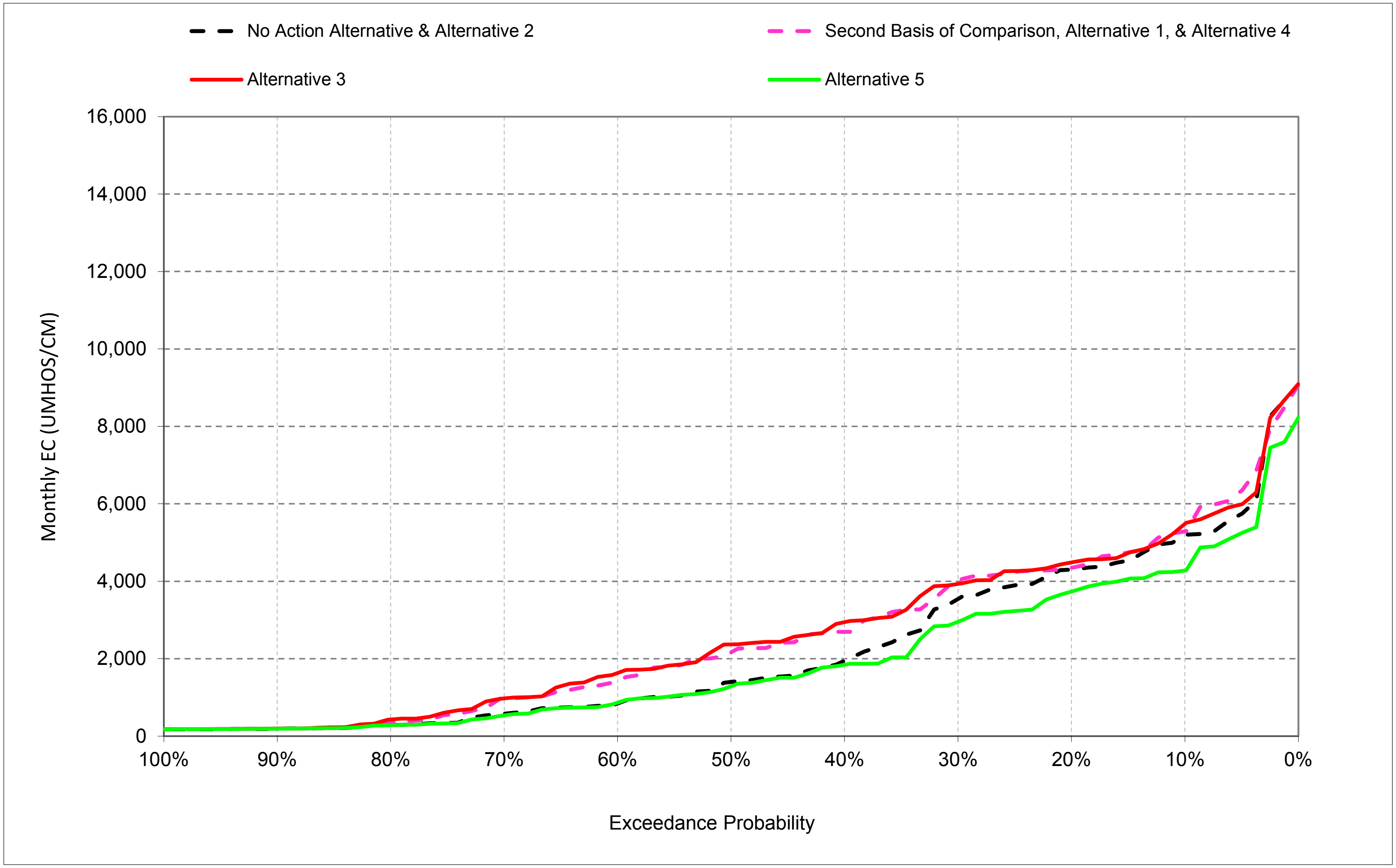
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.7. Chipps Island South Channel Salinity, Electrical Conductivity, April



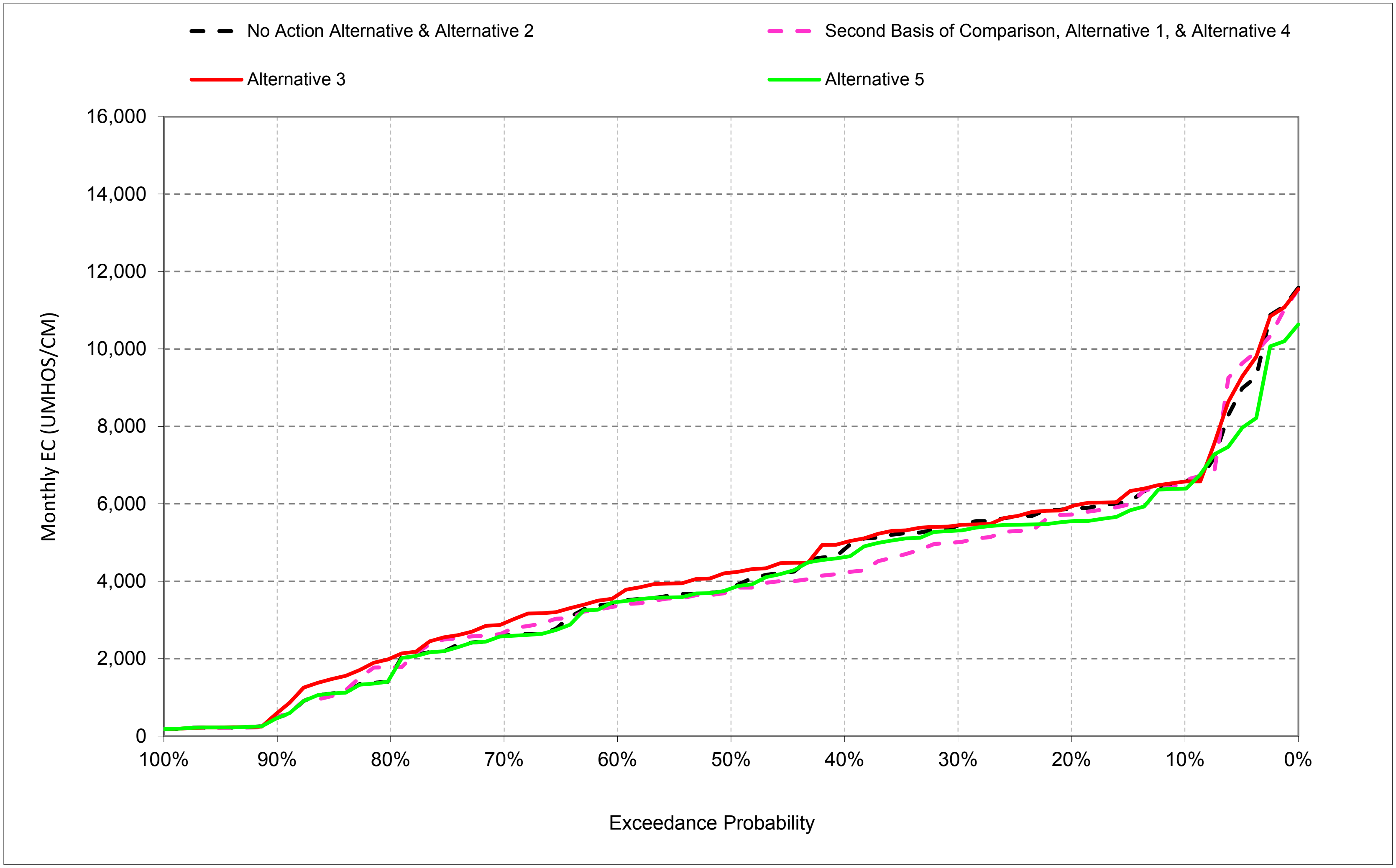
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.8. Chipps Island South Channel Salinity, Electrical Conductivity, May



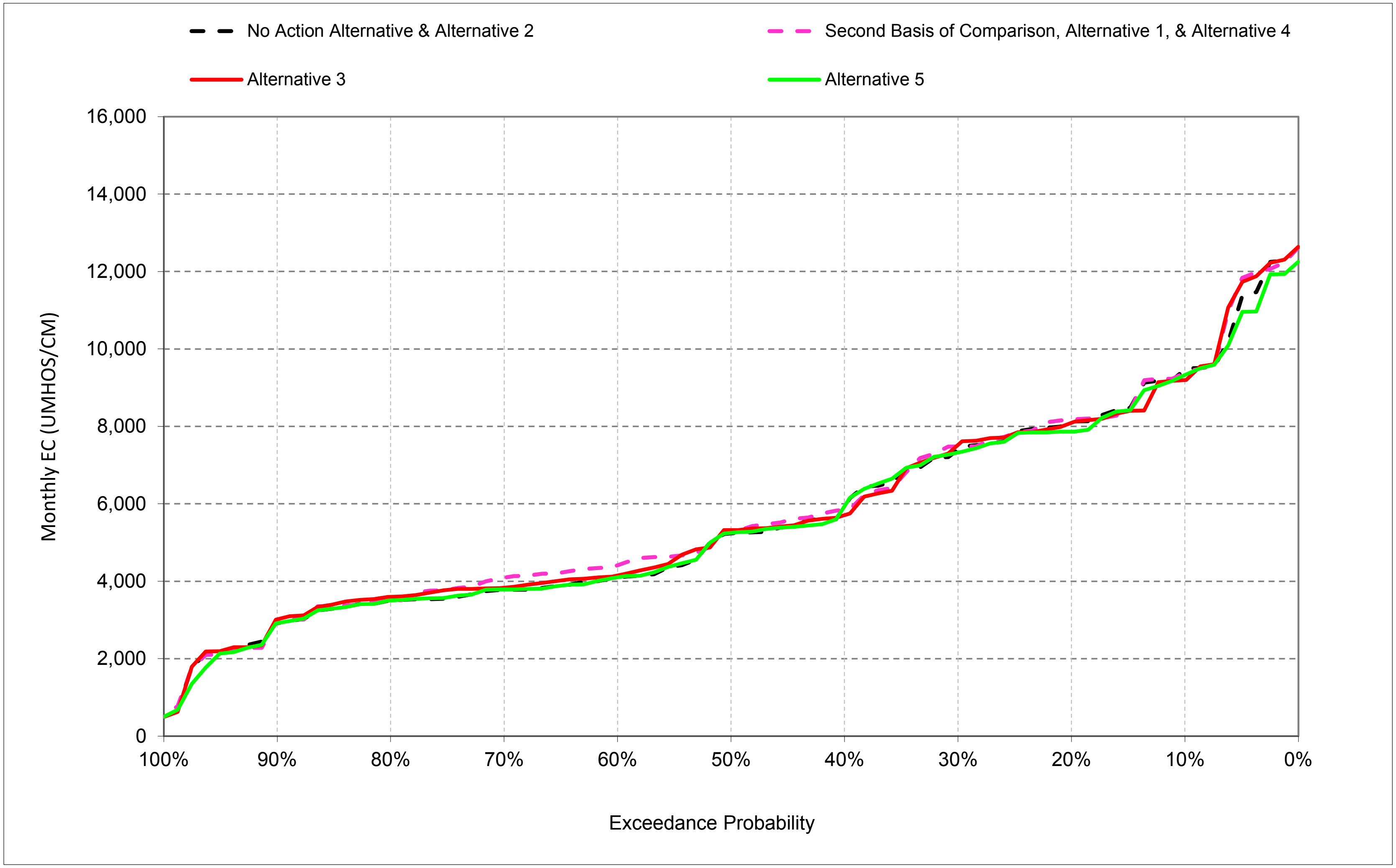
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.9. Chipps Island South Channel Salinity, Electrical Conductivity, June



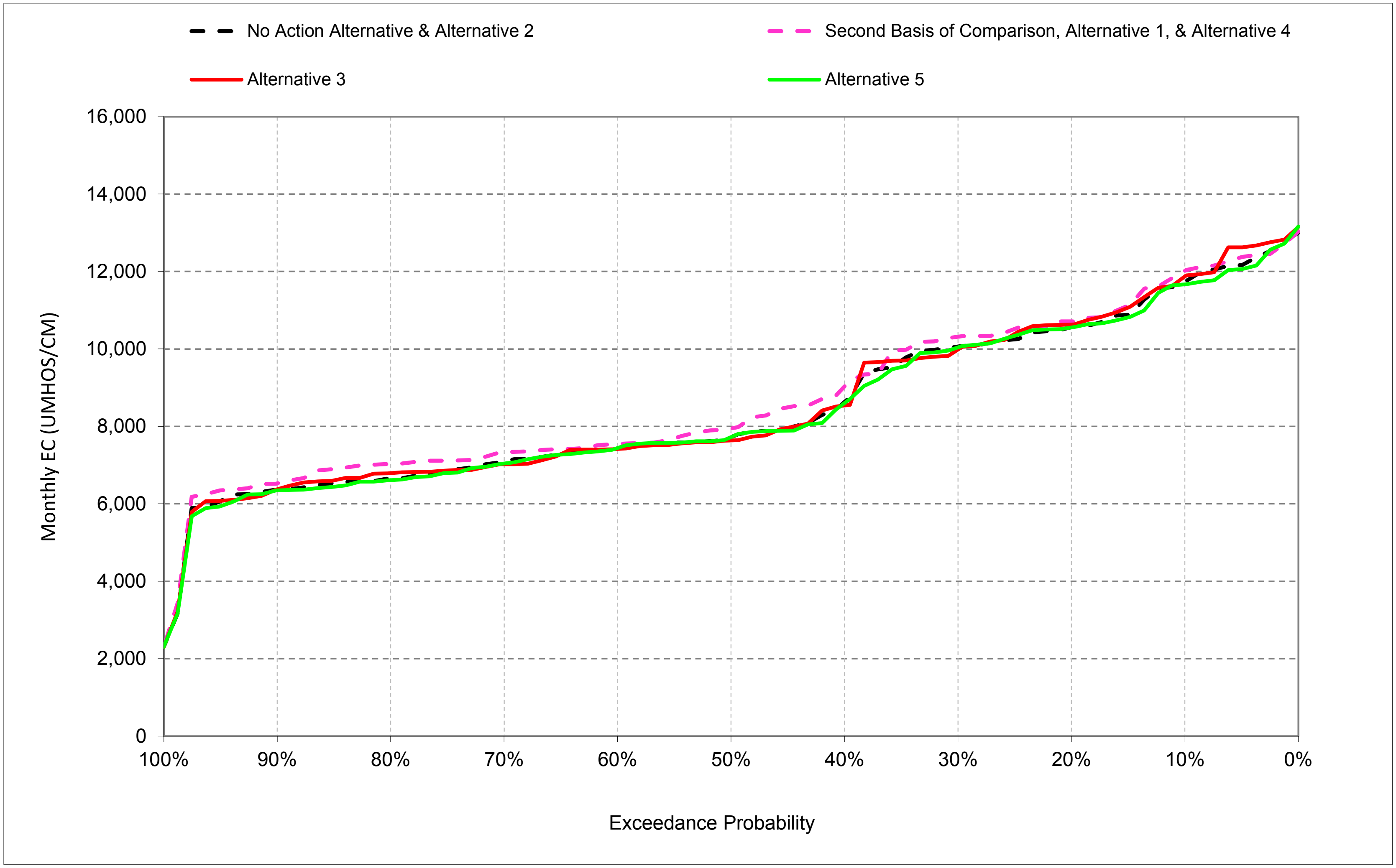
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.10. Chipps Island South Channel Salinity, Electrical Conductivity, July



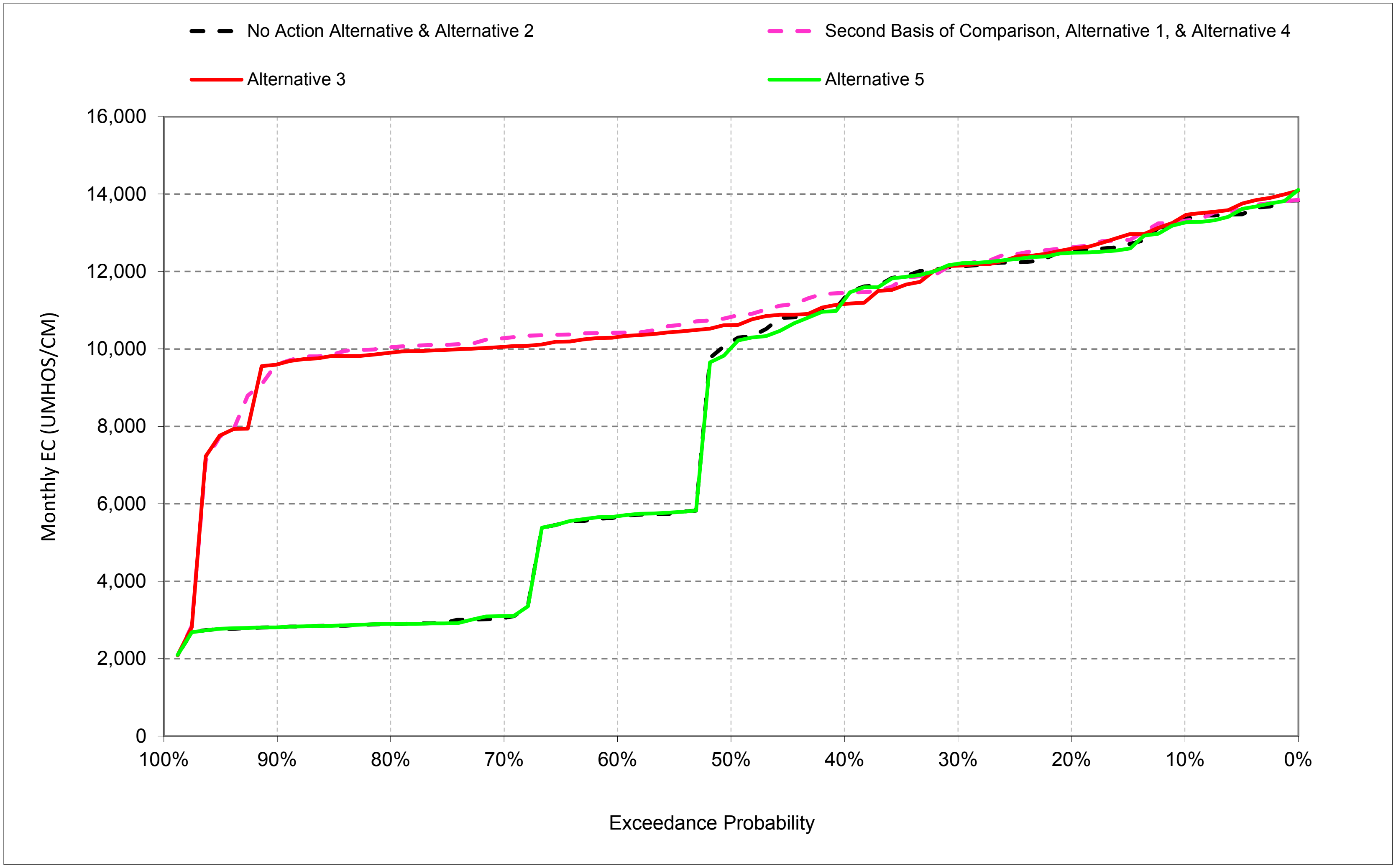
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.11. Chipps Island South Channel Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.10.2.12. Chipps Island South Channel Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.2.1. Chipps Island South Channel Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,923	15,215	12,996	8,123	3,597	2,905	3,911	5,182	6,581	9,468	11,739	13,345
20%	13,685	13,461	11,103	6,886	2,025	2,033	2,266	4,302	5,877	8,101	10,564	12,505
30%	13,564	12,987	7,576	5,487	1,288	822	1,527	3,543	5,435	7,397	10,064	12,129
40%	13,236	11,084	6,541	3,117	807	627	900	1,944	4,826	5,928	8,630	11,317
50%	11,999	5,844	5,602	2,446	485	363	615	1,401	3,825	5,234	7,725	10,183
60%	5,881	5,520	4,997	979	285	246	366	843	3,451	4,094	7,445	5,658
70%	2,777	2,822	2,163	302	217	202	268	578	2,595	3,779	7,097	3,174
80%	2,722	2,517	876	214	200	197	208	290	1,532	3,498	6,655	2,900
90%	2,559	2,419	339	194	191	191	195	192	467	2,918	6,365	2,827
Long Term												
Full Simulation Period[b]	8,838	7,926	6,004	3,373	1,395	1,026	1,357	2,217	4,062	5,689	8,497	8,174
Water Year Types[c]												
Wet (32%)	6,476	5,083	2,035	704	243	242	295	503	1,735	3,032	6,621	2,865
Above Normal (16%)	10,730	8,234	5,322	1,535	420	317	409	906	3,230	3,939	6,801	5,624
Below Normal (13%)	6,567	6,293	6,238	4,033	1,593	1,328	1,582	2,467	4,607	5,412	7,910	10,906
Dry (24%)	9,599	9,319	8,435	5,286	1,998	1,141	1,658	2,936	4,985	7,665	10,197	12,070
Critical (15%)	12,720	12,930	11,078	7,352	3,758	3,023	3,978	5,922	7,969	10,302	12,102	13,439

Alternative 1

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,822	15,055	13,036	10,462	5,408	3,992	4,173	5,289	6,601	9,386	12,021	13,311
20%	13,600	13,354	12,822	9,063	3,054	2,188	2,892	4,347	5,722	8,179	10,712	12,621
30%	13,238	13,048	12,042	7,692	2,046	1,037	2,257	4,000	5,007	7,483	10,317	12,155
40%	13,049	12,773	11,213	4,970	1,159	861	1,554	2,694	4,220	5,849	9,034	11,448
50%	12,567	12,393	9,721	3,411	706	481	1,071	2,164	3,763	5,305	7,948	10,828
60%	12,220	11,864	7,171	1,666	314	247	618	1,437	3,367	4,411	7,545	10,417
70%	11,963	11,605	3,644	404	216	205	313	971	2,682	4,094	7,332	10,280
80%	11,581	10,636	1,885	225	197	197	207	353	1,779	3,503	7,028	10,045
90%	10,260	5,768	690	195	191	190	194	193	497	2,963	6,529	9,606
Long Term												
Full Simulation Period[b]	12,243	11,302	7,959	4,361	1,816	1,228	1,640	2,577	3,974	5,799	8,713	10,985
Water Year Types[c]												
Wet (32%)	11,024	9,589	3,355	985	268	252	412	734	1,710	3,186	6,773	9,223
Above Normal (16%)	12,988	11,060	7,745	2,299	571	338	645	1,420	3,065	4,076	7,104	10,226
Below Normal (13%)	11,777	10,507	8,929	6,052	2,454	1,578	2,053	2,977	4,081	5,495	8,367	11,089
Dry (24%)	12,769	12,584	10,894	6,933	2,615	1,421	2,039	3,275	4,939	7,676	10,371	12,213
Critical (15%)	13,627	13,867	12,382	8,070	4,600	3,666	4,337	6,296	8,155	10,478	12,215	13,482

Alternative 1 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-101	-160	40	2,339	1,811	1,087	263	107	20	-81	282	-33
20%	-86	-108	1,719	2,177	1,029	155	625	44	-155	77	148	116
30%	-326	62	4,466	2,206	758	215	729	458	-428	86	253	25
40%	-187	1,689	4,672	1,853	352	234	655	750	-607	-79	404	131
50%	568	6,550	4,119	965	221	119	456	763	-62	70	223	645
60%	6,339	6,344	2,174	687	29	1	251	594	-84	316	101	4,759
70%	9,185	8,783	1,481	102	-1	2	45	393	87	316	235	7,106
80%	8,858	8,120	1,009	12	-3	0	-1	63	247	5	373	7,145
90%	7,701	3,349	351	1	0	-1	-1	1	30	45	164	6,778
Long Term												
Full Simulation Period[b]	3,404	3,375	1,954	988	421	202	283	361	-88	110	217	2,811
Water Year Types[c]												
Wet (32%)	4,547	4,506	1,321	282	25	10	117	231	-25	154	152	6,357
Above Normal (16%)	2,258	2,826	2,423	764	150	21	236	514	-165	137	303	4,602
Below Normal (13%)	5,210	4,214	2,690	2,019	861	250	471	510	-525	83	457	183
Dry (24%)	3,170	3,264	2,460	1,647	617	279	380	339	-46	11	174	142
Critical (15%)	907	936	1,303	717	842	643	359	375	186	176	113	43

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.2.2. Chipps Island South Channel Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,923	15,215	12,996	8,123	3,597	2,905	3,911	5,182	6,581	9,468	11,739	13,345
20%	13,685	13,461	11,103	6,886	2,025	2,033	2,266	4,302	5,877	8,101	10,564	12,505
30%	13,564	12,987	7,576	5,487	1,288	822	1,527	3,543	5,435	7,397	10,064	12,129
40%	13,236	11,084	6,541	3,117	807	627	900	1,944	4,826	5,928	8,630	11,317
50%	11,999	5,844	5,602	2,446	485	363	615	1,401	3,825	5,234	7,725	10,183
60%	5,881	5,520	4,997	979	285	246	366	843	3,451	4,094	7,445	5,658
70%	2,777	2,822	2,163	302	217	202	268	578	2,595	3,779	7,097	3,174
80%	2,722	2,517	876	214	200	197	208	290	1,532	3,498	6,655	2,900
90%	2,559	2,419	339	194	191	191	195	192	467	2,918	6,365	2,827
Long Term												
Full Simulation Period[b]	8,838	7,926	6,004	3,373	1,395	1,026	1,357	2,217	4,062	5,689	8,497	8,174
Water Year Types[c]												
Wet (32%)	6,476	5,083	2,035	704	243	242	295	503	1,735	3,032	6,621	2,865
Above Normal (16%)	10,730	8,234	5,322	1,535	420	317	409	906	3,230	3,939	6,801	5,624
Below Normal (13%)	6,567	6,293	6,238	4,033	1,593	1,328	1,582	2,467	4,607	5,412	7,910	10,906
Dry (24%)	9,599	9,319	8,435	5,286	1,998	1,141	1,658	2,936	4,985	7,665	10,197	12,070
Critical (15%)	12,720	12,930	11,078	7,352	3,758	3,023	3,978	5,922	7,969	10,302	12,102	13,439

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,730	15,237	13,071	9,206	3,718	2,919	3,852	5,477	6,574	9,195	11,873	13,445
20%	13,719	13,525	12,644	7,905	2,012	2,036	2,747	4,486	5,930	8,091	10,630	12,592
30%	13,433	13,082	12,030	6,725	1,349	812	1,885	3,928	5,447	7,518	9,985	12,150
40%	12,988	12,893	10,924	3,530	788	697	1,436	2,943	5,001	5,709	8,541	11,162
50%	12,486	12,515	9,681	2,518	485	404	987	2,369	4,223	5,321	7,634	10,617
60%	12,175	11,960	7,215	1,088	256	244	610	1,630	3,643	4,149	7,418	10,306
70%	11,928	11,678	2,772	290	213	203	345	975	2,917	3,833	7,021	10,056
80%	11,595	10,530	1,839	217	198	196	207	429	2,012	3,600	6,794	9,902
90%	10,651	5,537	766	194	191	190	192	193	600	3,014	6,374	9,689
Long Term												
Full Simulation Period[b]	12,307	11,415	7,810	3,769	1,420	1,030	1,537	2,611	4,245	5,737	8,531	10,896
Water Year Types[c]												
Wet (32%)	10,964	9,659	3,229	797	245	257	412	809	1,960	3,118	6,581	9,170
Above Normal (16%)	13,230	11,164	7,397	1,780	395	309	608	1,488	3,440	4,019	6,911	10,145
Below Normal (13%)	11,958	10,730	8,952	4,752	1,640	1,329	1,906	3,045	4,843	5,408	7,856	10,669
Dry (24%)	12,730	12,672	10,816	5,938	1,993	1,139	1,860	3,323	5,116	7,603	10,258	12,181
Critical (15%)	13,833	14,027	12,129	7,848	3,919	3,028	4,101	6,151	8,068	10,466	12,252	13,519

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-193	22	76	1,083	120	14	-59	295	-7	-273	133	100
20%	33	63	1,540	1,019	-13	3	481	184	53	-10	67	87
30%	-131	95	4,454	1,238	61	-11	358	385	12	121	-79	21
40%	-248	1,809	4,383	413	-19	69	536	999	174	-219	-89	-155
50%	487	6,671	4,079	71	0	41	372	968	399	87	-91	434
60%	6,295	6,440	2,218	109	-29	-2	244	787	192	55	-26	4,649
70%	9,151	8,856	609	-12	-4	1	77	397	322	54	-76	6,882
80%	8,873	8,013	963	4	-2	-1	-1	139	480	102	139	7,001
90%	8,092	3,117	427	0	0	-1	-3	1	133	96	9	6,862
Long Term												
Full Simulation Period[b]	3,469	3,489	1,806	396	25	4	179	395	183	48	34	2,723
Water Year Types[c]												
Wet (32%)	4,488	4,576	1,194	94	2	15	117	306	225	86	-41	6,304
Above Normal (16%)	2,500	2,929	2,075	245	-25	-8	199	582	210	80	111	4,521
Below Normal (13%)	5,390	4,437	2,714	719	47	1	324	578	237	-5	-54	-237
Dry (24%)	3,130	3,353	2,381	652	-5	-2	202	386	131	-61	61	111
Critical (15%)	1,113	1,097	1,051	495	161	5	122	229	99	163	150	80

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.2.3. Chipps Island South Channel Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,923	15,215	12,996	8,123	3,597	2,905	3,911	5,182	6,581	9,468	11,739	13,345
20%	13,685	13,461	11,103	6,886	2,025	2,033	2,266	4,302	5,877	8,101	10,564	12,505
30%	13,564	12,987	7,576	5,487	1,288	822	1,527	3,543	5,435	7,397	10,064	12,129
40%	13,236	11,084	6,541	3,117	807	627	900	1,944	4,826	5,928	8,630	11,317
50%	11,999	5,844	5,602	2,446	485	363	615	1,401	3,825	5,234	7,725	10,183
60%	5,881	5,520	4,997	979	285	246	366	843	3,451	4,094	7,445	5,658
70%	2,777	2,822	2,163	302	217	202	268	578	2,595	3,779	7,097	3,174
80%	2,722	2,517	876	214	200	197	208	290	1,532	3,498	6,655	2,900
90%	2,559	2,419	339	194	191	191	195	192	467	2,918	6,365	2,827
Long Term												
Full Simulation Period[b]	8,838	7,926	6,004	3,373	1,395	1,026	1,357	2,217	4,062	5,689	8,497	8,174
Water Year Types[c]												
Wet (32%)	6,476	5,083	2,035	704	243	242	295	503	1,735	3,032	6,621	2,865
Above Normal (16%)	10,730	8,234	5,322	1,535	420	317	409	906	3,230	3,939	6,801	5,624
Below Normal (13%)	6,567	6,293	6,238	4,033	1,593	1,328	1,582	2,467	4,607	5,412	7,910	10,906
Dry (24%)	9,599	9,319	8,435	5,286	1,998	1,141	1,658	2,936	4,985	7,665	10,197	12,070
Critical (15%)	12,720	12,930	11,078	7,352	3,758	3,023	3,978	5,922	7,969	10,302	12,102	13,439

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,965	15,101	13,021	8,114	3,598	2,909	3,394	4,277	6,390	9,327	11,666	13,266
20%	13,775	13,474	10,924	6,904	2,043	2,064	2,131	3,732	5,548	7,867	10,555	12,480
30%	13,580	12,987	7,592	5,487	1,285	835	1,403	2,952	5,310	7,323	10,041	12,201
40%	13,097	11,051	6,536	3,116	800	625	835	1,842	4,622	5,932	8,600	11,269
50%	11,913	5,812	5,619	2,452	485	369	604	1,289	3,811	5,250	7,720	10,026
60%	5,878	5,390	4,995	976	284	246	366	866	3,466	4,101	7,439	5,679
70%	2,779	2,821	2,171	295	217	202	269	537	2,579	3,787	7,040	3,181
80%	2,726	2,515	881	214	200	197	208	280	1,528	3,500	6,611	2,898
90%	2,567	2,384	338	194	191	191	195	192	468	2,917	6,348	2,831
Long Term												
Full Simulation Period[b]	8,829	7,898	6,004	3,399	1,418	1,030	1,231	1,978	3,919	5,633	8,445	8,159
Water Year Types[c]												
Wet (32%)	6,473	5,103	2,038	703	243	242	292	478	1,724	2,999	6,563	2,867
Above Normal (16%)	10,711	8,063	5,264	1,532	420	317	407	880	3,211	3,938	6,799	5,641
Below Normal (13%)	6,579	6,299	6,245	4,039	1,594	1,329	1,435	2,222	4,523	5,392	7,863	10,831
Dry (24%)	9,589	9,298	8,464	5,317	2,007	1,145	1,435	2,575	4,806	7,615	10,148	12,055
Critical (15%)	12,691	12,908	11,082	7,477	3,899	3,045	3,632	5,196	7,408	10,096	11,997	13,410

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	42	-114	26	-9	1	4	-516	-905	-191	-141	-73	-78
20%	90	13	-179	18	18	31	-135	-570	-329	-235	-9	-25
30%	16	0	16	0	-2	13	-124	-591	-125	-74	-23	72
40%	-140	-33	-5	-1	-7	-2	-65	-101	-205	4	-30	-48
50%	-86	-32	17	6	0	7	-11	-112	-13	15	-5	-157
60%	-3	-130	-2	-3	0	0	0	23	15	6	-5	21
70%	2	-1	8	-7	0	0	1	-42	-16	8	-58	7
80%	3	-2	5	0	0	0	1	-10	-4	2	-44	-3
90%	9	-36	-1	0	0	0	0	0	1	0	-16	4
Long Term												
Full Simulation Period[b]	-9	-28	0	26	23	4	-126	-239	-144	-56	-52	-15
Water Year Types[c]												
Wet (32%)	-3	20	3	0	0	0	-3	-25	-11	-33	-58	2
Above Normal (16%)	-19	-171	-58	-3	0	0	-1	-27	-19	-1	-2	18
Below Normal (13%)	12	6	6	7	0	1	-147	-245	-83	-20	-47	-75
Dry (24%)	-11	-22	29	31	10	3	-223	-361	-179	-49	-49	-15
Critical (15%)	-29	-22	3	125	141	22	-346	-725	-561	-207	-105	-29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.2.4. Chipps Island South Channel Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,822	15,055	13,036	10,462	5,408	3,992	4,173	5,289	6,601	9,386	12,021	13,311
20%	13,600	13,354	12,822	9,063	3,054	2,188	2,892	4,347	5,722	8,179	10,712	12,621
30%	13,238	13,048	12,042	7,692	2,046	1,037	2,257	4,000	5,007	7,483	10,317	12,155
40%	13,049	12,773	11,213	4,970	1,159	861	1,554	2,694	4,220	5,849	9,034	11,448
50%	12,567	12,393	9,721	3,411	706	481	1,071	2,164	3,763	5,305	7,948	10,828
60%	12,220	11,864	7,171	1,666	314	247	618	1,437	3,367	4,411	7,545	10,417
70%	11,963	11,605	3,644	404	216	205	313	971	2,682	4,094	7,332	10,280
80%	11,581	10,636	1,885	225	197	197	207	353	1,779	3,503	7,028	10,045
90%	10,260	5,768	690	195	191	190	194	193	497	2,963	6,529	9,606
Long Term												
Full Simulation Period[b]	12,243	11,302	7,959	4,361	1,816	1,228	1,640	2,577	3,974	5,799	8,713	10,985
Water Year Types[c]												
Wet (32%)	11,024	9,589	3,355	985	268	252	412	734	1,710	3,186	6,773	9,223
Above Normal (16%)	12,988	11,060	7,745	2,299	571	338	645	1,420	3,065	4,076	7,104	10,226
Below Normal (13%)	11,777	10,507	8,929	6,052	2,454	1,578	2,053	2,977	4,081	5,495	8,367	11,089
Dry (24%)	12,769	12,584	10,894	6,933	2,615	1,421	2,039	3,275	4,939	7,676	10,371	12,213
Critical (15%)	13,627	13,867	12,382	8,070	4,600	3,666	4,337	6,296	8,155	10,478	12,215	13,482

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,923	15,215	12,996	8,123	3,597	2,905	3,911	5,182	6,581	9,468	11,739	13,345
20%	13,685	13,461	11,103	6,886	2,025	2,033	2,266	4,302	5,877	8,101	10,564	12,505
30%	13,564	12,987	7,576	5,487	1,288	822	1,527	3,543	5,435	7,397	10,064	12,129
40%	13,236	11,084	6,541	3,117	807	627	900	1,944	4,826	5,928	8,630	11,317
50%	11,999	5,844	5,602	2,446	485	363	615	1,401	3,825	5,234	7,725	10,183
60%	5,881	5,520	4,997	979	285	246	366	843	3,451	4,094	7,445	5,658
70%	2,777	2,822	2,163	302	217	202	268	578	2,595	3,779	7,097	3,174
80%	2,722	2,517	876	214	200	197	208	290	1,532	3,498	6,655	2,900
90%	2,559	2,419	339	194	191	191	195	192	467	2,918	6,365	2,827
Long Term												
Full Simulation Period[b]	8,838	7,926	6,004	3,373	1,395	1,026	1,357	2,217	4,062	5,689	8,497	8,174
Water Year Types[c]												
Wet (32%)	6,476	5,083	2,035	704	243	242	295	503	1,735	3,032	6,621	2,865
Above Normal (16%)	10,730	8,234	5,322	1,535	420	317	409	906	3,230	3,939	6,801	5,624
Below Normal (13%)	6,567	6,293	6,238	4,033	1,593	1,328	1,582	2,467	4,607	5,412	7,910	10,906
Dry (24%)	9,599	9,319	8,435	5,286	1,998	1,141	1,658	2,936	4,985	7,665	10,197	12,070
Critical (15%)	12,720	12,930	11,078	7,352	3,758	3,023	3,978	5,922	7,969	10,302	12,102	13,439

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	101	160	-40	-2,339	-1,811	-1,087	-263	-107	-20	81	-282	33
20%	86	108	-1,719	-2,177	-1,029	-155	-625	-44	155	-77	-148	-116
30%	326	-62	-4,466	-2,206	-758	-215	-729	-458	428	-86	-253	-25
40%	187	-1,689	-4,672	-1,853	-352	-234	-655	-750	607	79	-404	-131
50%	-568	-6,550	-4,119	-965	-221	-119	-456	-763	62	-70	-223	-645
60%	-6,339	-6,344	-2,174	-687	-29	-1	-251	-594	84	-316	-101	-4,759
70%	-9,185	-8,783	-1,481	-102	1	-2	-45	-393	-87	-316	-235	-7,106
80%	-8,858	-8,120	-1,009	-12	3	0	1	-63	-247	-5	-373	-7,145
90%	-7,701	-3,349	-351	-1	0	1	1	-1	-30	-45	-164	-6,778
Long Term												
Full Simulation Period[b]	-3,404	-3,375	-1,954	-988	-421	-202	-283	-361	88	-110	-217	-2,811
Water Year Types[c]												
Wet (32%)	-4,547	-4,506	-1,321	-282	-25	-10	-117	-231	25	-154	-152	-6,357
Above Normal (16%)	-2,258	-2,826	-2,423	-764	-150	-21	-236	-514	165	-137	-303	-4,602
Below Normal (13%)	-5,210	-4,214	-2,690	-2,019	-861	-250	-471	-510	525	-83	-457	-183
Dry (24%)	-3,170	-3,264	-2,460	-1,647	-617	-279	-380	-339	46	-11	-174	-142
Critical (15%)	-907	-936	-1,303	-717	-842	-643	-359	-375	-186	-176	-113	-43

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.2.5. Chipps Island South Channel Salinity, Monthly EC

Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,822	15,055	13,036	10,462	5,408	3,992	4,173	5,289	6,601	9,386	12,021	13,311
20%	13,600	13,354	12,822	9,063	3,054	2,188	2,892	4,347	5,722	8,179	10,712	12,621
30%	13,238	13,048	12,042	7,692	2,046	1,037	2,257	4,000	5,007	7,483	10,317	12,155
40%	13,049	12,773	11,213	4,970	1,159	861	1,554	2,694	4,220	5,849	9,034	11,448
50%	12,567	12,393	9,721	3,411	706	481	1,071	2,164	3,763	5,305	7,948	10,828
60%	12,220	11,864	7,171	1,666	314	247	618	1,437	3,367	4,411	7,545	10,417
70%	11,963	11,605	3,644	404	216	205	313	971	2,682	4,094	7,332	10,280
80%	11,581	10,636	1,885	225	197	197	207	353	1,779	3,503	7,028	10,045
90%	10,260	5,768	690	195	191	190	194	193	497	2,963	6,529	9,606
Long Term												
Full Simulation Period[b]	12,243	11,302	7,959	4,361	1,816	1,228	1,640	2,577	3,974	5,799	8,713	10,985
Water Year Types[c]												
Wet (32%)	11,024	9,589	3,355	985	268	252	412	734	1,710	3,186	6,773	9,223
Above Normal (16%)	12,988	11,060	7,745	2,299	571	338	645	1,420	3,065	4,076	7,104	10,226
Below Normal (13%)	11,777	10,507	8,929	6,052	2,454	1,578	2,053	2,977	4,081	5,495	8,367	11,089
Dry (24%)	12,769	12,584	10,894	6,933	2,615	1,421	2,039	3,275	4,939	7,676	10,371	12,213
Critical (15%)	13,627	13,867	12,382	8,070	4,600	3,666	4,337	6,296	8,155	10,478	12,215	13,482

Alternative 3

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,730	15,237	13,071	9,206	3,718	2,919	3,852	5,477	6,574	9,195	11,873	13,445
20%	13,719	13,525	12,644	7,905	2,012	2,036	2,747	4,486	5,930	8,091	10,630	12,592
30%	13,433	13,082	12,030	6,725	1,349	812	1,885	3,928	5,447	7,518	9,985	12,150
40%	12,988	12,893	10,924	3,530	788	697	1,436	2,943	5,001	5,709	8,541	11,162
50%	12,486	12,515	9,681	2,518	485	404	987	2,369	4,223	5,321	7,634	10,617
60%	12,175	11,960	7,215	1,088	256	244	610	1,630	3,643	4,149	7,418	10,306
70%	11,928	11,678	2,772	290	213	203	345	975	2,917	3,833	7,021	10,056
80%	11,595	10,530	1,839	217	198	196	207	429	2,012	3,600	6,794	9,902
90%	10,651	5,537	766	194	191	190	192	193	600	3,014	6,374	9,689
Long Term												
Full Simulation Period[b]	12,307	11,415	7,810	3,769	1,420	1,030	1,537	2,611	4,245	5,737	8,531	10,896
Water Year Types[c]												
Wet (32%)	10,964	9,659	3,229	797	245	257	412	809	1,960	3,118	6,581	9,170
Above Normal (16%)	13,230	11,164	7,397	1,780	395	309	608	1,488	3,440	4,019	6,911	10,145
Below Normal (13%)	11,958	10,730	8,952	4,752	1,640	1,329	1,906	3,045	4,843	5,408	7,856	10,669
Dry (24%)	12,730	12,672	10,816	5,938	1,993	1,139	1,860	3,323	5,116	7,603	10,258	12,181
Critical (15%)	13,833	14,027	12,129	7,848	3,919	3,028	4,101	6,151	8,068	10,466	12,252	13,519

Alternative 3 minus Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-93	182	36	-1,256	-1,690	-1,073	-322	188	-27	-192	-148	133
20%	119	171	-178	-1,158	-1,042	-152	-145	139	208	-87	-82	-29
30%	195	34	-12	-968	-697	-226	-372	-72	439	35	-331	-4
40%	-61	120	-289	-1,440	-371	-165	-119	249	781	-140	-493	-286
50%	-81	121	-40	-894	-221	-77	-84	205	460	17	-313	-211
60%	-45	96	44	-578	-58	-3	-7	193	276	-261	-127	-111
70%	-34	74	-872	-113	-3	-1	32	4	235	-262	-312	-224
80%	15	-107	-47	-8	1	-1	-1	76	233	97	-234	-144
90%	391	-232	76	-1	1	0	-1	0	103	51	-155	83
Long Term												
Full Simulation Period[b]	64	114	-148	-592	-396	-198	-104	34	271	-62	-182	-88
Water Year Types[c]												
Wet (32%)	-60	70	-126	-188	-23	5	0	75	250	-68	-193	-53
Above Normal (16%)	242	104	-348	-519	-176	-28	-37	68	375	-56	-192	-81
Below Normal (13%)	180	223	24	-1,300	-814	-249	-147	68	762	-88	-511	-420
Dry (24%)	-39	89	-78	-995	-622	-282	-178	48	178	-72	-113	-31
Critical (15%)	206	160	-253	-222	-681	-638	-237	-146	-87	-13	36	37

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.10.2.6. Chipps Island South Channel Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,822	15,055	13,036	10,462	5,408	3,992	4,173	5,289	6,601	9,386	12,021	13,311
20%	13,600	13,354	12,822	9,063	3,054	2,188	2,892	4,347	5,722	8,179	10,712	12,621
30%	13,238	13,048	12,042	7,692	2,046	1,037	2,257	4,000	5,007	7,483	10,317	12,155
40%	13,049	12,773	11,213	4,970	1,159	861	1,554	2,694	4,220	5,849	9,034	11,448
50%	12,567	12,393	9,721	3,411	706	481	1,071	2,164	3,763	5,305	7,948	10,828
60%	12,220	11,864	7,171	1,666	314	247	618	1,437	3,367	4,411	7,545	10,417
70%	11,963	11,605	3,644	404	216	205	313	971	2,682	4,094	7,332	10,280
80%	11,581	10,636	1,885	225	197	197	207	353	1,779	3,503	7,028	10,045
90%	10,260	5,768	690	195	191	190	194	193	497	2,963	6,529	9,606
Long Term												
Full Simulation Period[b]	12,243	11,302	7,959	4,361	1,816	1,228	1,640	2,577	3,974	5,799	8,713	10,985
Water Year Types[c]												
Wet (32%)	11,024	9,589	3,355	985	268	252	412	734	1,710	3,186	6,773	9,223
Above Normal (16%)	12,988	11,060	7,745	2,299	571	338	645	1,420	3,065	4,076	7,104	10,226
Below Normal (13%)	11,777	10,507	8,929	6,052	2,454	1,578	2,053	2,977	4,081	5,495	8,367	11,089
Dry (24%)	12,769	12,584	10,894	6,933	2,615	1,421	2,039	3,275	4,939	7,676	10,371	12,213
Critical (15%)	13,627	13,867	12,382	8,070	4,600	3,666	4,337	6,296	8,155	10,478	12,215	13,482

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	14,965	15,101	13,021	8,114	3,598	2,909	3,394	4,277	6,390	9,327	11,666	13,266
20%	13,775	13,474	10,924	6,904	2,043	2,064	2,131	3,732	5,548	7,867	10,555	12,480
30%	13,580	12,987	7,592	5,487	1,285	835	1,403	2,952	5,310	7,323	10,041	12,201
40%	13,097	11,051	6,536	3,116	800	625	835	1,842	4,622	5,932	8,600	11,269
50%	11,913	5,812	5,619	2,452	485	369	604	1,289	3,811	5,250	7,720	10,026
60%	5,878	5,390	4,995	976	284	246	366	866	3,466	4,101	7,439	5,679
70%	2,779	2,821	2,171	295	217	202	269	537	2,579	3,787	7,040	3,181
80%	2,726	2,515	881	214	200	197	208	280	1,528	3,500	6,611	2,898
90%	2,567	2,384	338	194	191	191	195	192	468	2,917	6,348	2,831
Long Term												
Full Simulation Period[b]	8,829	7,898	6,004	3,399	1,418	1,030	1,231	1,978	3,919	5,633	8,445	8,159
Water Year Types[c]												
Wet (32%)	6,473	5,103	2,038	703	243	242	292	478	1,724	2,999	6,563	2,867
Above Normal (16%)	10,711	8,063	5,264	1,532	420	317	407	880	3,211	3,938	6,799	5,641
Below Normal (13%)	6,579	6,299	6,245	4,039	1,594	1,329	1,435	2,222	4,523	5,392	7,863	10,831
Dry (24%)	9,589	9,298	8,464	5,317	2,007	1,145	1,435	2,575	4,806	7,615	10,148	12,055
Critical (15%)	12,691	12,908	11,082	7,477	3,899	3,045	3,632	5,196	7,408	10,096	11,997	13,410

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	143	46	-15	-2,348	-1,810	-1,083	-779	-1,012	-211	-60	-355	-45
20%	176	120	-1,898	-2,159	-1,011	-124	-761	-615	-174	-312	-157	-141
30%	342	-61	-4,450	-2,206	-760	-202	-853	-1,048	303	-160	-275	47
40%	48	-1,722	-4,677	-1,854	-359	-236	-720	-852	402	83	-434	-178
50%	-654	-6,581	-4,103	-960	-221	-112	-467	-875	48	-55	-227	-802
60%	-6,342	-6,474	-2,176	-690	-30	-2	-251	-571	98	-310	-106	-4,738
70%	-9,184	-8,783	-1,473	-108	2	-2	-43	-435	-103	-307	-293	-7,099
80%	-8,855	-8,121	-1,004	-11	3	0	1	-73	-251	-3	-417	-7,148
90%	-7,693	-3,385	-352	-1	1	1	1	-1	-29	-45	-181	-6,774
Long Term												
Full Simulation Period[b]	-3,414	-3,404	-1,954	-962	-398	-198	-409	-600	-55	-166	-269	-2,825
Water Year Types[c]												
Wet (32%)	-4,550	-4,486	-1,318	-282	-25	-10	-120	-256	13	-187	-210	-6,355
Above Normal (16%)	-2,277	-2,997	-2,481	-767	-150	-20	-238	-540	146	-138	-305	-4,585
Below Normal (13%)	-5,198	-4,208	-2,684	-2,012	-861	-250	-618	-755	442	-103	-504	-258
Dry (24%)	-3,180	-3,286	-2,430	-1,616	-607	-276	-604	-700	-132	-61	-223	-157
Critical (15%)	-936	-958	-1,300	-593	-701	-621	-705	-1,100	-747	-383	-218	-72

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

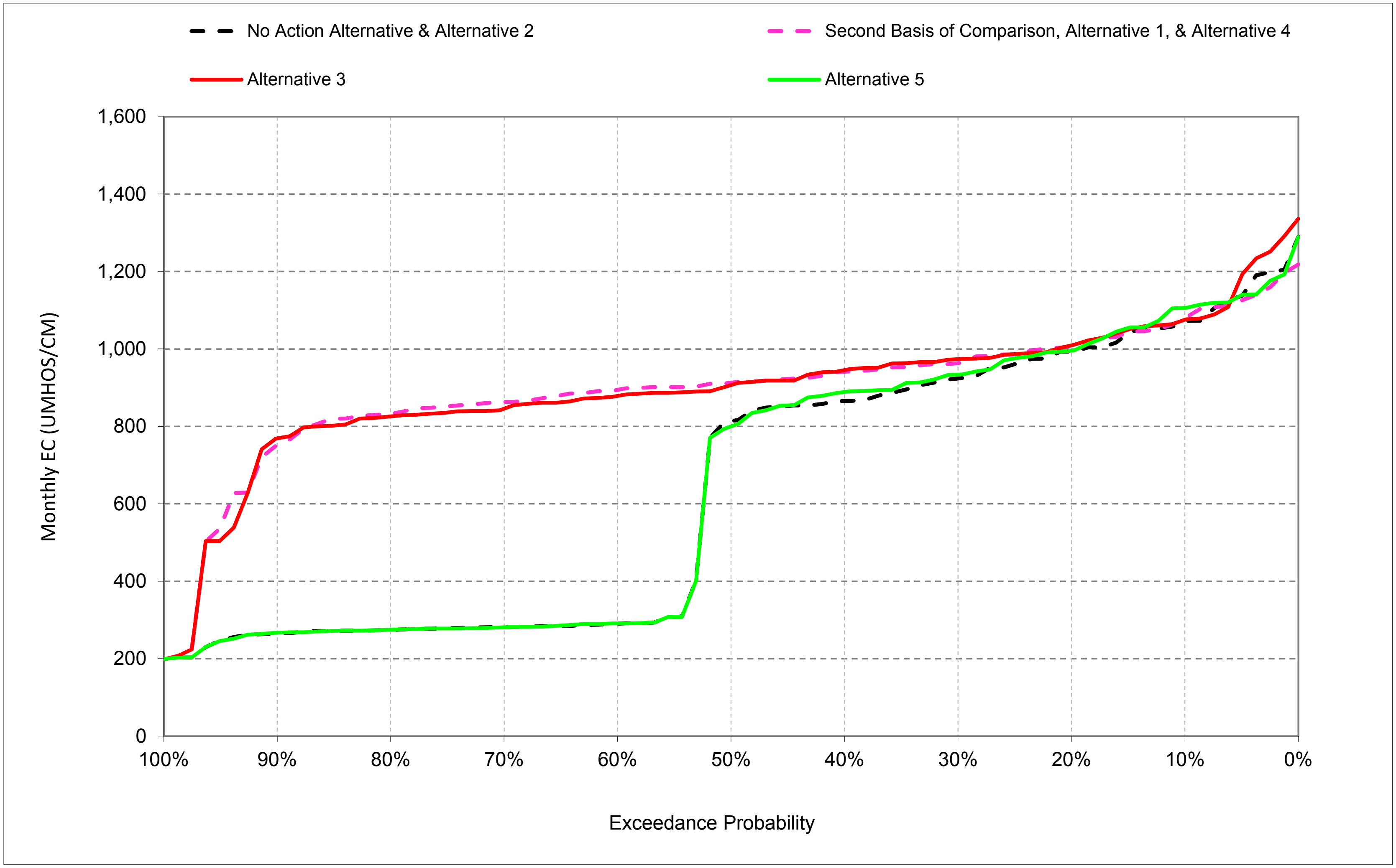
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

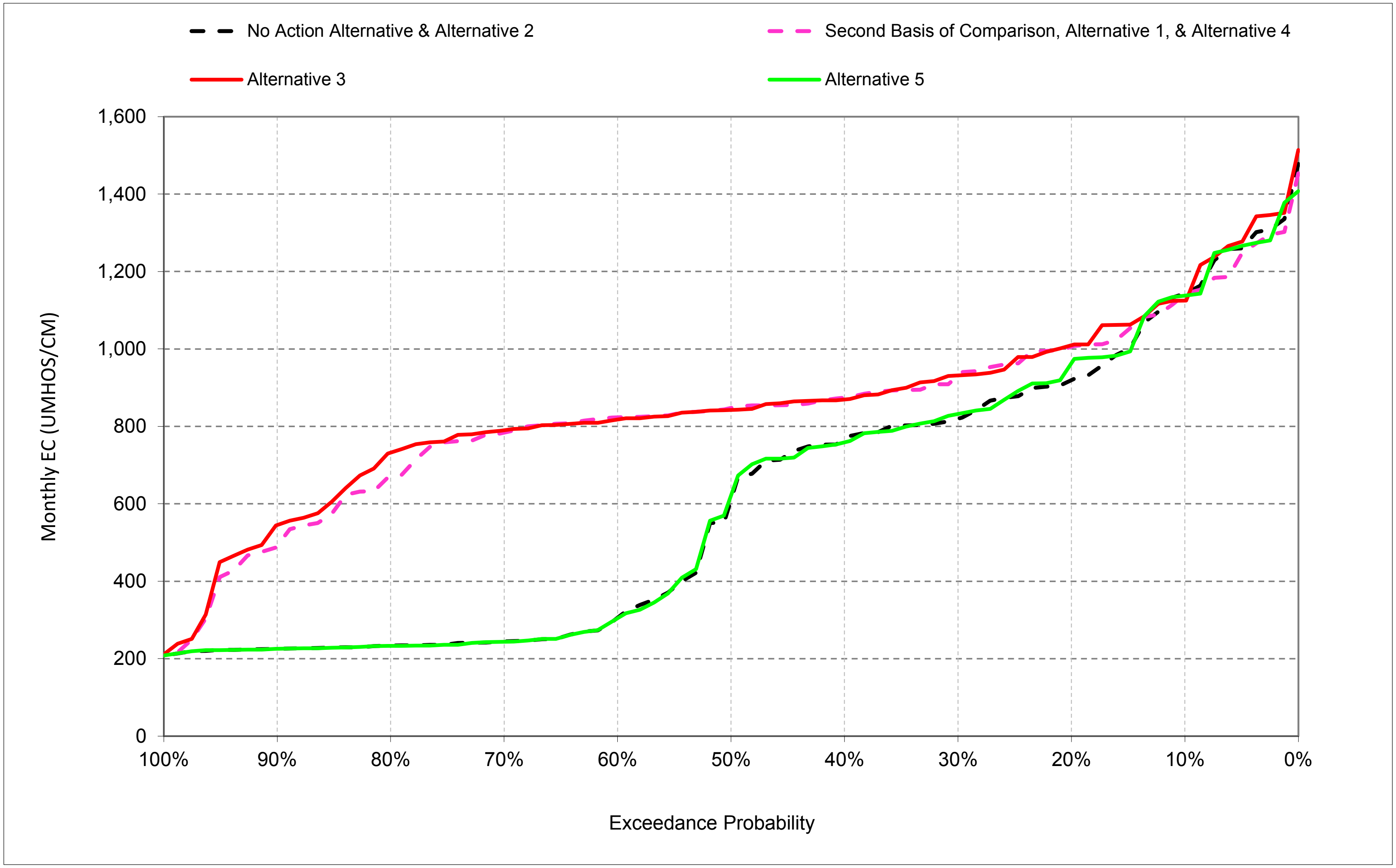
B.11 Old River at Rock Slough Salinity

Figure 6E.B.11.1. Old River at Rock Slough Salinity, Electrical Conductivity, October



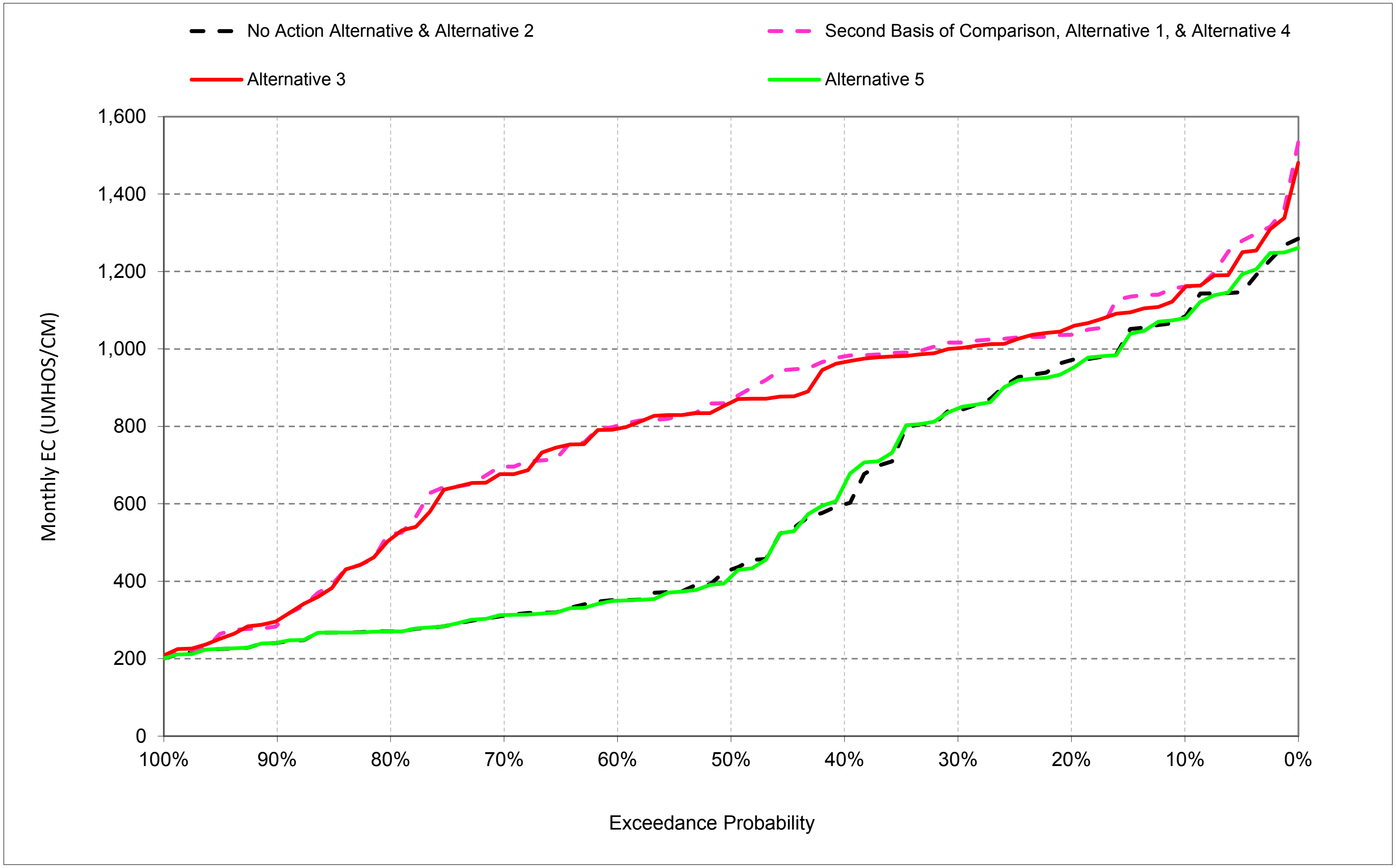
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.2. Old River at Rock Slough Salinity, Electrical Conductivity, November



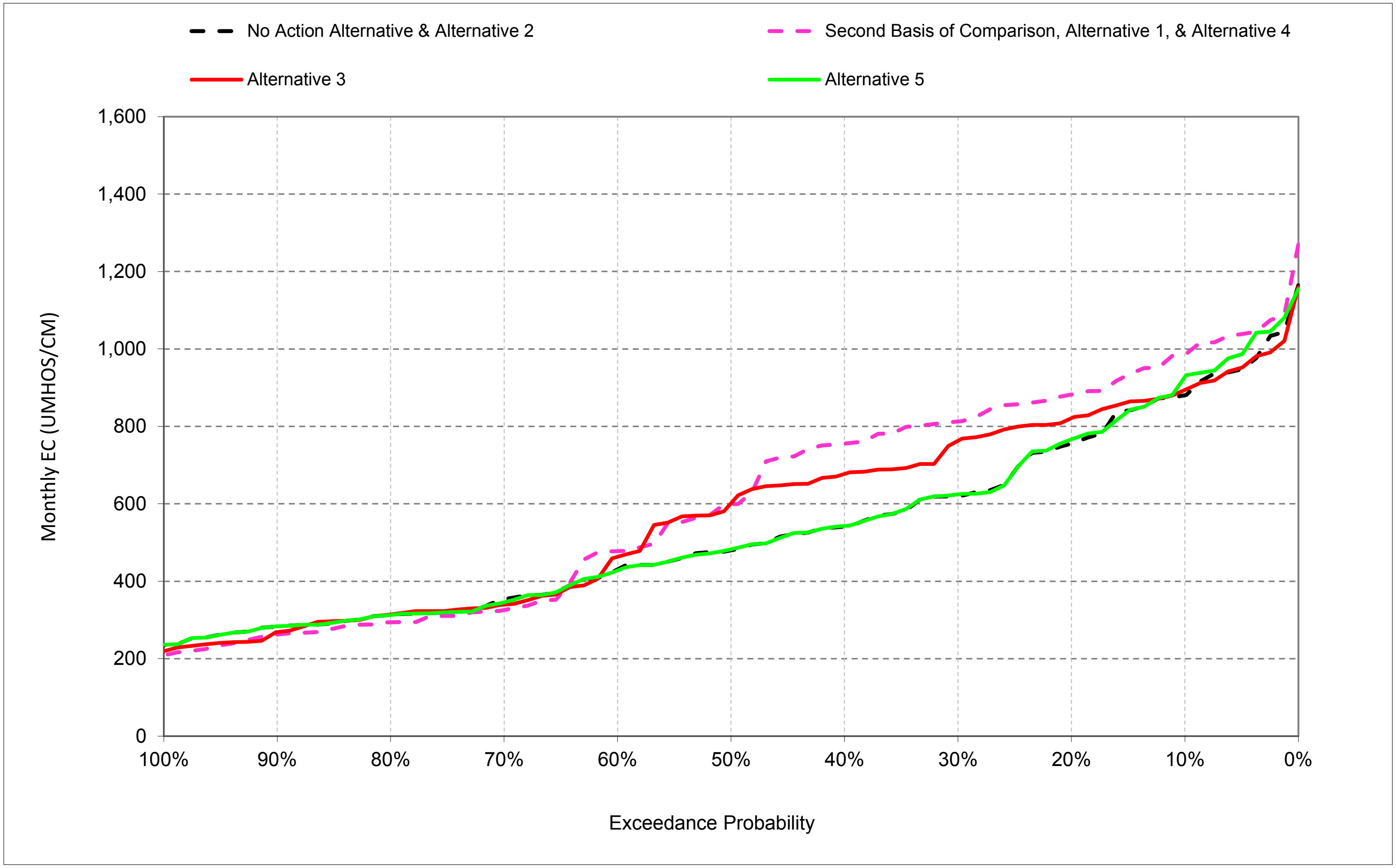
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.3. Old River at Rock Slough Salinity, Electrical Conductivity, December



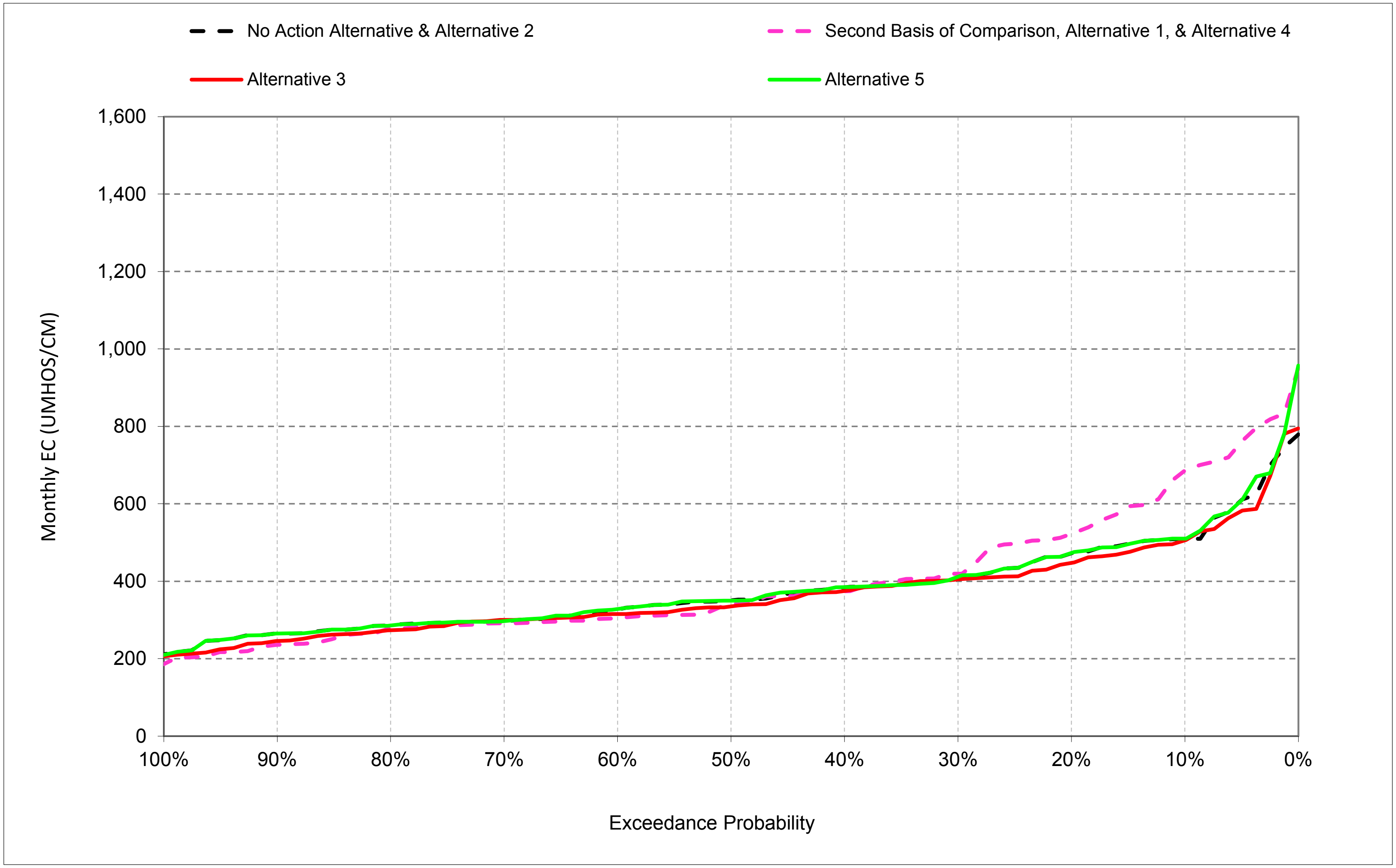
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.4. Old River at Rock Slough Salinity, Electrical Conductivity, January



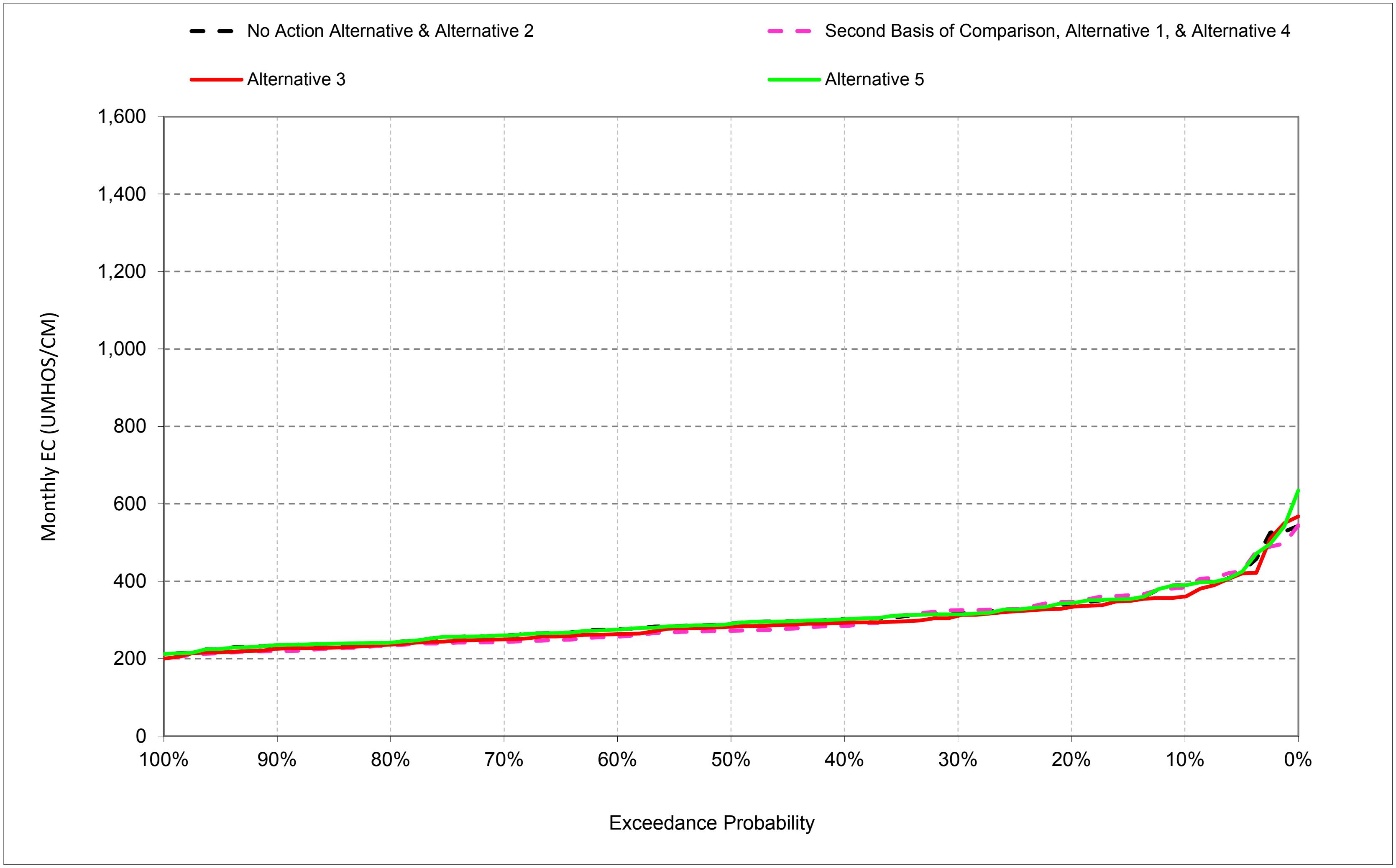
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.5. Old River at Rock Slough Salinity, Electrical Conductivity, February



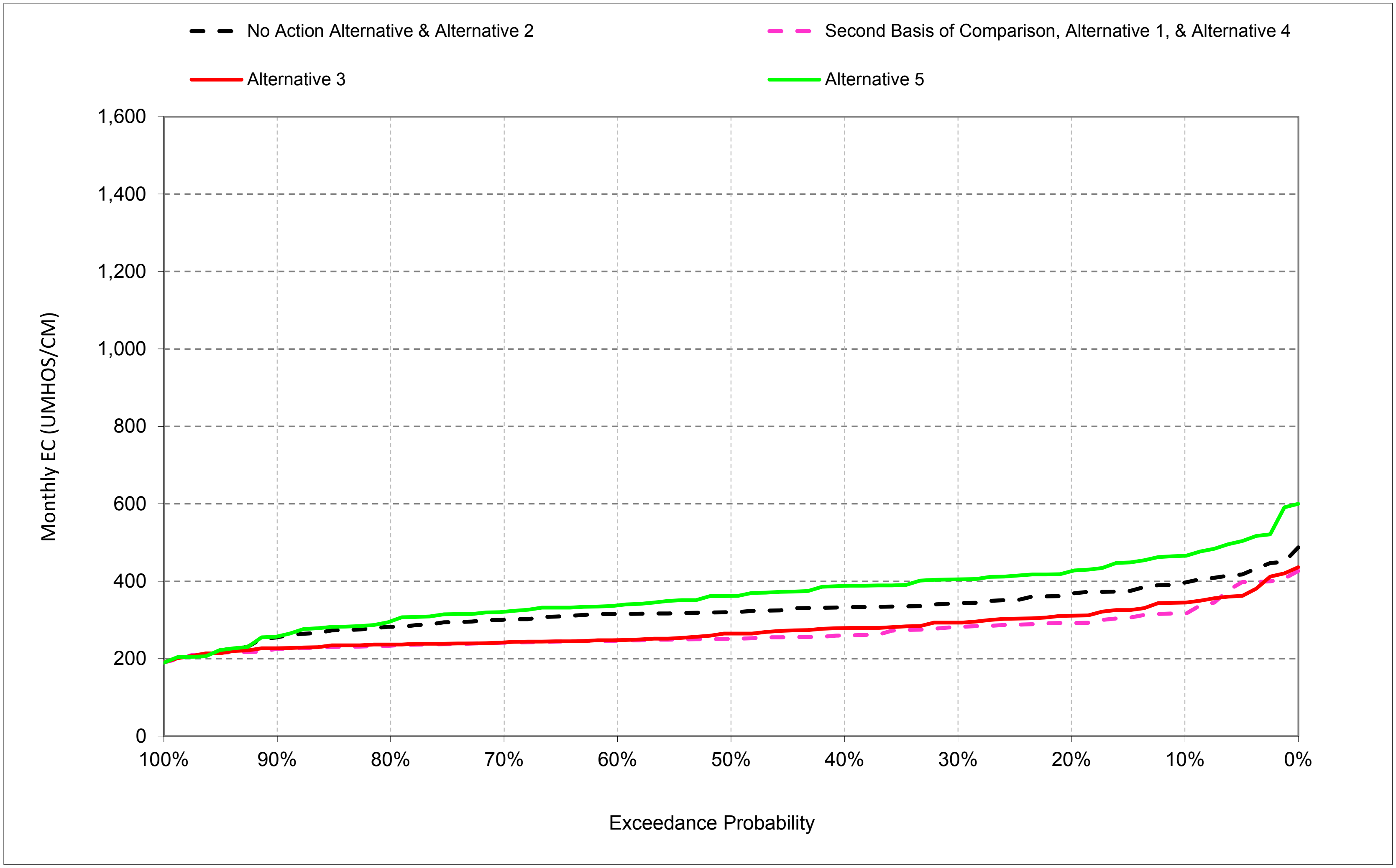
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.6. Old River at Rock Slough Salinity, Electrical Conductivity, March



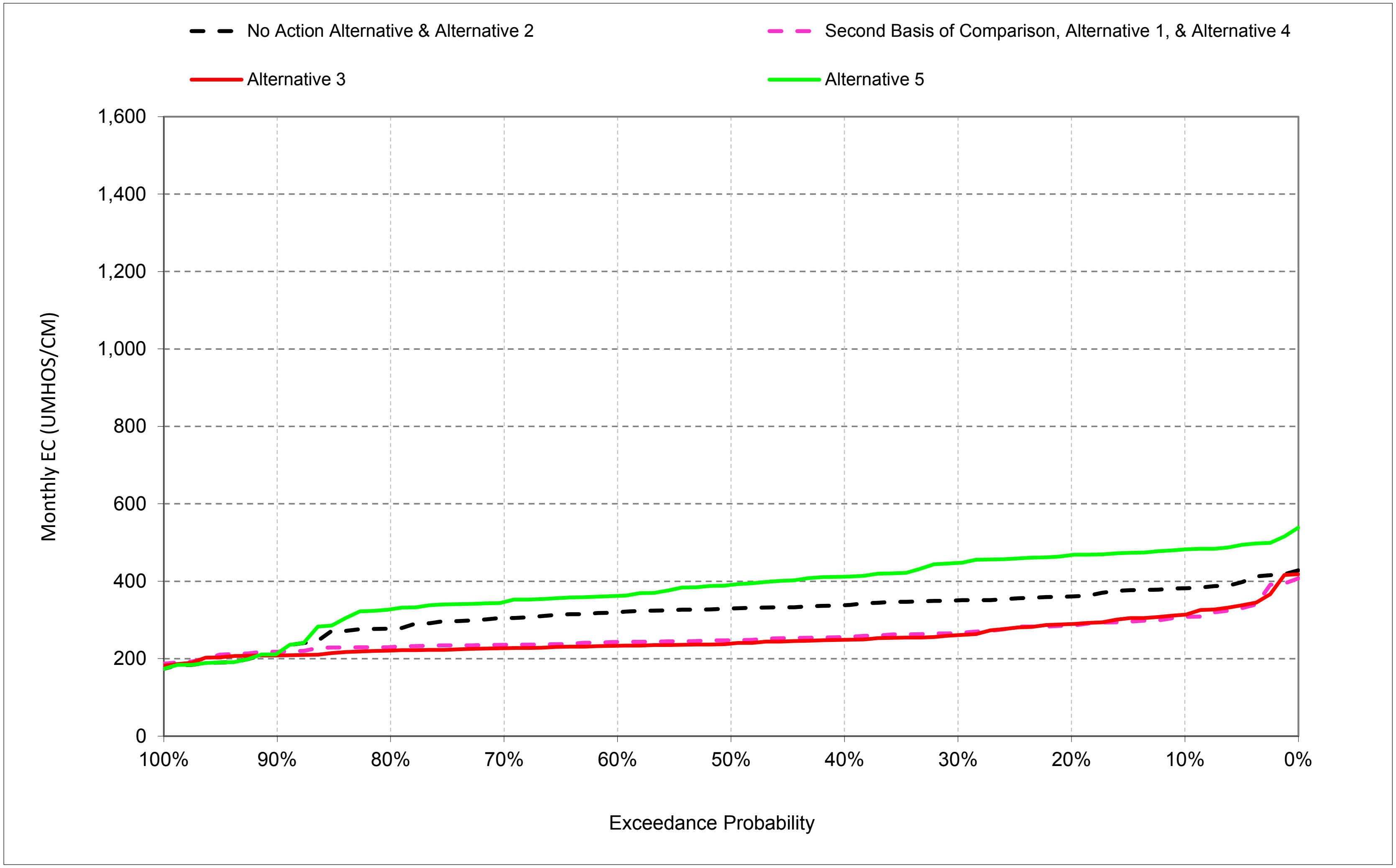
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.7. Old River at Rock Slough Salinity, Electrical Conductivity, April



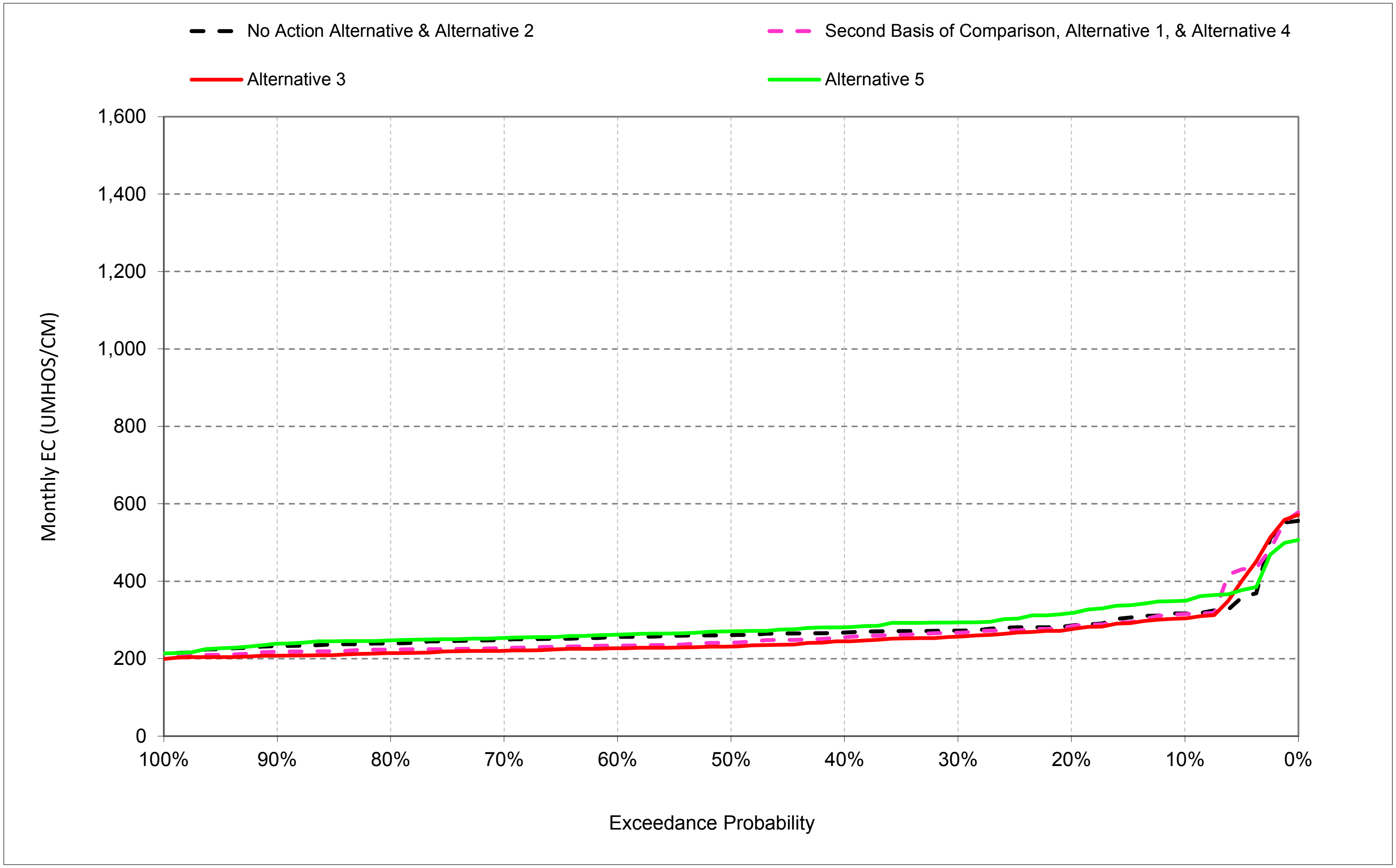
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.8. Old River at Rock Slough Salinity, Electrical Conductivity, May



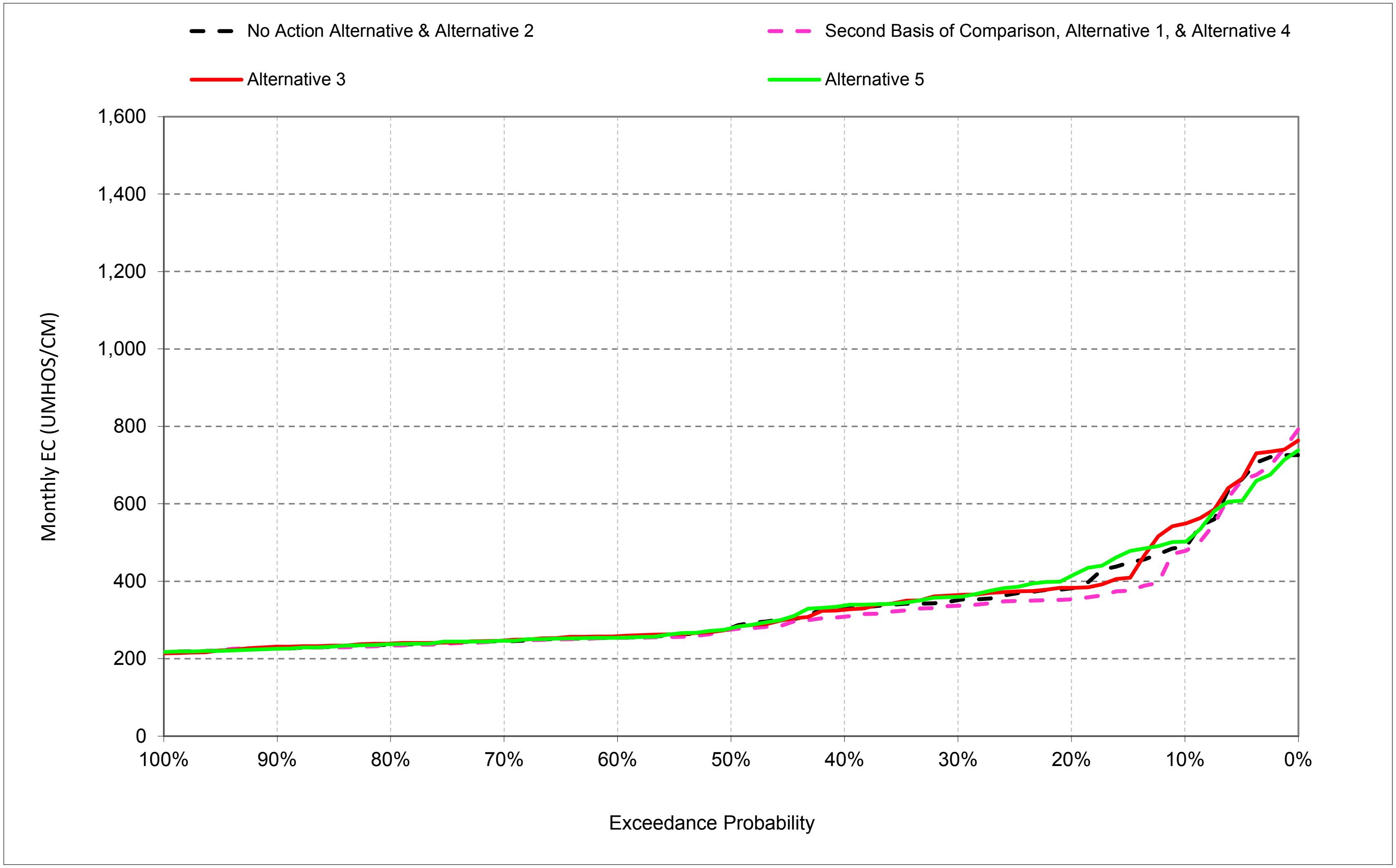
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.9. Old River at Rock Slough Salinity, Electrical Conductivity, June



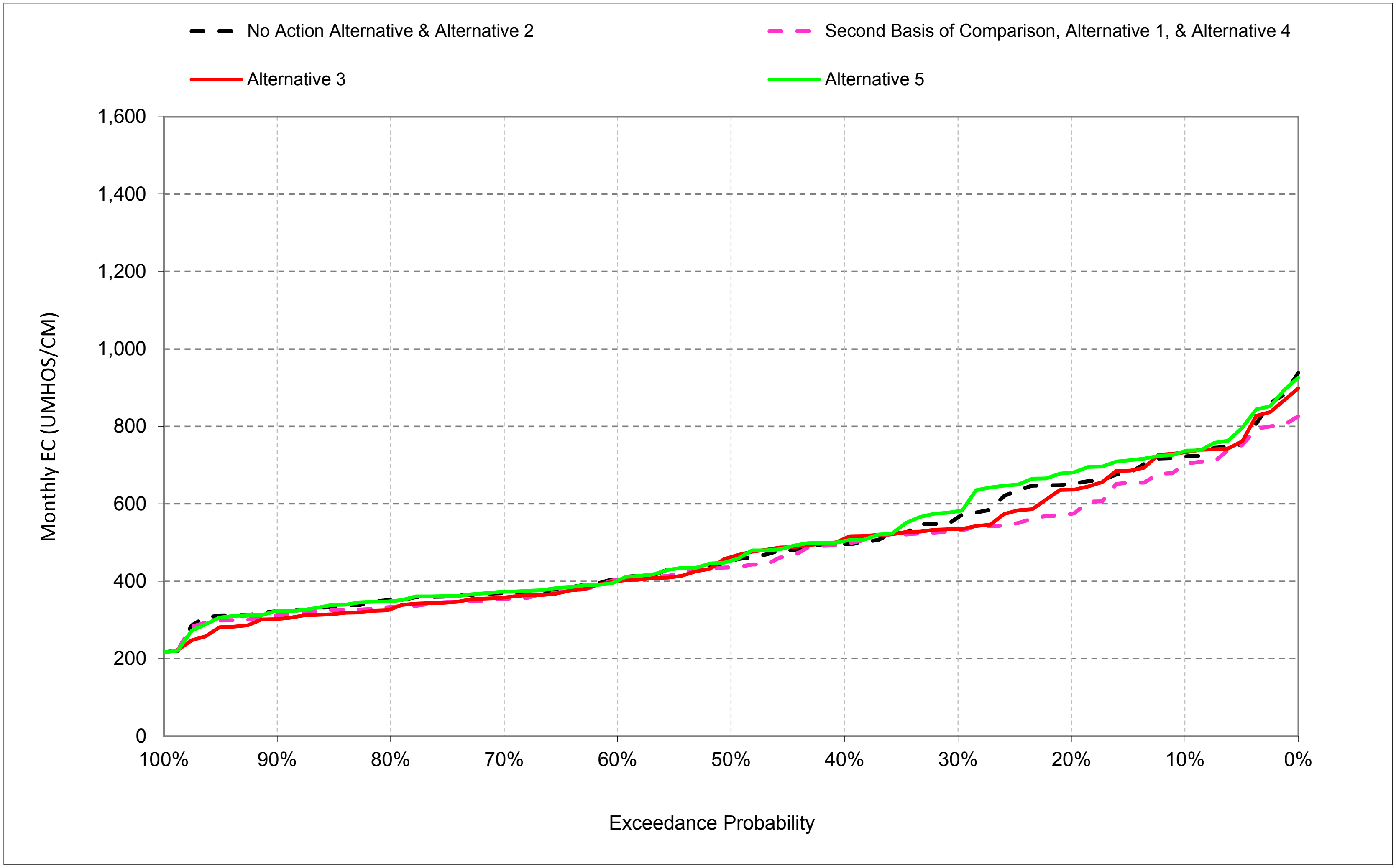
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.10. Old River at Rock Slough Salinity, Electrical Conductivity, July



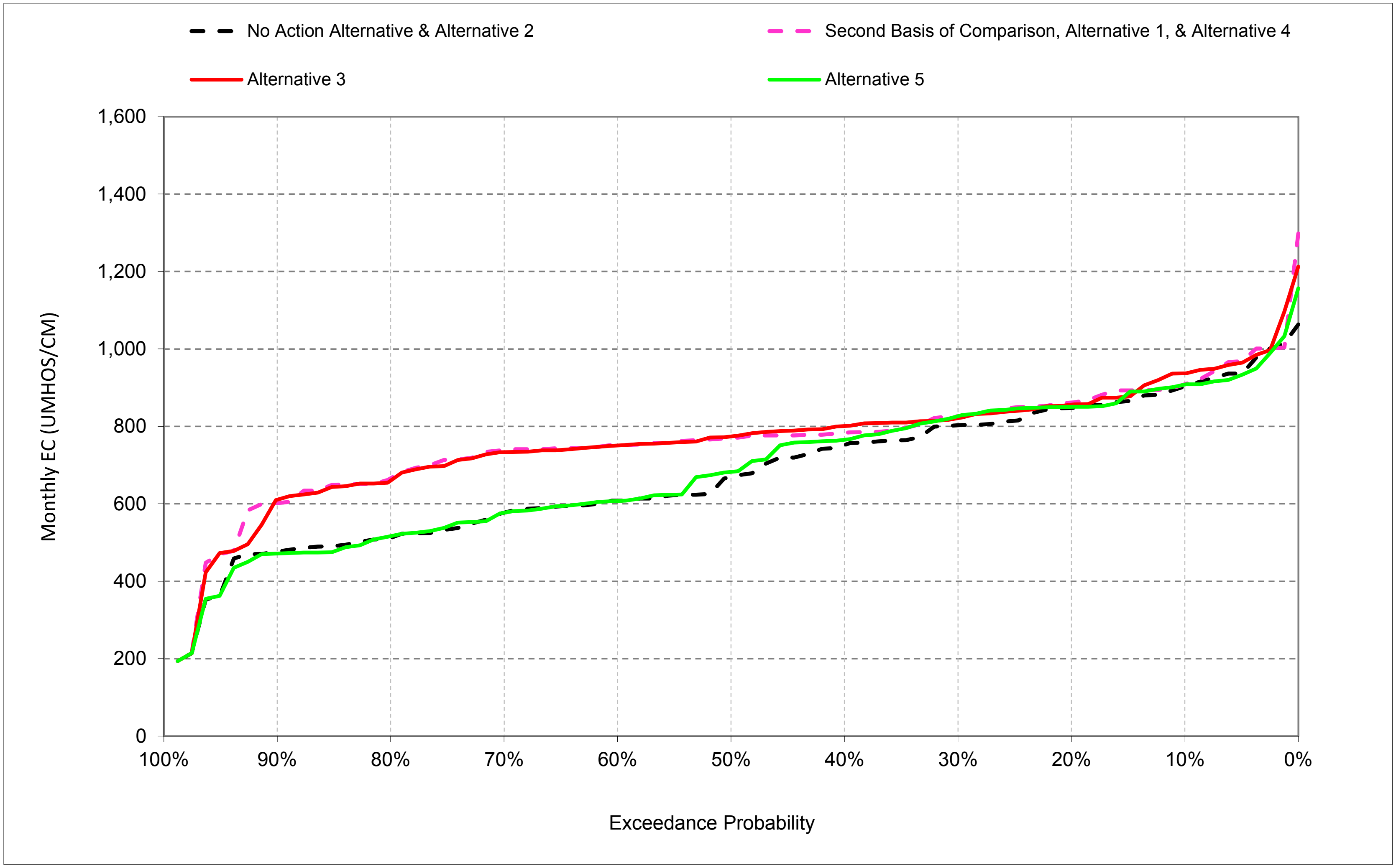
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.11. Old River at Rock Slough Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.11.12. Old River at Rock Slough Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.11.1. Old River at Rock Slough Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,071	1,143	1,084	881	509	390	397	382	317	489	722	903
20%	993	919	971	756	472	343	368	361	286	382	651	848
30%	924	820	842	621	406	316	343	350	272	351	565	803
40%	866	767	599	541	384	302	333	338	268	332	496	752
50%	814	611	430	480	351	290	320	329	261	279	451	670
60%	290	306	351	430	327	276	315	320	256	254	407	608
70%	282	245	311	354	297	260	301	305	249	245	369	577
80%	274	234	271	312	286	242	282	278	239	236	351	512
90%	265	225	241	283	265	235	255	213	233	226	323	476
Long Term												
Full Simulation Period[b]	640	608	588	533	379	302	324	319	274	332	491	678
Water Year Types[c]												
Wet (32%)	503	444	378	353	321	277	281	281	244	236	346	535
Above Normal (16%)	797	731	593	475	342	271	338	347	255	248	376	490
Below Normal (13%)	503	467	539	537	374	291	351	355	270	319	475	811
Dry (24%)	646	642	677	657	403	310	330	314	267	407	624	781
Critical (15%)	884	901	933	778	508	386	366	349	379	521	725	897

Alternative 1

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,080	1,141	1,161	987	686	384	317	308	316	478	702	909
20%	1,006	1,006	1,037	882	523	347	292	286	284	353	574	862
30%	963	931	1,016	813	420	325	282	266	267	337	531	826
40%	941	874	981	756	374	285	260	256	255	308	497	784
50%	913	847	870	599	340	272	251	248	241	275	436	770
60%	894	823	802	478	305	257	247	243	234	254	404	752
70%	863	784	696	326	292	243	241	236	227	246	354	741
80%	832	669	522	294	277	234	234	230	224	234	333	684
90%	751	492	286	262	236	220	225	218	218	228	312	608
Long Term												
Full Simulation Period[b]	895	835	819	610	399	294	268	259	265	321	469	764
Water Year Types[c]												
Wet (32%)	813	768	613	357	296	276	257	229	233	235	329	644
Above Normal (16%)	976	855	798	576	332	257	245	236	227	245	372	770
Below Normal (13%)	829	754	834	717	504	301	267	257	242	319	475	774
Dry (24%)	916	860	944	749	445	285	262	270	263	361	564	814
Critical (15%)	1,012	994	1,068	863	524	379	325	329	396	523	713	926

Alternative 1 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	9	-2	77	106	177	-6	-80	-74	-1	-11	-20	5
20%	13	86	65	127	50	4	-75	-75	-2	-29	-77	14
30%	40	111	174	192	14	9	-61	-84	-5	-14	-34	24
40%	76	108	382	215	-10	-17	-73	-82	-12	-24	1	32
50%	99	236	440	119	-10	-18	-69	-82	-20	-4	-15	100
60%	604	517	451	47	-22	-19	-69	-76	-22	-1	-3	144
70%	581	539	385	-28	-5	-17	-60	-69	-21	1	-15	164
80%	558	435	251	-18	-9	-8	-49	-48	-16	-2	-18	172
90%	486	267	45	-21	-29	-15	-30	5	-15	2	-11	132
Long Term												
Full Simulation Period[b]	255	228	231	77	20	-8	-56	-60	-10	-12	-22	87
Water Year Types[c]												
Wet (32%)	310	324	235	4	-25	-1	-24	-51	-11	-1	-16	109
Above Normal (16%)	179	125	205	101	-11	-14	-93	-111	-28	-3	-4	281
Below Normal (13%)	326	287	295	179	131	10	-84	-97	-29	-1	0	-36
Dry (24%)	270	218	267	93	42	-25	-68	-44	-3	-45	-60	33
Critical (15%)	128	93	135	85	16	-6	-40	-19	17	2	-13	29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.11.2. Old River at Rock Slough Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,071	1,143	1,084	881	509	390	397	382	317	489	722	903
20%	993	919	971	756	472	343	368	361	286	382	651	848
30%	924	820	842	621	406	316	343	350	272	351	565	803
40%	866	767	599	541	384	302	333	338	268	332	496	752
50%	814	611	430	480	351	290	320	329	261	279	451	670
60%	290	306	351	430	327	276	315	320	256	254	407	608
70%	282	245	311	354	297	260	301	305	249	245	369	577
80%	274	234	271	312	286	242	282	278	239	236	351	512
90%	265	225	241	283	265	235	255	213	233	226	323	476
Long Term												
Full Simulation Period[b]	640	608	588	533	379	302	324	319	274	332	491	678
Water Year Types[c]												
Wet (32%)	503	444	378	353	321	277	281	281	244	236	346	535
Above Normal (16%)	797	731	593	475	342	271	338	347	255	248	376	490
Below Normal (13%)	503	467	539	537	374	291	351	355	270	319	475	811
Dry (24%)	646	642	677	657	403	310	330	314	267	407	624	781
Critical (15%)	884	901	933	778	508	386	366	349	379	521	725	897

Alternative 3

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,075	1,125	1,158	894	505	360	345	314	304	549	733	937
20%	1,009	1,010	1,057	821	447	334	311	289	276	383	637	856
30%	974	932	1,002	763	405	310	293	261	257	365	535	823
40%	945	869	966	677	375	293	279	249	245	327	510	805
50%	907	842	862	601	335	282	265	239	231	278	462	779
60%	879	818	794	463	315	263	248	233	227	258	400	753
70%	846	790	677	339	300	250	242	227	220	247	358	734
80%	826	732	509	314	274	236	236	221	215	239	328	683
90%	769	545	298	268	245	226	227	209	208	231	303	620
Long Term												
Full Simulation Period[b]	896	850	808	576	367	293	276	254	256	337	480	765
Water Year Types[c]												
Wet (32%)	806	782	613	376	305	269	252	220	220	237	324	627
Above Normal (16%)	999	892	791	557	326	258	249	229	221	252	372	776
Below Normal (13%)	833	742	836	656	387	280	276	260	245	344	496	826
Dry (24%)	907	885	943	702	392	301	284	262	254	403	600	805
Critical (15%)	1,015	993	998	750	489	381	342	334	387	527	721	926

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5	-18	74	13	-4	-30	-52	-68	-13	60	11	33
20%	16	90	85	66	-25	-9	-57	-72	-10	1	-15	8
30%	50	112	160	142	-1	-6	-50	-90	-16	14	-30	20
40%	80	103	367	136	-9	-9	-54	-89	-23	-6	14	54
50%	93	231	432	121	-16	-8	-55	-90	-30	-1	11	109
60%	588	512	443	33	-12	-12	-67	-86	-29	4	-7	145
70%	564	545	366	-14	3	-11	-59	-78	-29	2	-11	157
80%	552	498	238	2	-12	-5	-46	-57	-24	4	-23	170
90%	504	320	57	-15	-20	-10	-29	-5	-25	5	-20	144
Long Term												
Full Simulation Period[b]	255	242	220	43	-11	-9	-48	-65	-18	4	-11	87
Water Year Types[c]												
Wet (32%)	303	337	236	23	-16	-8	-29	-61	-24	2	-22	92
Above Normal (16%)	203	162	198	82	-16	-14	-89	-117	-34	3	-4	286
Below Normal (13%)	330	275	297	119	13	-11	-75	-94	-25	24	21	16
Dry (24%)	262	243	266	45	-11	-9	-46	-51	-13	-4	-24	25
Critical (15%)	131	92	65	-28	-20	-4	-24	-15	8	6	-4	29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.11.3. Old River at Rock Slough Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	1,071	1,143	1,084	881	509	390	397	382	317	489	722	903
20%	993	919	971	756	472	343	368	361	286	382	651	848
30%	924	820	842	621	406	316	343	350	272	351	565	803
40%	866	767	599	541	384	302	333	338	268	332	496	752
50%	814	611	430	480	351	290	320	329	261	279	451	670
60%	290	306	351	430	327	276	315	320	256	254	407	608
70%	282	245	311	354	297	260	301	305	249	245	369	577
80%	274	234	271	312	286	242	282	278	239	236	351	512
90%	265	225	241	283	265	235	255	213	233	226	323	476
Long Term												
Full Simulation Period[b]	640	608	588	533	379	302	324	319	274	332	491	678
Water Year Types[c]												
Wet (32%)	503	444	378	353	321	277	281	281	244	236	346	535
Above Normal (16%)	797	731	593	475	342	271	338	347	255	248	376	490
Below Normal (13%)	503	467	539	537	374	291	351	355	270	319	475	811
Dry (24%)	646	642	677	657	403	310	330	314	267	407	624	781
Critical (15%)	884	901	933	778	508	386	366	349	379	521	725	897

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	1,106	1,138	1,079	927	510	390	466	482	350	503	736	908
20%	996	963	949	766	473	344	426	468	318	414	681	850
30%	934	832	846	624	411	315	405	447	294	360	581	826
40%	889	759	650	543	385	302	388	412	281	337	504	766
50%	800	621	412	482	350	290	362	391	271	279	453	682
60%	291	305	350	428	328	276	338	362	262	254	401	608
70%	281	244	312	345	297	260	321	346	253	246	373	577
80%	275	233	270	312	286	242	296	327	247	238	348	517
90%	267	225	241	283	265	235	257	213	239	225	323	471
Long Term												
Full Simulation Period[b]	645	609	588	536	383	303	364	380	287	336	500	686
Water Year Types[c]												
Wet (32%)	504	454	384	353	323	278	282	285	246	236	345	532
Above Normal (16%)	812	724	583	473	342	271	342	361	260	249	374	488
Below Normal (13%)	502	470	538	537	373	290	381	411	286	324	476	820
Dry (24%)	651	637	675	668	406	311	413	440	296	426	656	803
Critical (15%)	886	900	932	783	525	393	472	480	387	506	734	914

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	35	-5	-5	46	1	0	69	101	33	14	14	5
20%	3	44	-22	11	1	1	58	107	32	32	29	3
30%	10	12	4	4	6	-1	62	97	21	9	16	24
40%	24	-8	51	2	1	0	55	74	14	5	8	14
50%	-13	10	-18	2	-1	0	42	61	10	-1	2	12
60%	1	-1	-2	-2	1	0	22	43	6	0	-6	0
70%	-1	-1	2	-8	0	0	20	41	5	1	3	0
80%	1	0	0	0	0	0	14	50	8	2	-3	4
90%	2	0	0	0	0	0	2	0	6	-1	0	-5
Long Term												
Full Simulation Period[b]	4	1	0	3	4	1	41	61	12	3	9	8
Water Year Types[c]												
Wet (32%)	1	10	6	0	2	1	1	5	2	0	0	-3
Above Normal (16%)	15	-6	-10	-2	0	0	4	14	6	1	-1	-1
Below Normal (13%)	-1	3	-1	-1	-1	-1	30	56	16	4	1	9
Dry (24%)	6	-5	-2	12	3	1	83	126	29	19	32	23
Critical (15%)	3	-1	-1	5	17	8	106	132	8	-15	9	17

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.11.4. Old River at Rock Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	1,080	1,141	1,161	987	686	384	317	308	316	478	702	909
20%	1,006	1,006	1,037	882	523	347	292	286	284	353	574	862
30%	963	931	1,016	813	420	325	282	266	267	337	531	826
40%	941	874	981	756	374	285	260	256	255	308	497	784
50%	913	847	870	599	340	272	251	248	241	275	436	770
60%	894	823	802	478	305	257	247	243	234	254	404	752
70%	863	784	696	326	292	243	241	236	227	246	354	741
80%	832	669	522	294	277	234	234	230	224	234	333	684
90%	751	492	286	262	236	220	225	218	218	228	312	608
Long Term												
Full Simulation Period[b]	895	835	819	610	399	294	268	259	265	321	469	764
Water Year Types[c]												
Wet (32%)	813	768	613	357	296	276	257	229	233	235	329	644
Above Normal (16%)	976	855	798	576	332	257	245	236	227	245	372	770
Below Normal (13%)	829	754	834	717	504	301	267	257	242	319	475	774
Dry (24%)	916	860	944	749	445	285	262	270	263	361	564	814
Critical (15%)	1,012	994	1,068	863	524	379	325	329	396	523	713	926

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	1,071	1,143	1,084	881	509	390	397	382	317	489	722	903
20%	993	919	971	756	472	343	368	361	286	382	651	848
30%	924	820	842	621	406	316	343	350	272	351	565	803
40%	866	767	599	541	384	302	333	338	268	332	496	752
50%	814	611	430	480	351	290	320	329	261	279	451	670
60%	290	306	351	430	327	276	315	320	256	254	407	608
70%	282	245	311	354	297	260	301	305	249	245	369	577
80%	274	234	271	312	286	242	282	278	239	236	351	512
90%	265	225	241	283	265	235	255	213	233	226	323	476
Long Term												
Full Simulation Period[b]	640	608	588	533	379	302	324	319	274	332	491	678
Water Year Types[c]												
Wet (32%)	503	444	378	353	321	277	281	281	244	236	346	535
Above Normal (16%)	797	731	593	475	342	271	338	347	255	248	376	490
Below Normal (13%)	503	467	539	537	374	291	351	355	270	319	475	811
Dry (24%)	646	642	677	657	403	310	330	314	267	407	624	781
Critical (15%)	884	901	933	778	508	386	366	349	379	521	725	897

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-9	2	-77	-106	-177	6	80	74	1	11	20	-5
20%	-13	-86	-65	-127	-50	-4	75	75	2	29	77	-14
30%	-40	-111	-174	-192	-14	-9	61	84	5	14	34	-24
40%	-76	-108	-382	-215	10	17	73	82	12	24	-1	-32
50%	-99	-236	-440	-119	10	18	69	82	20	4	15	-100
60%	-604	-517	-451	-47	22	19	69	76	22	1	3	-144
70%	-581	-539	-385	28	5	17	60	69	21	-1	15	-164
80%	-558	-435	-251	18	9	8	49	48	16	2	18	-172
90%	-486	-267	-45	21	29	15	30	-5	15	-2	11	-132
Long Term												
Full Simulation Period[b]	-255	-228	-231	-77	-20	8	56	60	10	12	22	-87
Water Year Types[c]												
Wet (32%)	-310	-324	-235	-4	25	1	24	51	11	1	16	-109
Above Normal (16%)	-179	-125	-205	-101	11	14	93	111	28	3	4	-281
Below Normal (13%)	-326	-287	-295	-179	-131	-10	84	97	29	1	0	36
Dry (24%)	-270	-218	-267	-93	-42	25	68	44	3	45	60	-33
Critical (15%)	-128	-93	-135	-85	-16	6	40	19	-17	-2	13	-29

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.11.5. Old River at Rock Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,080	1,141	1,161	987	686	384	317	308	316	478	702	909
20%	1,006	1,006	1,037	882	523	347	292	286	284	353	574	862
30%	963	931	1,016	813	420	325	282	266	267	337	531	826
40%	941	874	981	756	374	285	260	256	255	308	497	784
50%	913	847	870	599	340	272	251	248	241	275	436	770
60%	894	823	802	478	305	257	247	243	234	254	404	752
70%	863	784	696	326	292	243	241	236	227	246	354	741
80%	832	669	522	294	277	234	234	230	224	234	333	684
90%	751	492	286	262	236	220	225	218	218	228	312	608
Long Term												
Full Simulation Period[b]	895	835	819	610	399	294	268	259	265	321	469	764
Water Year Types[c]												
Wet (32%)	813	768	613	357	296	276	257	229	233	235	329	644
Above Normal (16%)	976	855	798	576	332	257	245	236	227	245	372	770
Below Normal (13%)	829	754	834	717	504	301	267	257	242	319	475	774
Dry (24%)	916	860	944	749	445	285	262	270	263	361	564	814
Critical (15%)	1,012	994	1,068	863	524	379	325	329	396	523	713	926

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,075	1,125	1,158	894	505	360	345	314	304	549	733	937
20%	1,009	1,010	1,057	821	447	334	311	289	276	383	637	856
30%	974	932	1,002	763	405	310	293	261	257	365	535	823
40%	945	869	966	677	375	293	279	249	245	327	510	805
50%	907	842	862	601	335	282	265	239	231	278	462	779
60%	879	818	794	463	315	263	248	233	227	258	400	753
70%	846	790	677	339	300	250	242	227	220	247	358	734
80%	826	732	509	314	274	236	236	221	215	239	328	683
90%	769	545	298	268	245	226	227	209	208	231	303	620
Long Term												
Full Simulation Period[b]	896	850	808	576	367	293	276	254	256	337	480	765
Water Year Types[c]												
Wet (32%)	806	782	613	376	305	269	252	220	220	237	324	627
Above Normal (16%)	999	892	791	557	326	258	249	229	221	252	372	776
Below Normal (13%)	833	742	836	656	387	280	276	260	245	344	496	826
Dry (24%)	907	885	943	702	392	301	284	262	254	403	600	805
Critical (15%)	1,015	993	998	750	489	381	342	334	387	527	721	926

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4	-16	-3	-93	-181	-24	28	6	-11	71	31	28
20%	3	4	20	-61	-75	-13	19	4	-8	30	62	-5
30%	10	1	-15	-50	-15	-15	12	-6	-10	28	4	-4
40%	4	-5	-15	-79	1	8	19	-7	-11	18	13	22
50%	-6	-5	-8	2	-5	10	14	-9	-10	3	26	9
60%	-16	-6	-8	-14	10	7	1	-10	-7	4	-3	1
70%	-18	6	-19	14	8	7	1	-9	-7	1	4	-7
80%	-6	63	-13	20	-3	3	3	-9	-9	5	-6	-2
90%	18	53	12	6	10	6	2	-9	-10	3	-9	12
Long Term												
Full Simulation Period[b]	0	14	-11	-34	-32	-1	8	-5	-8	16	11	0
Water Year Types[c]												
Wet (32%)	-7	13	1	18	9	-7	-5	-9	-13	2	-6	-17
Above Normal (16%)	23	37	-7	-20	-5	1	4	-6	-6	6	0	6
Below Normal (13%)	4	-12	2	-61	-118	-21	9	3	3	25	21	52
Dry (24%)	-8	25	-1	-48	-53	16	22	-8	-10	41	36	-9
Critical (15%)	3	-1	-70	-113	-35	2	17	4	-9	4	8	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.11.6. Old River at Rock Slough Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,080	1,141	1,161	987	686	384	317	308	316	478	702	909
20%	1,006	1,006	1,037	882	523	347	292	286	284	353	574	862
30%	963	931	1,016	813	420	325	282	266	267	337	531	826
40%	941	874	981	756	374	285	260	256	255	308	497	784
50%	913	847	870	599	340	272	251	248	241	275	436	770
60%	894	823	802	478	305	257	247	243	234	254	404	752
70%	863	784	696	326	292	243	241	236	227	246	354	741
80%	832	669	522	294	277	234	234	230	224	234	333	684
90%	751	492	286	262	236	220	225	218	218	228	312	608
Long Term												
Full Simulation Period[b]	895	835	819	610	399	294	268	259	265	321	469	764
Water Year Types[c]												
Wet (32%)	813	768	613	357	296	276	257	229	233	235	329	644
Above Normal (16%)	976	855	798	576	332	257	245	236	227	245	372	770
Below Normal (13%)	829	754	834	717	504	301	267	257	242	319	475	774
Dry (24%)	916	860	944	749	445	285	262	270	263	361	564	814
Critical (15%)	1,012	994	1,068	863	524	379	325	329	396	523	713	926

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,106	1,138	1,079	927	510	390	466	482	350	503	736	908
20%	996	963	949	766	473	344	426	468	318	414	681	850
30%	934	832	846	624	411	315	405	447	294	360	581	826
40%	889	759	650	543	385	302	388	412	281	337	504	766
50%	800	621	412	482	350	290	362	391	271	279	453	682
60%	291	305	350	428	328	276	338	362	262	254	401	608
70%	281	244	312	345	297	260	321	346	253	246	373	577
80%	275	233	270	312	286	242	296	327	247	238	348	517
90%	267	225	241	283	265	235	257	213	239	225	323	471
Long Term												
Full Simulation Period[b]	645	609	588	536	383	303	364	380	287	336	500	686
Water Year Types[c]												
Wet (32%)	504	454	384	353	323	278	282	285	246	236	345	532
Above Normal (16%)	812	724	583	473	342	271	342	361	260	249	374	488
Below Normal (13%)	502	470	538	537	373	290	381	411	286	324	476	820
Dry (24%)	651	637	675	668	406	311	413	440	296	426	656	803
Critical (15%)	886	900	932	783	525	393	472	480	387	506	734	914

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	26	-3	-82	-60	-176	6	149	175	34	24	34	-1
20%	-10	-42	-88	-116	-50	-3	134	182	34	61	106	-11
30%	-30	-99	-170	-188	-8	-10	123	181	27	23	50	0
40%	-52	-115	-331	-213	11	18	128	156	26	29	7	-18
50%	-113	-226	-458	-117	9	18	111	143	29	3	17	-88
60%	-603	-519	-452	-50	23	19	91	119	28	0	-3	-144
70%	-582	-540	-384	20	5	17	80	110	26	0	18	-164
80%	-558	-436	-252	18	9	8	63	97	24	3	15	-168
90%	-484	-267	-45	21	29	15	32	-4	21	-3	11	-137
Long Term												
Full Simulation Period[b]	-251	-227	-232	-73	-17	10	97	122	22	15	31	-79
Water Year Types[c]												
Wet (32%)	-309	-314	-229	-4	27	2	25	56	13	1	16	-112
Above Normal (16%)	-164	-131	-214	-103	11	14	98	125	34	4	2	-282
Below Normal (13%)	-327	-283	-295	-180	-132	-11	114	153	45	5	2	45
Dry (24%)	-264	-223	-269	-81	-39	25	151	170	32	65	92	-10
Critical (15%)	-126	-94	-136	-80	2	14	147	151	-9	-17	21	-12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

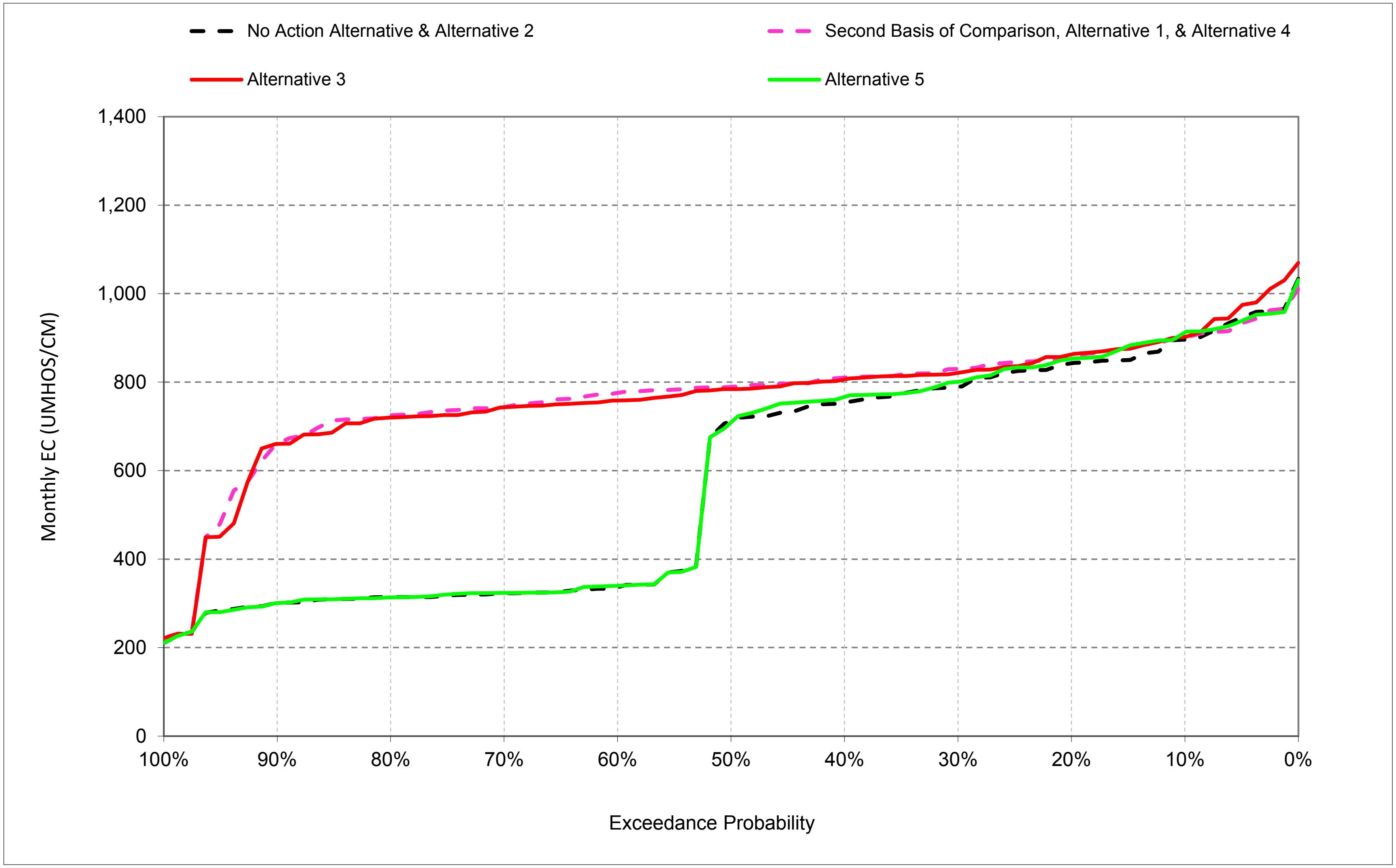
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

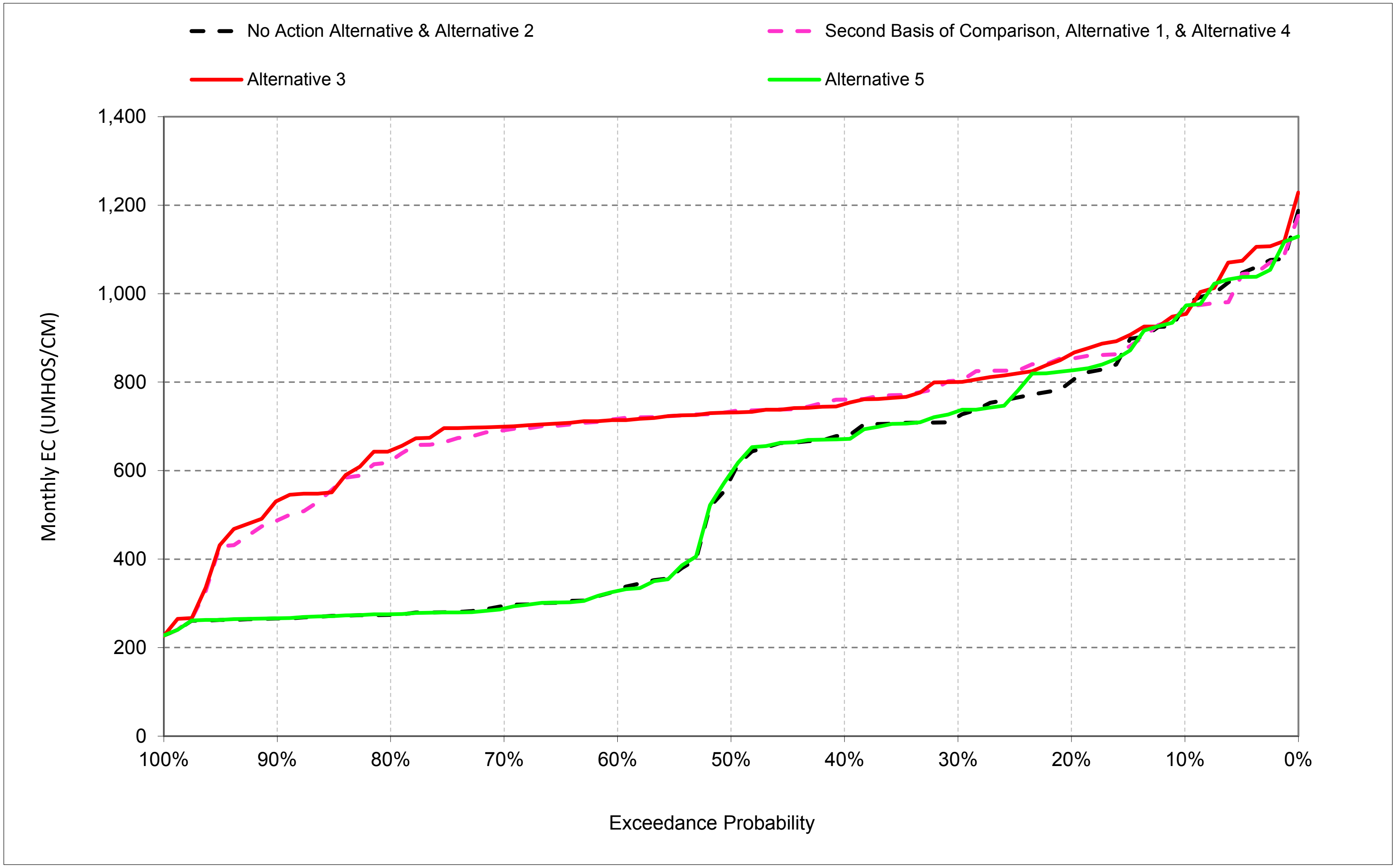
B.12 Contra Costa Water District Old River Intake Salinity

Figure 6E.B.12.1. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, October



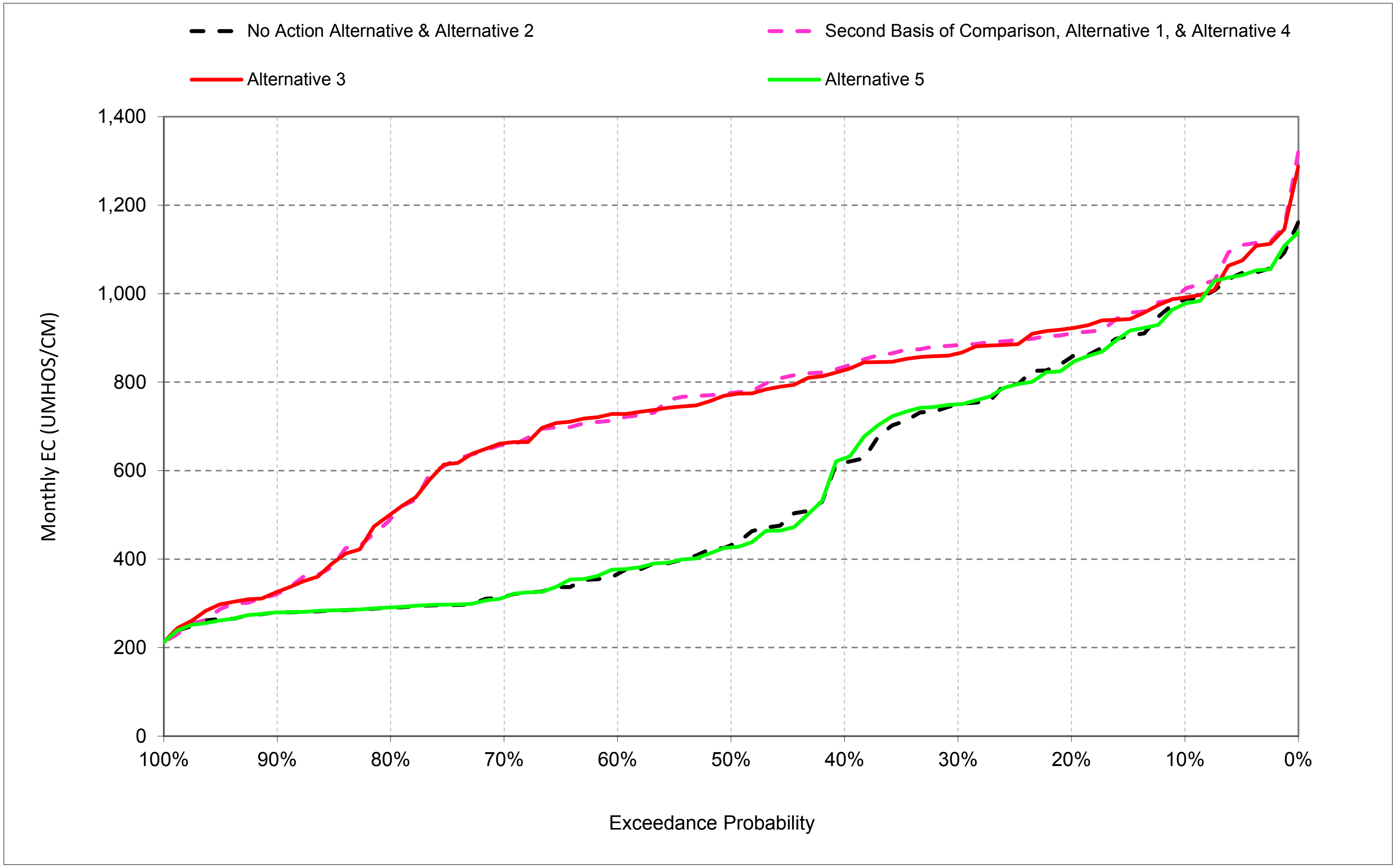
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.2. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, November



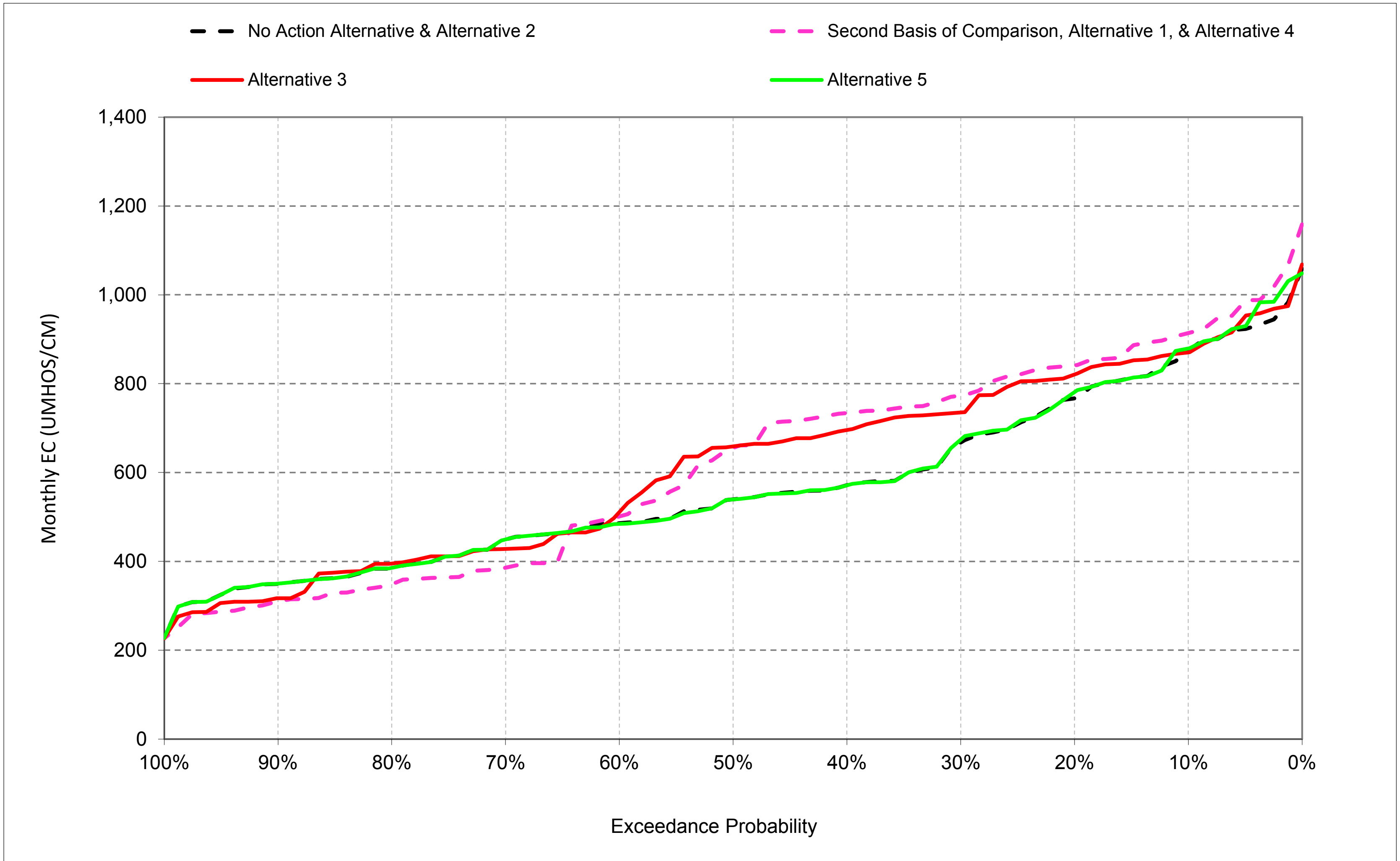
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.3. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, December



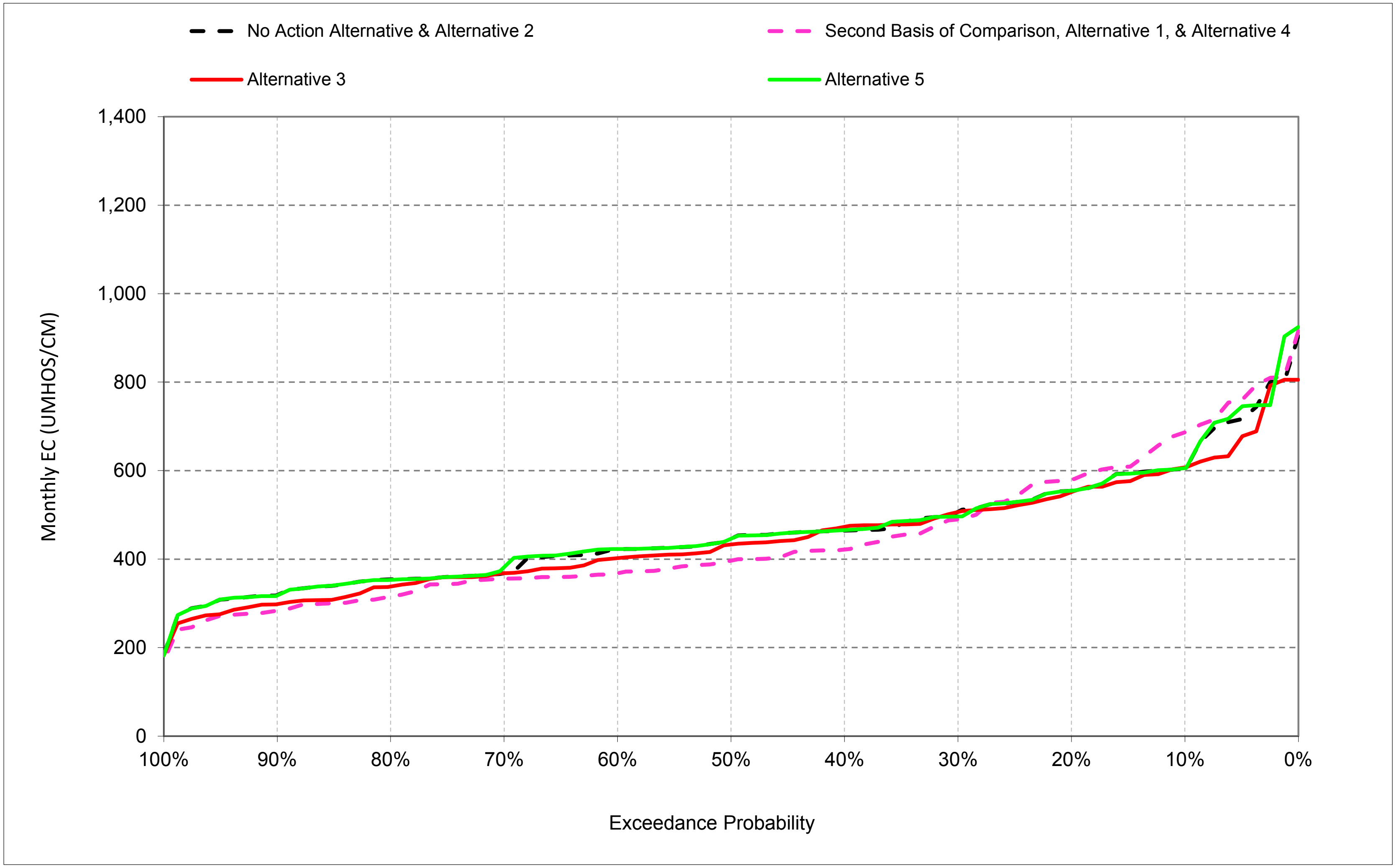
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.4. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, January



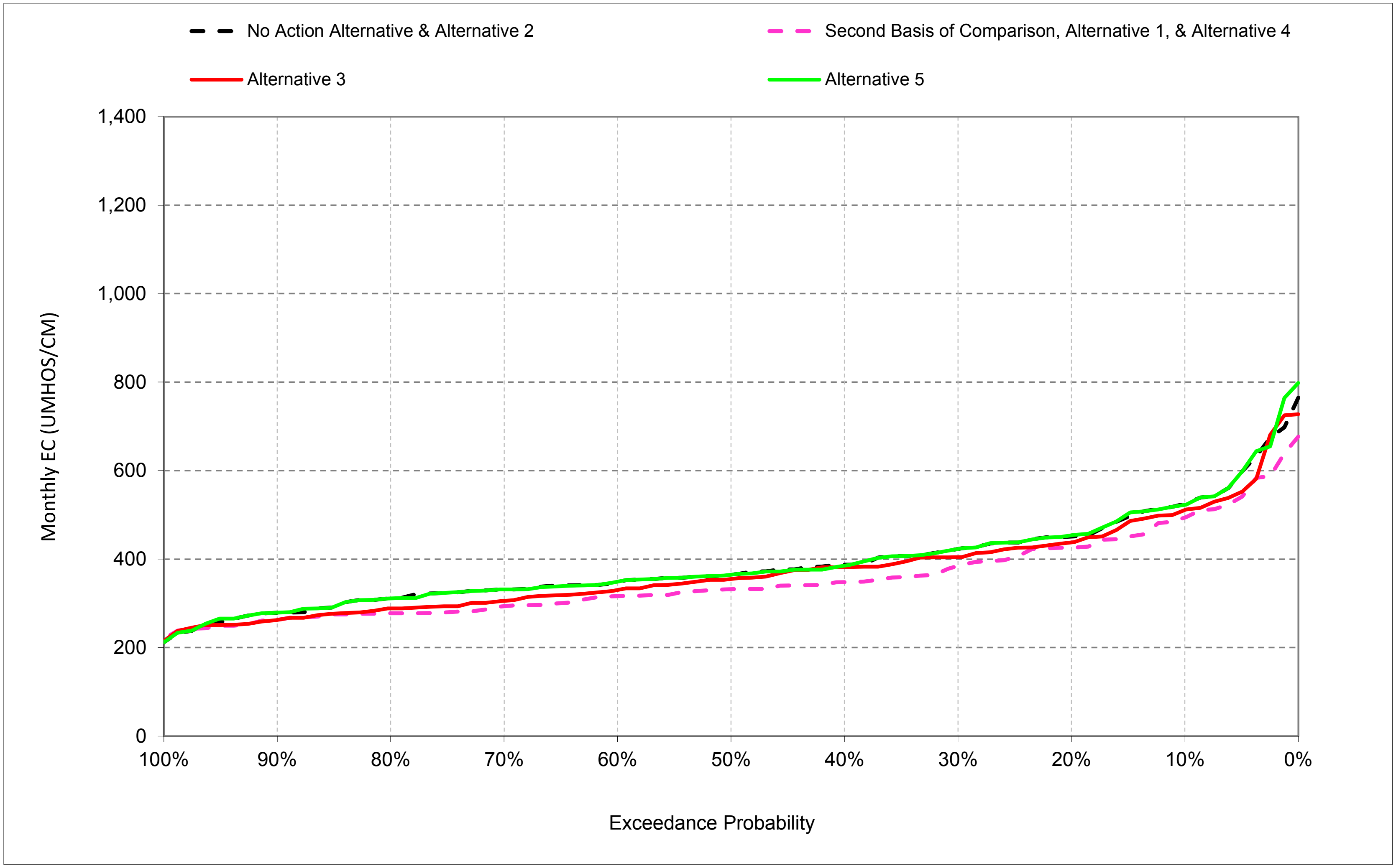
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.5. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, February



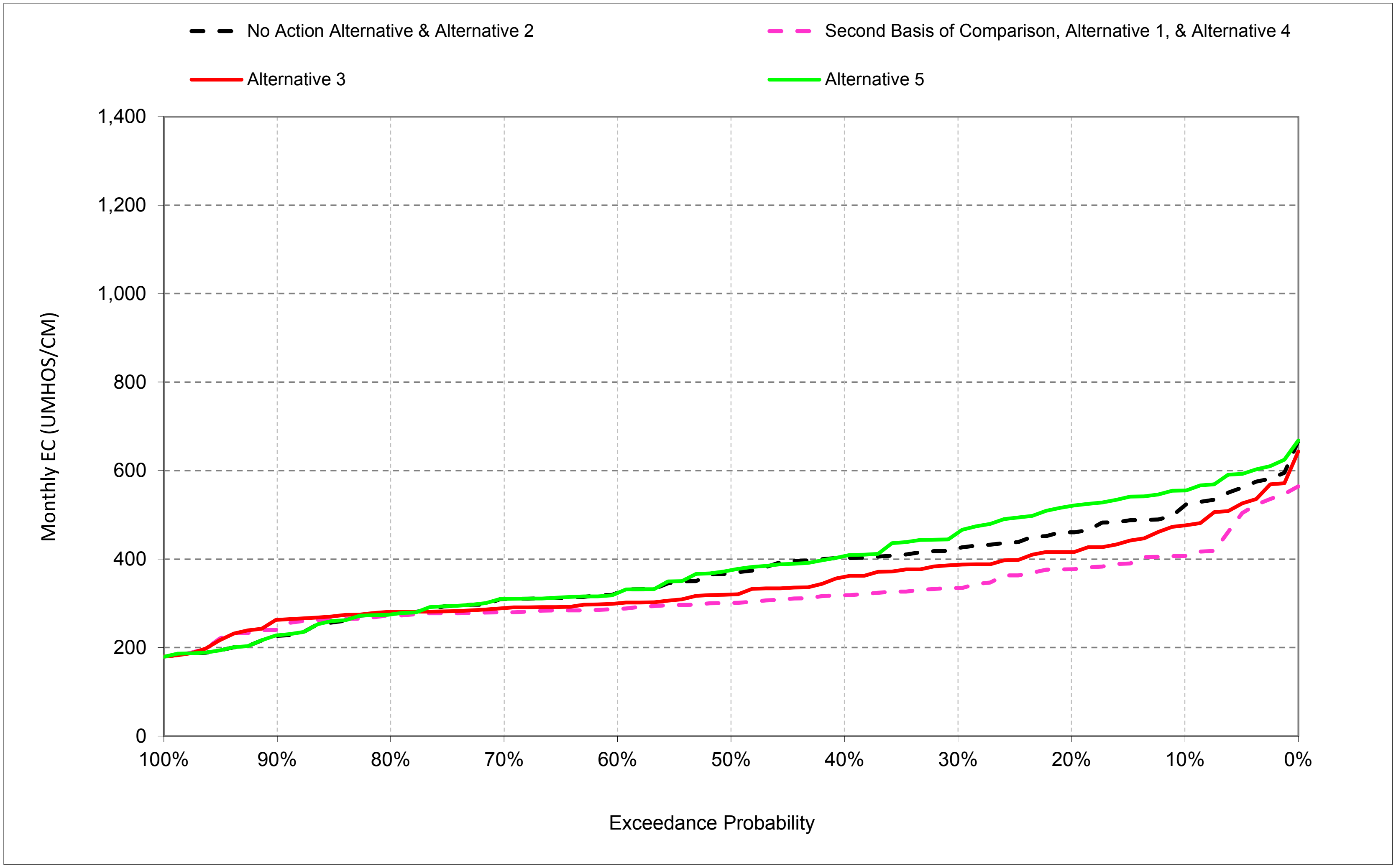
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.6. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, March



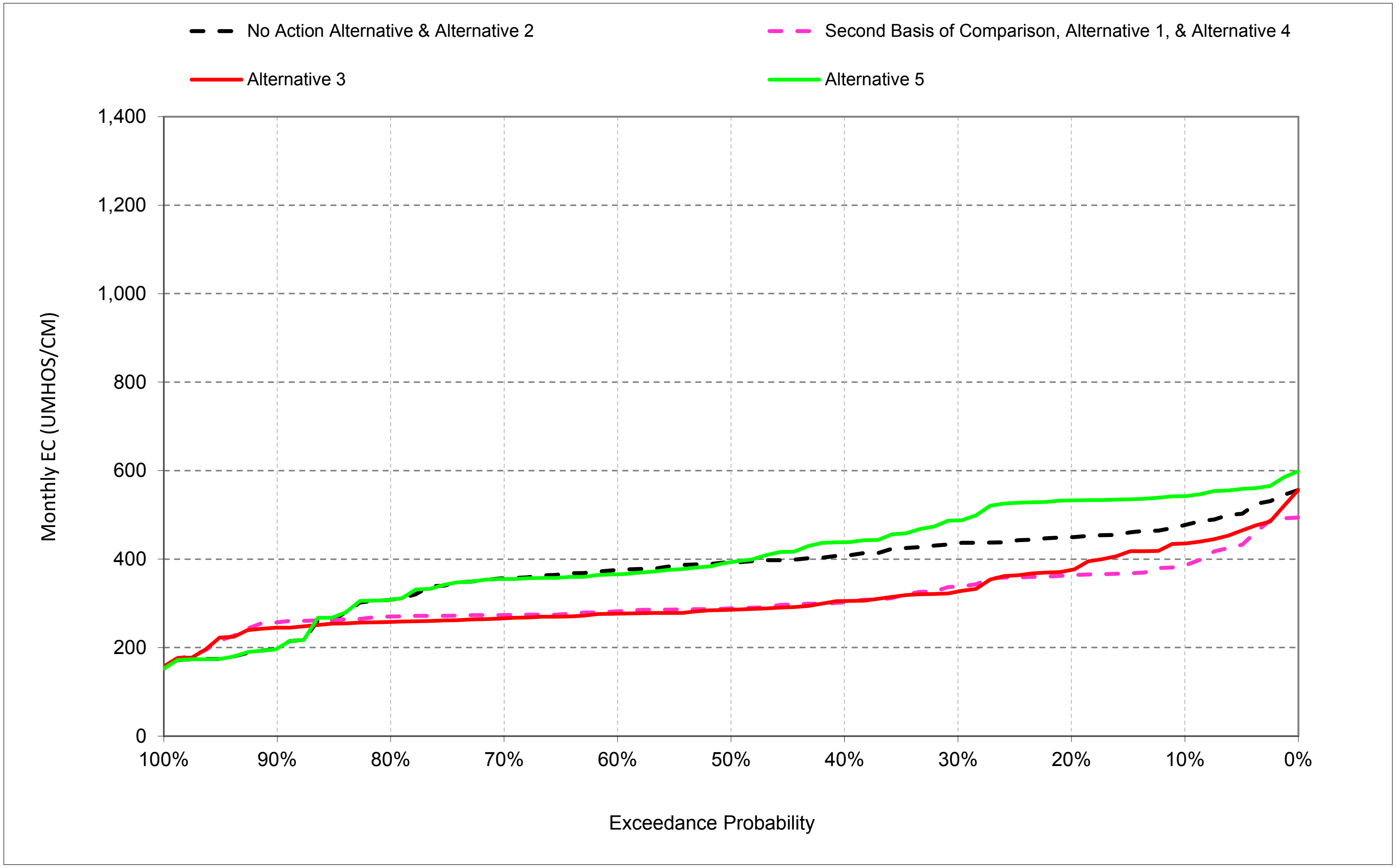
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.7. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, April



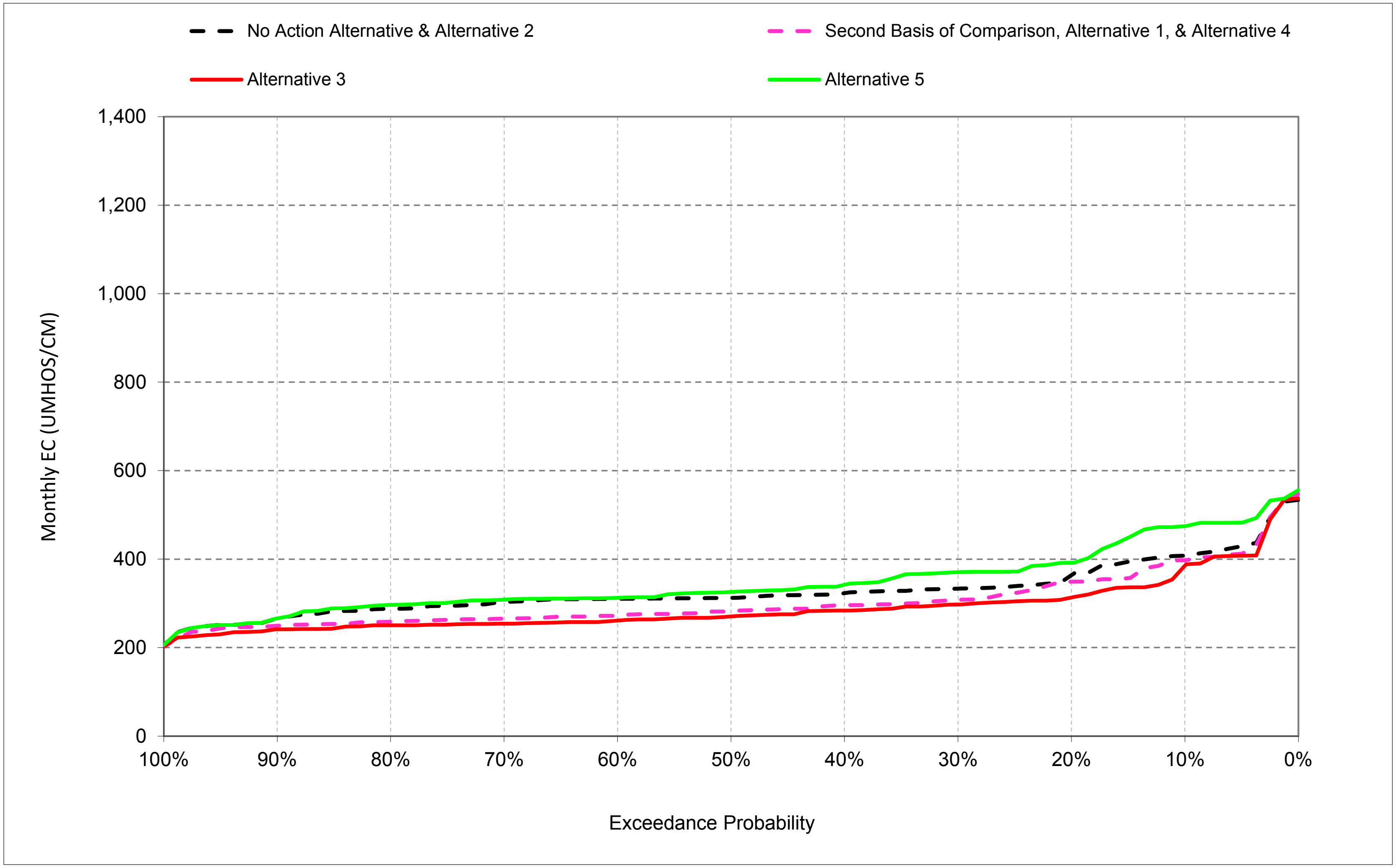
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.8. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, May



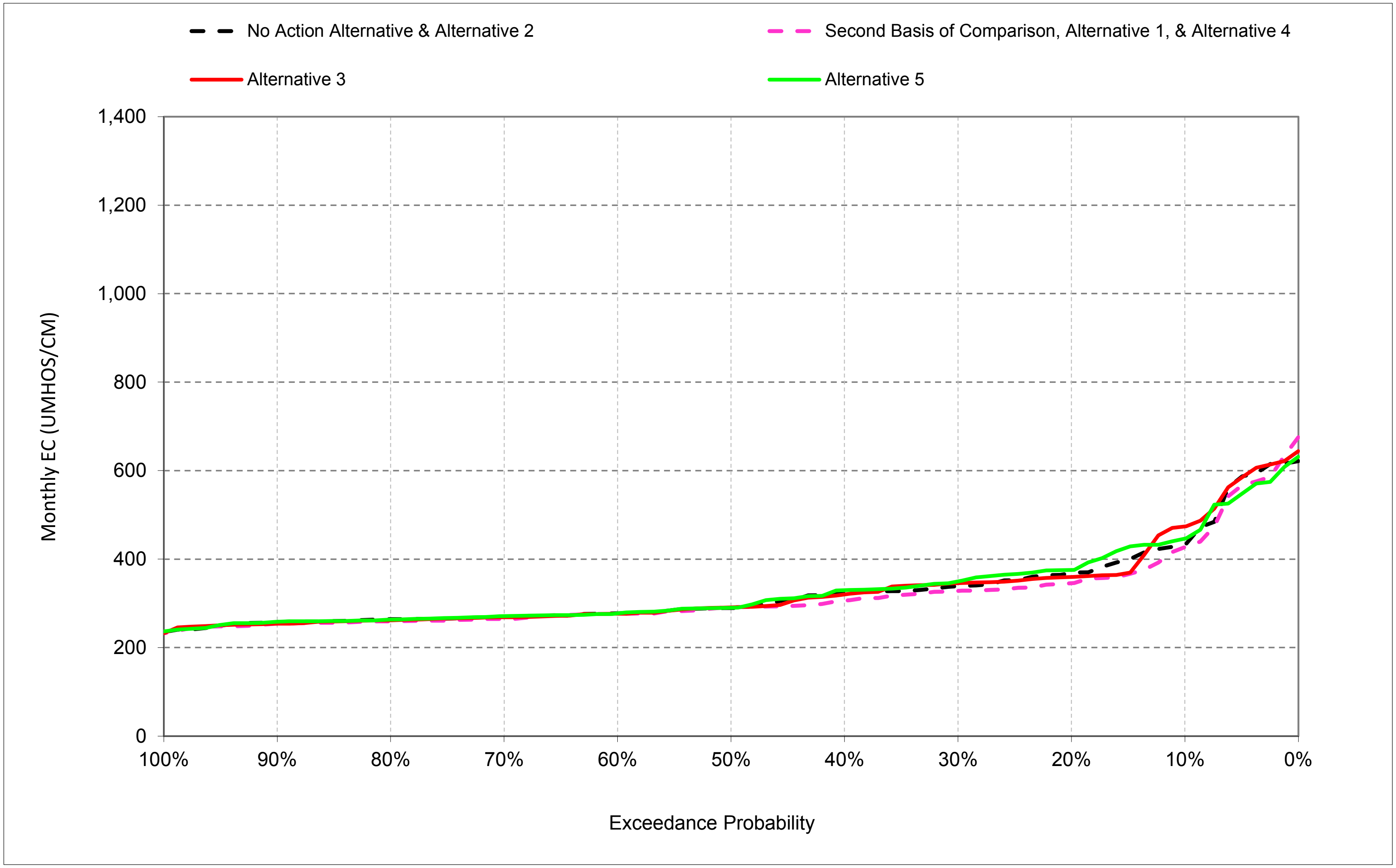
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.9. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, June



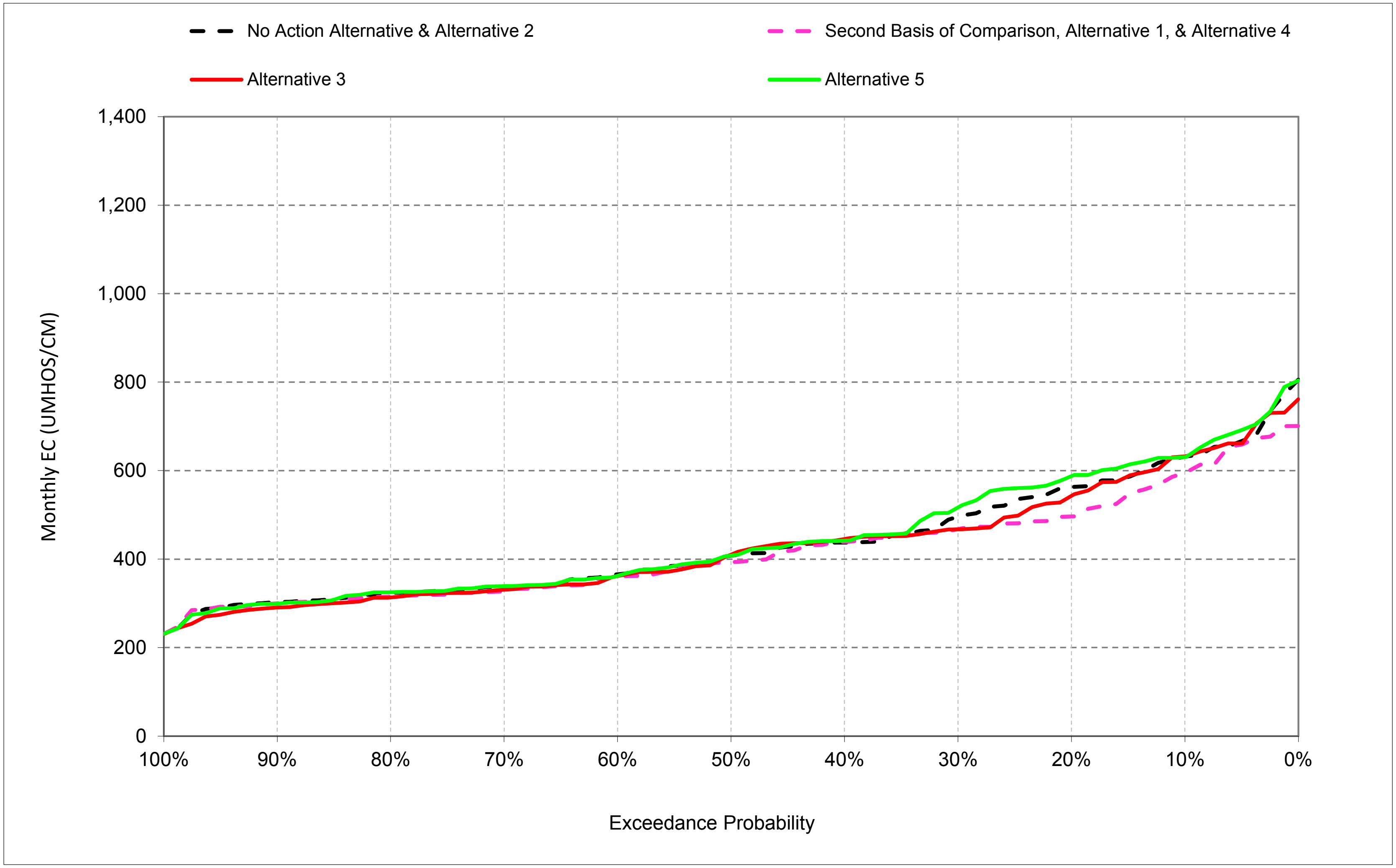
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.10. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, July



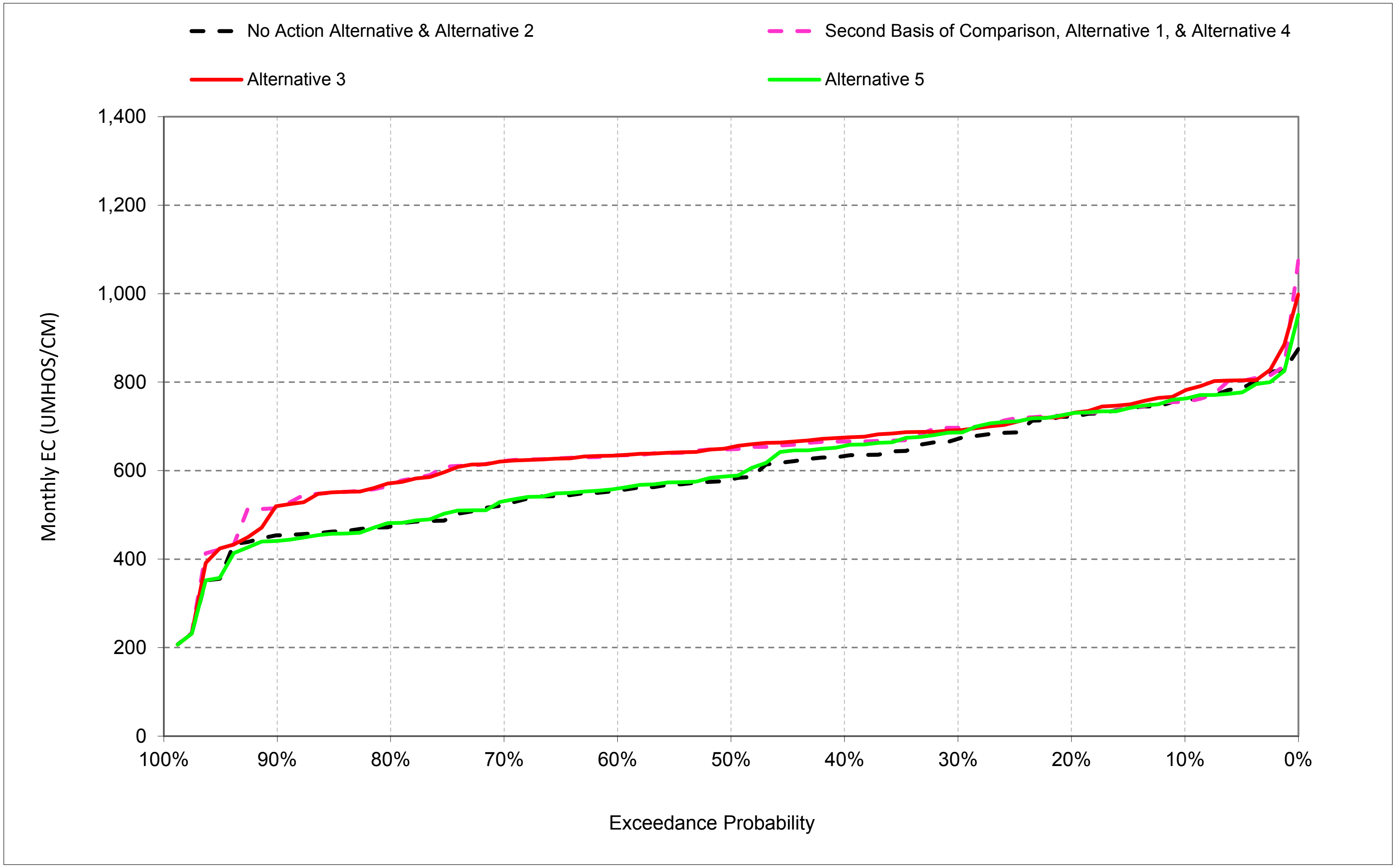
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.11. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.12.12. Contra Costa Water District Old River Intake Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.12.1. Contra Costa Water District Old River Intake Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	5	-5	23	39	81	-31	-114	-91	-11	-7	-36	-3
20%	13	52	54	74	26	-25	-83	-86	-15	-23	-67	7
30%	40	82	134	106	-17	-38	-89	-98	-25	-11	-28	25
40%	56	81	217	162	-43	-40	-84	-105	-28	-18	2	33
50%	77	149	344	116	-50	-33	-67	-104	-30	1	-14	68
60%	439	387	350	16	-54	-32	-37	-93	-37	-1	-6	80
70%	420	397	343	-63	-13	-38	-30	-83	-38	-6	-9	102
80%	411	348	200	-37	-39	-34	-6	-38	-29	-4	-9	105
90%	360	222	42	-40	-35	-16	15	59	-17	-4	-3	76
Long Term												
Full Simulation Period[b]	189	171	180	44	-18	-34	-49	-67	-24	-9	-18	53
Water Year Types[c]												
Wet (32%)	223	237	187	-21	-34	-7	5	-31	-17	-1	-10	57
Above Normal (16%)	136	94	149	56	-52	-32	-49	-99	-41	-5	0	193
Below Normal (13%)	235	214	230	127	69	-16	-75	-125	-62	-6	2	-32
Dry (24%)	206	165	208	63	-11	-70	-89	-69	-16	-30	-54	21
Critical (15%)	102	82	104	63	-34	-53	-74	-52	2	4	-11	21

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.12.2. Contra Costa Water District Old River Intake Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	902	953	991	870	607	511	476	435	385	474	632	781
20%	862	864	922	821	552	438	416	375	313	360	543	729
30%	821	800	865	735	507	404	387	326	297	346	467	695
40%	806	750	827	696	473	382	360	305	284	320	445	676
50%	784	731	771	659	433	355	320	286	271	291	410	658
60%	758	714	728	511	402	330	300	277	261	276	362	637
70%	743	699	662	428	368	305	289	266	254	269	331	623
80%	720	646	501	395	338	289	281	258	250	262	313	576
90%	660	532	326	317	298	263	263	245	241	254	290	525
Long Term												
Full Simulation Period[b]	767	740	730	612	447	375	347	313	291	330	428	648
Water Year Types[c]												
Wet (32%)	700	684	588	442	354	307	271	247	253	266	309	541
Above Normal (16%)	843	778	724	623	423	322	294	272	258	265	338	659
Below Normal (13%)	722	656	738	672	485	371	360	328	282	325	440	703
Dry (24%)	775	767	829	714	487	410	390	340	291	370	526	682
Critical (15%)	854	852	872	742	574	522	486	443	416	478	609	759

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	6	-19	4	-4	2	-14	-45	-42	-23	40	1	22
20%	20	61	65	54	-3	-14	-44	-74	-50	-9	-20	7
30%	31	79	116	68	0	-18	-37	-109	-36	7	-29	23
40%	52	70	209	124	8	-5	-42	-103	-39	-5	8	43
50%	71	147	340	119	-13	-10	-49	-107	-42	2	3	78
60%	422	384	362	25	-20	-18	-24	-99	-49	-1	-4	82
70%	420	405	347	-22	0	-26	-21	-90	-49	-2	-6	100
80%	406	372	210	10	-16	-23	2	-50	-38	-3	-11	102
90%	359	266	47	-32	-20	-16	36	47	-25	-4	-13	71
Long Term												
Full Simulation Period[b]	187	182	176	42	-16	-16	-23	-63	-37	1	-8	54
Water Year Types[c]												
Wet (32%)	217	247	192	14	-19	-14	11	-37	-32	-1	-13	43
Above Normal (16%)	151	123	154	81	-21	-24	-48	-105	-51	-2	-1	199
Below Normal (13%)	235	205	232	114	13	-19	-48	-108	-56	14	17	16
Dry (24%)	195	182	211	52	-12	-14	-37	-68	-38	-3	-22	16
Critical (15%)	101	81	53	-24	-36	-11	-25	-25	-14	1	-5	20

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.12.3. Contra Costa Water District Old River Intake Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	912	970	977	879	606	522	555	542	475	446	631	763
20%	853	827	843	781	555	454	520	533	392	376	588	729
30%	801	734	750	674	496	423	460	488	370	350	517	686
40%	766	671	628	571	465	385	407	438	342	330	442	656
50%	709	595	426	540	446	365	375	393	326	290	408	588
60%	340	328	377	484	423	349	323	366	313	277	362	559
70%	324	288	314	449	382	331	310	355	309	271	339	531
80%	314	276	291	385	353	311	275	308	297	263	325	482
90%	301	266	280	350	318	279	228	198	266	259	299	443
Long Term												
Full Simulation Period[b]	584	560	555	572	465	391	386	401	348	332	444	600
Water Year Types[c]												
Wet (32%)	485	443	403	428	376	321	261	278	286	266	322	496
Above Normal (16%)	706	654	563	540	444	346	338	364	313	267	338	459
Below Normal (13%)	486	453	506	557	470	388	398	435	357	315	423	695
Dry (24%)	585	582	615	671	502	425	464	480	372	388	574	685
Critical (15%)	756	772	818	766	617	540	568	546	475	468	623	752

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	16	-3	-10	5	0	-3	34	65	67	12	-1	4
20%	10	25	-14	14	1	3	60	83	28	7	25	7
30%	11	12	1	6	-11	0	36	52	37	11	21	14
40%	12	-8	10	0	1	-2	5	30	19	5	4	23
50%	-4	11	-5	0	0	0	7	1	14	1	1	8
60%	3	-2	10	-1	1	1	-1	-9	3	0	-3	5
70%	1	-6	-1	0	13	0	0	-2	5	1	2	8
80%	-1	2	0	0	-1	0	-4	0	9	-1	1	8
90%	0	0	0	0	-1	1	1	0	0	1	-4	-11
Long Term												
Full Simulation Period[b]	4	2	0	2	2	1	16	25	21	3	8	7
Water Year Types[c]												
Wet (32%)	1	7	8	0	2	0	0	-6	1	0	0	-2
Above Normal (16%)	14	-1	-8	-2	0	0	-3	-12	5	1	-1	-1
Below Normal (13%)	-1	3	0	-1	-2	-2	-10	-1	20	4	1	8
Dry (24%)	5	-3	-3	9	3	1	37	72	42	15	27	19
Critical (15%)	3	0	-1	0	7	7	58	78	46	-8	9	12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.12.4. Contra Costa Water District Old River Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-5	5	-23	-39	-81	31	114	91	11	7	36	3
20%	-13	-52	-54	-74	-26	25	83	86	15	23	67	-7
30%	-40	-82	-134	-106	17	38	89	98	25	11	28	-25
40%	-56	-81	-217	-162	43	40	84	105	28	18	-2	-33
50%	-77	-149	-344	-116	50	33	67	104	30	-1	14	-68
60%	-439	-387	-350	-16	54	32	37	93	37	1	6	-80
70%	-420	-397	-343	63	13	38	30	83	38	6	9	-102
80%	-411	-348	-200	37	39	34	6	38	29	4	9	-105
90%	-360	-222	-42	40	35	16	-15	-59	17	4	3	-76
Long Term												
Full Simulation Period[b]	-189	-171	-180	-44	18	34	49	67	24	9	18	-53
Water Year Types[c]												
Wet (32%)	-223	-237	-187	21	34	7	-5	31	17	1	10	-57
Above Normal (16%)	-136	-94	-149	-56	52	32	49	99	41	5	0	-193
Below Normal (13%)	-235	-214	-230	-127	-69	16	75	125	62	6	-2	32
Dry (24%)	-206	-165	-208	-63	11	70	89	69	16	30	54	-21
Critical (15%)	-102	-82	-104	-63	34	53	74	52	-2	-4	11	-21

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.12.5. Contra Costa Water District Old River Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	902	953	991	870	607	511	476	435	385	474	632	781
20%	862	864	922	821	552	438	416	375	313	360	543	729
30%	821	800	865	735	507	404	387	326	297	346	467	695
40%	806	750	827	696	473	382	360	305	284	320	445	676
50%	784	731	771	659	433	355	320	286	271	291	410	658
60%	758	714	728	511	402	330	300	277	261	276	362	637
70%	743	699	662	428	368	305	289	266	254	269	331	623
80%	720	646	501	395	338	289	281	258	250	262	313	576
90%	660	532	326	317	298	263	263	245	241	254	290	525
Long Term												
Full Simulation Period[b]	767	740	730	612	447	375	347	313	291	330	428	648
Water Year Types[c]												
Wet (32%)	700	684	588	442	354	307	271	247	253	266	309	541
Above Normal (16%)	843	778	724	623	423	322	294	272	258	265	338	659
Below Normal (13%)	722	656	738	672	485	371	360	328	282	325	440	703
Dry (24%)	775	767	829	714	487	410	390	340	291	370	526	682
Critical (15%)	854	852	872	742	574	522	486	443	416	478	609	759

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1	-15	-19	-44	-79	17	69	49	-13	47	37	25
20%	6	10	12	-21	-29	11	39	11	-36	14	47	-1
30%	-9	-3	-19	-38	17	20	52	-12	-11	17	-1	-2
40%	-4	-10	-8	-38	51	34	42	2	-12	14	6	11
50%	-5	-2	-4	3	37	23	19	-3	-12	0	17	10
60%	-17	-3	12	10	34	14	13	-5	-12	0	2	2
70%	0	8	4	42	13	12	9	-8	-11	4	3	-1
80%	-5	24	10	47	23	11	8	-12	-8	2	-2	-3
90%	-1	45	5	7	15	0	21	-12	-8	0	-10	-5
Long Term												
Full Simulation Period[b]	-2	11	-4	-2	2	19	25	3	-13	10	10	2
Water Year Types[c]												
Wet (32%)	-6	10	5	35	15	-7	5	-7	-15	1	-4	-14
Above Normal (16%)	15	28	5	25	31	9	1	-6	-10	3	-1	5
Below Normal (13%)	0	-9	2	-13	-56	-3	28	16	6	20	15	48
Dry (24%)	-10	17	4	-11	-1	56	52	1	-22	27	33	-5
Critical (15%)	-1	-1	-51	-87	-1	42	49	27	-16	-3	6	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.12.6. Contra Costa Water District Old River Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	912	970	977	879	606	522	555	542	475	446	631	763
20%	853	827	843	781	555	454	520	533	392	376	588	729
30%	801	734	750	674	496	423	460	488	370	350	517	686
40%	766	671	628	571	465	385	407	438	342	330	442	656
50%	709	595	426	540	446	365	375	393	326	290	408	588
60%	340	328	377	484	423	349	323	366	313	277	362	559
70%	324	288	314	449	382	331	310	355	309	271	339	531
80%	314	276	291	385	353	311	275	308	297	263	325	482
90%	301	266	280	350	318	279	228	198	266	259	299	443
Long Term												
Full Simulation Period[b]	584	560	555	572	465	391	386	401	348	332	444	600
Water Year Types[c]												
Wet (32%)	485	443	403	428	376	321	261	278	286	266	322	496
Above Normal (16%)	706	654	563	540	444	346	338	364	313	267	338	459
Below Normal (13%)	486	453	506	557	470	388	398	435	357	315	423	695
Dry (24%)	585	582	615	671	502	425	464	480	372	388	574	685
Critical (15%)	756	772	818	766	617	540	568	546	475	468	623	752

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11	2	-33	-35	-81	29	148	156	77	19	36	7
20%	-3	-27	-67	-60	-25	28	143	169	43	30	91	0
30%	-29	-70	-134	-99	7	38	125	150	63	21	49	-11
40%	-44	-89	-207	-163	44	37	89	135	47	24	2	-10
50%	-80	-139	-349	-116	50	33	74	105	43	-1	15	-61
60%	-436	-389	-339	-17	55	32	36	84	40	1	3	-76
70%	-420	-403	-344	63	26	38	30	81	43	7	11	-94
80%	-412	-347	-200	37	38	34	2	38	38	4	10	-97
90%	-360	-221	-42	40	35	16	-14	-59	17	5	-1	-87
Long Term												
Full Simulation Period[b]	-184	-169	-179	-42	20	35	64	91	45	12	25	-46
Water Year Types[c]												
Wet (32%)	-221	-230	-179	22	37	7	-5	25	18	2	9	-59
Above Normal (16%)	-122	-96	-157	-58	52	32	46	86	46	6	-1	-195
Below Normal (13%)	-236	-211	-231	-127	-71	14	65	123	82	10	-2	40
Dry (24%)	-200	-167	-211	-54	15	71	126	141	58	45	81	-2
Critical (15%)	-98	-82	-105	-63	41	60	132	130	44	-13	20	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

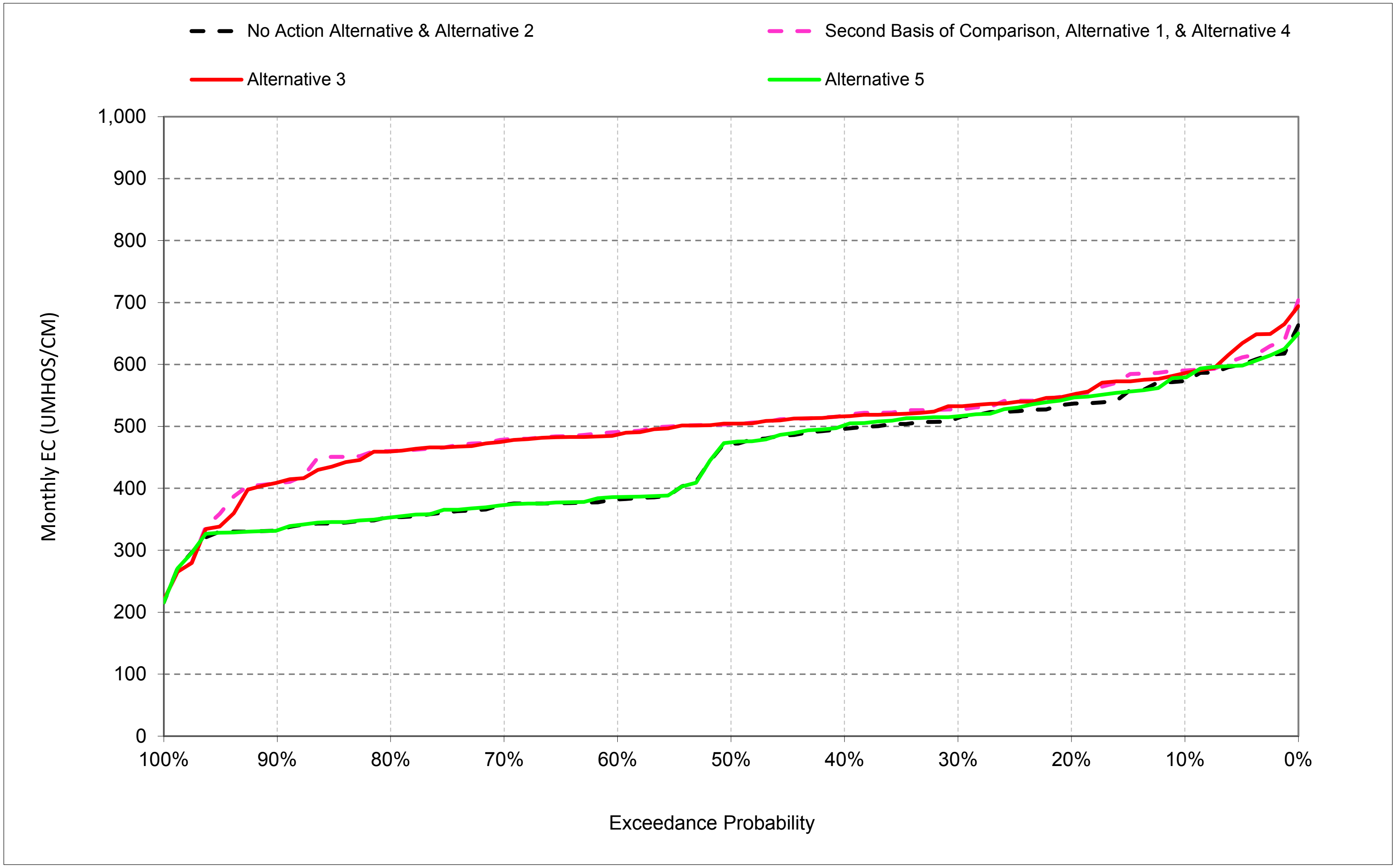
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

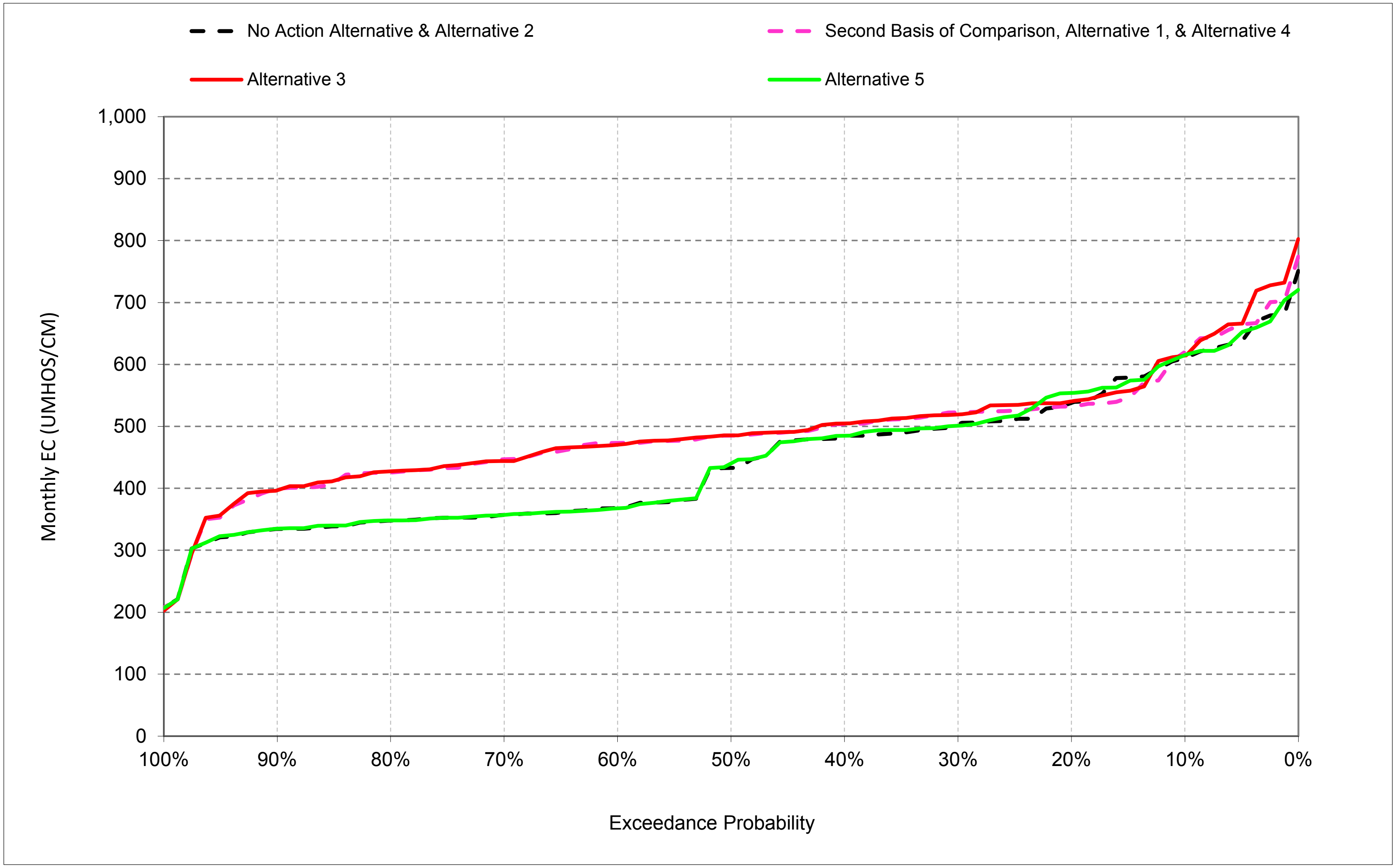
B.13. Contra Costa Water District Victoria Canal Intake Salinity

Figure 6E.B.13.1. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, October



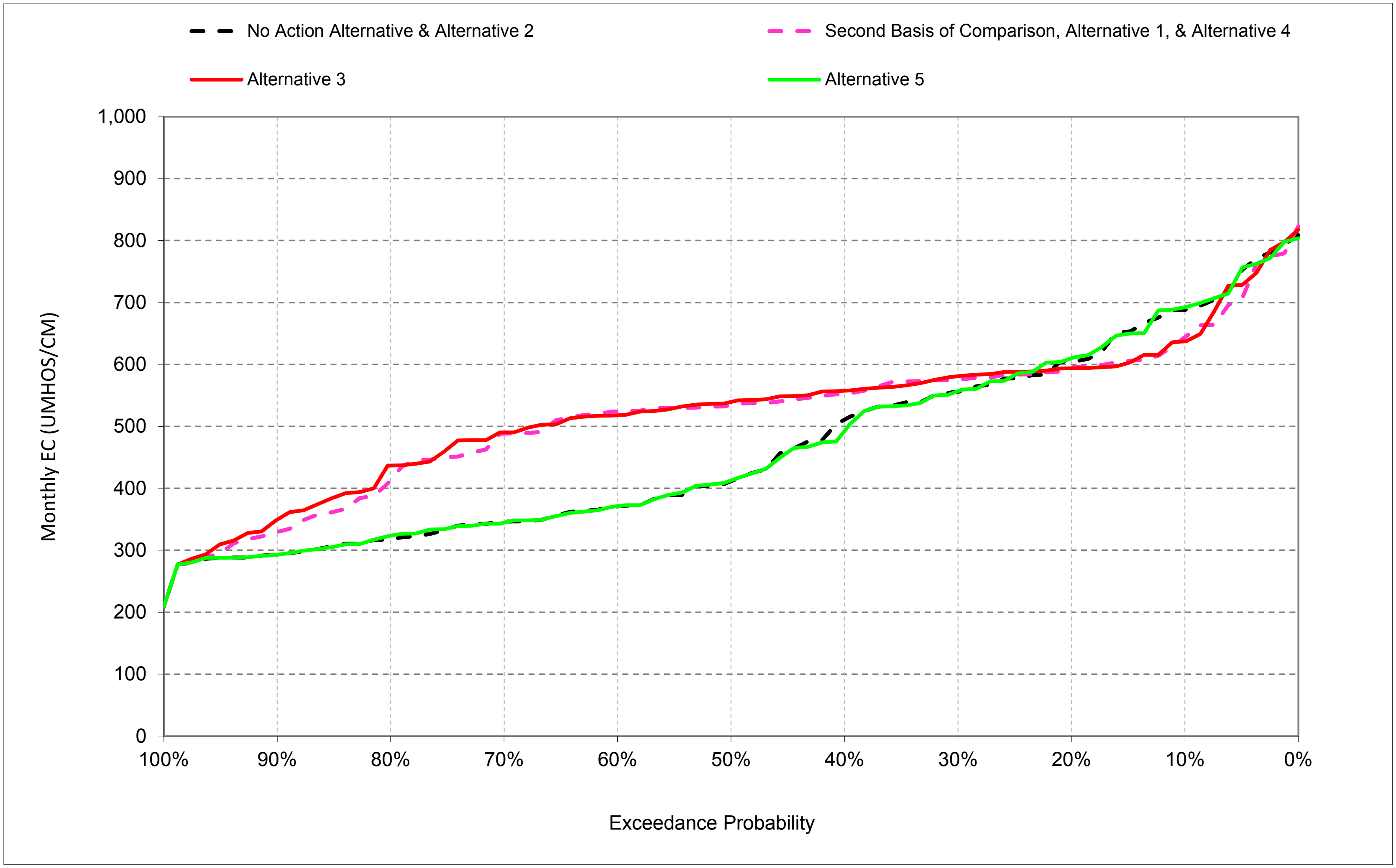
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.2. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, November



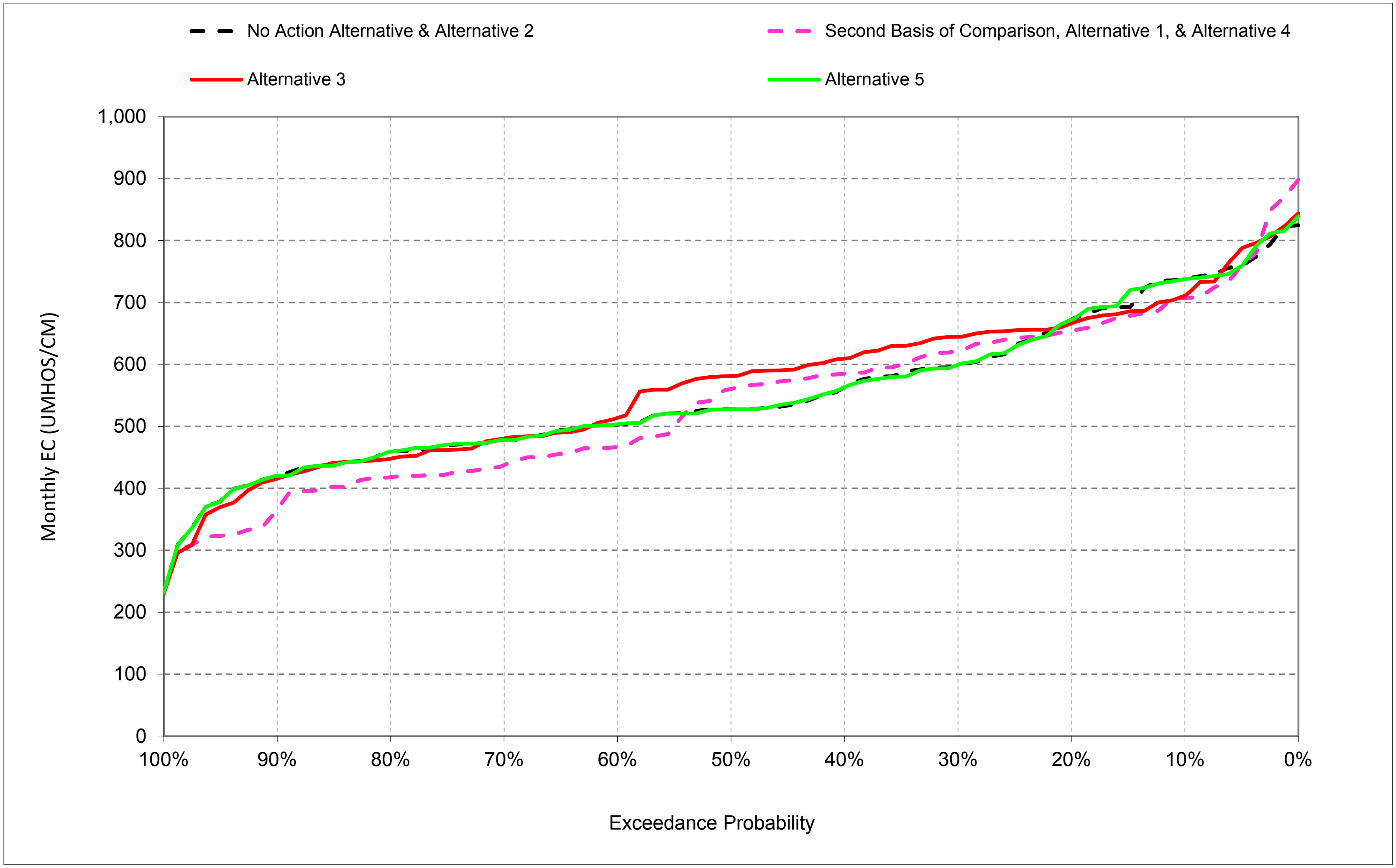
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.3. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, December



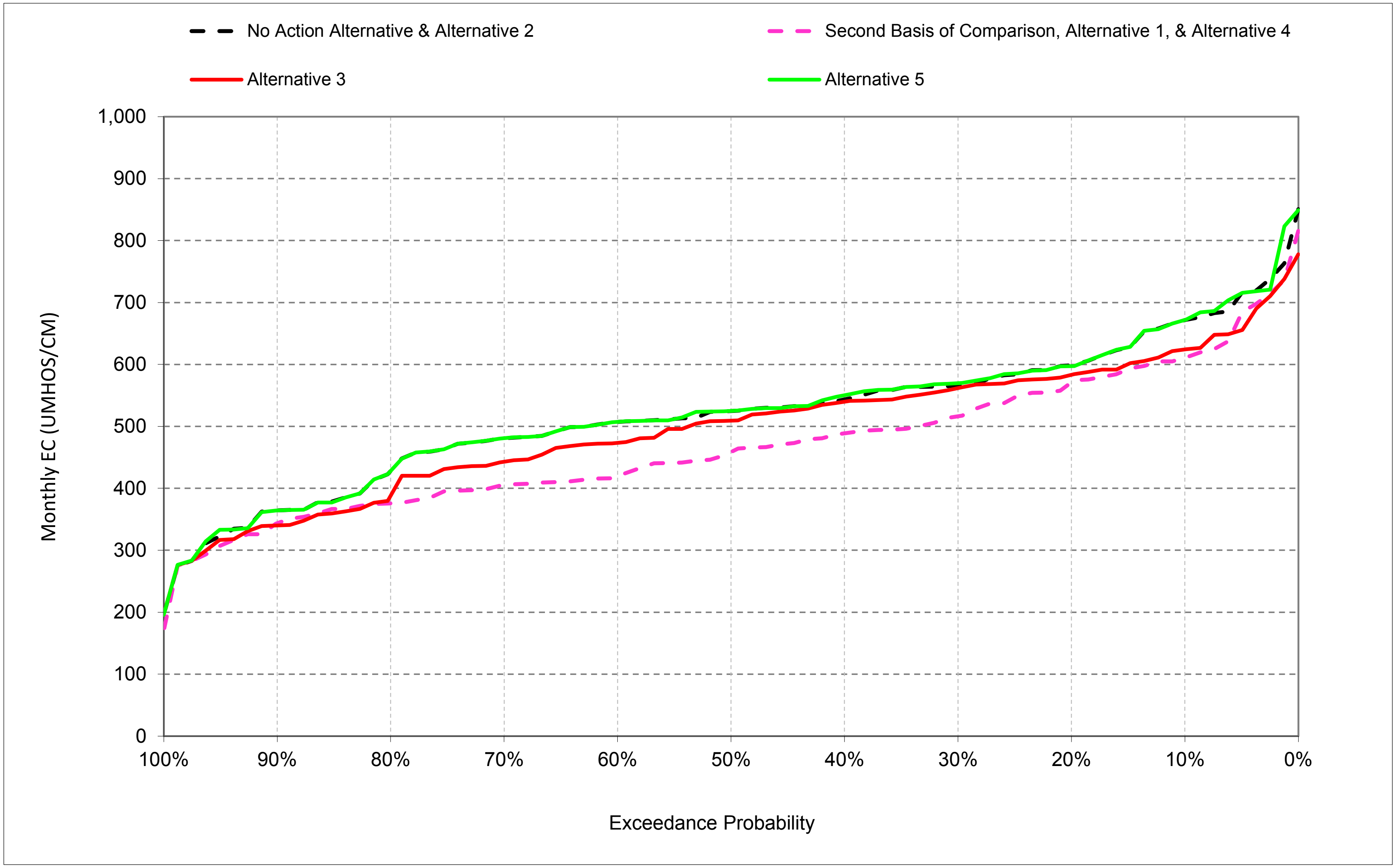
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.4. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, January



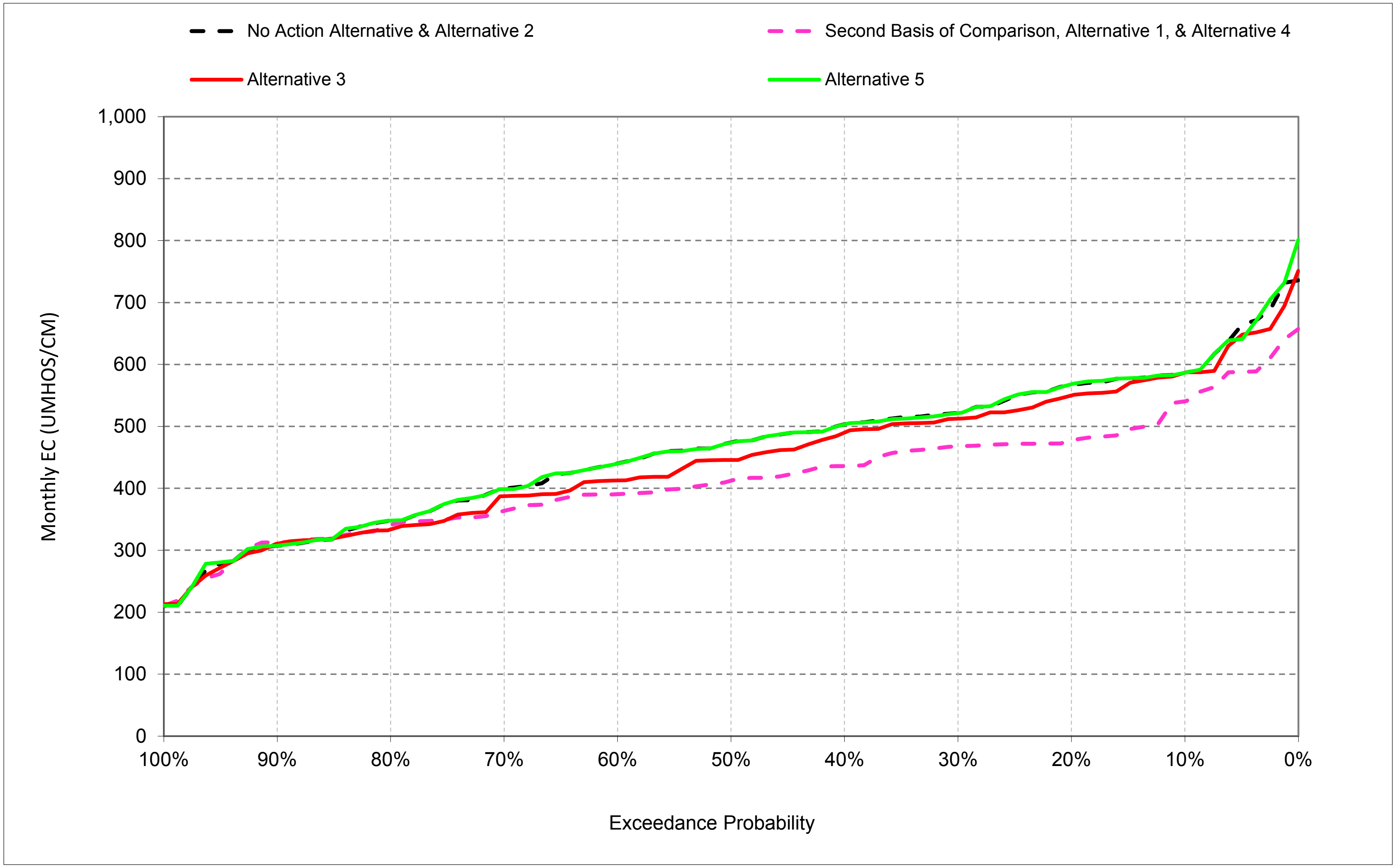
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.5. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, February



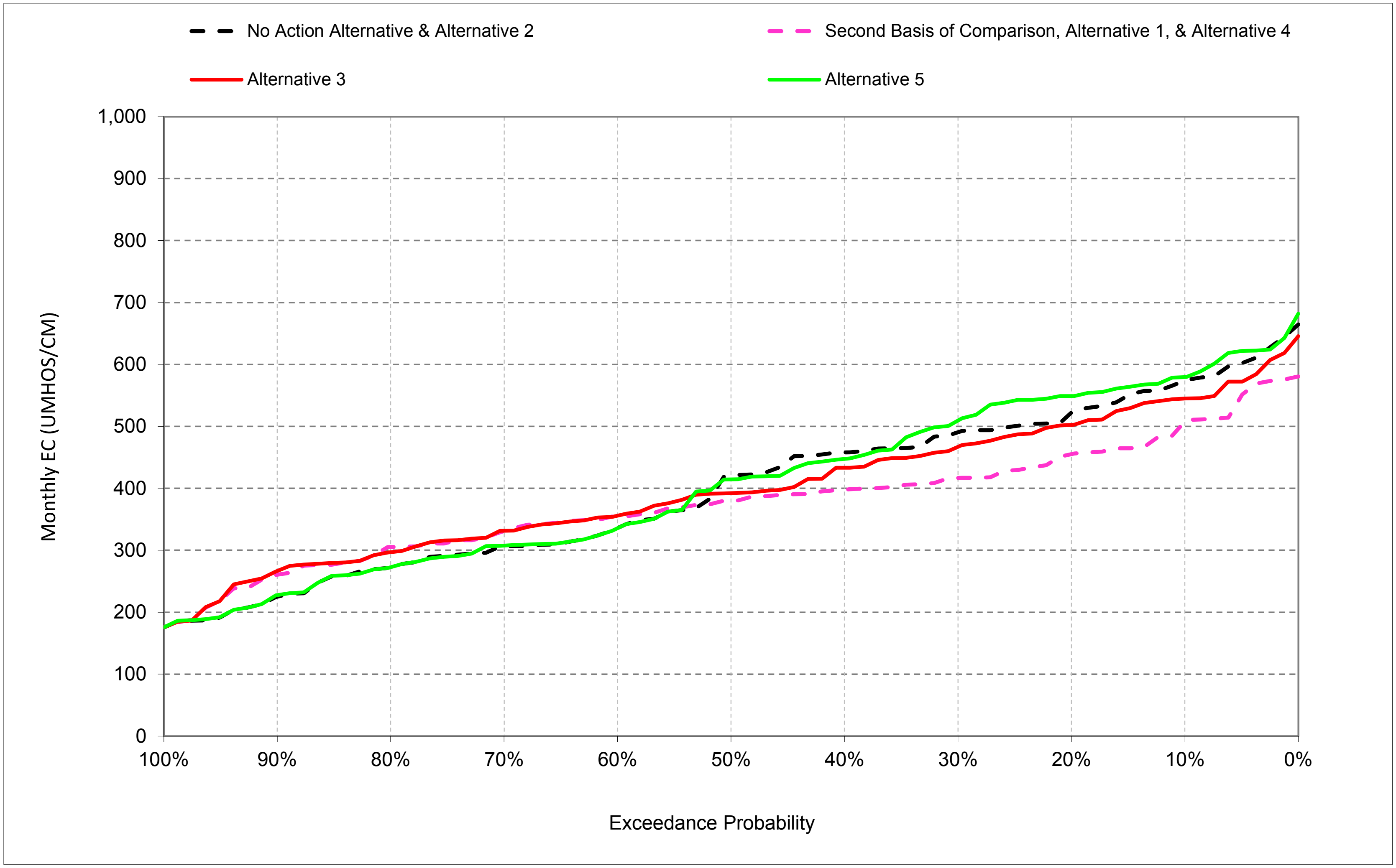
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.6. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, March



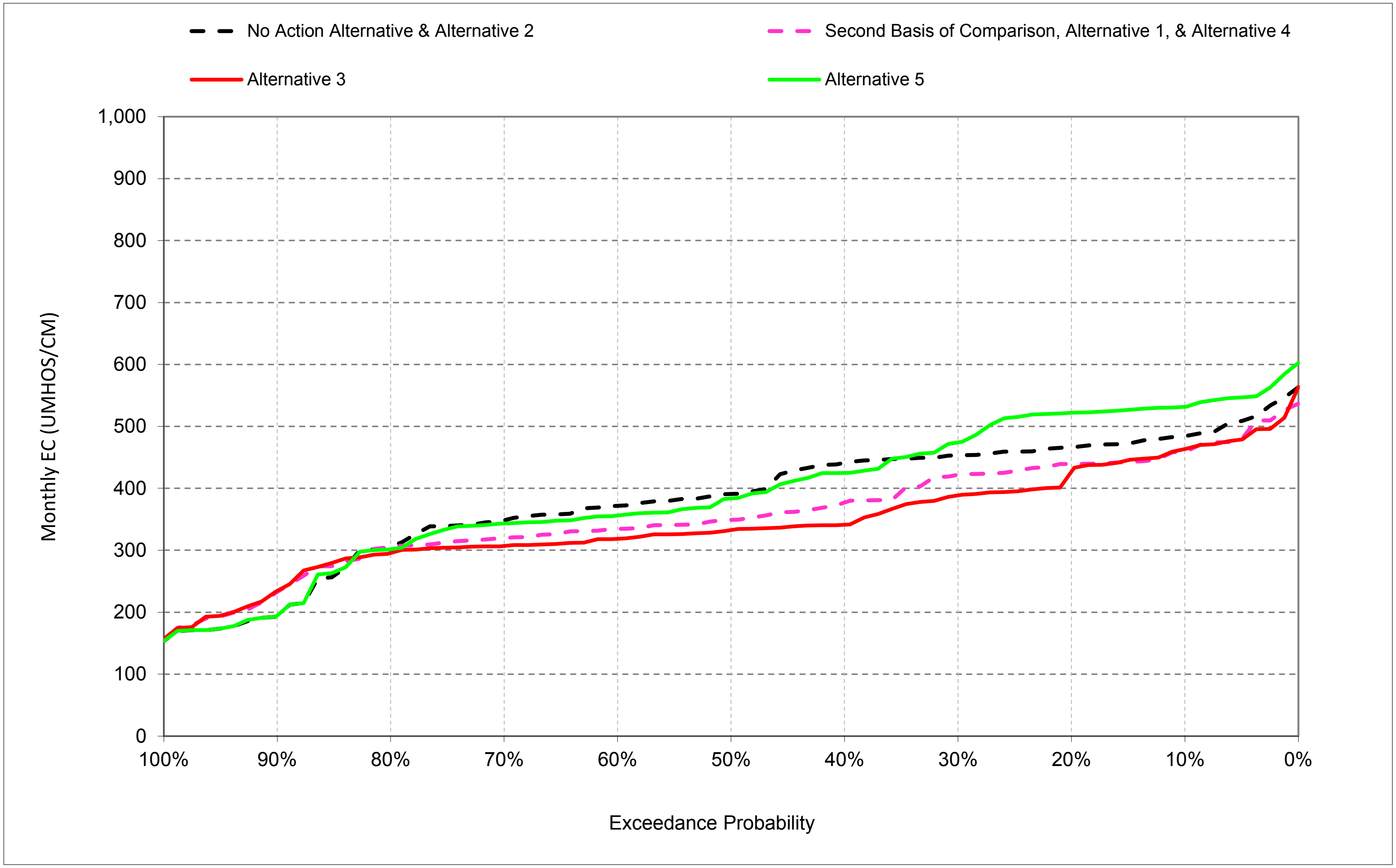
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.7. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, April



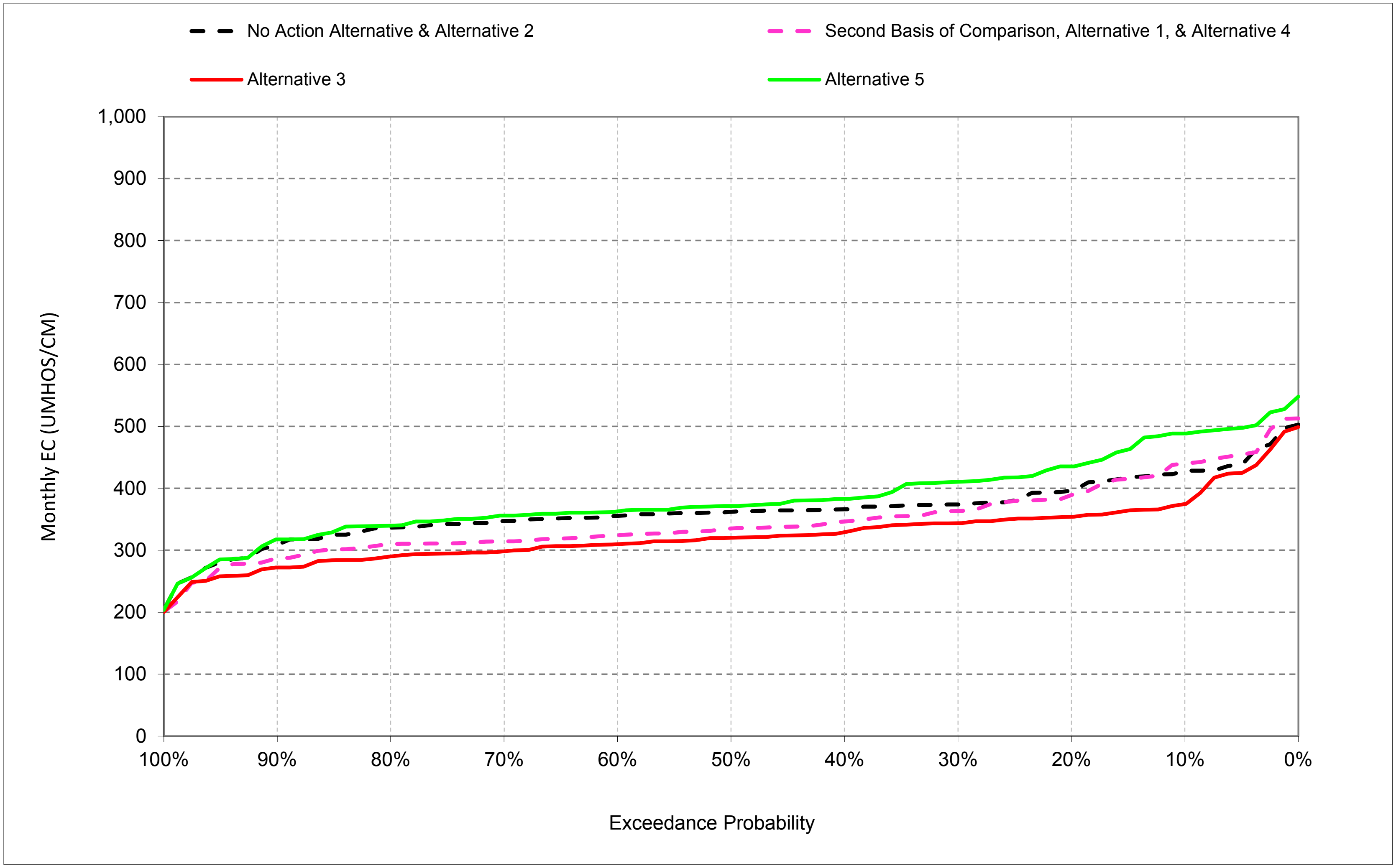
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.8. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, May



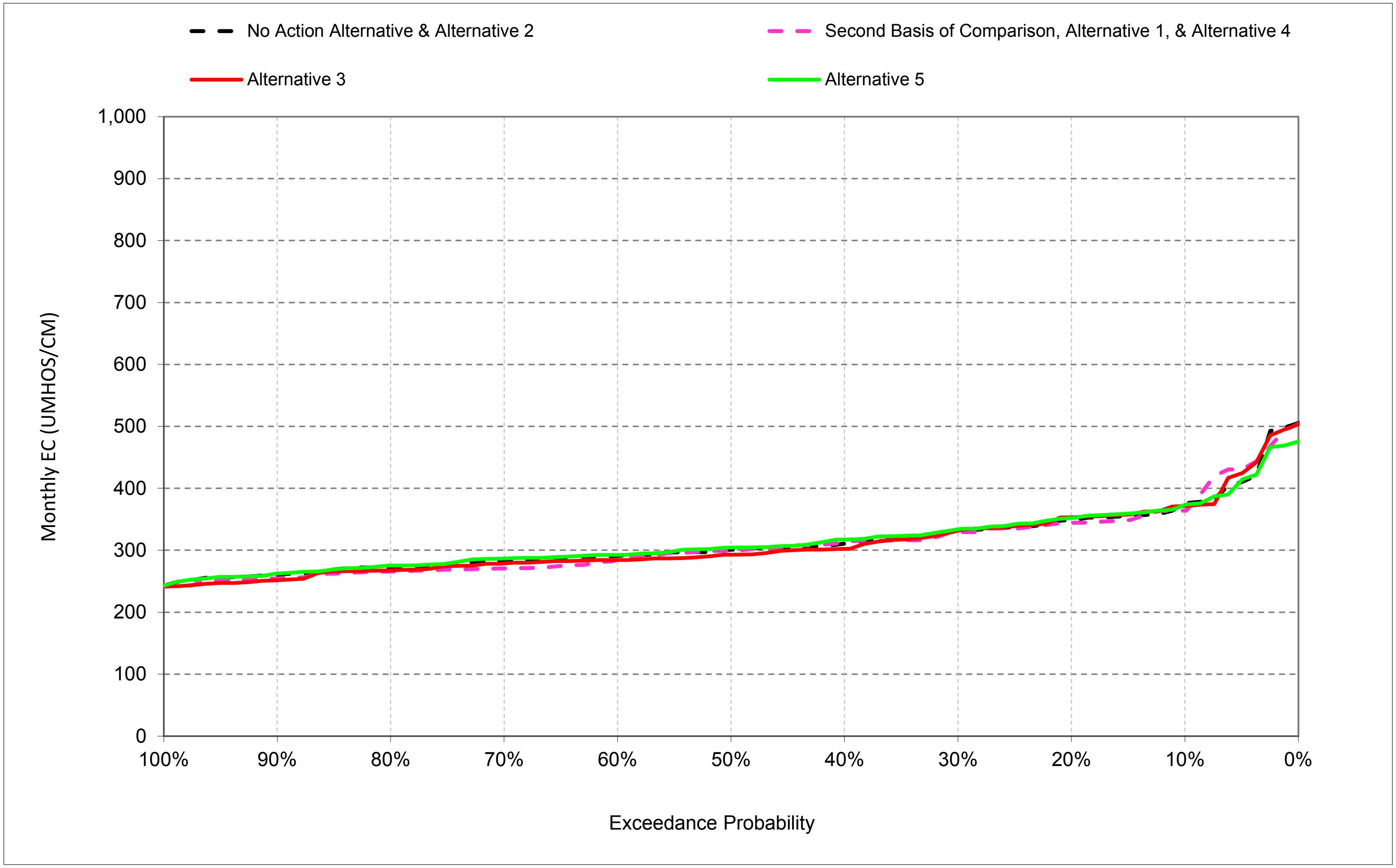
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.9. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, June



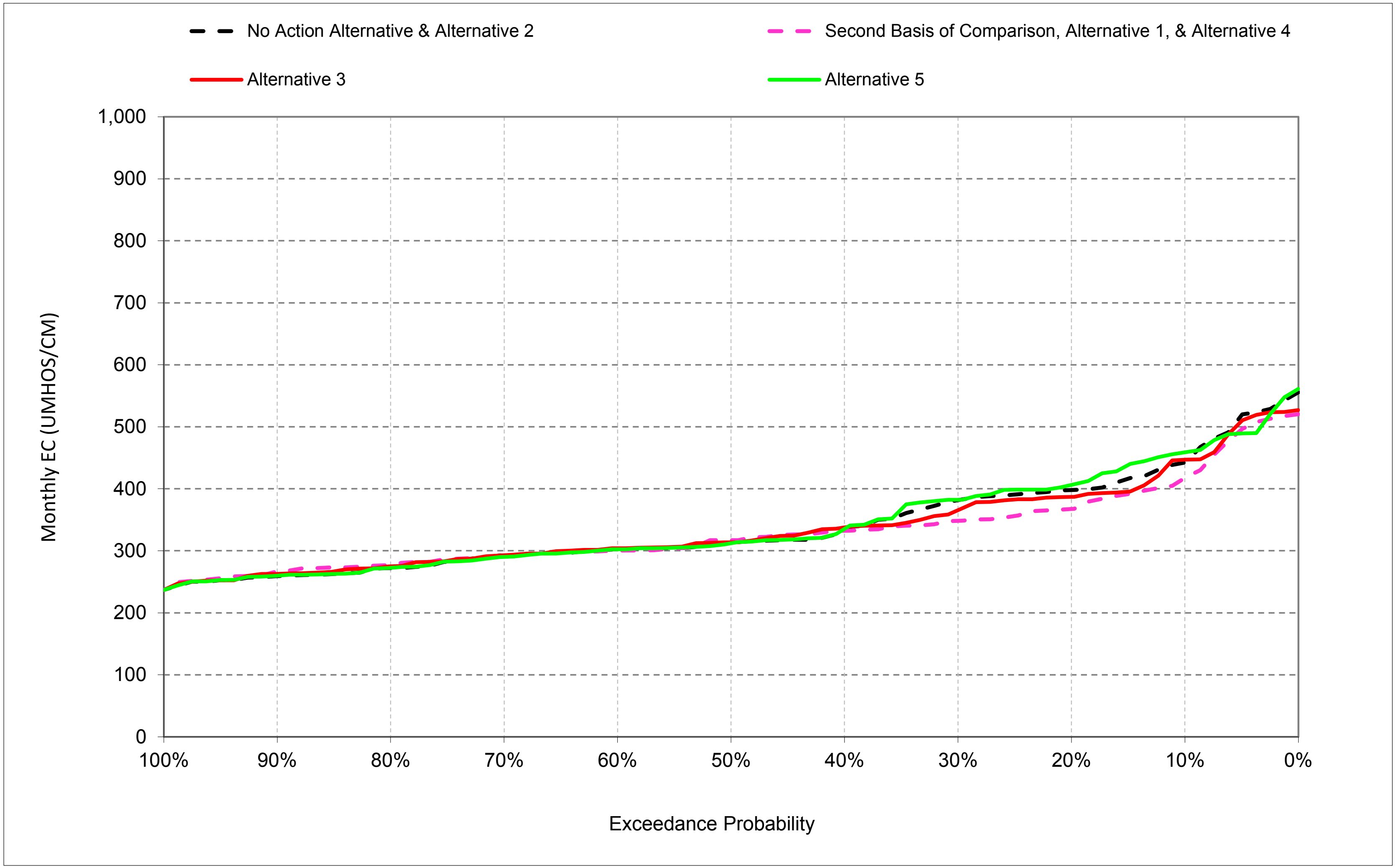
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.10. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, July



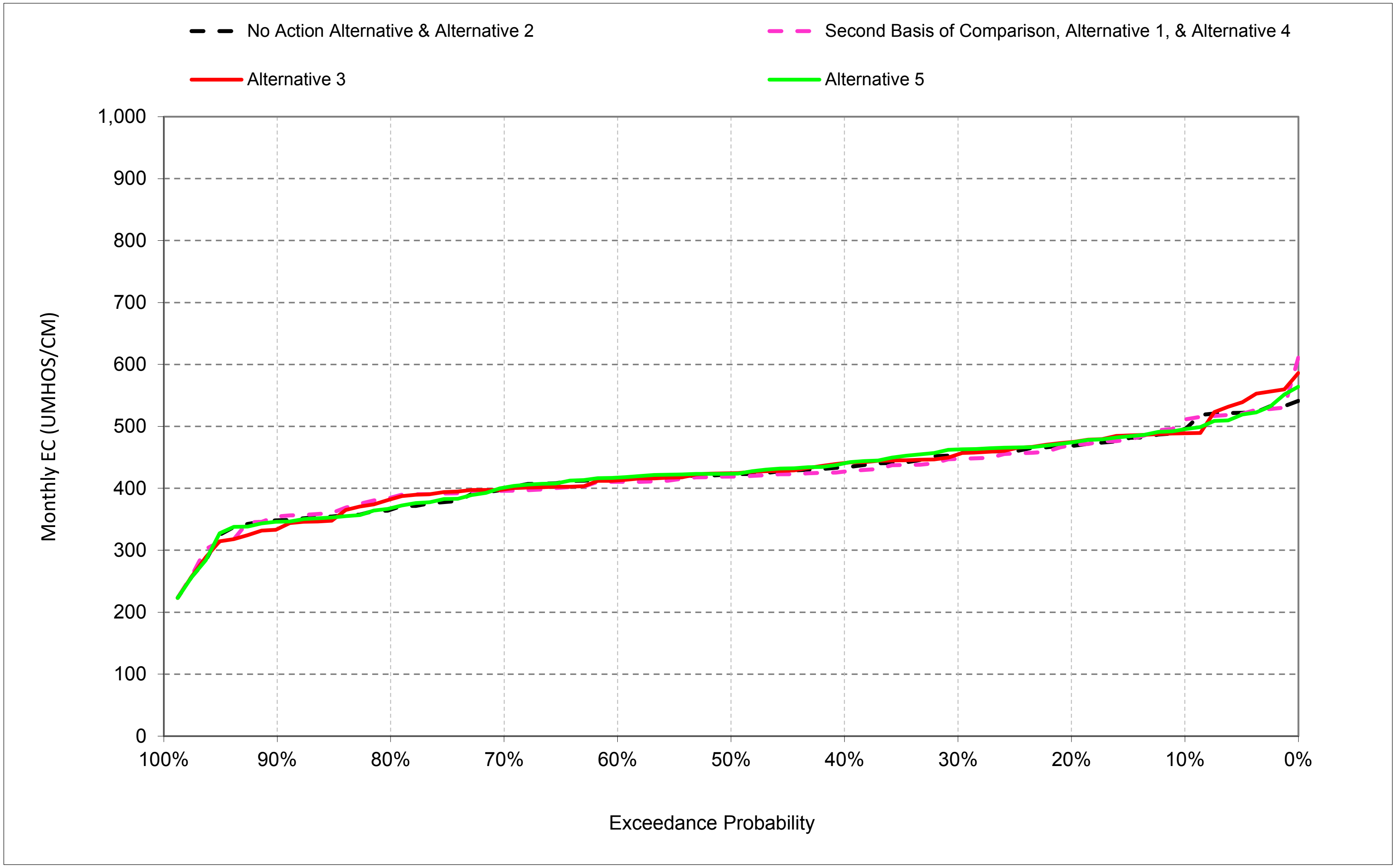
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.11. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.13.12. Contra Costa Victoria Canal Intake Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.13.1. Contra Costa Victoria Canal Intake Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

Alternative 1

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

Alternative 1 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5	-5	23	39	81	-31	-114	-91	-11	-7	-36	-3
20%	13	52	54	74	26	-25	-83	-86	-15	-23	-67	7
30%	40	82	134	106	-17	-38	-89	-98	-25	-11	-28	25
40%	56	81	217	162	-43	-40	-84	-105	-28	-18	2	33
50%	77	149	344	116	-50	-33	-67	-104	-30	1	-14	68
60%	439	387	350	16	-54	-32	-37	-93	-37	-1	-6	80
70%	420	397	343	-63	-13	-38	-30	-83	-38	-6	-9	102
80%	411	348	200	-37	-39	-34	-6	-38	-29	-4	-9	105
90%	360	222	42	-40	-35	-16	15	59	-17	-4	-3	76
Long Term												
Full Simulation Period[b]	189	171	180	44	-18	-34	-49	-67	-24	-9	-18	53
Water Year Types[c]												
Wet (32%)	223	237	187	-21	-34	-7	5	-31	-17	-1	-10	57
Above Normal (16%)	136	94	149	56	-52	-32	-49	-99	-41	-5	0	193
Below Normal (13%)	235	214	230	127	69	-16	-75	-125	-62	-6	2	-32
Dry (24%)	206	165	208	63	-11	-70	-89	-69	-16	-30	-54	21
Critical (15%)	102	82	104	63	-34	-53	-74	-52	2	4	-11	21

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.13.2. Contra Costa Victoria Canal Intake Salinity, Monthly EC

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

Alternative 3

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	902	953	991	870	607	511	476	435	385	474	632	781
20%	862	864	922	821	552	438	416	375	313	360	543	729
30%	821	800	865	735	507	404	387	326	297	346	467	695
40%	806	750	827	696	473	382	360	305	284	320	445	676
50%	784	731	771	659	433	355	320	286	271	291	410	658
60%	758	714	728	511	402	330	300	277	261	276	362	637
70%	743	699	662	428	368	305	289	266	254	269	331	623
80%	720	646	501	395	338	289	281	258	250	262	313	576
90%	660	532	326	317	298	263	263	245	241	254	290	525
Long Term												
Full Simulation Period[b]	767	740	730	612	447	375	347	313	291	330	428	648
Water Year Types[c]												
Wet (32%)	700	684	588	442	354	307	271	247	253	266	309	541
Above Normal (16%)	843	778	724	623	423	322	294	272	258	265	338	659
Below Normal (13%)	722	656	738	672	485	371	360	328	282	325	440	703
Dry (24%)	775	767	829	714	487	410	390	340	291	370	526	682
Critical (15%)	854	852	872	742	574	522	486	443	416	478	609	759

Alternative 3 minus No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	-19	4	-4	2	-14	-45	-42	-23	40	1	22
20%	20	61	65	54	-3	-14	-44	-74	-50	-9	-20	7
30%	31	79	116	68	0	-18	-37	-109	-36	7	-29	23
40%	52	70	209	124	8	-5	-42	-103	-39	-5	8	43
50%	71	147	340	119	-13	-10	-49	-107	-42	2	3	78
60%	422	384	362	25	-20	-18	-24	-99	-49	-1	-4	82
70%	420	405	347	-22	0	-26	-21	-90	-49	-2	-6	100
80%	406	372	210	10	-16	-23	2	-50	-38	-3	-11	102
90%	359	266	47	-32	-20	-16	36	47	-25	-4	-13	71
Long Term												
Full Simulation Period[b]	187	182	176	42	-16	-16	-23	-63	-37	1	-8	54
Water Year Types[c]												
Wet (32%)	217	247	192	14	-19	-14	11	-37	-32	-1	-13	43
Above Normal (16%)	151	123	154	81	-21	-24	-48	-105	-51	-2	-1	199
Below Normal (13%)	235	205	232	114	13	-19	-48	-108	-56	14	17	16
Dry (24%)	195	182	211	52	-12	-14	-37	-68	-38	-3	-22	16
Critical (15%)	101	81	53	-24	-36	-11	-25	-25	-14	1	-5	20

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.13.3. Contra Costa Victoria Canal Intake Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	912	970	977	879	606	522	555	542	475	446	631	763
20%	853	827	843	781	555	454	520	533	392	376	588	729
30%	801	734	750	674	496	423	460	488	370	350	517	686
40%	766	671	628	571	465	385	407	438	342	330	442	656
50%	709	595	426	540	446	365	375	393	326	290	408	588
60%	340	328	377	484	423	349	323	366	313	277	362	559
70%	324	288	314	449	382	331	310	355	309	271	339	531
80%	314	276	291	385	353	311	275	308	297	263	325	482
90%	301	266	280	350	318	279	228	198	266	259	299	443
Long Term												
Full Simulation Period[b]	584	560	555	572	465	391	386	401	348	332	444	600
Water Year Types[c]												
Wet (32%)	485	443	403	428	376	321	261	278	286	266	322	496
Above Normal (16%)	706	654	563	540	444	346	338	364	313	267	338	459
Below Normal (13%)	486	453	506	557	470	388	398	435	357	315	423	695
Dry (24%)	585	582	615	671	502	425	464	480	372	388	574	685
Critical (15%)	756	772	818	766	617	540	568	546	475	468	623	752

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	16	-3	-10	5	0	-3	34	65	67	12	-1	4
20%	10	25	-14	14	1	3	60	83	28	7	25	7
30%	11	12	1	6	-11	0	36	52	37	11	21	14
40%	12	-8	10	0	1	-2	5	30	19	5	4	23
50%	-4	11	-5	0	0	0	7	1	14	1	1	8
60%	3	-2	10	-1	1	1	-1	-9	3	0	-3	5
70%	1	-6	-1	0	13	0	0	-2	5	1	2	8
80%	-1	2	0	0	-1	0	-4	0	9	-1	1	8
90%	0	0	0	0	-1	1	1	0	0	1	-4	-11
Long Term												
Full Simulation Period[b]	4	2	0	2	2	1	16	25	21	3	8	7
Water Year Types[c]												
Wet (32%)	1	7	8	0	2	0	0	-6	1	0	0	-2
Above Normal (16%)	14	-1	-8	-2	0	0	-3	-12	5	1	-1	-1
Below Normal (13%)	-1	3	0	-1	-2	-2	-10	-1	20	4	1	8
Dry (24%)	5	-3	-3	9	3	1	37	72	42	15	27	19
Critical (15%)	3	0	-1	0	7	7	58	78	46	-8	9	12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.13.4. Contra Costa Victoria Canal Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	896	973	987	875	605	525	521	477	408	434	631	759
20%	843	802	857	767	554	451	461	449	364	368	563	722
30%	790	722	749	667	507	423	424	436	333	339	496	672
40%	754	680	618	571	464	387	402	408	323	325	437	633
50%	713	584	431	540	446	365	368	393	312	289	408	580
60%	337	330	366	486	422	348	324	375	310	277	366	555
70%	323	294	315	449	368	331	310	356	303	270	337	523
80%	314	274	291	385	354	311	279	308	288	264	324	474
90%	301	266	280	349	319	279	227	198	266	258	303	454
Long Term												
Full Simulation Period[b]	580	558	554	570	463	390	370	376	328	329	436	594
Water Year Types[c]												
Wet (32%)	483	436	396	428	373	321	260	284	284	266	323	498
Above Normal (16%)	692	656	571	542	444	346	341	377	308	266	339	460
Below Normal (13%)	487	451	506	558	472	390	408	436	338	311	422	688
Dry (24%)	580	584	618	662	499	424	427	407	329	373	548	666
Critical (15%)	753	772	819	766	610	533	511	468	429	477	614	740

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-5	5	-23	-39	-81	31	114	91	11	7	36	3
20%	-13	-52	-54	-74	-26	25	83	86	15	23	67	-7
30%	-40	-82	-134	-106	17	38	89	98	25	11	28	-25
40%	-56	-81	-217	-162	43	40	84	105	28	18	-2	-33
50%	-77	-149	-344	-116	50	33	67	104	30	-1	14	-68
60%	-439	-387	-350	-16	54	32	37	93	37	1	6	-80
70%	-420	-397	-343	63	13	38	30	83	38	6	9	-102
80%	-411	-348	-200	37	39	34	6	38	29	4	9	-105
90%	-360	-222	-42	40	35	16	-15	-59	17	4	3	-76
Long Term												
Full Simulation Period[b]	-189	-171	-180	-44	18	34	49	67	24	9	18	-53
Water Year Types[c]												
Wet (32%)	-223	-237	-187	21	34	7	-5	31	17	1	10	-57
Above Normal (16%)	-136	-94	-149	-56	52	32	49	99	41	5	0	-193
Below Normal (13%)	-235	-214	-230	-127	-69	16	75	125	62	6	-2	32
Dry (24%)	-206	-165	-208	-63	11	70	89	69	16	30	54	-21
Critical (15%)	-102	-82	-104	-63	34	53	74	52	-2	-4	11	-21

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.13.5. Contra Costa Victoria Canal Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	902	953	991	870	607	511	476	435	385	474	632	781
20%	862	864	922	821	552	438	416	375	313	360	543	729
30%	821	800	865	735	507	404	387	326	297	346	467	695
40%	806	750	827	696	473	382	360	305	284	320	445	676
50%	784	731	771	659	433	355	320	286	271	291	410	658
60%	758	714	728	511	402	330	300	277	261	276	362	637
70%	743	699	662	428	368	305	289	266	254	269	331	623
80%	720	646	501	395	338	289	281	258	250	262	313	576
90%	660	532	326	317	298	263	263	245	241	254	290	525
Long Term												
Full Simulation Period[b]	767	740	730	612	447	375	347	313	291	330	428	648
Water Year Types[c]												
Wet (32%)	700	684	588	442	354	307	271	247	253	266	309	541
Above Normal (16%)	843	778	724	623	423	322	294	272	258	265	338	659
Below Normal (13%)	722	656	738	672	485	371	360	328	282	325	440	703
Dry (24%)	775	767	829	714	487	410	390	340	291	370	526	682
Critical (15%)	854	852	872	742	574	522	486	443	416	478	609	759

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1	-15	-19	-44	-79	17	69	49	-13	47	37	25
20%	6	10	12	-21	-29	11	39	11	-36	14	47	-1
30%	-9	-3	-19	-38	17	20	52	-12	-11	17	-1	-2
40%	-4	-10	-8	-38	51	34	42	2	-12	14	6	11
50%	-5	-2	-4	3	37	23	19	-3	-12	0	17	10
60%	-17	-3	12	10	34	14	13	-5	-12	0	2	2
70%	0	8	4	42	13	12	9	-8	-11	4	3	-1
80%	-5	24	10	47	23	11	8	-12	-8	2	-2	-3
90%	-1	45	5	7	15	0	21	-12	-8	0	-10	-5
Long Term												
Full Simulation Period[b]	-2	11	-4	-2	2	19	25	3	-13	10	10	2
Water Year Types[c]												
Wet (32%)	-6	10	5	35	15	-7	5	-7	-15	1	-4	-14
Above Normal (16%)	15	28	5	25	31	9	1	-6	-10	3	-1	5
Below Normal (13%)	0	-9	2	-13	-56	-3	28	16	6	20	15	48
Dry (24%)	-10	17	4	-11	-1	56	52	1	-22	27	33	-5
Critical (15%)	-1	-1	-51	-87	-1	42	49	27	-16	-3	6	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.13.6. Contra Costa Victoria Canal Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	901	968	1,010	914	687	494	407	386	397	427	595	755
20%	856	854	910	841	580	426	377	364	349	345	496	729
30%	830	804	884	773	490	385	335	338	308	328	468	697
40%	810	761	835	734	422	348	318	303	295	306	439	666
50%	789	733	775	656	396	332	301	288	283	291	393	648
60%	776	717	716	501	368	316	287	282	273	276	360	635
70%	743	691	658	386	356	294	280	274	265	265	328	624
80%	725	622	491	348	315	278	273	270	259	260	315	579
90%	661	487	321	310	283	263	242	257	250	254	300	530
Long Term												
Full Simulation Period[b]	769	729	734	614	445	356	322	310	304	320	419	646
Water Year Types[c]												
Wet (32%)	706	674	583	407	339	314	266	254	267	265	313	555
Above Normal (16%)	828	750	720	598	392	314	293	278	267	261	339	654
Below Normal (13%)	722	665	736	685	541	374	333	311	275	305	425	656
Dry (24%)	785	749	825	725	487	354	338	339	313	343	493	687
Critical (15%)	855	854	923	829	575	480	436	416	431	481	603	761

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	912	970	977	879	606	522	555	542	475	446	631	763
20%	853	827	843	781	555	454	520	533	392	376	588	729
30%	801	734	750	674	496	423	460	488	370	350	517	686
40%	766	671	628	571	465	385	407	438	342	330	442	656
50%	709	595	426	540	446	365	375	393	326	290	408	588
60%	340	328	377	484	423	349	323	366	313	277	362	559
70%	324	288	314	449	382	331	310	355	309	271	339	531
80%	314	276	291	385	353	311	275	308	297	263	325	482
90%	301	266	280	350	318	279	228	198	266	259	299	443
Long Term												
Full Simulation Period[b]	584	560	555	572	465	391	386	401	348	332	444	600
Water Year Types[c]												
Wet (32%)	485	443	403	428	376	321	261	278	286	266	322	496
Above Normal (16%)	706	654	563	540	444	346	338	364	313	267	338	459
Below Normal (13%)	486	453	506	557	470	388	398	435	357	315	423	695
Dry (24%)	585	582	615	671	502	425	464	480	372	388	574	685
Critical (15%)	756	772	818	766	617	540	568	546	475	468	623	752

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11	2	-33	-35	-81	29	148	156	77	19	36	7
20%	-3	-27	-67	-60	-25	28	143	169	43	30	91	0
30%	-29	-70	-134	-99	7	38	125	150	63	21	49	-11
40%	-44	-89	-207	-163	44	37	89	135	47	24	2	-10
50%	-80	-139	-349	-116	50	33	74	105	43	-1	15	-61
60%	-436	-389	-339	-17	55	32	36	84	40	1	3	-76
70%	-420	-403	-344	63	26	38	30	81	43	7	11	-94
80%	-412	-347	-200	37	38	34	2	38	38	4	10	-97
90%	-360	-221	-42	40	35	16	-14	-59	17	5	-1	-87
Long Term												
Full Simulation Period[b]	-184	-169	-179	-42	20	35	64	91	45	12	25	-46
Water Year Types[c]												
Wet (32%)	-221	-230	-179	22	37	7	-5	25	18	2	9	-59
Above Normal (16%)	-122	-96	-157	-58	52	32	46	86	46	6	-1	-195
Below Normal (13%)	-236	-211	-231	-127	-71	14	65	123	82	10	-2	40
Dry (24%)	-200	-167	-211	-54	15	71	126	141	58	45	81	-2
Critical (15%)	-98	-82	-105	-63	41	60	132	130	44	-13	20	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

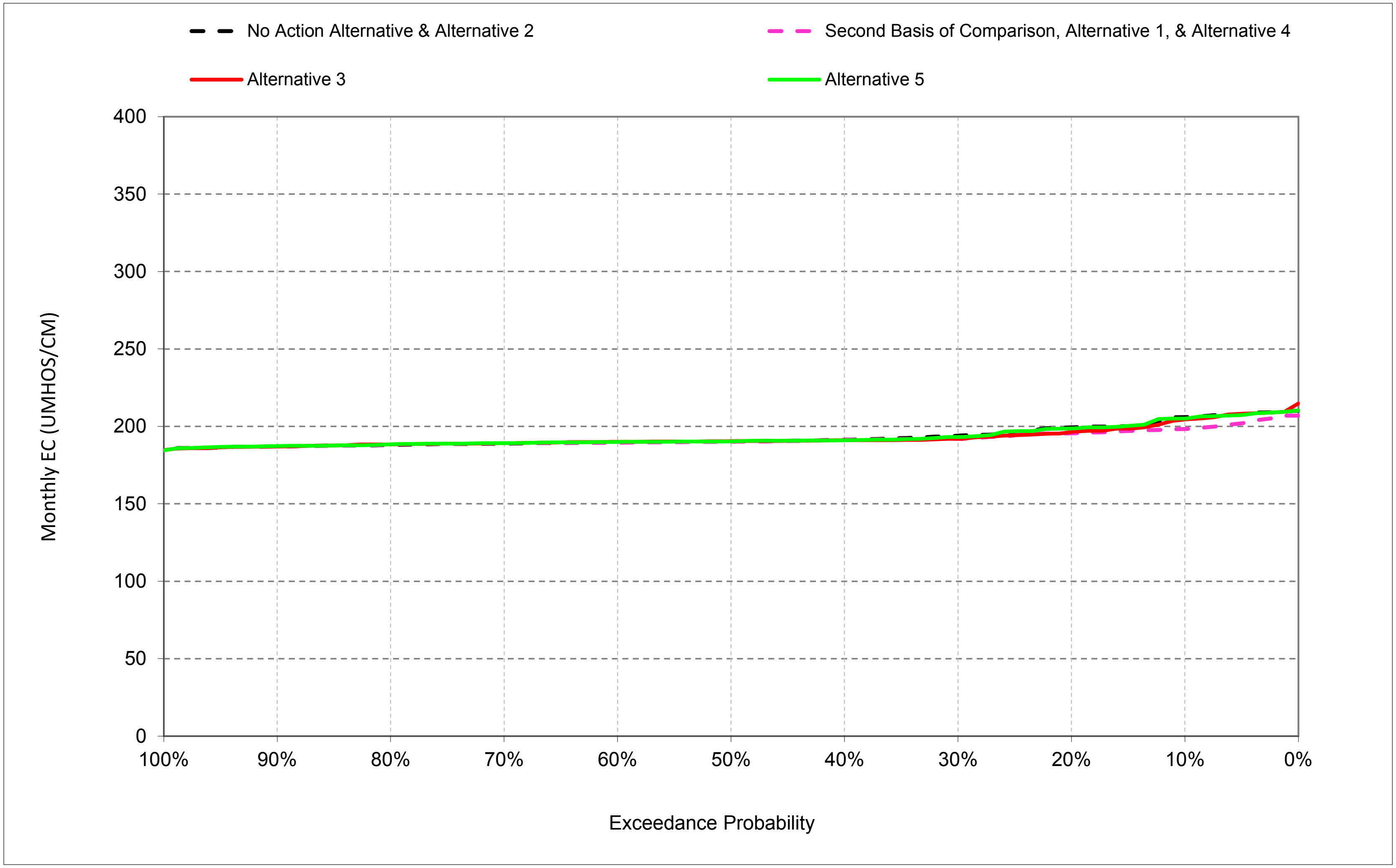
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

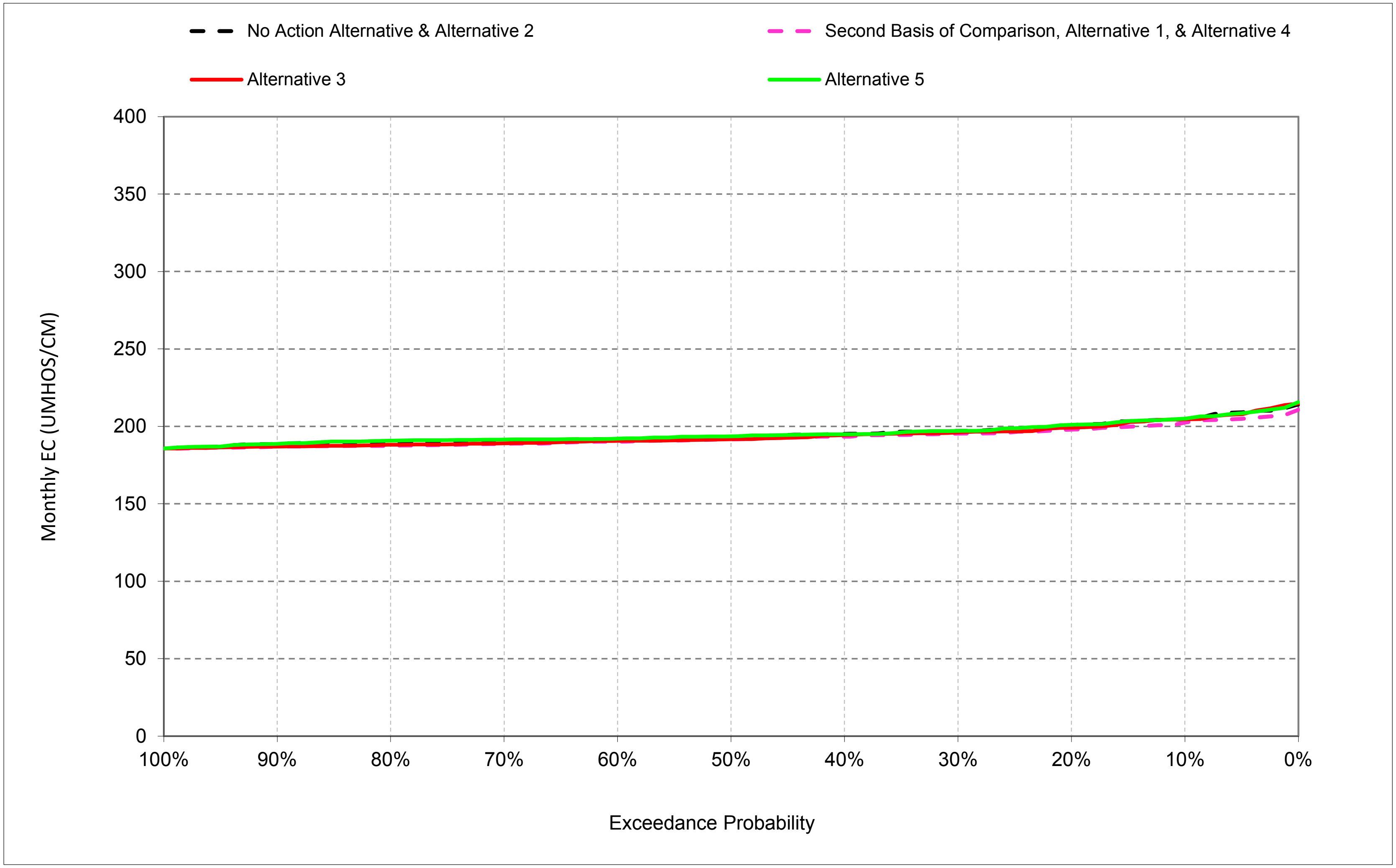
B.14. Barker Slough North Bay Aqueduct Intake Salinity

Figure 6E.B.14.1. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, October



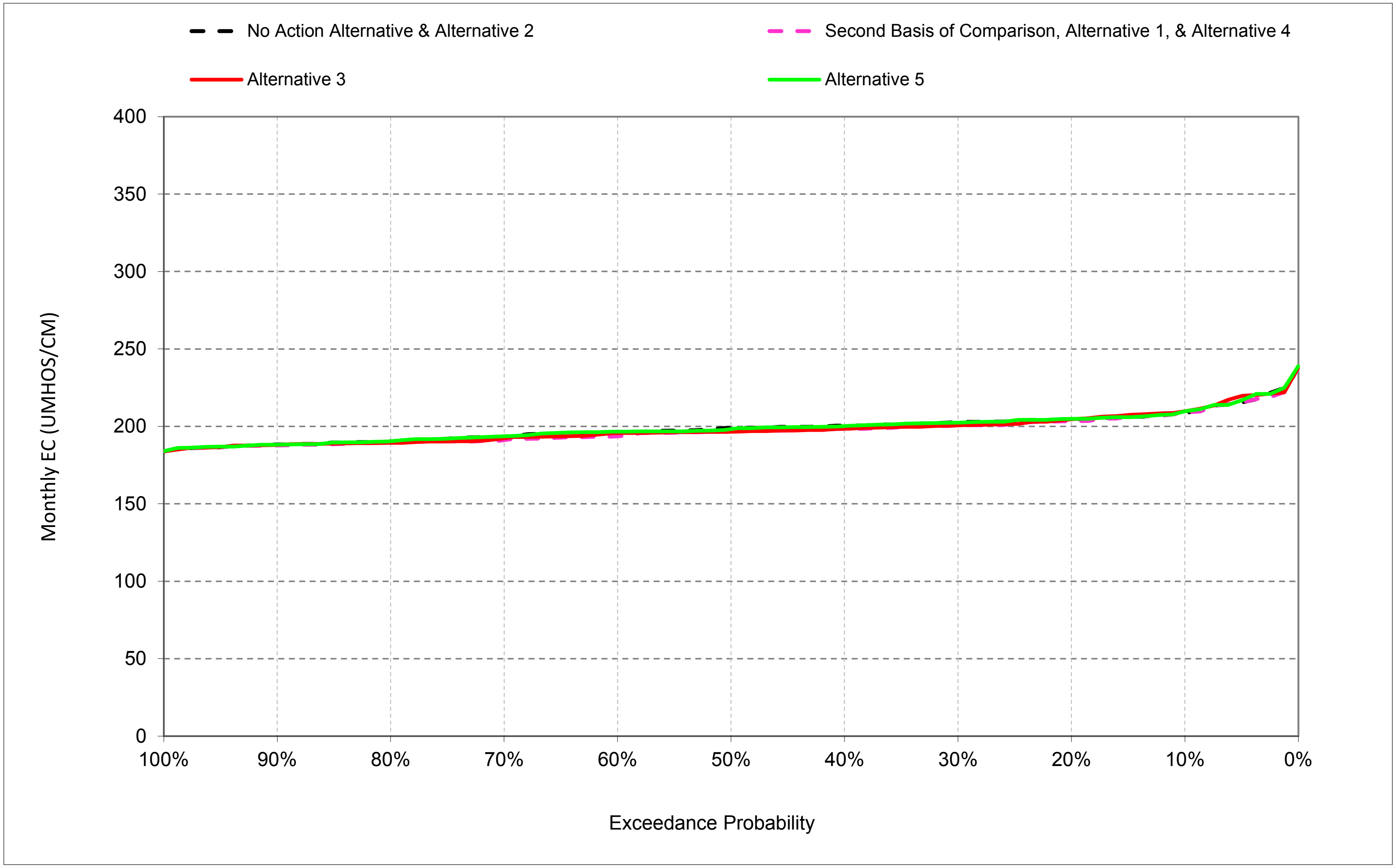
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.2. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, November



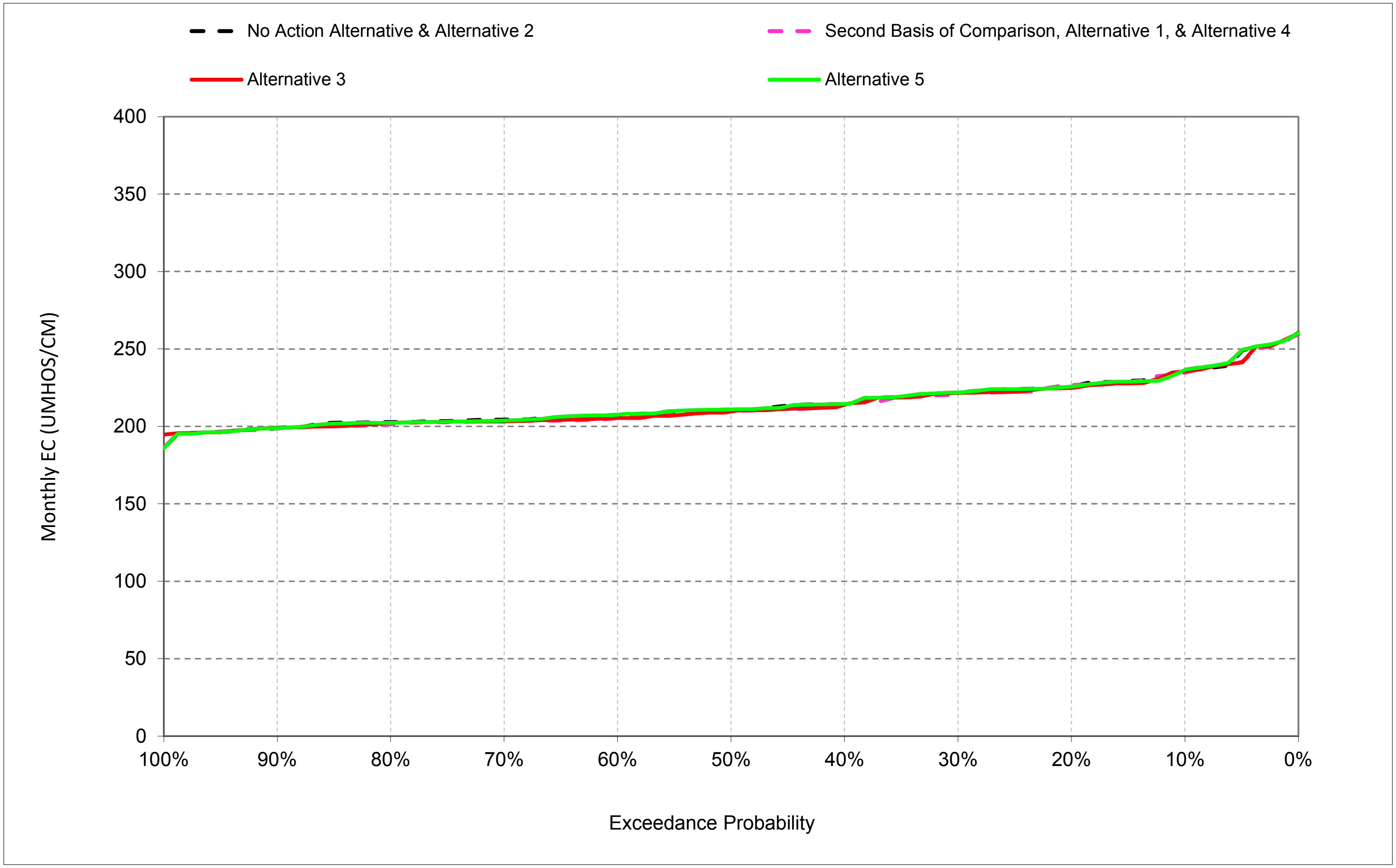
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.3. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, December



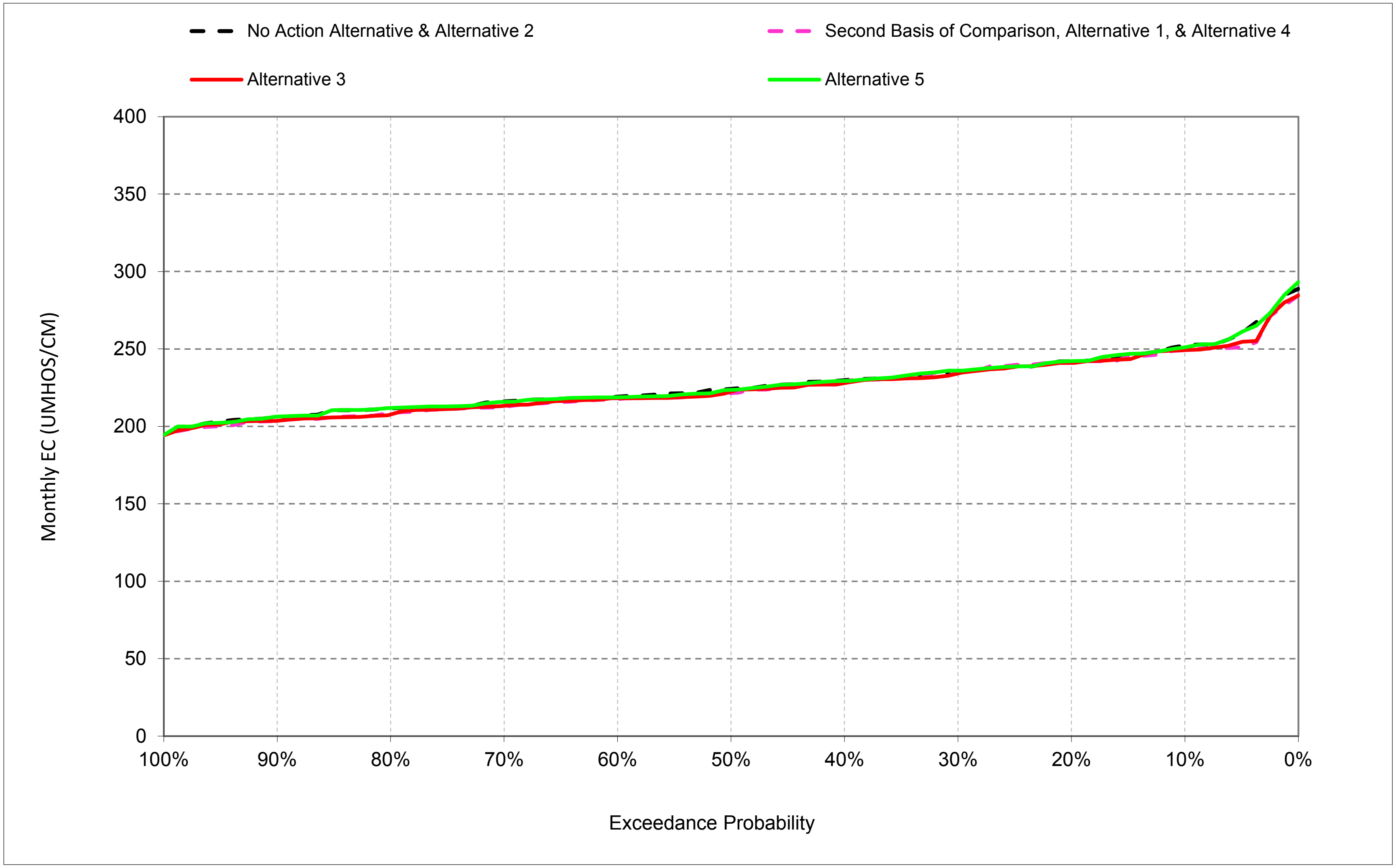
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.4. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, January



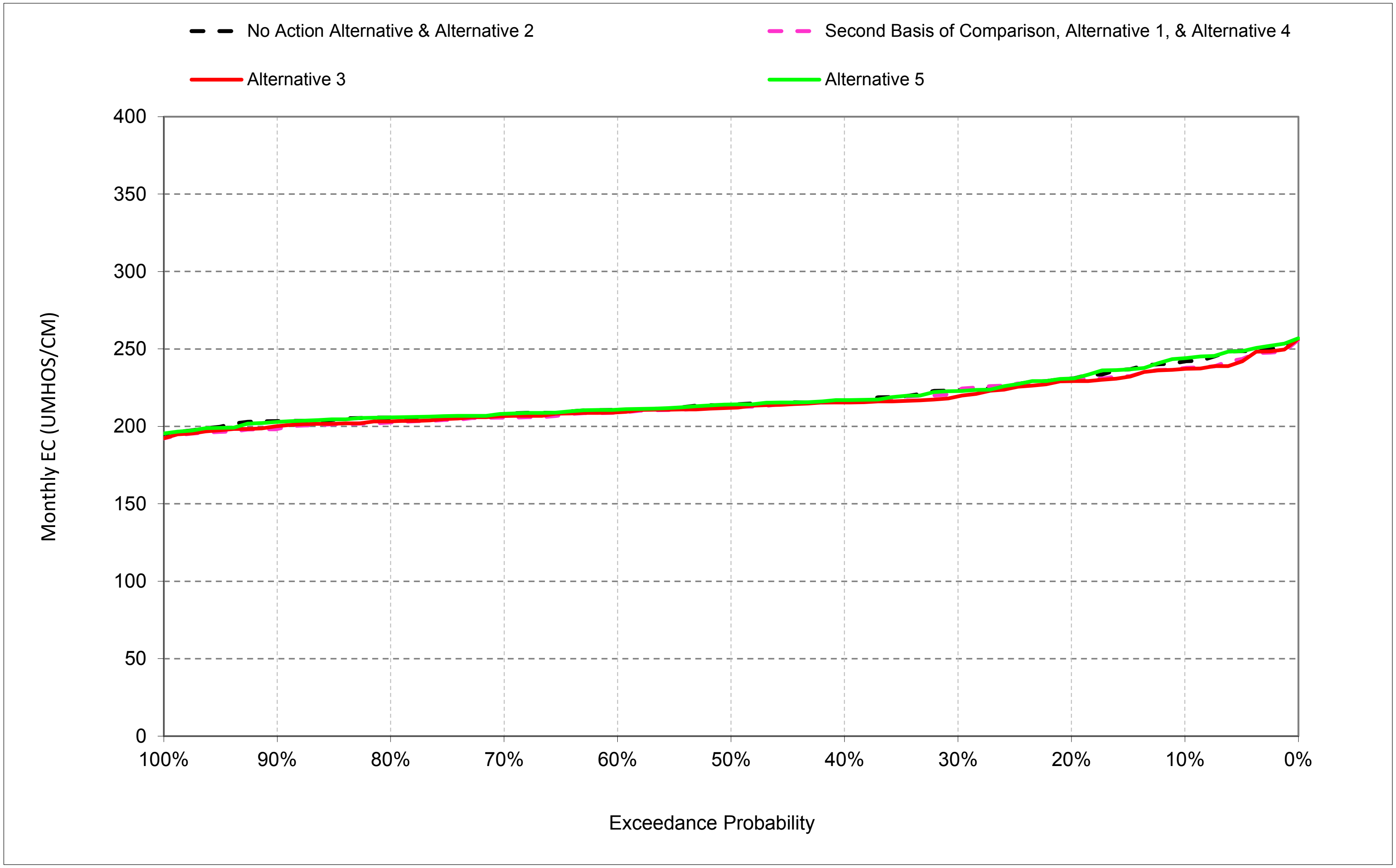
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.5. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, February



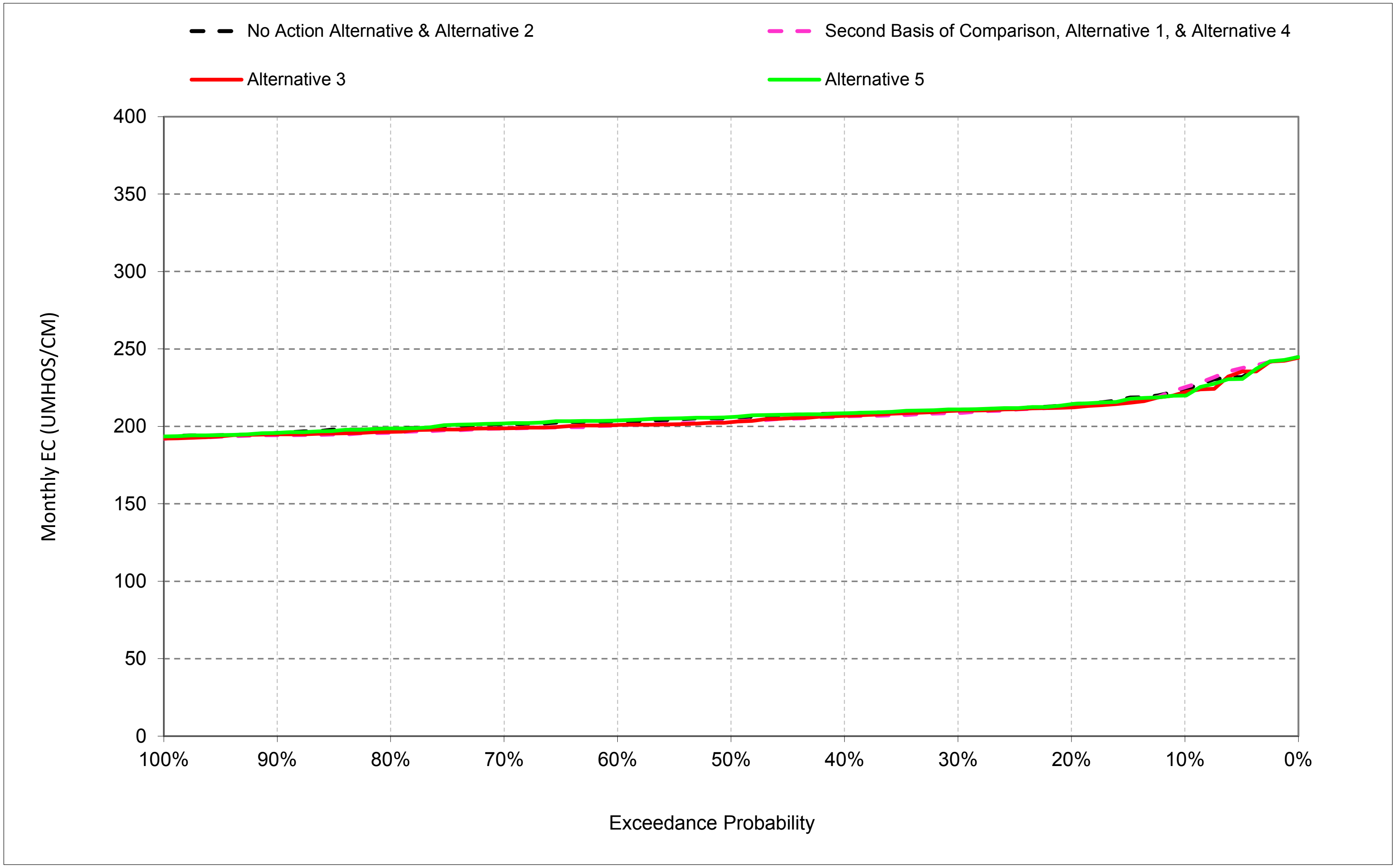
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.6. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, March



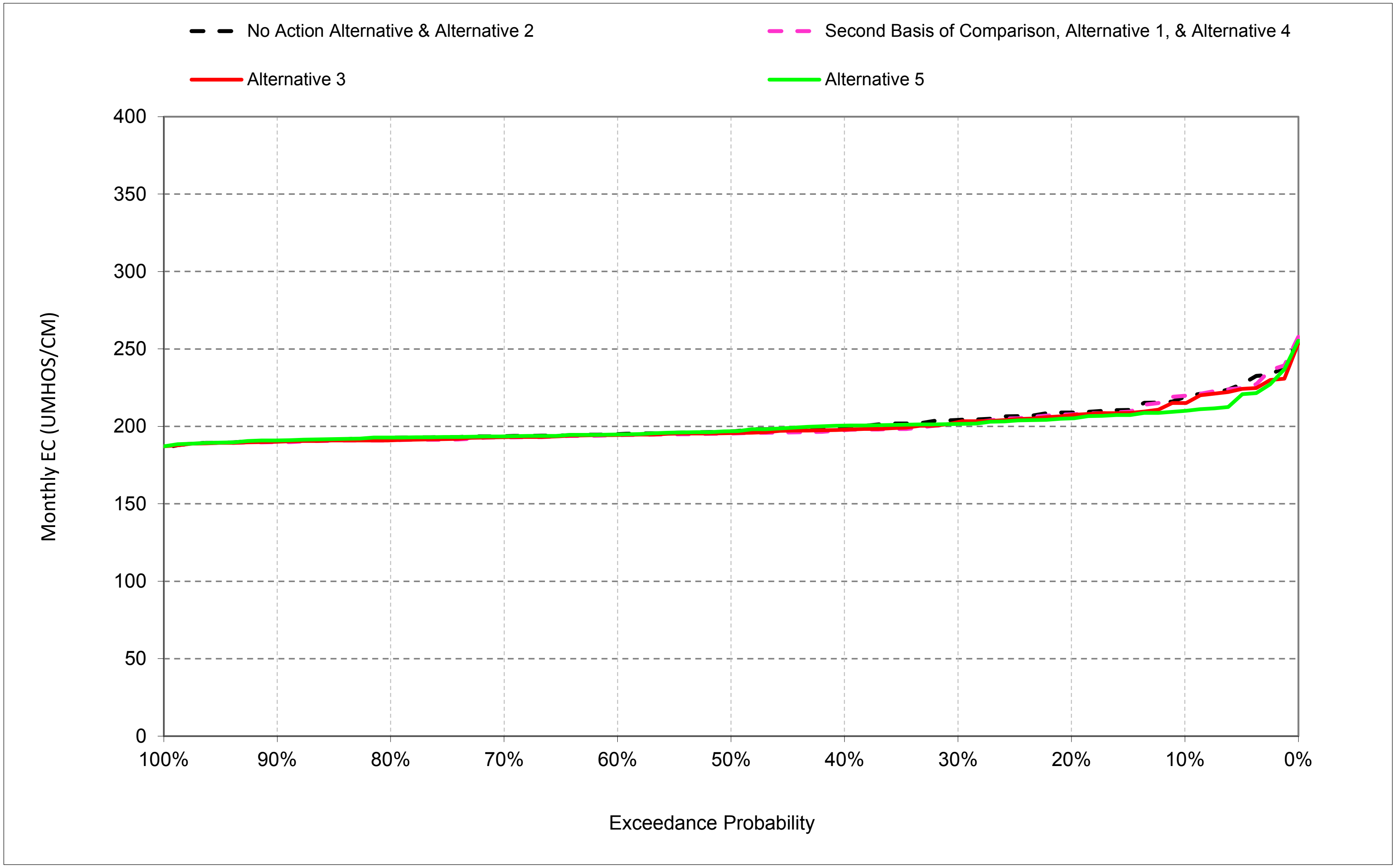
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.7. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, April



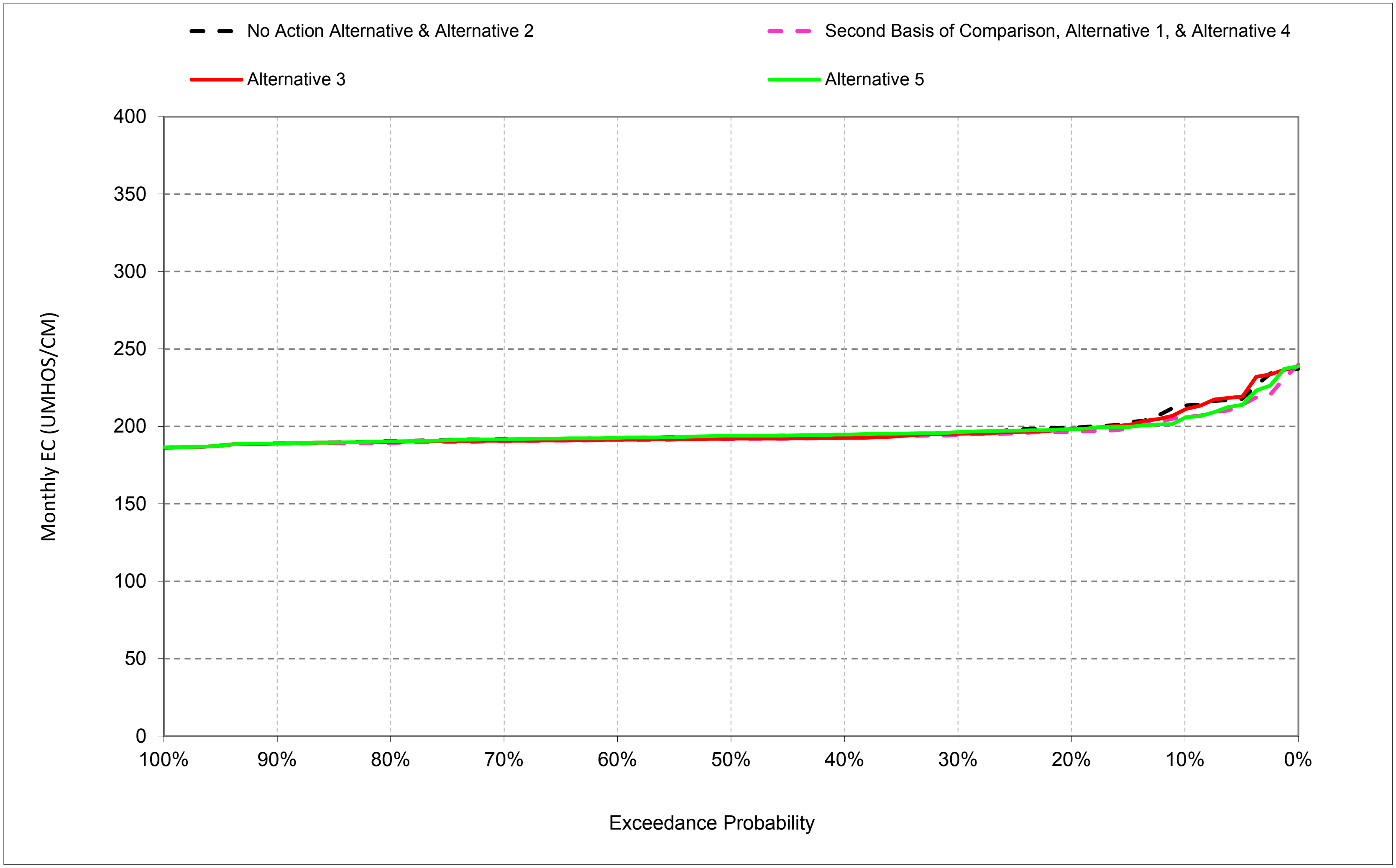
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.8. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, May



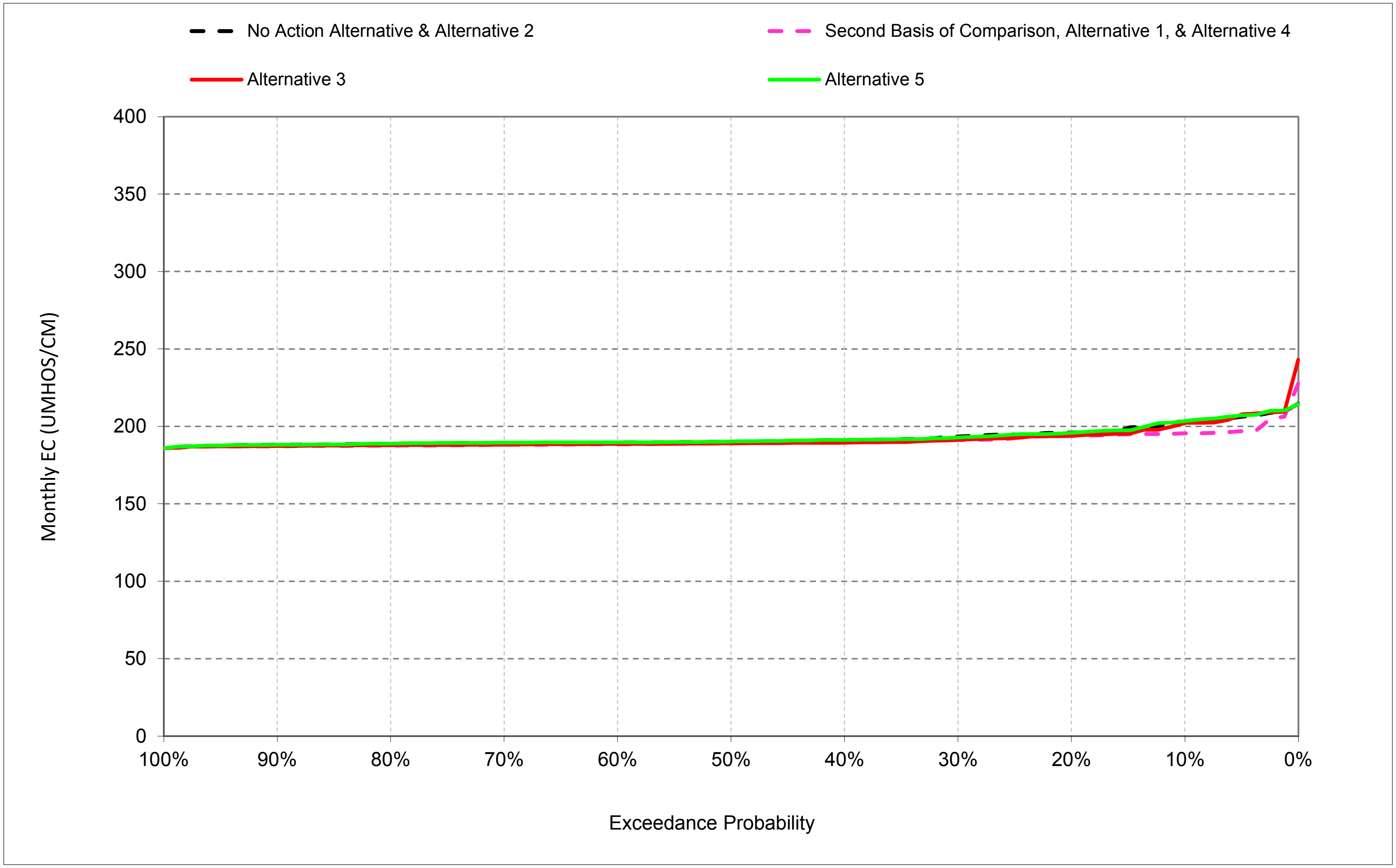
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.9. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, June



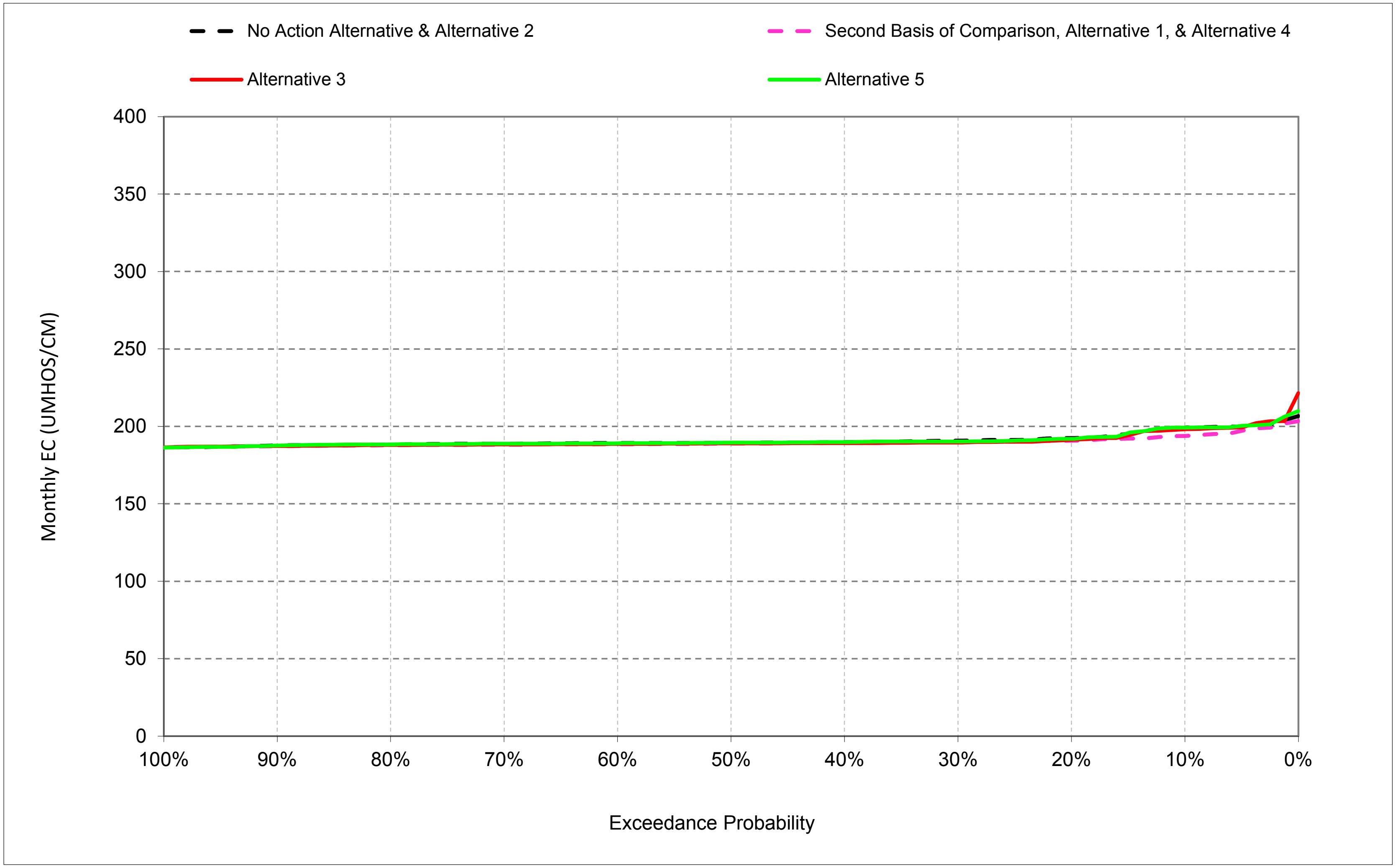
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.10. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, July



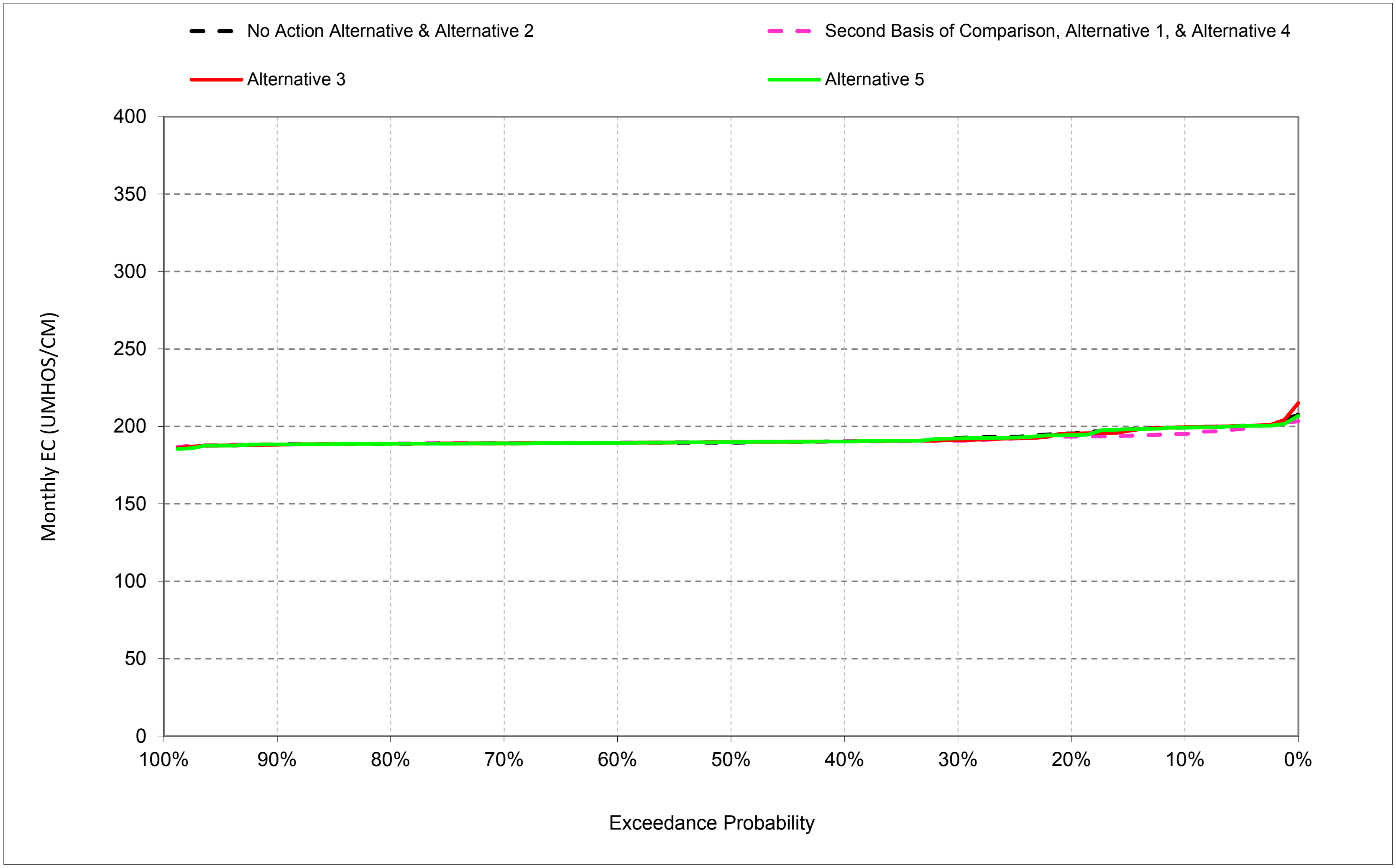
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.11. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.14.12. Barker Slough North Bay Aqueduct Intake Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.14.1. Barker Slough North Bay Aqueduct Intake Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	206	204	209	236	252	242	224	219	213	203	199	199
20%	199	201	205	226	242	231	214	209	199	196	192	195
30%	194	197	203	222	236	223	211	204	196	193	191	193
40%	191	195	200	214	230	216	208	200	194	191	190	190
50%	190	193	199	211	224	214	206	197	193	190	189	190
60%	190	192	196	207	219	211	203	195	192	190	189	189
70%	189	191	193	204	216	207	201	194	192	189	189	189
80%	188	190	190	203	212	206	199	193	190	189	188	189
90%	187	189	188	199	206	203	196	191	189	188	188	188
Long Term												
Full Simulation Period[b]	193	195	199	215	227	218	208	202	197	193	191	192
Water Year Types[c]												
Wet (32%)	190	193	199	217	229	214	201	193	191	189	189	189
Above Normal (16%)	193	195	200	218	231	216	203	195	192	189	188	189
Below Normal (13%)	191	193	197	210	224	221	211	203	193	190	189	190
Dry (24%)	195	197	198	214	229	221	211	206	199	195	192	193
Critical (15%)	198	200	203	213	222	221	222	220	215	203	199	200

Alternative 1

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	198	202	209	235	249	238	225	220	206	195	194	195
20%	196	198	203	227	241	230	213	208	196	194	191	193
30%	192	195	201	221	236	223	209	202	195	191	190	191
40%	191	193	198	215	229	216	206	198	193	190	189	190
50%	190	192	197	210	222	213	203	195	192	189	189	190
60%	190	190	194	206	218	209	201	194	191	188	189	189
70%	189	189	191	203	213	206	199	193	190	188	188	189
80%	188	188	190	201	209	203	196	191	189	188	188	189
90%	187	187	188	199	204	198	194	190	189	187	187	188
Long Term												
Full Simulation Period[b]	192	193	198	214	225	216	207	200	195	191	190	191
Water Year Types[c]												
Wet (32%)	190	191	198	216	225	212	200	192	190	188	189	190
Above Normal (16%)	192	193	199	218	227	210	199	193	191	188	188	189
Below Normal (13%)	191	192	196	209	220	214	206	197	191	188	189	189
Dry (24%)	193	194	195	213	230	222	210	204	196	192	190	192
Critical (15%)	195	197	202	213	222	223	223	222	211	199	196	197

Alternative 1 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-8	-2	0	-2	-3	-4	2	1	-7	-8	-5	-4
20%	-4	-3	-1	1	-1	-1	-2	-1	-3	-2	-2	-2
30%	-2	-2	-2	-1	0	0	-2	-2	-1	-2	-1	-2
40%	0	-2	-2	1	-1	0	-2	-2	-2	-1	0	0
50%	0	-2	-2	-1	-3	-1	-3	-1	-2	-1	-1	0
60%	0	-2	-3	-2	-2	-2	-3	-1	-1	-1	-1	0
70%	0	-3	-2	-1	-3	-2	-3	-1	-1	-1	-1	0
80%	0	-2	-1	-1	-3	-3	-3	-2	-1	-1	0	0
90%	0	-2	-1	0	-3	-5	-1	-1	0	-1	0	0
Long Term												
Full Simulation Period[b]	-1	-2	-1	-1	-2	-2	-2	-1	-2	-2	-1	-1
Water Year Types[c]												
Wet (32%)	0	-2	-1	-2	-4	-2	-1	0	0	0	0	0
Above Normal (16%)	-1	-2	-1	0	-4	-6	-4	-2	-2	-1	-1	0
Below Normal (13%)	0	-1	-1	-2	-4	-7	-4	-6	-2	-2	0	0
Dry (24%)	-3	-3	-2	-1	1	1	-1	-1	-3	-3	-2	-2
Critical (15%)	-3	-3	-1	0	0	2	1	2	-4	-4	-3	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.14.2. Barker Slough North Bay Aqueduct Intake Salinity, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	206	204	209	236	252	242	224	219	213	203	199	199
20%	199	201	205	226	242	231	214	209	199	196	192	195
30%	194	197	203	222	236	223	211	204	196	193	191	193
40%	191	195	200	214	230	216	208	200	194	191	190	190
50%	190	193	199	211	224	214	206	197	193	190	189	190
60%	190	192	196	207	219	211	203	195	192	190	189	189
70%	189	191	193	204	216	207	201	194	192	189	189	189
80%	188	190	190	203	212	206	199	193	190	189	188	189
90%	187	189	188	199	206	203	196	191	189	188	188	188
Long Term												
Full Simulation Period[b]	193	195	199	215	227	218	208	202	197	193	191	192
Water Year Types[c]												
Wet (32%)	190	193	199	217	229	214	201	193	191	189	189	189
Above Normal (16%)	193	195	200	218	231	216	203	195	192	189	188	189
Below Normal (13%)	191	193	197	210	224	221	211	203	193	190	189	190
Dry (24%)	195	197	198	214	229	221	211	206	199	195	192	193
Critical (15%)	198	200	203	213	222	221	222	220	215	203	199	200

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	204	205	210	236	249	237	222	215	211	202	198	199
20%	196	199	205	225	241	229	212	207	198	194	191	195
30%	192	196	201	222	234	219	210	203	195	191	190	191
40%	191	194	198	214	228	215	207	198	193	189	189	190
50%	190	192	197	210	222	212	203	196	192	189	189	190
60%	190	191	196	205	218	209	201	194	191	189	189	189
70%	189	189	192	203	213	207	199	193	191	188	188	189
80%	188	188	189	202	208	203	197	191	190	188	188	189
90%	187	187	188	199	204	200	195	190	189	187	187	188
Long Term												
Full Simulation Period[b]	193	194	198	214	225	216	206	200	196	192	191	192
Water Year Types[c]												
Wet (32%)	190	192	198	216	226	212	200	193	190	188	189	190
Above Normal (16%)	193	193	199	218	228	212	199	193	191	188	188	189
Below Normal (13%)	191	192	196	210	219	214	206	196	191	188	188	189
Dry (24%)	195	196	197	213	229	221	211	204	198	193	190	193
Critical (15%)	197	198	202	212	222	221	221	219	216	205	200	200

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-1	0	1	-1	-3	-5	-2	-4	-3	-1	-1	0
20%	-3	-1	0	-1	-1	-2	-2	-2	-1	-2	-1	0
30%	-2	-1	-2	0	-2	-4	0	-1	-1	-2	-1	-1
40%	0	-1	-2	0	-2	-1	-1	-2	-2	-2	-1	0
50%	0	-2	-2	-1	-2	-2	-3	-1	-1	-1	0	0
60%	0	-1	-1	-2	-1	-2	-3	-1	-1	-1	-1	0
70%	0	-2	-1	-1	-3	-1	-3	-1	-1	-1	0	0
80%	0	-2	-1	0	-4	-2	-2	-2	0	-1	0	0
90%	0	-2	0	0	-2	-3	-1	0	0	-1	0	0
Long Term												
Full Simulation Period[b]	0	-1	-1	-1	-2	-2	-2	-2	-1	-1	0	0
Water Year Types[c]												
Wet (32%)	0	-1	-1	-2	-3	-2	-1	0	0	-1	0	0
Above Normal (16%)	-1	-2	-1	0	-3	-4	-3	-1	-1	-1	0	0
Below Normal (13%)	0	-1	0	-1	-5	-7	-4	-7	-2	-2	0	-1
Dry (24%)	0	-1	-1	-1	0	0	-1	-1	-1	-2	-1	-1
Critical (15%)	-1	-2	-2	0	0	0	-1	-1	1	2	1	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.14.3. Barker Slough North Bay Aqueduct Intake Salinity, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	206	204	209	236	252	242	224	219	213	203	199	199
20%	199	201	205	226	242	231	214	209	199	196	192	195
30%	194	197	203	222	236	223	211	204	196	193	191	193
40%	191	195	200	214	230	216	208	200	194	191	190	190
50%	190	193	199	211	224	214	206	197	193	190	189	190
60%	190	192	196	207	219	211	203	195	192	190	189	189
70%	189	191	193	204	216	207	201	194	192	189	189	189
80%	188	190	190	203	212	206	199	193	190	189	188	189
90%	187	189	188	199	206	203	196	191	189	188	188	188
Long Term												
Full Simulation Period[b]	193	195	199	215	227	218	208	202	197	193	191	192
Water Year Types[c]												
Wet (32%)	190	193	199	217	229	214	201	193	191	189	189	189
Above Normal (16%)	193	195	200	218	231	216	203	195	192	189	188	189
Below Normal (13%)	191	193	197	210	224	221	211	203	193	190	189	190
Dry (24%)	195	197	198	214	229	221	211	206	199	195	192	193
Critical (15%)	198	200	203	213	222	221	222	220	215	203	199	200

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	205	205	210	236	251	244	220	210	205	203	199	199
20%	199	201	205	226	242	231	214	205	198	196	192	194
30%	193	197	202	222	236	223	211	202	196	193	190	192
40%	191	195	200	215	229	217	208	201	195	191	190	190
50%	190	194	198	211	224	214	206	197	194	190	189	190
60%	190	192	197	208	219	211	204	195	193	190	189	189
70%	189	192	194	204	216	208	202	194	192	189	189	189
80%	188	191	190	202	212	206	199	193	190	189	188	189
90%	187	189	188	199	206	203	196	191	189	188	188	188
Long Term												
Full Simulation Period[b]	193	196	199	215	227	218	208	200	196	193	191	192
Water Year Types[c]												
Wet (32%)	190	193	199	217	229	214	201	193	191	189	189	189
Above Normal (16%)	193	195	200	218	231	216	203	195	192	189	189	189
Below Normal (13%)	192	194	197	211	224	220	210	199	193	190	189	189
Dry (24%)	195	197	198	214	229	221	211	204	199	195	191	193
Critical (15%)	198	200	203	212	222	221	222	216	211	204	200	199

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1	1	1	0	-1	2	-4	-9	-8	0	0	0
20%	-1	0	0	0	0	0	0	-4	-1	0	-1	-1
30%	-1	0	0	0	0	-1	0	-3	0	-1	-1	0
40%	0	0	0	0	0	1	0	1	0	0	0	0
50%	0	0	-1	0	-1	0	0	0	1	0	0	0
60%	0	0	0	0	0	0	0	0	0	0	0	0
70%	0	0	0	-1	0	1	0	0	0	0	0	0
80%	0	1	0	0	0	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	0	0	0	0	0	0	0	-2	-1	0	0	0
Water Year Types[c]												
Wet (32%)	0	0	0	0	0	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0	0	0	0	0	0
Below Normal (13%)	1	1	0	0	-1	0	-1	-4	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0	-2	-1	0	0	0
Critical (15%)	0	0	0	0	0	0	0	-4	-4	1	1	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.14.4. Barker Slough North Bay Aqueduct Intake Salinity, Monthly EC

Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	198	202	209	235	249	238	225	220	206	195	194	195
20%	196	198	203	227	241	230	213	208	196	194	191	193
30%	192	195	201	221	236	223	209	202	195	191	190	191
40%	191	193	198	215	229	216	206	198	193	190	189	190
50%	190	192	197	210	222	213	203	195	192	189	189	190
60%	190	190	194	206	218	209	201	194	191	188	189	189
70%	189	189	191	203	213	206	199	193	190	188	188	189
80%	188	188	190	201	209	203	196	191	189	188	188	189
90%	187	187	188	199	204	198	194	190	189	187	187	188
Long Term												
Full Simulation Period[b]	192	193	198	214	225	216	207	200	195	191	190	191
Water Year Types[c]												
Wet (32%)	190	191	198	216	225	212	200	192	190	188	189	190
Above Normal (16%)	192	193	199	218	227	210	199	193	191	188	188	189
Below Normal (13%)	191	192	196	209	220	214	206	197	191	188	189	189
Dry (24%)	193	194	195	213	230	222	210	204	196	192	190	192
Critical (15%)	195	197	202	213	222	223	223	222	211	199	196	197

No Action Alternative

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	206	204	209	236	252	242	224	219	213	203	199	199
20%	199	201	205	226	242	231	214	209	199	196	192	195
30%	194	197	203	222	236	223	211	204	196	193	191	193
40%	191	195	200	214	230	216	208	200	194	191	190	190
50%	190	193	199	211	224	214	206	197	193	190	189	190
60%	190	192	196	207	219	211	203	195	192	190	189	189
70%	189	191	193	204	216	207	201	194	192	189	189	189
80%	188	190	190	203	212	206	199	193	190	189	188	189
90%	187	189	188	199	206	203	196	191	189	188	188	188
Long Term												
Full Simulation Period[b]	193	195	199	215	227	218	208	202	197	193	191	192
Water Year Types[c]												
Wet (32%)	190	193	199	217	229	214	201	193	191	189	189	189
Above Normal (16%)	193	195	200	218	231	216	203	195	192	189	188	189
Below Normal (13%)	191	193	197	210	224	221	211	203	193	190	189	190
Dry (24%)	195	197	198	214	229	221	211	206	199	195	192	193
Critical (15%)	198	200	203	213	222	221	222	220	215	203	199	200

No Action Alternative minus Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	8	2	0	2	3	4	-2	-1	7	8	5	4
20%	4	3	1	-1	1	1	2	1	3	2	2	2
30%	2	2	2	1	0	0	2	2	1	2	1	2
40%	0	2	2	-1	1	0	2	2	2	1	0	0
50%	0	2	2	1	3	1	3	1	2	1	1	0
60%	0	2	3	2	2	2	3	1	1	1	1	0
70%	0	3	2	1	3	2	3	1	1	1	1	0
80%	0	2	1	1	3	3	3	2	1	1	0	0
90%	0	2	1	0	3	5	1	1	0	1	0	0
Long Term												
Full Simulation Period[b]	1	2	1	1	2	2	2	1	2	2	1	1
Water Year Types[c]												
Wet (32%)	0	2	1	2	4	2	1	0	0	0	0	0
Above Normal (16%)	1	2	1	0	4	6	4	2	2	1	1	0
Below Normal (13%)	0	1	1	2	4	7	4	6	2	2	0	0
Dry (24%)	3	3	2	1	-1	-1	1	1	3	3	2	2
Critical (15%)	3	3	1	0	0	-2	-1	-2	4	4	3	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.14.5. Barker Slough North Bay Aqueduct Intake Salinity, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	198	202	209	235	249	238	225	220	206	195	194	195
20%	196	198	203	227	241	230	213	208	196	194	191	193
30%	192	195	201	221	236	223	209	202	195	191	190	191
40%	191	193	198	215	229	216	206	198	193	190	189	190
50%	190	192	197	210	222	213	203	195	192	189	189	190
60%	190	190	194	206	218	209	201	194	191	188	189	189
70%	189	189	191	203	213	206	199	193	190	188	188	189
80%	188	188	190	201	209	203	196	191	189	188	188	189
90%	187	187	188	199	204	198	194	190	189	187	187	188
Long Term												
Full Simulation Period[b]	192	193	198	214	225	216	207	200	195	191	190	191
Water Year Types[c]												
Wet (32%)	190	191	198	216	225	212	200	192	190	188	189	190
Above Normal (16%)	192	193	199	218	227	210	199	193	191	188	188	189
Below Normal (13%)	191	192	196	209	220	214	206	197	191	188	189	189
Dry (24%)	193	194	195	213	230	222	210	204	196	192	190	192
Critical (15%)	195	197	202	213	222	223	223	222	211	199	196	197

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	204	205	210	236	249	237	222	215	211	202	198	199
20%	196	199	205	225	241	229	212	207	198	194	191	195
30%	192	196	201	222	234	219	210	203	195	191	190	191
40%	191	194	198	214	228	215	207	198	193	189	189	190
50%	190	192	197	210	222	212	203	196	192	189	189	190
60%	190	191	196	205	218	209	201	194	191	189	189	189
70%	189	189	192	203	213	207	199	193	191	188	188	189
80%	188	188	189	202	208	203	197	191	190	188	188	189
90%	187	187	188	199	204	200	195	190	189	187	187	188
Long Term												
Full Simulation Period[b]	193	194	198	214	225	216	206	200	196	192	191	192
Water Year Types[c]												
Wet (32%)	190	192	198	216	226	212	200	193	190	188	189	190
Above Normal (16%)	193	193	199	218	228	212	199	193	191	188	188	189
Below Normal (13%)	191	192	196	210	219	214	206	196	191	188	188	189
Dry (24%)	195	196	197	213	229	221	211	204	198	193	190	193
Critical (15%)	197	198	202	212	222	221	221	219	216	205	200	200

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	6	2	1	1	0	0	-3	-5	5	7	4	4
20%	1	1	1	-2	0	-1	-1	0	2	0	1	2
30%	0	1	0	0	-1	-4	1	1	1	0	0	0
40%	0	1	0	-1	-1	-1	0	0	0	-1	0	0
50%	0	0	0	0	1	-1	0	0	0	0	0	0
60%	0	0	2	0	1	0	0	0	0	0	0	0
70%	0	0	1	0	1	1	0	0	0	0	0	0
80%	0	1	0	1	-1	1	1	0	1	0	0	0
90%	0	0	0	0	0	2	0	0	0	0	0	0
Long Term												
Full Simulation Period[b]	1	1	1	0	0	0	0	0	1	1	1	1
Water Year Types[c]												
Wet (32%)	0	1	0	0	1	0	0	0	0	0	0	0
Above Normal (16%)	1	0	0	0	1	2	0	0	1	0	0	0
Below Normal (13%)	0	0	0	1	-1	0	0	-1	0	0	0	0
Dry (24%)	2	2	1	0	-1	-1	0	0	2	1	1	1
Critical (15%)	2	1	0	-1	0	-2	-2	-3	4	6	4	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.14.6. Barker Slough North Bay Aqueduct Intake Salinity, Monthly EC

Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	198	202	209	235	249	238	225	220	206	195	194	195
20%	196	198	203	227	241	230	213	208	196	194	191	193
30%	192	195	201	221	236	223	209	202	195	191	190	191
40%	191	193	198	215	229	216	206	198	193	190	189	190
50%	190	192	197	210	222	213	203	195	192	189	189	190
60%	190	190	194	206	218	209	201	194	191	188	189	189
70%	189	189	191	203	213	206	199	193	190	188	188	189
80%	188	188	190	201	209	203	196	191	189	188	188	189
90%	187	187	188	199	204	198	194	190	189	187	187	188
Long Term												
Full Simulation Period[b]	192	193	198	214	225	216	207	200	195	191	190	191
Water Year Types[c]												
Wet (32%)	190	191	198	216	225	212	200	192	190	188	189	190
Above Normal (16%)	192	193	199	218	227	210	199	193	191	188	188	189
Below Normal (13%)	191	192	196	209	220	214	206	197	191	188	189	189
Dry (24%)	193	194	195	213	230	222	210	204	196	192	190	192
Critical (15%)	195	197	202	213	222	223	223	222	211	199	196	197

Alternative 5

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	205	205	210	236	251	244	220	210	205	203	199	199
20%	199	201	205	226	242	231	214	205	198	196	192	194
30%	193	197	202	222	236	223	211	202	196	193	190	192
40%	191	195	200	215	229	217	208	201	195	191	190	190
50%	190	194	198	211	224	214	206	197	194	190	189	190
60%	190	192	197	208	219	211	204	195	193	190	189	189
70%	189	192	194	204	216	208	202	194	192	189	189	189
80%	188	191	190	202	212	206	199	193	190	189	188	189
90%	187	189	188	199	206	203	196	191	189	188	188	188
Long Term												
Full Simulation Period[b]	193	196	199	215	227	218	208	200	196	193	191	192
Water Year Types[c]												
Wet (32%)	190	193	199	217	229	214	201	193	191	189	189	189
Above Normal (16%)	193	195	200	218	231	216	203	195	192	189	189	189
Below Normal (13%)	192	194	197	211	224	220	210	199	193	190	189	189
Dry (24%)	195	197	198	214	229	221	211	204	199	195	191	193
Critical (15%)	198	200	203	212	222	221	222	216	211	204	200	199

Alternative 5 minus Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7	3	1	2	2	6	-5	-10	-1	8	5	4
20%	3	3	1	-1	1	1	2	-3	2	2	1	1
30%	1	2	2	1	0	0	2	-1	2	1	0	1
40%	0	2	2	0	0	1	2	3	2	1	0	0
50%	0	2	1	1	2	1	3	2	2	1	1	0
60%	0	2	3	2	1	2	3	0	1	1	1	0
70%	0	3	2	1	3	2	3	1	1	1	1	0
80%	0	3	1	1	3	3	3	2	1	1	1	0
90%	0	2	0	0	3	5	1	1	0	1	0	0
Long Term												
Full Simulation Period[b]	1	2	1	1	2	2	2	0	1	2	1	1
Water Year Types[c]												
Wet (32%)	0	2	1	2	4	3	1	0	0	1	1	0
Above Normal (16%)	1	2	1	0	4	6	4	2	2	1	1	0
Below Normal (13%)	1	2	1	2	4	7	4	2	2	2	0	0
Dry (24%)	2	3	2	1	-1	0	1	-1	2	3	1	1
Critical (15%)	2	3	1	-1	0	-2	-1	-6	0	5	4	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

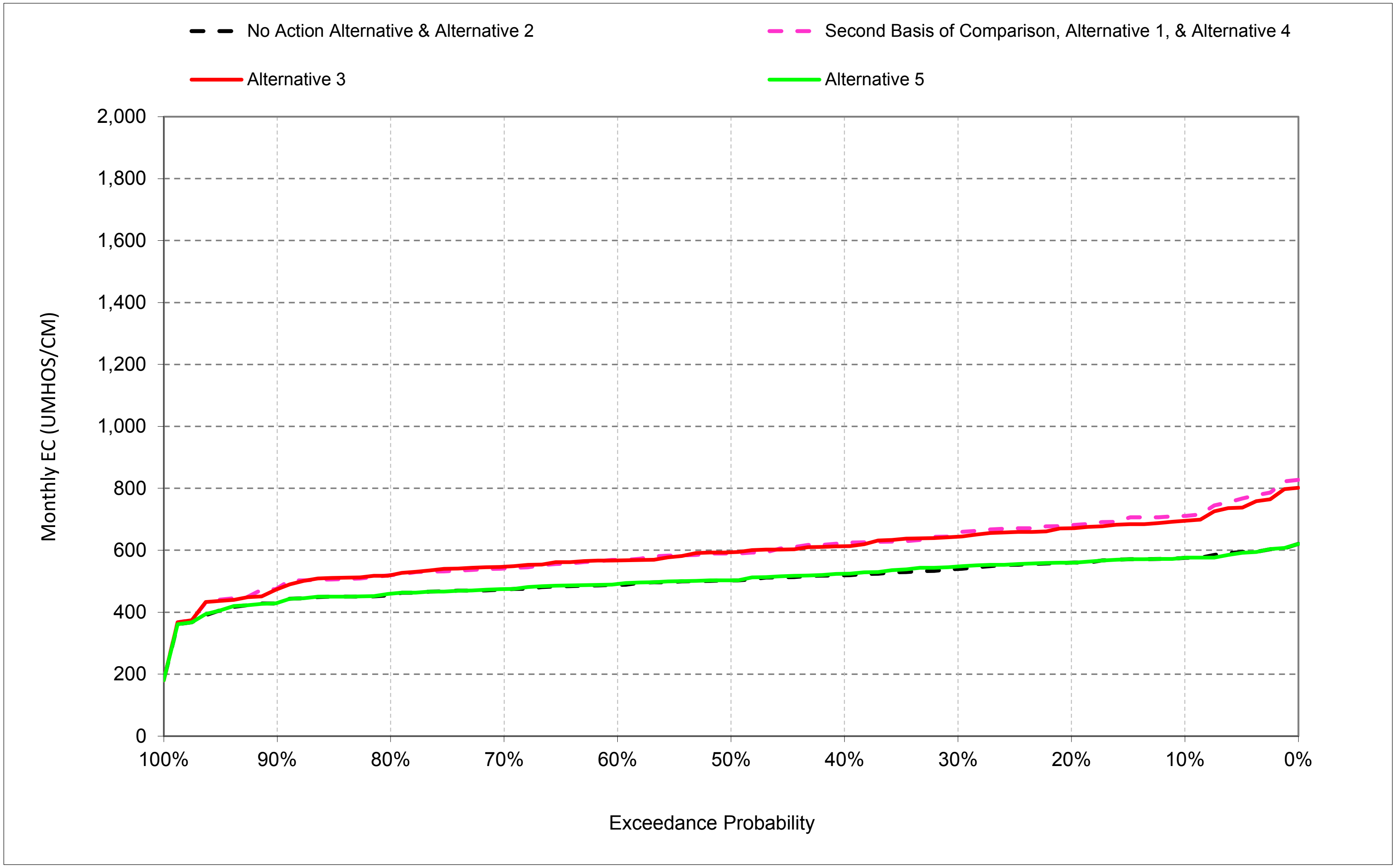
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

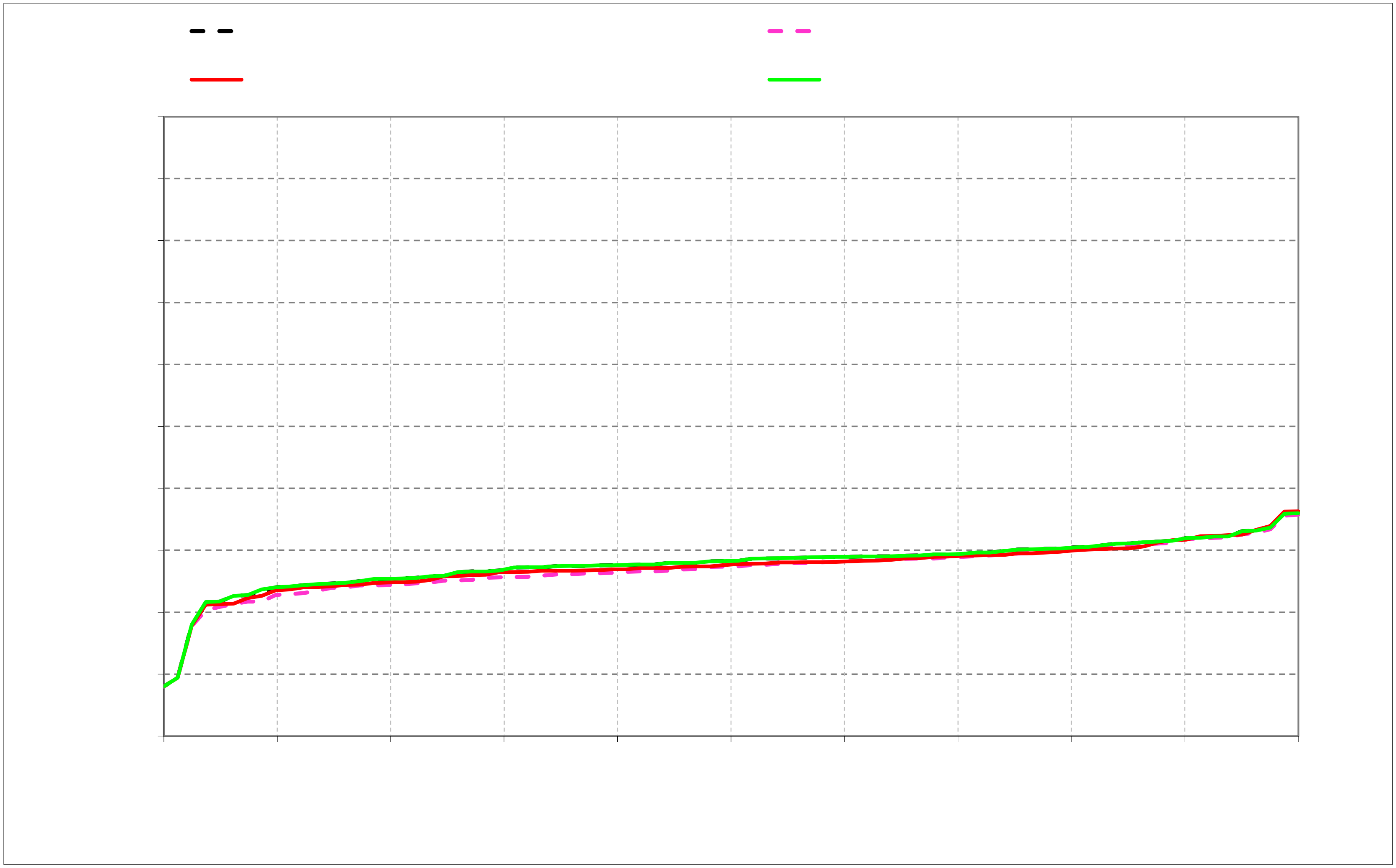
B.15. San Joaquin River at Vernalis Salinity

Figure 6E.B.15.1. San Joaquin River at Vernalis Salinity, Electrical Conductivity, October



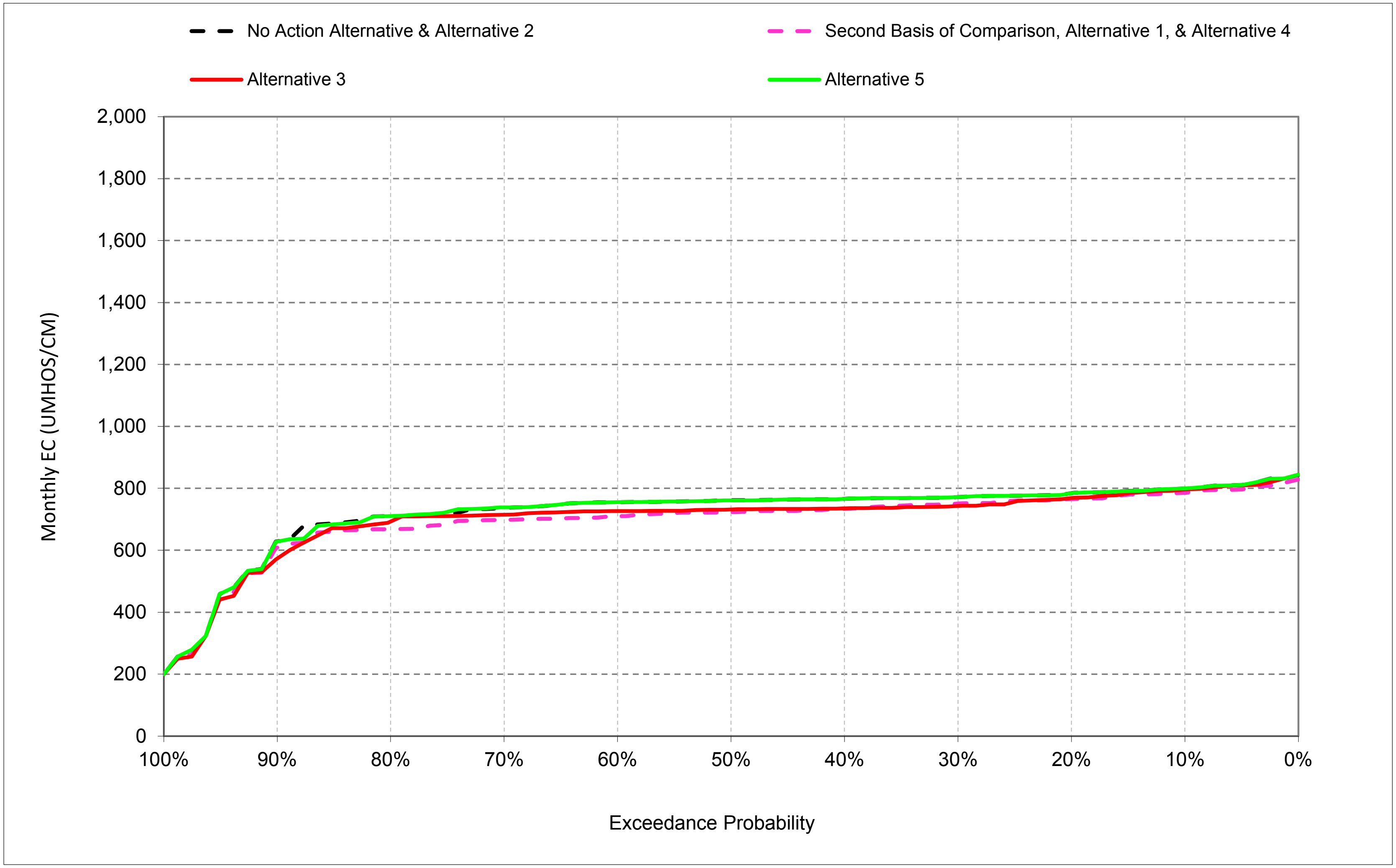
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.2. San Joaquin River at Vernalis Salinity, Electrical Conductivity, November



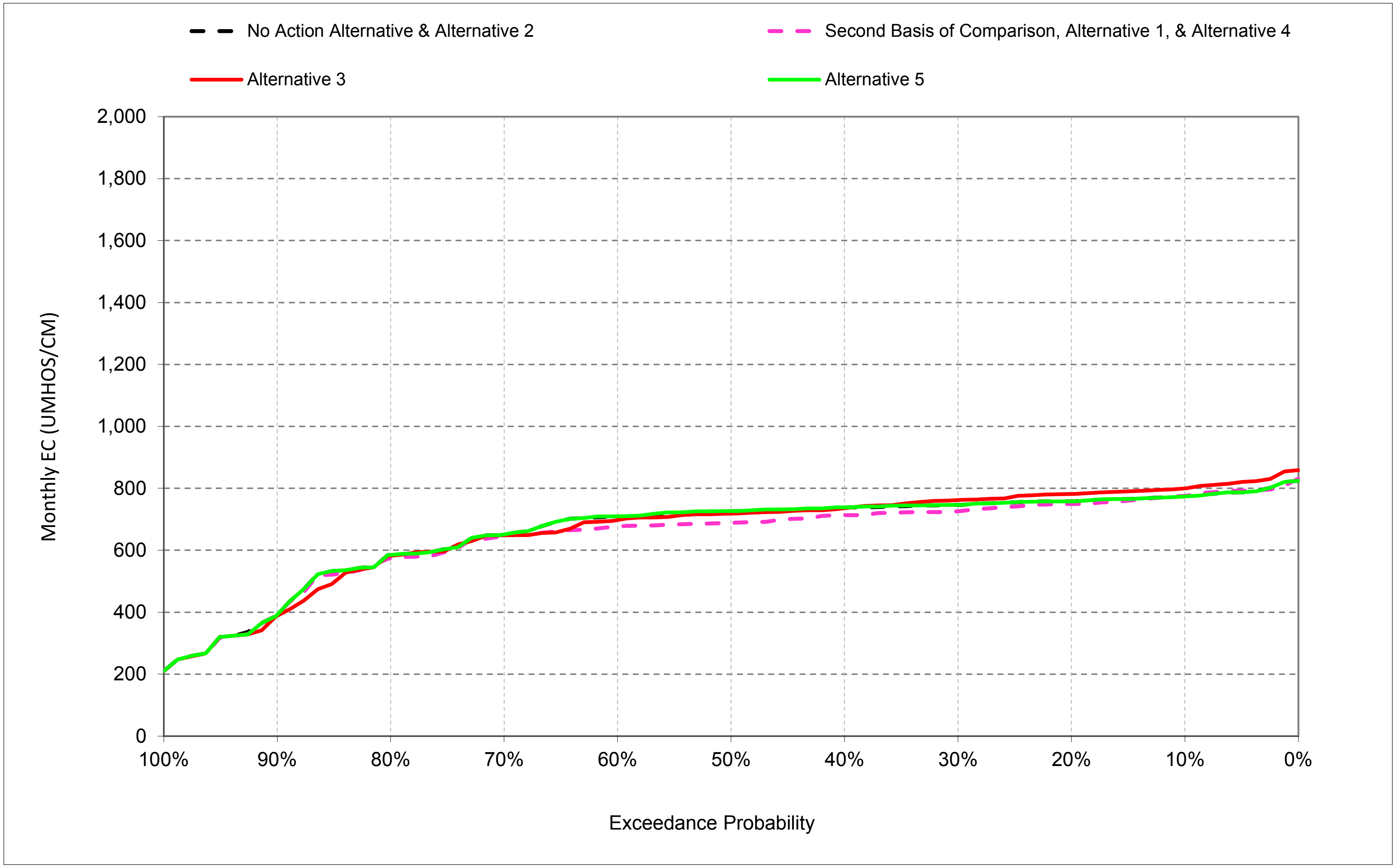
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.3. San Joaquin River at Vernalis Salinity, Electrical Conductivity, December



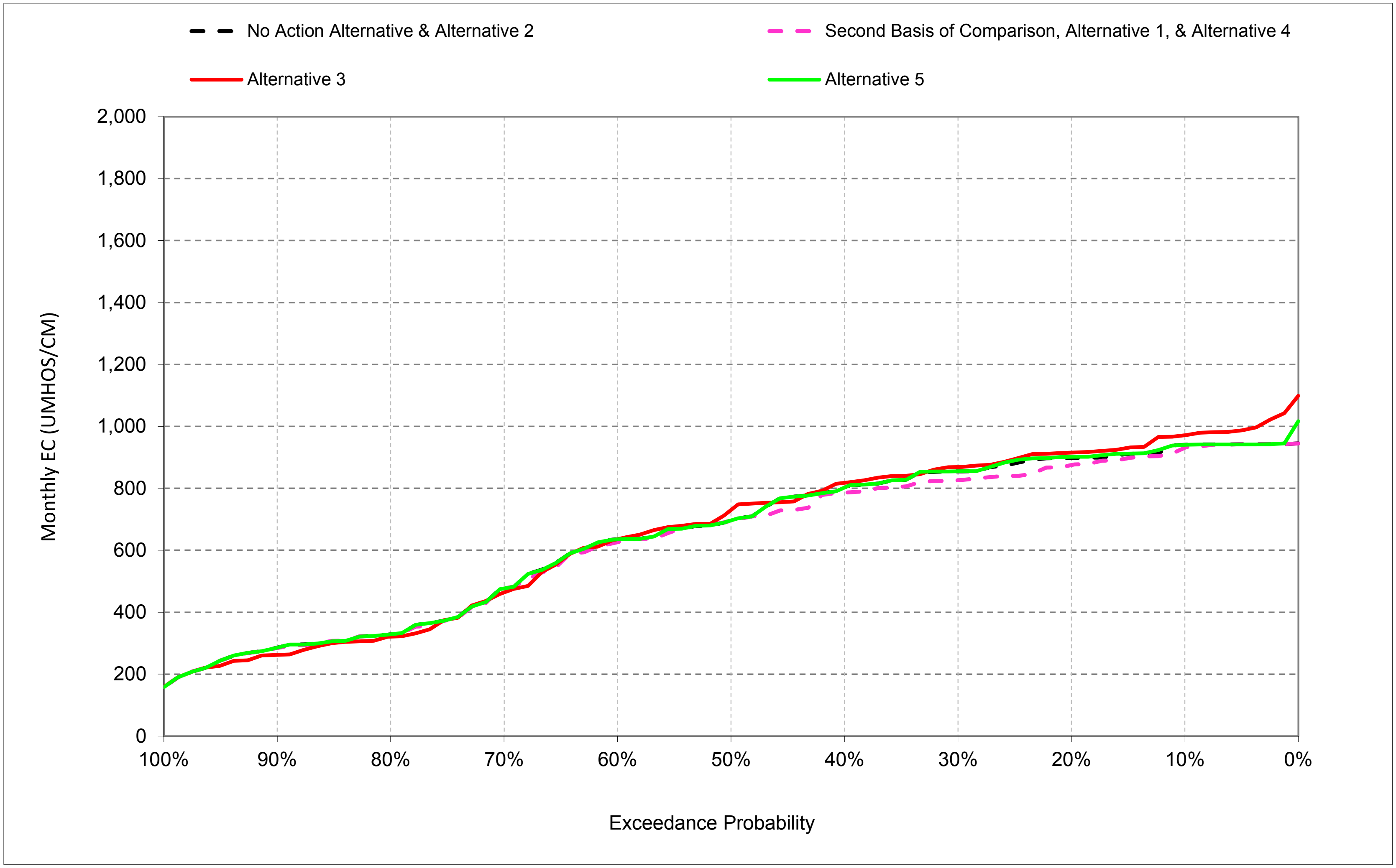
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.4. San Joaquin River at Vernalis Salinity, Electrical Conductivity, January



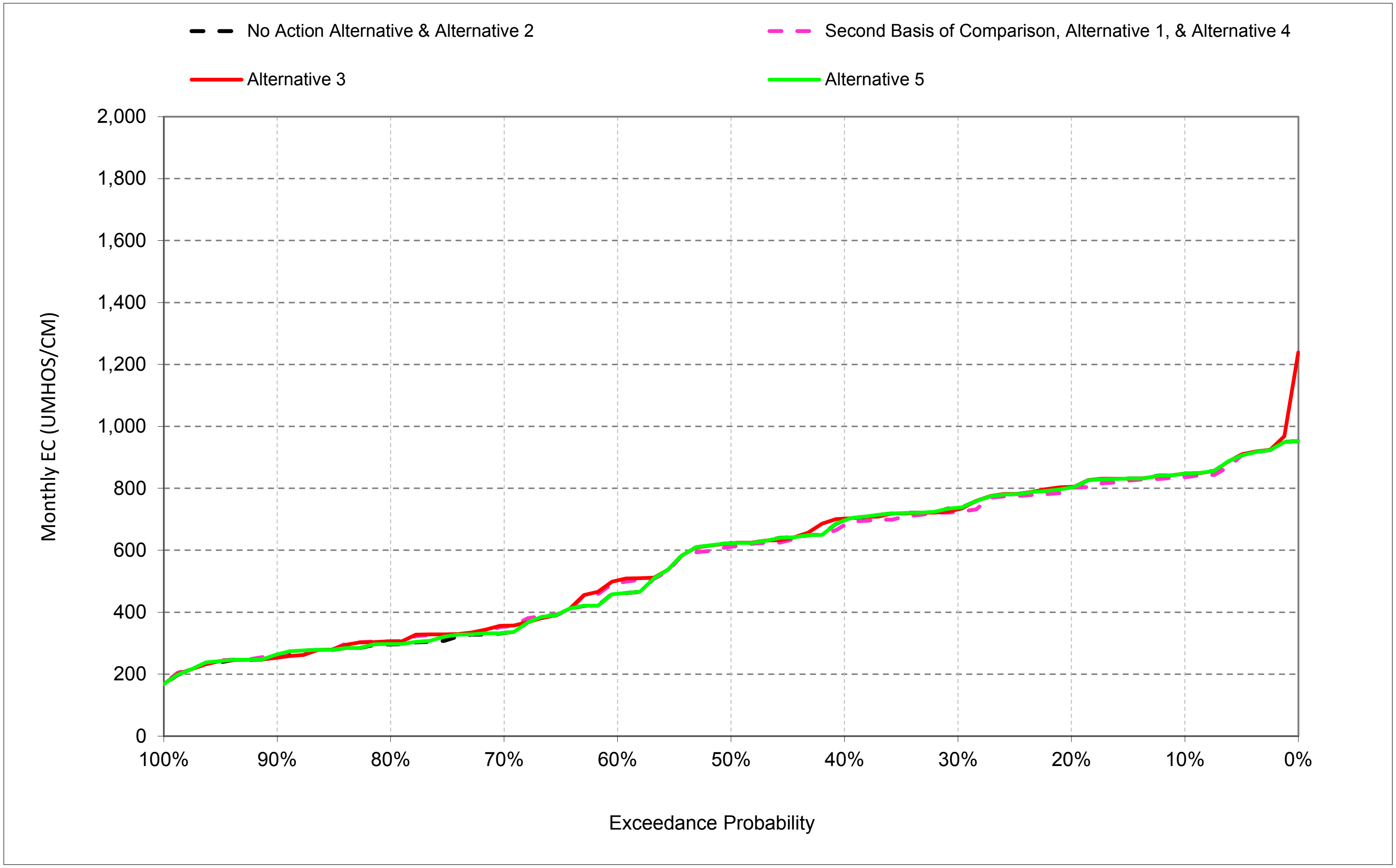
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.5. San Joaquin River at Vernalis Salinity, Electrical Conductivity, February



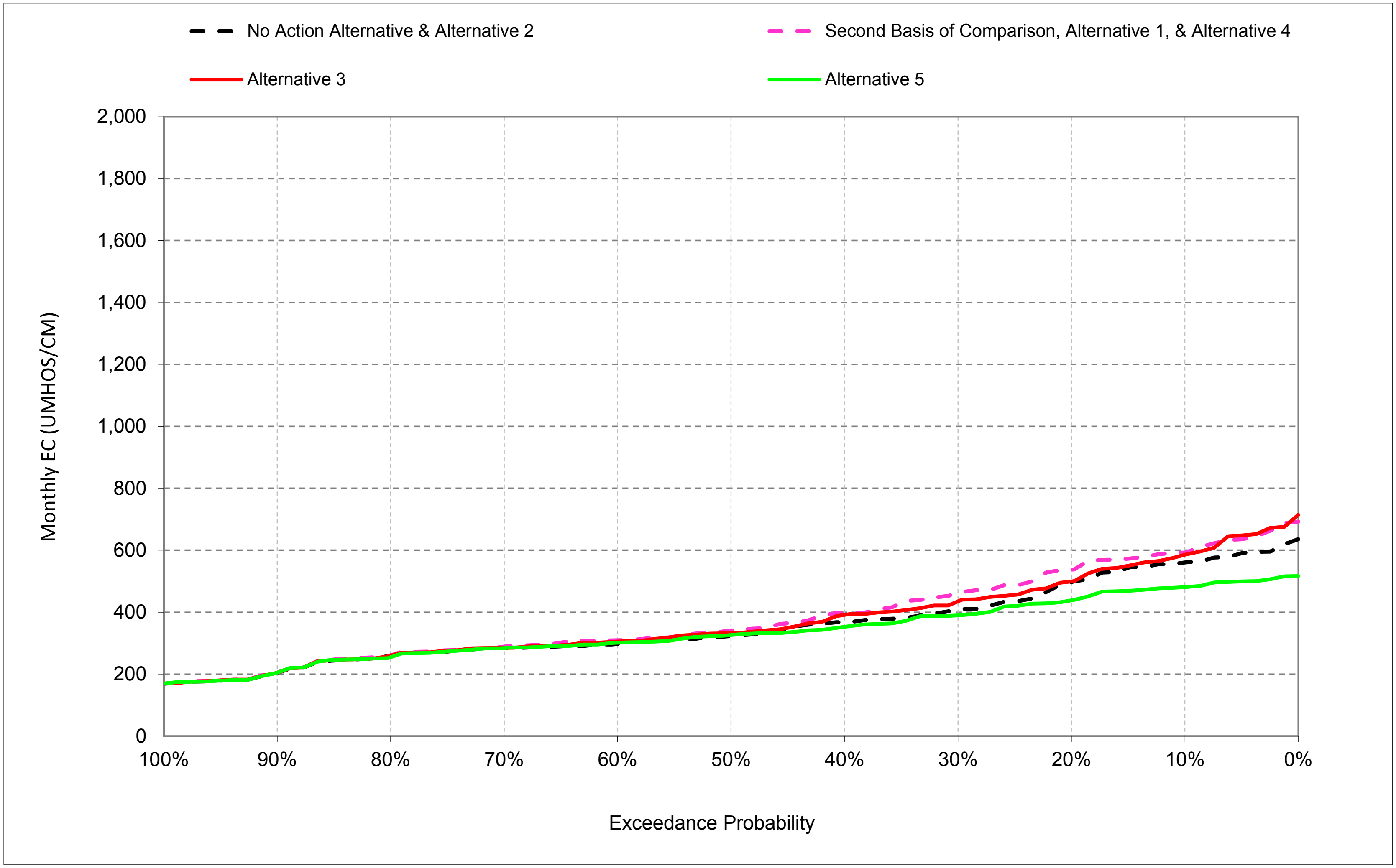
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.6. San Joaquin River at Vernalis Salinity, Electrical Conductivity, March



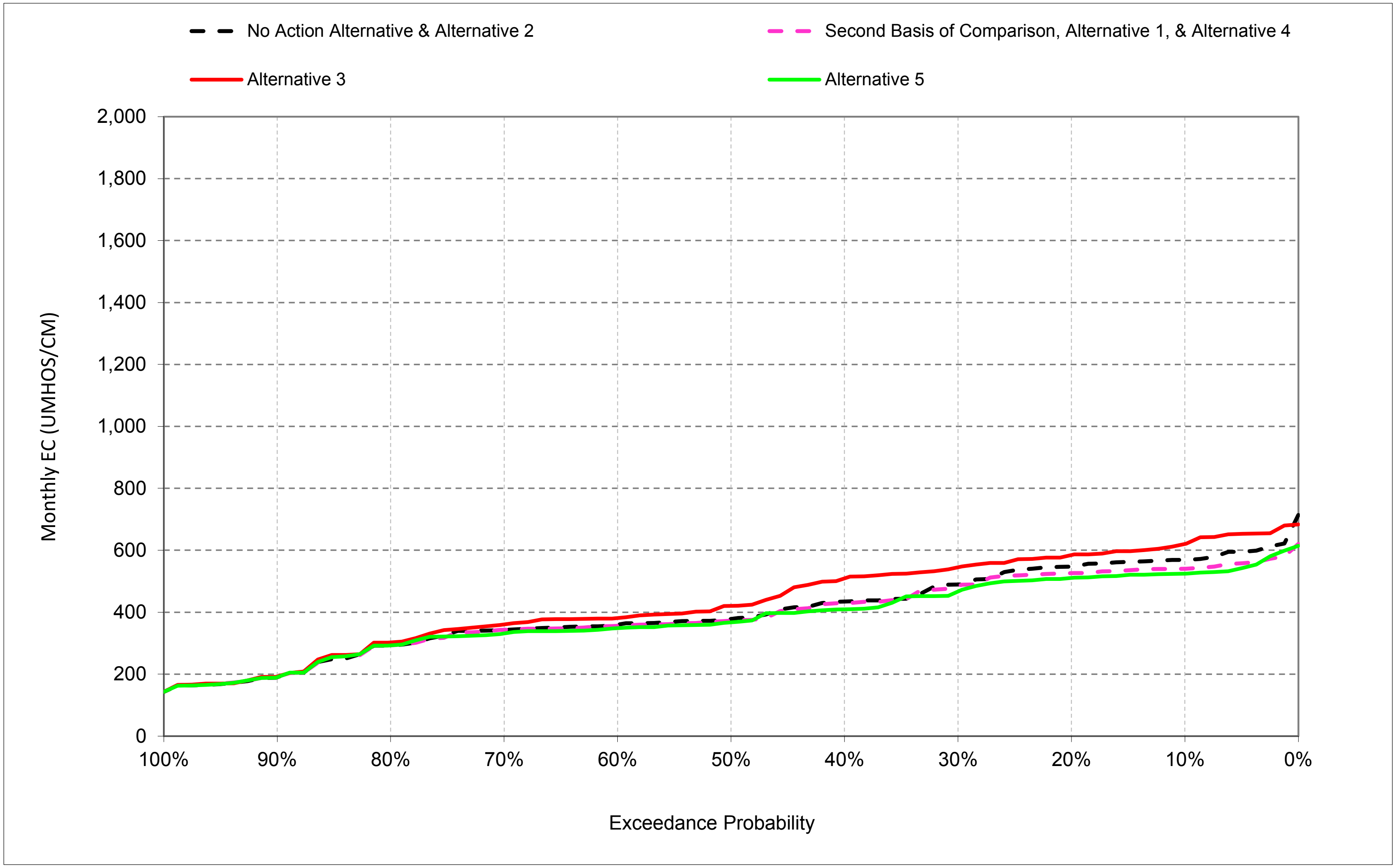
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.7. San Joaquin River at Vernalis Salinity, Electrical Conductivity, April



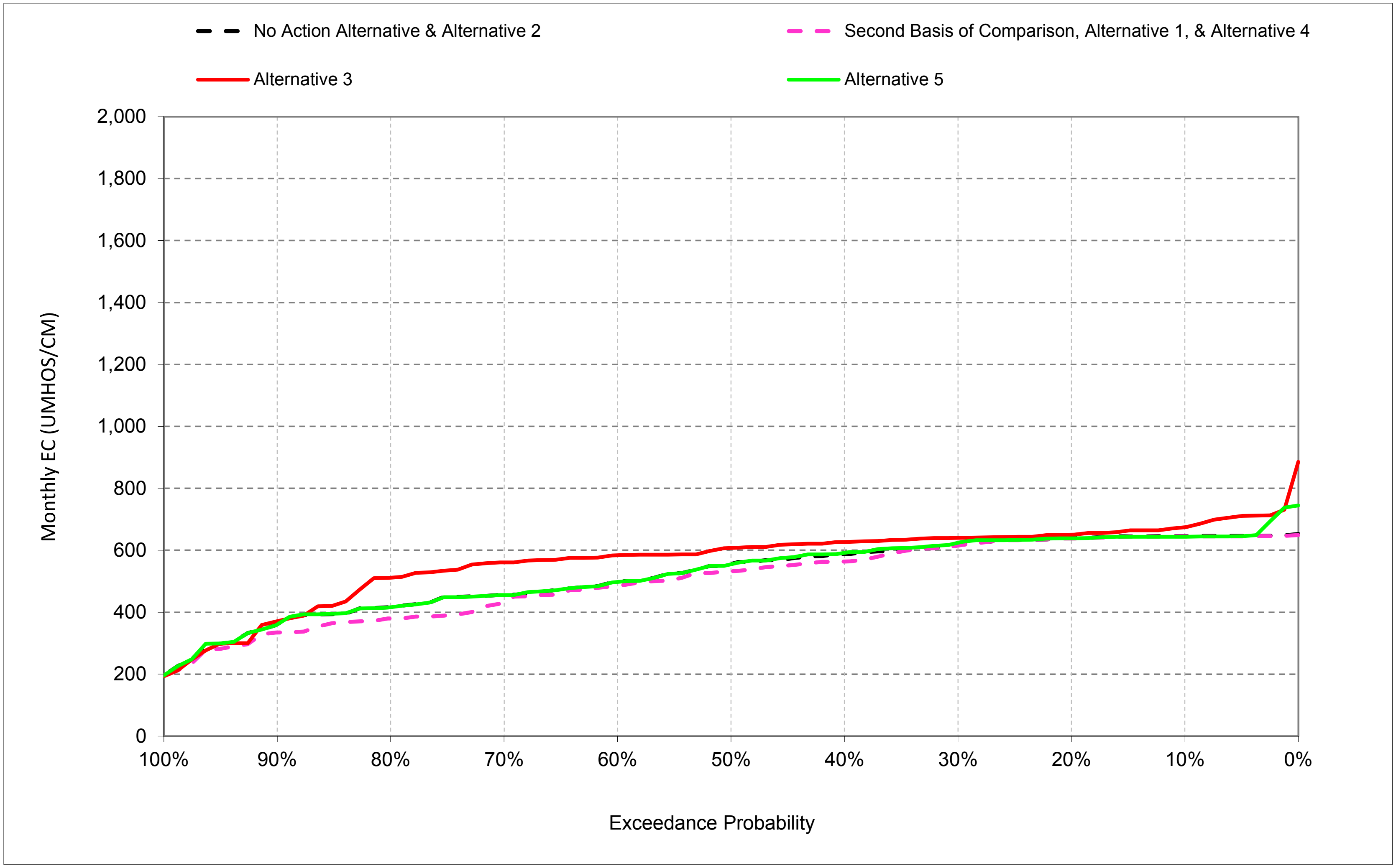
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.8. San Joaquin River at Vernalis Salinity, Electrical Conductivity, May



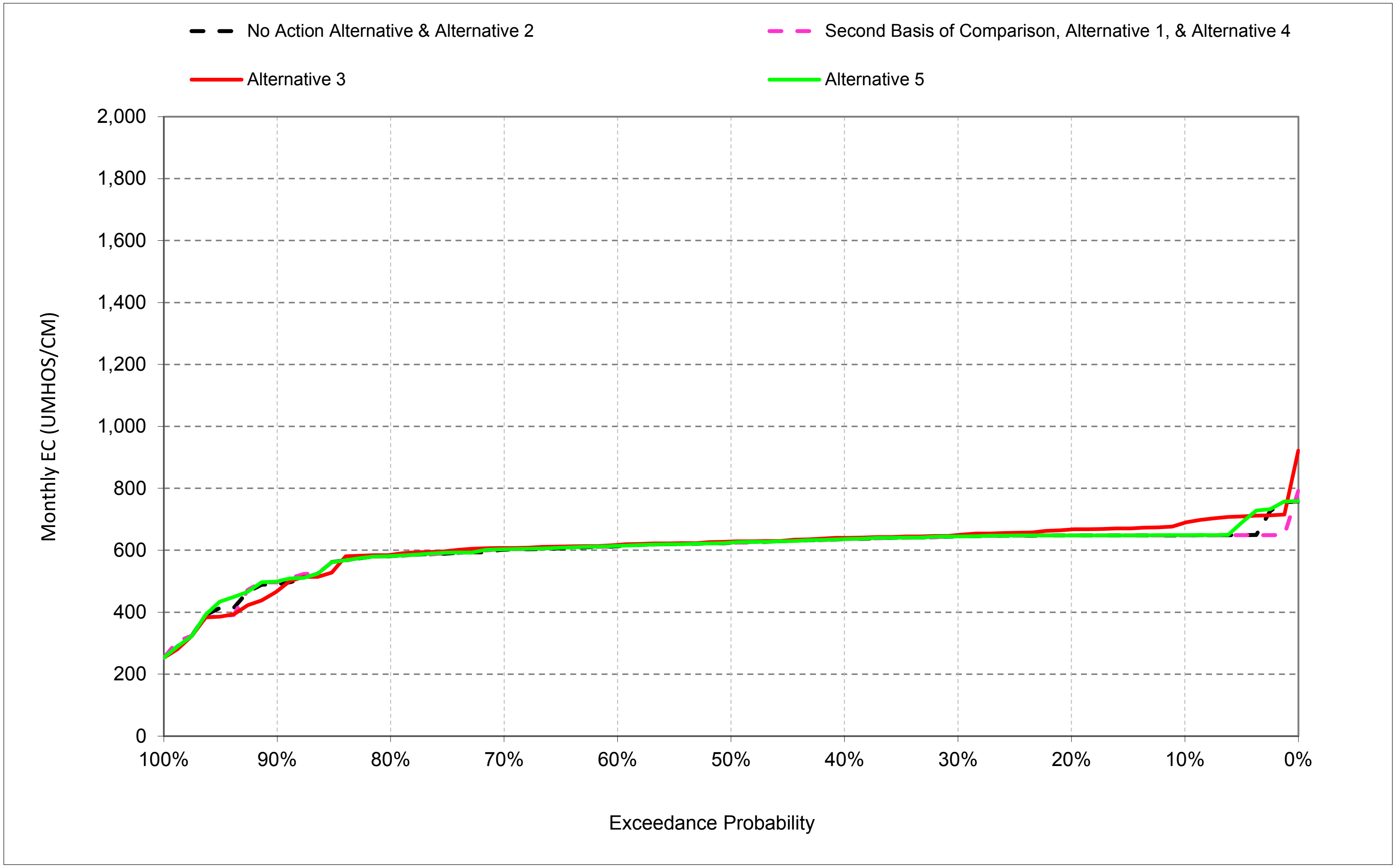
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.9. San Joaquin River at Vernalis Salinity, Electrical Conductivity, June



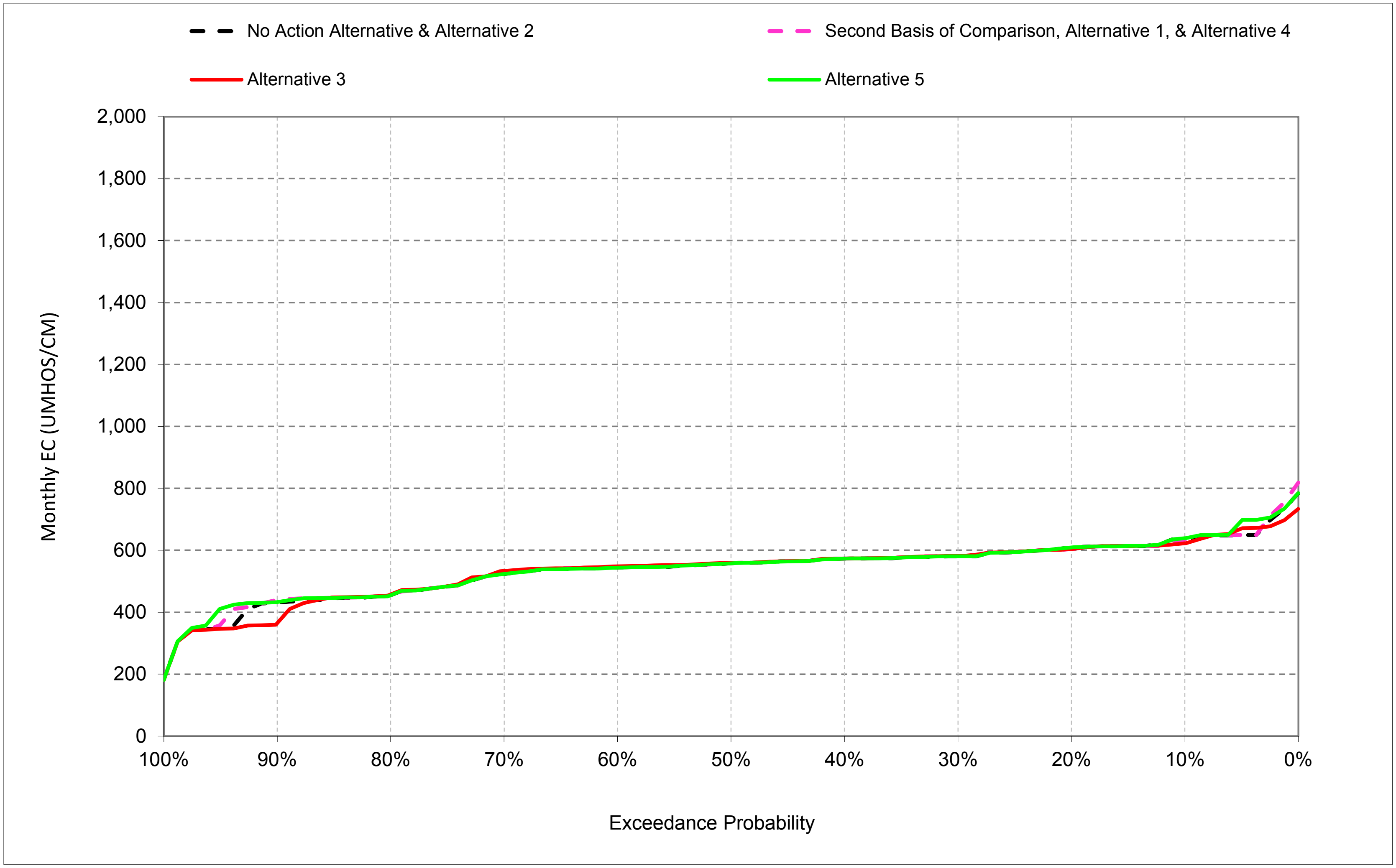
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.10. San Joaquin River at Vernalis Salinity, Electrical Conductivity, July



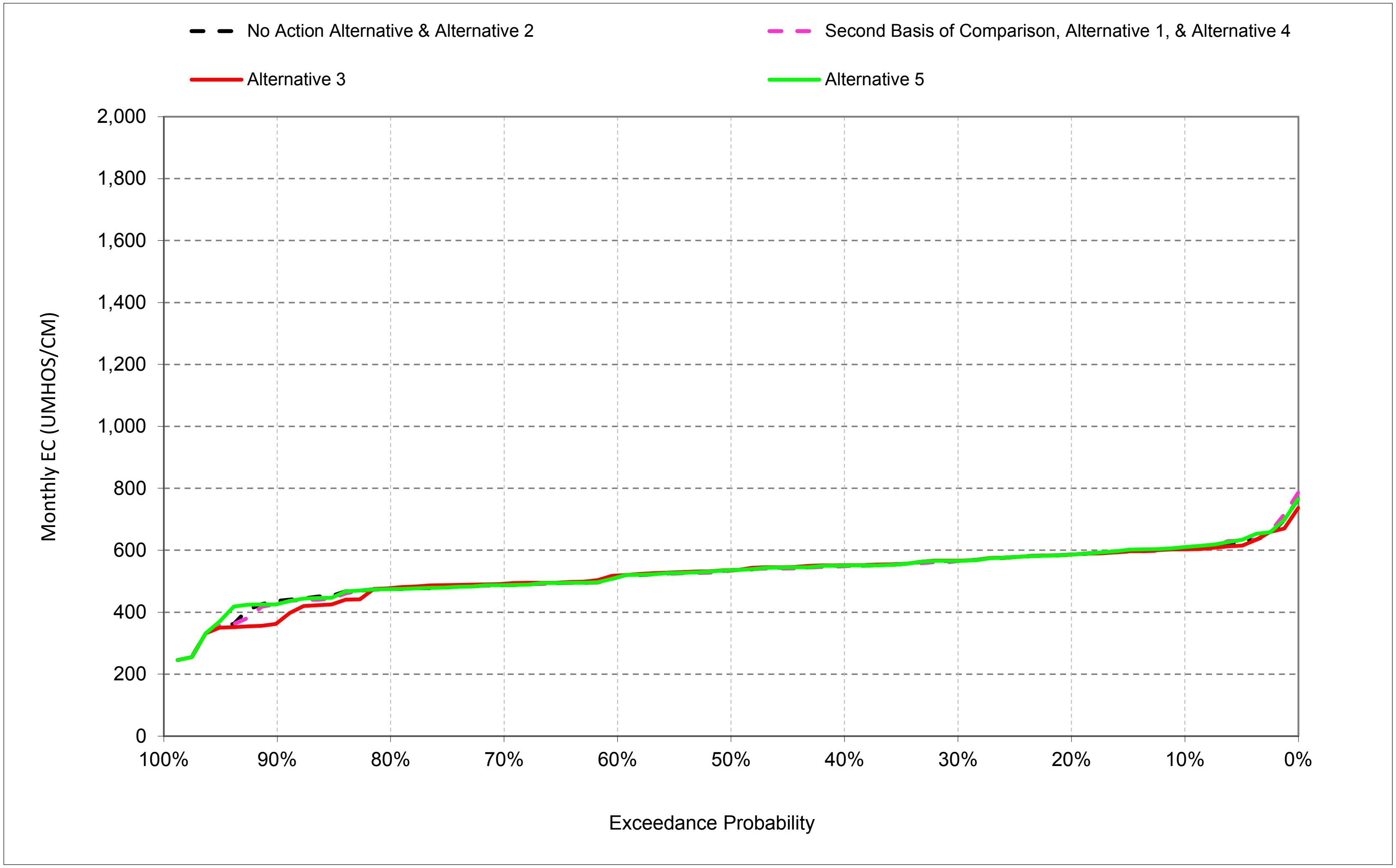
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.11. San Joaquin River at Vernalis Salinity, Electrical Conductivity, August



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure 6E.B.15.12. San Joaquin River at Vernalis Salinity, Electrical Conductivity, September



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.15.1. San Joaquin River at Vernalis, Monthly EC

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	575	639	800	774	941	847	561	569	646	648	636	606
20%	560	608	784	758	898	803	498	547	639	648	609	586
30%	540	587	772	746	855	737	408	489	616	645	580	568
40%	519	579	766	737	802	696	368	435	588	636	573	551
50%	503	565	761	726	697	623	323	378	556	624	558	538
60%	488	552	755	709	635	460	298	360	498	613	544	521
70%	474	538	736	651	477	333	284	343	456	602	523	489
80%	456	509	710	585	329	296	261	293	417	581	455	476
90%	430	481	629	392	286	263	205	190	361	491	431	441
Long Term												
Full Simulation Period[b]	503	554	721	660	647	564	360	401	521	599	539	526
Water Year Types[c]												
Wet (23%)	427	465	633	546	508	425	299	351	476	574	512	490
Above Normal (24%)	479	530	716	673	637	546	366	414	546	614	541	537
Below Normal (10%)	509	583	764	717	719	630	323	375	510	594	520	519
Dry (16%)	533	585	726	669	639	535	350	366	489	584	525	499
Critical (27%)	571	627	784	721	754	694	425	462	558	617	575	564

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	711	635	785	776	931	836	592	540	645	648	635	603
20%	681	603	766	750	875	799	537	526	638	648	604	586
30%	655	578	751	726	826	724	461	485	615	645	582	568
40%	623	564	734	713	786	681	398	429	564	636	573	551
50%	590	548	723	689	695	611	341	373	532	624	559	538
60%	569	529	710	677	626	494	309	356	485	614	545	521
70%	541	513	698	645	477	353	289	344	434	603	529	488
80%	520	488	668	574	328	306	260	294	380	581	454	478
90%	477	456	609	391	285	258	205	192	335	498	440	437
Long Term												
Full Simulation Period[b]	595	539	695	646	636	564	383	391	505	597	542	525
Water Year Types[c]												
Wet (23%)	475	442	598	525	490	431	325	353	439	574	514	489
Above Normal (24%)	549	512	686	654	622	543	383	402	534	614	541	532
Below Normal (10%)	604	561	727	692	702	627	353	369	496	590	520	518
Dry (16%)	641	573	705	659	635	533	370	356	473	580	533	500
Critical (27%)	715	621	770	719	753	692	452	442	556	614	579	565

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	136	-4	-14	1	-10	-11	31	-28	-1	0	-1	-3
20%	121	-6	-18	-8	-23	-3	40	-21	-1	0	-5	0
30%	115	-9	-21	-20	-29	-13	53	-4	0	1	2	0
40%	104	-14	-33	-24	-16	-15	30	-5	-24	0	0	0
50%	87	-17	-39	-37	-1	-12	18	-5	-24	-1	1	0
60%	81	-24	-45	-32	-9	34	12	-4	-13	1	1	0
70%	68	-25	-38	-5	0	20	6	0	-22	1	6	-1
80%	63	-21	-42	-11	-1	10	0	0	-38	0	0	2
90%	48	-25	-20	-1	-1	-5	1	2	-26	7	8	-4
Long Term												
Full Simulation Period[b]	93	-15	-27	-14	-11	0	24	-10	-16	-2	3	-1
Water Year Types[c]												
Wet (23%)	48	-23	-36	-21	-19	6	26	2	-37	0	3	-1
Above Normal (24%)	70	-17	-30	-20	-15	-3	17	-12	-12	0	-1	-5
Below Normal (10%)	94	-22	-37	-25	-17	-3	30	-7	-14	-4	0	-1
Dry (16%)	108	-11	-21	-10	-5	-2	19	-10	-16	-4	8	1
Critical (27%)	144	-6	-15	-2	-1	-1	27	-21	-2	-3	4	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.15.2. San Joaquin River at Vernalis, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	575	639	800	774	941	847	561	569	646	648	636	606
20%	560	608	784	758	898	803	498	547	639	648	609	586
30%	540	587	772	746	855	737	408	489	616	645	580	568
40%	519	579	766	737	802	696	368	435	588	636	573	551
50%	503	565	761	726	697	623	323	378	556	624	558	538
60%	488	552	755	709	635	460	298	360	498	613	544	521
70%	474	538	736	651	477	333	284	343	456	602	523	489
80%	456	509	710	585	329	296	261	293	417	581	455	476
90%	430	481	629	392	286	263	205	190	361	491	431	441
Long Term												
Full Simulation Period[b]	503	554	721	660	647	564	360	401	521	599	539	526
Water Year Types[c]												
Wet (23%)	427	465	633	546	508	425	299	351	476	574	512	490
Above Normal (24%)	479	530	716	673	637	546	366	414	546	614	541	537
Below Normal (10%)	509	583	764	717	719	630	323	375	510	594	520	519
Dry (16%)	533	585	726	669	639	535	350	366	489	584	525	499
Critical (27%)	571	627	784	721	754	694	425	462	558	617	575	564

Alternative 3

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	695	634	796	800	972	848	586	620	674	689	622	603
20%	671	599	768	781	916	805	499	585	650	667	604	586
30%	644	582	743	762	869	732	435	545	640	649	582	568
40%	613	564	735	736	818	702	391	509	627	640	573	552
50%	594	554	732	718	730	622	332	421	607	628	559	540
60%	567	538	727	698	636	503	305	381	584	617	548	522
70%	547	530	715	648	464	356	285	361	561	607	533	495
80%	519	496	693	582	321	306	260	302	512	586	457	482
90%	475	471	573	389	262	253	205	193	371	469	364	400
Long Term												
Full Simulation Period[b]	590	544	701	663	657	573	374	434	569	607	536	521
Water Year Types[c]												
Wet (23%)	477	455	609	526	478	437	321	395	548	582	511	490
Above Normal (24%)	547	519	695	670	634	547	369	436	587	625	537	528
Below Normal (10%)	608	568	736	723	733	645	337	413	536	591	509	508
Dry (16%)	635	572	702	684	666	535	361	395	525	581	524	497
Critical (27%)	699	622	773	742	802	711	443	493	605	633	574	561

Alternative 3 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**120**	-5	-3	**26**	**31**	**1**	**25**	**51**	**28**	**40**	-14	-3
20%	**111**	-9	-16	**23**	**17**	**2**	**2**	**37**	**11**	**19**	-5	**0**
30%	**104**	-6	-29	**16**	**14**	-5	**27**	**56**	**24**	**5**	**1**	**0**
40%	**94**	-15	-31	-1	**16**	**5**	**23**	**74**	**39**	**5**	**0**	**1**
50%	**91**	-11	-29	-8	**33**	0	**9**	**43**	**51**	**4**	**1**	**2**
60%	**79**	-14	-29	-11	**1**	**43**	**7**	**22**	**86**	**4**	**4**	**1**
70%	**73**	-8	-22	-3	-13	**23**	**2**	**18**	**104**	**6**	**10**	**6**
80%	**63**	-12	-17	-3	-8	**10**	-1	**9**	**94**	**5**	**3**	**6**
90%	**45**	-10	-55	-3	-23	-10	**0**	**3**	**10**	-22	-67	-41
Long Term												
Full Simulation Period[b]	**88**	-10	-20	**3**	**10**	**9**	**14**	**32**	**48**	**8**	-3	-4
Water Year Types[c]												
Wet (23%)	**50**	-10	-24	-20	-30	**12**	**22**	**44**	**72**	**8**	0	0
Above Normal (24%)	**68**	-11	-21	-4	-3	**1**	**3**	**22**	**41**	**11**	-4	-9
Below Normal (10%)	**98**	-15	-27	**6**	**13**	**15**	**14**	**38**	**26**	-2	-10	-11
Dry (16%)	**102**	-13	-24	**15**	**27**	**0**	**11**	**30**	**36**	-3	-1	-2
Critical (27%)	**128**	-5	-12	**21**	**48**	**17**	**18**	**31**	**47**	**16**	-1	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.15.3. San Joaquin River at Vernalis, Monthly EC

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	575	639	800	774	941	847	561	569	646	648	636	606
20%	560	608	784	758	898	803	498	547	639	648	609	586
30%	540	587	772	746	855	737	408	489	616	645	580	568
40%	519	579	766	737	802	696	368	435	588	636	573	551
50%	503	565	761	726	697	623	323	378	556	624	558	538
60%	488	552	755	709	635	460	298	360	498	613	544	521
70%	474	538	736	651	477	333	284	343	456	602	523	489
80%	456	509	710	585	329	296	261	293	417	581	455	476
90%	430	481	629	392	286	263	205	190	361	491	431	441
Long Term												
Full Simulation Period[b]	503	554	721	660	647	564	360	401	521	599	539	526
Water Year Types[c]												
Wet (23%)	427	465	633	546	508	425	299	351	476	574	512	490
Above Normal (24%)	479	530	716	673	637	546	366	414	546	614	541	537
Below Normal (10%)	509	583	764	717	719	630	323	375	510	594	520	519
Dry (16%)	533	585	726	669	639	535	350	366	489	584	525	499
Critical (27%)	571	627	784	721	754	694	425	462	558	617	575	564

Alternative 5

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	576	638	800	774	941	847	481	525	644	649	639	611
20%	560	608	784	758	901	803	438	511	639	648	609	586
30%	548	588	772	746	855	737	390	467	624	645	580	568
40%	524	579	766	739	802	696	353	410	591	636	573	551
50%	503	565	761	727	697	623	326	367	555	624	558	538
60%	491	552	755	710	635	460	302	349	498	614	544	521
70%	475	538	739	651	477	333	284	331	455	603	524	489
80%	460	509	710	585	329	297	255	293	416	581	455	476
90%	430	481	628	392	286	264	205	190	361	500	433	437
Long Term												
Full Simulation Period[b]	504	554	721	661	649	565	339	383	525	602	543	527
Water Year Types[c]												
Wet (23%)	428	466	633	547	512	425	292	345	478	574	512	489
Above Normal (24%)	481	530	716	674	638	546	347	394	546	614	541	536
Below Normal (10%)	512	583	764	717	720	630	327	377	515	598	531	521
Dry (16%)	537	585	726	670	640	539	329	348	494	589	533	507
Critical (27%)	572	627	784	721	757	694	382	427	567	623	581	566

Alternative 5 minus No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1	-1	0	0	0	0	-80	-44	-2	0	3	5
20%	0	0	0	0	3	0	-59	-37	0	0	0	0
30%	8	1	0	0	0	0	-18	-23	8	0	0	0
40%	5	0	0	2	0	0	-15	-25	4	0	0	0
50%	0	0	0	1	0	0	3	-11	-1	0	0	0
60%	3	0	0	1	0	0	4	-11	0	1	0	0
70%	1	0	2	0	0	0	0	-12	-1	1	0	0
80%	3	0	0	0	0	1	-6	0	-1	0	0	0
90%	0	0	-1	0	0	1	0	0	0	9	2	-4
Long Term												
Full Simulation Period[b]	2	0	0	0	2	1	-21	-18	4	3	4	2
Water Year Types[c]												
Wet (23%)	1	1	-1	2	3	0	-7	-5	2	1	1	-1
Above Normal (24%)	2	0	0	0	0	0	-19	-20	-1	0	0	-1
Below Normal (10%)	3	0	0	0	0	0	4	1	5	4	11	2
Dry (16%)	4	0	0	0	0	4	-22	-17	5	6	8	8
Critical (27%)	1	0	0	0	3	0	-43	-36	9	6	5	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.15.4. San Joaquin River at Vernalis, Monthly EC

Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	711	635	785	776	931	836	592	540	645	648	635	603
20%	681	603	766	750	875	799	537	526	638	648	604	586
30%	655	578	751	726	826	724	461	485	615	645	582	568
40%	623	564	734	713	786	681	398	429	564	636	573	551
50%	590	548	723	689	695	611	341	373	532	624	559	538
60%	569	529	710	677	626	494	309	356	485	614	545	521
70%	541	513	698	645	477	353	289	344	434	603	529	488
80%	520	488	668	574	328	306	260	294	380	581	454	478
90%	477	456	609	391	285	258	205	192	335	498	440	437
Long Term												
Full Simulation Period[b]	595	539	695	646	636	564	383	391	505	597	542	525
Water Year Types[c]												
Wet (23%)	475	442	598	525	490	431	325	353	439	574	514	489
Above Normal (24%)	549	512	686	654	622	543	383	402	534	614	541	532
Below Normal (10%)	604	561	727	692	702	627	353	369	496	590	520	518
Dry (16%)	641	573	705	659	635	533	370	356	473	580	533	500
Critical (27%)	715	621	770	719	753	692	452	442	556	614	579	565

No Action Alternative

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	575	639	800	774	941	847	561	569	646	648	636	606
20%	560	608	784	758	898	803	498	547	639	648	609	586
30%	540	587	772	746	855	737	408	489	616	645	580	568
40%	519	579	766	737	802	696	368	435	588	636	573	551
50%	503	565	761	726	697	623	323	378	556	624	558	538
60%	488	552	755	709	635	460	298	360	498	613	544	521
70%	474	538	736	651	477	333	284	343	456	602	523	489
80%	456	509	710	585	329	296	261	293	417	581	455	476
90%	430	481	629	392	286	263	205	190	361	491	431	441
Long Term												
Full Simulation Period[b]	503	554	721	660	647	564	360	401	521	599	539	526
Water Year Types[c]												
Wet (23%)	427	465	633	546	508	425	299	351	476	574	512	490
Above Normal (24%)	479	530	716	673	637	546	366	414	546	614	541	537
Below Normal (10%)	509	583	764	717	719	630	323	375	510	594	520	519
Dry (16%)	533	585	726	669	639	535	350	366	489	584	525	499
Critical (27%)	571	627	784	721	754	694	425	462	558	617	575	564

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly EC (UMHOS/CM)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-136	4	14	-1	10	11	-31	28	1	0	1	3
20%	-121	6	18	8	23	3	-40	21	1	0	5	0
30%	-115	9	21	20	29	13	-53	4	0	-1	-2	0
40%	-104	14	33	24	16	15	-30	5	24	0	0	0
50%	-87	17	39	37	1	12	-18	5	24	1	-1	0
60%	-81	24	45	32	9	-34	-12	4	13	-1	-1	0
70%	-68	25	38	5	0	-20	-6	0	22	-1	-6	1
80%	-63	21	42	11	1	-10	0	0	38	0	0	-2
90%	-48	25	20	1	1	5	-1	-2	26	-7	-8	4
Long Term												
Full Simulation Period[b]	-93	15	27	14	11	0	-24	10	16	2	-3	1
Water Year Types[c]												
Wet (23%)	-48	23	36	21	19	-6	-26	-2	37	0	-3	1
Above Normal (24%)	-70	17	30	20	15	3	-17	12	12	0	1	5
Below Normal (10%)	-94	22	37	25	17	3	-30	7	14	4	0	1
Dry (16%)	-108	11	21	10	5	2	-19	10	16	4	-8	-1
Critical (27%)	-144	6	15	2	1	1	-27	21	2	3	-4	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.15.5. San Joaquin River at Vernalis, Monthly EC

Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	711	635	785	776	931	836	592	540	645	648	635	603
20%	681	603	766	750	875	799	537	526	638	648	604	586
30%	655	578	751	726	826	724	461	485	615	645	582	568
40%	623	564	734	713	786	681	398	429	564	636	573	551
50%	590	548	723	689	695	611	341	373	532	624	559	538
60%	569	529	710	677	626	494	309	356	485	614	545	521
70%	541	513	698	645	477	353	289	344	434	603	529	488
80%	520	488	668	574	328	306	260	294	380	581	454	478
90%	477	456	609	391	285	258	205	192	335	498	440	437
Long Term												
Full Simulation Period[b]	595	539	695	646	636	564	383	391	505	597	542	525
Water Year Types[c]												
Wet (23%)	475	442	598	525	490	431	325	353	439	574	514	489
Above Normal (24%)	549	512	686	654	622	543	383	402	534	614	541	532
Below Normal (10%)	604	561	727	692	702	627	353	369	496	590	520	518
Dry (16%)	641	573	705	659	635	533	370	356	473	580	533	500
Critical (27%)	715	621	770	719	753	692	452	442	556	614	579	565

Alternative 3

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	695	634	796	800	972	848	586	620	674	689	622	603
20%	671	599	768	781	916	805	499	585	650	667	604	586
30%	644	582	743	762	869	732	435	545	640	649	582	568
40%	613	564	735	736	818	702	391	509	627	640	573	552
50%	594	554	732	718	730	622	332	421	607	628	559	540
60%	567	538	727	698	636	503	305	381	584	617	548	522
70%	547	530	715	648	464	356	285	361	561	607	533	495
80%	519	496	693	582	321	306	260	302	512	586	457	482
90%	475	471	573	389	262	253	205	193	371	469	364	400
Long Term												
Full Simulation Period[b]	590	544	701	663	657	573	374	434	569	607	536	521
Water Year Types[c]												
Wet (23%)	477	455	609	526	478	437	321	395	548	582	511	490
Above Normal (24%)	547	519	695	670	634	547	369	436	587	625	537	528
Below Normal (10%)	608	568	736	723	733	645	337	413	536	591	509	508
Dry (16%)	635	572	702	684	666	535	361	395	525	581	524	497
Critical (27%)	699	622	773	742	802	711	443	493	605	633	574	561

Alternative 3 minus Second Basis of Comparison

	Monthly EC (UMHOS/CM)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-16	-1	11	24	40	11	-7	80	30	40	-13	0
20%	-10	-4	3	32	40	6	-38	58	12	19	0	0
30%	-11	3	-8	36	43	8	-26	60	25	4	0	0
40%	-10	0	2	23	32	20	-6	79	63	4	0	1
50%	4	6	9	29	35	11	-8	48	75	5	1	2
60%	-2	10	17	21	10	9	-4	25	98	3	3	1
70%	6	17	17	3	-13	3	-4	17	126	4	4	6
80%	0	8	24	9	-7	0	-1	9	132	5	3	4
90%	-3	15	-35	-2	-22	-5	0	1	36	-29	-75	-37
Long Term												
Full Simulation Period[b]	-5	6	6	17	21	9	-10	42	64	10	-5	-4
Water Year Types[c]												
Wet (23%)	2	14	12	1	-12	6	-4	42	109	8	-3	0
Above Normal (24%)	-2	7	9	16	12	4	-14	34	53	11	-4	-4
Below Normal (10%)	4	7	10	31	31	17	-16	44	40	1	-11	-10
Dry (16%)	-6	-2	-3	25	32	3	-8	39	52	1	-9	-3
Critical (27%)	-16	1	3	23	49	18	-9	52	49	19	-5	-4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.15.6. San Joaquin River at Vernalis, Monthly EC

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	711	635	785	776	931	836	592	540	645	648	635	603
20%	681	603	766	750	875	799	537	526	638	648	604	586
30%	655	578	751	726	826	724	461	485	615	645	582	568
40%	623	564	734	713	786	681	398	429	564	636	573	551
50%	590	548	723	689	695	611	341	373	532	624	559	538
60%	569	529	710	677	626	494	309	356	485	614	545	521
70%	541	513	698	645	477	353	289	344	434	603	529	488
80%	520	488	668	574	328	306	260	294	380	581	454	478
90%	477	456	609	391	285	258	205	192	335	498	440	437
Long Term												
Full Simulation Period[b]	595	539	695	646	636	564	383	391	505	597	542	525
Water Year Types[c]												
Wet (23%)	475	442	598	525	490	431	325	353	439	574	514	489
Above Normal (24%)	549	512	686	654	622	543	383	402	534	614	541	532
Below Normal (10%)	604	561	727	692	702	627	353	369	496	590	520	518
Dry (16%)	641	573	705	659	635	533	370	356	473	580	533	500
Critical (27%)	715	621	770	719	753	692	452	442	556	614	579	565

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	576	638	800	774	941	847	481	525	644	649	639	611
20%	560	608	784	758	901	803	438	511	639	648	609	586
30%	548	588	772	746	855	737	390	467	624	645	580	568
40%	524	579	766	739	802	696	353	410	591	636	573	551
50%	503	565	761	727	697	623	326	367	555	624	558	538
60%	491	552	755	710	635	460	302	349	498	614	544	521
70%	475	538	739	651	477	333	284	331	455	603	524	489
80%	460	509	710	585	329	297	255	293	416	581	455	476
90%	430	481	628	392	286	264	205	190	361	500	433	437
Long Term												
Full Simulation Period[b]	504	554	721	661	649	565	339	383	525	602	543	527
Water Year Types[c]												
Wet (23%)	428	466	633	547	512	425	292	345	478	574	512	489
Above Normal (24%)	481	530	716	674	638	546	347	394	546	614	541	536
Below Normal (10%)	512	583	764	717	720	630	327	377	515	598	531	521
Dry (16%)	537	585	726	670	640	539	329	348	494	589	533	507
Critical (27%)	572	627	784	721	757	694	382	427	567	623	581	566

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly EC (UMHOS/CM)											
Probability of Exceedance[a]												
10%	-135	3	14	-1	10	11	-111	-16	-1	0	4	7
20%	-121	6	18	8	26	3	-99	-15	0	0	5	0
30%	-107	10	21	20	29	13	-72	-18	9	-1	-2	0
40%	-99	15	33	25	16	15	-45	-20	28	0	0	0
50%	-87	17	39	38	1	12	-15	-5	23	1	-1	0
60%	-78	24	45	32	9	-34	-8	-8	13	0	-1	0
70%	-66	25	41	5	0	-20	-5	-12	21	0	-6	0
80%	-60	21	42	11	1	-9	-5	0	37	0	0	-2
90%	-48	25	19	1	1	6	0	-2	26	2	-7	0
Long Term												
Full Simulation Period[b]	-91	16	26	15	13	1	-44	-8	20	5	1	2
Water Year Types[c]												
Wet (23%)	-47	24	35	22	22	-6	-33	-8	39	0	-2	-1
Above Normal (24%)	-68	17	30	20	15	3	-36	-8	12	0	1	4
Below Normal (10%)	-91	22	37	25	18	3	-26	8	19	8	11	3
Dry (16%)	-104	11	21	10	5	6	-41	-8	21	10	0	7
Critical (27%)	-143	6	15	2	4	2	-70	-15	11	9	2	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period

c As defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.16. Sacramento River at Mallard Slough Chloride Concentration

Table 6E.B.16.1. Sacramento River at Mallard Slough, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,292.5	4,377.7	3,764.3	2,376.9	1,054.1	873.1	1,185.6	1,568.7	2,001.4	2,779.5	3,422.7	3,859.9
20%	3,943.4	3,866.0	3,185.1	2,012.0	596.0	606.6	708.9	1,319.2	1,789.0	2,422.7	3,081.0	3,621.1
30%	3,900.3	3,740.2	2,264.3	1,602.9	300.9	228.7	473.0	1,094.6	1,660.3	2,228.7	2,946.1	3,512.6
40%	3,808.2	3,193.4	1,941.4	890.4	164.1	168.9	268.0	615.5	1,503.1	1,801.5	2,543.1	3,297.9
50%	3,486.5	1,721.7	1,718.4	642.6	82.0	71.9	161.4	441.4	1,191.4	1,584.4	2,305.5	2,954.9
60%	1,745.2	1,626.4	1,515.8	283.8	27.0	29.8	73.6	254.5	1,093.0	1,251.5	2,220.2	1,631.3
70%	854.0	845.9	611.7	45.6	20.6	19.3	39.2	161.8	824.1	1,158.1	2,121.0	890.8
80%	820.0	768.0	196.6	20.8	18.3	17.6	20.2	48.8	484.0	1,052.1	2,001.6	809.6
90%	780.5	722.2	40.8	17.2	16.8	16.8	17.4	17.7	121.2	901.5	1,919.2	787.5
Long Term												
Full Simulation Period[b]	2,564.0	2,295.0	1,749.1	962.9	377.6	279.6	390.3	668.5	1,239.7	1,711.5	2,511.6	2,359.4
Water Year Types[c]												
Wet (32%)	1,888.6	1,477.4	566.7	169.3	27.4	33.4	52.6	127.0	528.9	928.7	1,983.6	801.7
Above Normal (16%)	3,098.5	2,363.8	1,549.1	401.8	87.3	58.2	91.1	267.5	1,012.2	1,203.8	2,037.2	1,633.3
Below Normal (13%)	1,919.6	1,837.8	1,847.7	1,172.0	436.7	381.6	467.7	759.6	1,415.1	1,641.1	2,356.3	3,172.4
Dry (24%)	2,783.4	2,701.6	2,477.6	1,537.9	560.5	314.7	493.3	905.0	1,528.1	2,297.7	2,986.8	3,495.0
Critical (15%)	3,673.1	3,733.3	3,223.1	2,140.1	1,091.9	901.1	1,203.8	1,798.4	2,384.5	3,044.6	3,519.7	3,883.2

Alternative 1

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,250.7	4,314.5	3,765.9	3,038.4	1,582.1	1,184.6	1,254.0	1,619.2	2,008.3	2,762.1	3,502.7	3,858.6
20%	3,909.5	3,848.8	3,725.0	2,663.1	889.8	672.9	894.9	1,343.2	1,733.9	2,436.3	3,135.8	3,648.2
30%	3,810.5	3,765.9	3,464.4	2,225.6	562.1	301.0	701.2	1,225.3	1,554.4	2,263.5	3,022.9	3,516.2
40%	3,749.6	3,691.9	3,277.4	1,482.1	252.6	238.4	478.8	845.2	1,312.4	1,778.6	2,660.3	3,332.3
50%	3,631.4	3,584.4	2,841.3	991.3	136.5	110.1	318.6	677.3	1,184.6	1,615.7	2,369.1	3,151.6
60%	3,530.3	3,431.9	2,092.8	439.3	44.9	29.4	165.0	449.0	1,054.1	1,358.6	2,226.2	3,030.1
70%	3,459.6	3,363.6	1,104.9	62.1	20.6	19.4	57.9	305.4	850.2	1,267.7	2,170.8	2,985.5
80%	3,338.6	3,067.7	480.2	23.2	18.5	17.8	21.6	76.5	576.7	1,087.7	2,106.7	2,918.2
90%	2,991.4	1,664.6	106.4	17.3	16.6	17.0	17.2	18.1	132.3	915.0	1,972.8	2,820.6
Long Term												
Full Simulation Period[b]	3,528.9	3,257.1	2,292.5	1,249.8	502.1	341.2	481.9	780.9	1,213.0	1,747.8	2,572.0	3,187.6
Water Year Types[c]												
Wet (32%)	3,181.2	2,759.1	923.1	253.4	33.7	36.7	93.2	202.4	520.6	979.9	2,025.4	2,681.5
Above Normal (16%)	3,740.6	3,172.3	2,232.7	622.5	133.6	65.4	173.0	431.3	961.6	1,249.8	2,121.9	2,978.5
Below Normal (13%)	3,399.8	3,040.6	2,599.9	1,756.2	676.2	455.5	618.7	915.8	1,259.8	1,675.1	2,482.8	3,224.3
Dry (24%)	3,676.1	3,632.6	3,163.9	2,015.6	744.8	404.7	613.8	1,009.1	1,515.1	2,302.0	3,037.0	3,536.5
Critical (15%)	3,926.2	4,001.0	3,590.2	2,347.6	1,352.3	1,089.4	1,313.8	1,908.7	2,439.3	3,093.9	3,551.0	3,895.6

Alternative 1 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-41.8	-63.2	1.6	661.6	528.0	311.4	68.4	50.5	6.9	-17.3	80.0	-1.4
20%	-33.9	-17.2	539.9	651.2	293.8	66.3	186.0	24.1	-55.1	13.6	54.8	27.1
30%	-89.8	25.7	1,200.1	622.7	261.2	72.3	228.2	130.7	-105.9	34.8	76.7	3.6
40%	-58.6	498.5	1,336.0	591.7	88.5	69.6	210.8	229.6	-190.7	-22.9	117.2	34.4
50%	144.9	1,862.7	1,123.0	348.7	54.5	38.2	157.2	235.8	-6.8	31.2	63.7	196.7
60%	1,785.1	1,805.5	577.1	155.5	17.9	-0.4	91.4	194.6	-38.9	107.0	6.1	1,398.8
70%	2,605.6	2,517.6	493.2	16.5	-0.1	0.2	18.8	143.6	26.1	109.6	49.8	2,094.8
80%	2,518.6	2,299.7	283.6	2.4	0.2	0.3	1.4	27.7	92.6	35.6	105.2	2,108.6
90%	2,210.9	942.4	65.6	0.1	-0.1	0.3	-0.2	0.5	11.0	13.6	53.5	2,033.1
Long Term												
Full Simulation Period[b]	965.0	962.2	543.4	286.9	124.5	61.6	91.6	112.4	-26.6	36.3	60.5	828.2
Water Year Types[c]												
Wet (32%)	1,292.6	1,281.7	356.4	84.1	6.3	3.3	40.5	75.3	-8.3	51.2	41.8	1,879.8
Above Normal (16%)	642.1	808.5	683.6	220.7	46.4	7.2	81.9	163.8	-50.6	46.0	84.7	1,345.2
Below Normal (13%)	1,480.2	1,202.8	752.3	584.3	239.5	73.9	151.0	156.2	-155.3	34.0	126.5	51.9
Dry (24%)	892.7	930.9	686.2	477.8	184.3	89.9	120.6	104.1	-13.0	4.2	50.1	41.5
Critical (15%)	253.1	267.6	367.0	207.4	260.4	188.3	110.0	110.4	54.8	49.3	31.3	12.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.16.2. Sacramento River at Mallard Slough, Monthly Chloride Concentration

No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,292.5	4,377.7	3,764.3	2,376.9	1,054.1	873.1	1,185.6	1,568.7	2,001.4	2,779.5	3,422.7	3,859.9
20%	3,943.4	3,866.0	3,185.1	2,012.0	596.0	606.6	708.9	1,319.2	1,789.0	2,422.7	3,081.0	3,621.1
30%	3,900.3	3,740.2	2,264.3	1,602.9	300.9	228.7	473.0	1,094.6	1,660.3	2,228.7	2,946.1	3,512.6
40%	3,808.2	3,193.4	1,941.4	890.4	164.1	168.9	268.0	615.5	1,503.1	1,801.5	2,543.1	3,297.9
50%	3,486.5	1,721.7	1,718.4	642.6	82.0	71.9	161.4	441.4	1,191.4	1,584.4	2,305.5	2,954.9
60%	1,745.2	1,626.4	1,515.8	283.8	27.0	29.8	73.6	254.5	1,093.0	1,251.5	2,220.2	1,631.3
70%	854.0	845.9	611.7	45.6	20.6	19.3	39.2	161.8	824.1	1,158.1	2,121.0	890.8
80%	820.0	768.0	196.6	20.8	18.3	17.6	20.2	48.8	484.0	1,052.1	2,001.6	809.6
90%	780.5	722.2	40.8	17.2	16.8	16.8	17.4	17.7	121.2	901.5	1,919.2	787.5
Long Term												
Full Simulation Period[b]	2,564.0	2,295.0	1,749.1	962.9	377.6	279.6	390.3	668.5	1,239.7	1,711.5	2,511.6	2,359.4
Water Year Types[c]												
Wet (32%)	1,888.6	1,477.4	566.7	169.3	27.4	33.4	52.6	127.0	528.9	928.7	1,983.6	801.7
Above Normal (16%)	3,098.5	2,363.8	1,549.1	401.8	87.3	58.2	91.1	267.5	1,012.2	1,203.8	2,037.2	1,633.3
Below Normal (13%)	1,919.6	1,837.8	1,847.7	1,172.0	436.7	381.6	467.7	759.6	1,415.1	1,641.1	2,356.3	3,172.4
Dry (24%)	2,783.4	2,701.6	2,477.6	1,537.9	560.5	314.7	493.3	905.0	1,528.1	2,297.7	2,986.8	3,495.0
Critical (15%)	3,673.1	3,733.3	3,223.1	2,140.1	1,091.9	901.1	1,203.8	1,798.4	2,384.5	3,044.6	3,519.7	3,883.2

Alternative 3

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,241.2	4,380.5	3,774.2	2,674.8	1,113.8	871.9	1,160.2	1,661.6	1,999.3	2,747.5	3,459.4	3,894.2
20%	3,942.9	3,891.3	3,669.5	2,291.5	598.5	599.4	848.3	1,354.1	1,809.5	2,425.3	3,114.3	3,630.4
30%	3,867.4	3,777.0	3,468.7	1,964.3	323.1	232.3	578.0	1,208.5	1,665.0	2,269.3	2,932.5	3,524.6
40%	3,744.8	3,705.3	3,158.9	999.4	205.4	176.6	439.0	911.8	1,542.5	1,746.6	2,532.3	3,242.2
50%	3,609.3	3,626.2	2,821.5	692.6	92.5	85.8	296.3	742.2	1,316.8	1,593.4	2,270.5	3,085.0
60%	3,497.6	3,451.7	2,109.0	281.2	23.6	30.6	156.3	502.5	1,135.9	1,282.2	2,211.4	2,991.8
70%	3,448.6	3,357.6	814.4	43.8	20.2	19.0	69.2	307.7	916.2	1,182.9	2,097.0	2,920.9
80%	3,343.9	3,048.0	458.6	20.7	18.2	17.7	20.7	105.4	632.0	1,104.6	2,039.3	2,890.5
90%	3,058.9	1,584.8	105.3	17.1	16.7	16.9	17.0	18.4	169.3	924.6	1,892.4	2,822.4
Long Term												
Full Simulation Period[b]	3,547.9	3,288.1	2,246.6	1,070.7	384.1	280.8	450.5	792.7	1,294.1	1,727.0	2,522.0	3,163.0
Water Year Types[c]												
Wet (32%)	3,165.3	2,778.1	880.0	195.1	28.7	38.5	93.3	227.1	597.8	957.8	1,971.7	2,666.5
Above Normal (16%)	3,808.5	3,200.3	2,130.3	461.7	80.1	57.0	160.9	454.5	1,075.0	1,228.0	2,069.6	2,957.6
Below Normal (13%)	3,450.9	3,103.8	2,605.7	1,364.5	447.1	379.0	572.2	937.3	1,483.4	1,641.2	2,342.5	3,106.0
Dry (24%)	3,668.3	3,656.4	3,140.2	1,718.9	558.2	314.6	560.5	1,024.8	1,565.7	2,280.4	3,006.5	3,527.8
Critical (15%)	3,982.6	4,043.8	3,514.9	2,278.3	1,135.5	901.8	1,243.4	1,865.2	2,413.9	3,090.7	3,561.1	3,905.5

Alternative 3 minus No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-51.2	2.8	9.9	298.0	59.7	-1.2	-25.4	92.8	-2.0	-32.0	36.7	34.3
20%	-0.5	25.3	484.4	279.5	2.5	-7.2	139.3	34.9	20.5	2.6	33.3	9.3
30%	-32.9	36.8	1,204.4	361.4	22.1	3.6	104.9	113.9	4.7	40.6	-13.6	12.0
40%	-63.4	511.9	1,217.5	109.0	41.4	7.7	171.0	296.2	39.4	-54.9	-10.7	-55.7
50%	122.8	1,904.5	1,103.2	50.0	10.6	13.9	135.0	300.8	125.4	8.9	-35.0	130.1
60%	1,752.4	1,825.4	593.2	-2.6	-3.4	0.8	82.6	248.1	42.8	30.6	-8.8	1,360.5
70%	2,594.5	2,511.7	202.7	-1.8	-0.5	-0.3	30.0	145.9	92.1	24.8	-24.0	2,030.2
80%	2,523.8	2,280.1	262.0	0.0	0.0	0.2	0.5	56.7	147.9	52.5	37.7	2,080.9
90%	2,278.4	862.6	64.6	0.0	-0.1	0.1	-0.4	0.8	48.0	23.1	-26.8	2,035.0
Long Term												
Full Simulation Period[b]	983.9	993.2	497.5	107.9	6.5	1.1	60.2	124.2	54.4	15.6	10.4	803.6
Water Year Types[c]												
Wet (32%)	1,276.7	1,300.7	313.4	25.8	1.3	5.1	40.7	100.0	68.9	29.0	-11.9	1,864.8
Above Normal (16%)	710.0	836.4	581.2	59.8	-7.2	-1.2	69.7	187.0	62.8	24.2	32.4	1,324.4
Below Normal (13%)	1,531.4	1,266.0	758.1	192.6	10.5	-2.6	104.4	177.7	68.3	0.1	-13.8	-66.4
Dry (24%)	884.9	954.7	662.6	181.0	-2.3	-0.1	67.3	119.8	37.7	-17.3	19.6	32.8
Critical (15%)	309.5	310.4	291.8	138.2	43.6	0.7	39.6	66.8	29.4	46.1	41.4	22.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.16.3. Sacramento River at Mallard Slough, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,292.5	4,377.7	3,764.3	2,376.9	1,054.1	873.1	1,185.6	1,568.7	2,001.4	2,779.5	3,422.7	3,859.9
20%	3,943.4	3,866.0	3,185.1	2,012.0	596.0	606.6	708.9	1,319.2	1,789.0	2,422.7	3,081.0	3,621.1
30%	3,900.3	3,740.2	2,264.3	1,602.9	300.9	228.7	473.0	1,094.6	1,660.3	2,228.7	2,946.1	3,512.6
40%	3,808.2	3,193.4	1,941.4	890.4	164.1	168.9	268.0	615.5	1,503.1	1,801.5	2,543.1	3,297.9
50%	3,486.5	1,721.7	1,718.4	642.6	82.0	71.9	161.4	441.4	1,191.4	1,584.4	2,305.5	2,954.9
60%	1,745.2	1,626.4	1,515.8	283.8	27.0	29.8	73.6	254.5	1,093.0	1,251.5	2,220.2	1,631.3
70%	854.0	845.9	611.7	45.6	20.6	19.3	39.2	161.8	824.1	1,158.1	2,121.0	890.8
80%	820.0	768.0	196.6	20.8	18.3	17.6	20.2	48.8	484.0	1,052.1	2,001.6	809.6
90%	780.5	722.2	40.8	17.2	16.8	16.8	17.4	17.7	121.2	901.5	1,919.2	787.5
Long Term												
Full Simulation Period[b]	2,564.0	2,295.0	1,749.1	962.9	377.6	279.6	390.3	668.5	1,239.7	1,711.5	2,511.6	2,359.4
Water Year Types[c]												
Wet (32%)	1,888.6	1,477.4	566.7	169.3	27.4	33.4	52.6	127.0	528.9	928.7	1,983.6	801.7
Above Normal (16%)	3,098.5	2,363.8	1,549.1	401.8	87.3	58.2	91.1	267.5	1,012.2	1,203.8	2,037.2	1,633.3
Below Normal (13%)	1,919.6	1,837.8	1,847.7	1,172.0	436.7	381.6	467.7	759.6	1,415.1	1,641.1	2,356.3	3,172.4
Dry (24%)	2,783.4	2,701.6	2,477.6	1,537.9	560.5	314.7	493.3	905.0	1,528.1	2,297.7	2,986.8	3,495.0
Critical (15%)	3,673.1	3,733.3	3,223.1	2,140.1	1,091.9	901.1	1,203.8	1,798.4	2,384.5	3,044.6	3,519.7	3,883.2

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,293.7	4,345.7	3,764.7	2,374.0	1,056.9	874.4	1,014.1	1,313.3	1,961.5	2,775.6	3,404.4	3,826.0
20%	3,966.6	3,872.0	3,135.0	2,018.5	597.5	606.8	659.9	1,137.6	1,699.1	2,376.0	3,096.7	3,606.0
30%	3,896.2	3,740.9	2,268.7	1,603.0	300.1	233.1	433.7	942.9	1,640.7	2,211.4	2,939.6	3,527.3
40%	3,783.0	3,184.6	1,940.6	890.2	163.3	168.9	243.9	579.5	1,435.9	1,793.9	2,534.8	3,286.5
50%	3,442.7	1,713.0	1,722.2	644.3	81.9	75.1	162.6	414.0	1,198.2	1,586.2	2,310.1	2,920.1
60%	1,745.8	1,607.6	1,515.1	283.0	26.9	29.7	75.3	265.3	1,092.5	1,257.2	2,206.0	1,645.4
70%	853.7	845.8	602.4	44.9	20.7	19.3	39.2	150.4	815.7	1,158.4	2,108.8	889.6
80%	822.4	768.2	198.5	20.6	18.3	17.6	20.3	44.2	479.2	1,056.3	1,987.2	811.7
90%	779.1	722.7	44.2	17.2	16.8	16.8	17.4	17.7	121.5	905.1	1,921.1	790.3
Long Term												
Full Simulation Period[b]	2,561.5	2,286.6	1,749.0	970.3	384.0	280.7	351.0	596.7	1,199.6	1,695.3	2,497.3	2,355.7
Water Year Types[c]												
Wet (32%)	1,888.0	1,483.3	567.3	169.1	27.3	33.3	51.7	118.7	525.6	917.9	1,966.9	801.3
Above Normal (16%)	3,093.7	2,312.9	1,531.9	401.2	87.3	58.3	90.5	258.4	1,006.5	1,203.4	2,036.7	1,638.7
Below Normal (13%)	1,922.9	1,839.4	1,849.4	1,173.8	436.3	381.4	421.2	685.0	1,391.6	1,634.0	2,343.2	3,151.1
Dry (24%)	2,780.3	2,695.5	2,486.2	1,546.8	563.2	315.7	422.6	795.8	1,478.1	2,284.1	2,974.6	3,493.1
Critical (15%)	3,664.9	3,727.3	3,223.7	2,175.6	1,131.4	906.8	1,097.6	1,586.2	2,229.1	2,987.1	3,491.1	3,875.3

Alternative 5 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1.2	-32.0	0.3	-2.8	2.8	1.2	-171.5	-255.5	-39.9	-3.9	-18.4	-34.0
20%	23.2	6.0	-50.1	6.5	1.5	0.1	-49.1	-181.6	-89.9	-46.7	15.7	-15.2
30%	-4.1	0.7	4.4	0.0	-0.8	4.4	-39.3	-151.7	-19.5	-17.2	-6.5	14.7
40%	-25.2	-8.7	-0.8	-0.2	-0.8	0.1	-24.1	-36.0	-67.2	-7.6	-8.2	-11.4
50%	-43.8	-8.8	3.9	1.8	-0.1	3.2	1.2	-27.5	6.8	1.8	4.6	-34.8
60%	0.5	-18.8	-0.6	-0.8	-0.2	-0.1	1.6	10.8	-0.5	5.7	-14.2	14.1
70%	-0.3	-0.1	-9.3	-0.8	0.0	0.0	0.0	-11.4	-8.4	0.3	-12.2	-1.2
80%	2.4	0.3	1.9	-0.1	0.0	0.0	0.2	-4.5	-4.8	4.2	-14.4	2.1
90%	-1.4	0.5	3.5	0.0	0.0	0.0	0.0	0.0	0.2	3.7	1.8	2.9
Long Term												
Full Simulation Period[b]	-2.5	-8.3	-0.1	7.4	6.4	1.0	-39.4	-71.8	-40.0	-16.2	-14.3	-3.7
Water Year Types[c]												
Wet (32%)	-0.6	6.0	0.7	-0.2	0.0	-0.1	-0.9	-8.4	-3.3	-10.8	-16.7	-0.4
Above Normal (16%)	-4.8	-51.0	-17.2	-0.7	0.0	0.1	-0.6	-9.0	-5.7	-0.4	-0.5	5.4
Below Normal (13%)	3.4	1.6	1.7	1.9	-0.4	-0.2	-46.5	-74.6	-23.5	-7.1	-13.1	-21.3
Dry (24%)	-3.1	-6.1	8.6	8.9	2.7	1.0	-70.7	-109.3	-50.0	-13.6	-12.2	-1.9
Critical (15%)	-8.2	-6.1	0.5	35.4	39.5	5.8	-106.2	-212.2	-155.4	-57.5	-28.5	-7.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.16.4. Sacramento River at Mallard Slough, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,250.7	4,314.5	3,765.9	3,038.4	1,582.1	1,184.6	1,254.0	1,619.2	2,008.3	2,762.1	3,502.7	3,858.6
20%	3,909.5	3,848.8	3,725.0	2,663.1	889.8	672.9	894.9	1,343.2	1,733.9	2,436.3	3,135.8	3,648.2
30%	3,810.5	3,765.9	3,464.4	2,225.6	562.1	301.0	701.2	1,225.3	1,554.4	2,263.5	3,022.9	3,516.2
40%	3,749.6	3,691.9	3,277.4	1,482.1	252.6	238.4	478.8	845.2	1,312.4	1,778.6	2,660.3	3,332.3
50%	3,631.4	3,584.4	2,841.3	991.3	136.5	110.1	318.6	677.3	1,184.6	1,615.7	2,369.1	3,151.6
60%	3,530.3	3,431.9	2,092.8	439.3	44.9	29.4	165.0	449.0	1,054.1	1,358.6	2,226.2	3,030.1
70%	3,459.6	3,363.6	1,104.9	62.1	20.6	19.4	57.9	305.4	850.2	1,267.7	2,170.8	2,985.5
80%	3,338.6	3,067.7	480.2	23.2	18.5	17.8	21.6	76.5	576.7	1,087.7	2,106.7	2,918.2
90%	2,991.4	1,664.6	106.4	17.3	16.6	17.0	17.2	18.1	132.3	915.0	1,972.8	2,820.6
Long Term												
Full Simulation Period[b]	3,528.9	3,257.1	2,292.5	1,249.8	502.1	341.2	481.9	780.9	1,213.0	1,747.8	2,572.0	3,187.6
Water Year Types[c]												
Wet (32%)	3,181.2	2,759.1	923.1	253.4	33.7	36.7	93.2	202.4	520.6	979.9	2,025.4	2,681.5
Above Normal (16%)	3,740.6	3,172.3	2,232.7	622.5	133.6	65.4	173.0	431.3	961.6	1,249.8	2,121.9	2,978.5
Below Normal (13%)	3,399.8	3,040.6	2,599.9	1,756.2	676.2	455.5	618.7	915.8	1,259.8	1,675.1	2,482.8	3,224.3
Dry (24%)	3,676.1	3,632.6	3,163.9	2,015.6	744.8	404.7	613.8	1,009.1	1,515.1	2,302.0	3,037.0	3,536.5
Critical (15%)	3,926.2	4,001.0	3,590.2	2,347.6	1,352.3	1,089.4	1,313.8	1,908.7	2,439.3	3,093.9	3,551.0	3,895.6

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,292.5	4,377.7	3,764.3	2,376.9	1,054.1	873.1	1,185.6	1,568.7	2,001.4	2,779.5	3,422.7	3,859.9
20%	3,943.4	3,866.0	3,185.1	2,012.0	596.0	606.6	708.9	1,319.2	1,789.0	2,422.7	3,081.0	3,621.1
30%	3,900.3	3,740.2	2,264.3	1,602.9	300.9	228.7	473.0	1,094.6	1,660.3	2,228.7	2,946.1	3,512.6
40%	3,808.2	3,193.4	1,941.4	890.4	164.1	168.9	268.0	615.5	1,503.1	1,801.5	2,543.1	3,297.9
50%	3,486.5	1,721.7	1,718.4	642.6	82.0	71.9	161.4	441.4	1,191.4	1,584.4	2,305.5	2,954.9
60%	1,745.2	1,626.4	1,515.8	283.8	27.0	29.8	73.6	254.5	1,093.0	1,251.5	2,220.2	1,631.3
70%	854.0	845.9	611.7	45.6	20.6	19.3	39.2	161.8	824.1	1,158.1	2,121.0	890.8
80%	820.0	768.0	196.6	20.8	18.3	17.6	20.2	48.8	484.0	1,052.1	2,001.6	809.6
90%	780.5	722.2	40.8	17.2	16.8	16.8	17.4	17.7	121.2	901.5	1,919.2	787.5
Long Term												
Full Simulation Period[b]	2,564.0	2,295.0	1,749.1	962.9	377.6	279.6	390.3	668.5	1,239.7	1,711.5	2,511.6	2,359.4
Water Year Types[c]												
Wet (32%)	1,888.6	1,477.4	566.7	169.3	27.4	33.4	52.6	127.0	528.9	928.7	1,983.6	801.7
Above Normal (16%)	3,098.5	2,363.8	1,549.1	401.8	87.3	58.2	91.1	267.5	1,012.2	1,203.8	2,037.2	1,633.3
Below Normal (13%)	1,919.6	1,837.8	1,847.7	1,172.0	436.7	381.6	467.7	759.6	1,415.1	1,641.1	2,356.3	3,172.4
Dry (24%)	2,783.4	2,701.6	2,477.6	1,537.9	560.5	314.7	493.3	905.0	1,528.1	2,297.7	2,986.8	3,495.0
Critical (15%)	3,673.1	3,733.3	3,223.1	2,140.1	1,091.9	901.1	1,203.8	1,798.4	2,384.5	3,044.6	3,519.7	3,883.2

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	41.8	63.2	-1.6	-661.6	-528.0	-311.4	-68.4	-50.5	-6.9	17.3	-80.0	1.4
20%	33.9	17.2	-539.9	-651.2	-293.8	-66.3	-186.0	-24.1	55.1	-13.6	-54.8	-27.1
30%	89.8	-25.7	-1,200.1	-622.7	-261.2	-72.3	-228.2	-130.7	105.9	-34.8	-76.7	-3.6
40%	58.6	-498.5	-1,336.0	-591.7	-88.5	-69.6	-210.8	-229.6	190.7	22.9	-117.2	-34.4
50%	-144.9	-1,862.7	-1,123.0	-348.7	-54.5	-38.2	-157.2	-235.8	6.8	-31.2	-63.7	-196.7
60%	-1,785.1	-1,805.5	-577.1	-155.5	-17.9	0.4	-91.4	-194.6	38.9	-107.0	-6.1	-1,398.8
70%	-2,605.6	-2,517.6	-493.2	-16.5	0.1	-0.2	-18.8	-143.6	-26.1	-109.6	-49.8	-2,094.8
80%	-2,518.6	-2,299.7	-283.6	-2.4	-0.2	-0.3	-1.4	-27.7	-92.6	-35.6	-105.2	-2,108.6
90%	-2,210.9	-942.4	-65.6	-0.1	0.1	-0.3	0.2	-0.5	-11.0	-13.6	-53.5	-2,033.1
Long Term												
Full Simulation Period[b]	-965.0	-962.2	-543.4	-286.9	-124.5	-61.6	-91.6	-112.4	26.6	-36.3	-60.5	-828.2
Water Year Types[c]												
Wet (32%)	-1,292.6	-1,281.7	-356.4	-84.1	-6.3	-3.3	-40.5	-75.3	8.3	-51.2	-41.8	-1,879.8
Above Normal (16%)	-642.1	-808.5	-683.6	-220.7	-46.4	-7.2	-81.9	-163.8	50.6	-46.0	-84.7	-1,345.2
Below Normal (13%)	-1,480.2	-1,202.8	-752.3	-584.3	-239.5	-73.9	-151.0	-156.2	155.3	-34.0	-126.5	-51.9
Dry (24%)	-892.7	-930.9	-686.2	-477.8	-184.3	-89.9	-120.6	-104.1	13.0	-4.2	-50.1	-41.5
Critical (15%)	-253.1	-267.6	-367.0	-207.4	-260.4	-188.3	-110.0	-110.4	-54.8	-49.3	-31.3	-12.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.16.5. Sacramento River at Mallard Slough, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,250.7	4,314.5	3,765.9	3,038.4	1,582.1	1,184.6	1,254.0	1,619.2	2,008.3	2,762.1	3,502.7	3,858.6
20%	3,909.5	3,848.8	3,725.0	2,663.1	889.8	672.9	894.9	1,343.2	1,733.9	2,436.3	3,135.8	3,648.2
30%	3,810.5	3,765.9	3,464.4	2,225.6	562.1	301.0	701.2	1,225.3	1,554.4	2,263.5	3,022.9	3,516.2
40%	3,749.6	3,691.9	3,277.4	1,482.1	252.6	238.4	478.8	845.2	1,312.4	1,778.6	2,660.3	3,332.3
50%	3,631.4	3,584.4	2,841.3	991.3	136.5	110.1	318.6	677.3	1,184.6	1,615.7	2,369.1	3,151.6
60%	3,530.3	3,431.9	2,092.8	439.3	44.9	29.4	165.0	449.0	1,054.1	1,358.6	2,226.2	3,030.1
70%	3,459.6	3,363.6	1,104.9	62.1	20.6	19.4	57.9	305.4	850.2	1,267.7	2,170.8	2,985.5
80%	3,338.6	3,067.7	480.2	23.2	18.5	17.8	21.6	76.5	576.7	1,087.7	2,106.7	2,918.2
90%	2,991.4	1,664.6	106.4	17.3	16.6	17.0	17.2	18.1	132.3	915.0	1,972.8	2,820.6
Long Term												
Full Simulation Period[b]	3,528.9	3,257.1	2,292.5	1,249.8	502.1	341.2	481.9	780.9	1,213.0	1,747.8	2,572.0	3,187.6
Water Year Types[c]												
Wet (32%)	3,181.2	2,759.1	923.1	253.4	33.7	36.7	93.2	202.4	520.6	979.9	2,025.4	2,681.5
Above Normal (16%)	3,740.6	3,172.3	2,232.7	622.5	133.6	65.4	173.0	431.3	961.6	1,249.8	2,121.9	2,978.5
Below Normal (13%)	3,399.8	3,040.6	2,599.9	1,756.2	676.2	455.5	618.7	915.8	1,259.8	1,675.1	2,482.8	3,224.3
Dry (24%)	3,676.1	3,632.6	3,163.9	2,015.6	744.8	404.7	613.8	1,009.1	1,515.1	2,302.0	3,037.0	3,536.5
Critical (15%)	3,926.2	4,001.0	3,590.2	2,347.6	1,352.3	1,089.4	1,313.8	1,908.7	2,439.3	3,093.9	3,551.0	3,895.6

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,241.2	4,380.5	3,774.2	2,674.8	1,113.8	871.9	1,160.2	1,661.6	1,999.3	2,747.5	3,459.4	3,894.2
20%	3,942.9	3,891.3	3,669.5	2,291.5	598.5	599.4	848.3	1,354.1	1,809.5	2,425.3	3,114.3	3,630.4
30%	3,867.4	3,777.0	3,468.7	1,964.3	323.1	232.3	578.0	1,208.5	1,665.0	2,269.3	2,932.5	3,524.6
40%	3,744.8	3,705.3	3,158.9	999.4	205.4	176.6	439.0	911.8	1,542.5	1,746.6	2,532.3	3,242.2
50%	3,609.3	3,626.2	2,821.5	692.6	92.5	85.8	296.3	742.2	1,316.8	1,593.4	2,270.5	3,085.0
60%	3,497.6	3,451.7	2,109.0	281.2	23.6	30.6	156.3	502.5	1,135.9	1,282.2	2,211.4	2,991.8
70%	3,448.6	3,357.6	814.4	43.8	20.2	19.0	69.2	307.7	916.2	1,182.9	2,097.0	2,920.9
80%	3,343.9	3,048.0	458.6	20.7	18.2	17.7	20.7	105.4	632.0	1,104.6	2,039.3	2,890.5
90%	3,058.9	1,584.8	105.3	17.1	16.7	16.9	17.0	18.4	169.3	924.6	1,892.4	2,822.4
Long Term												
Full Simulation Period[b]	3,547.9	3,288.1	2,246.6	1,070.7	384.1	280.8	450.5	792.7	1,294.1	1,727.0	2,522.0	3,163.0
Water Year Types[c]												
Wet (32%)	3,165.3	2,778.1	880.0	195.1	28.7	38.5	93.3	227.1	597.8	957.8	1,971.7	2,666.5
Above Normal (16%)	3,808.5	3,200.3	2,130.3	461.7	80.1	57.0	160.9	454.5	1,075.0	1,228.0	2,069.6	2,957.6
Below Normal (13%)	3,450.9	3,103.8	2,605.7	1,364.5	447.1	379.0	572.2	937.3	1,483.4	1,641.2	2,342.5	3,106.0
Dry (24%)	3,668.3	3,656.4	3,140.2	1,718.9	558.2	314.6	560.5	1,024.8	1,565.7	2,280.4	3,006.5	3,527.8
Critical (15%)	3,982.6	4,043.8	3,514.9	2,278.3	1,135.5	901.8	1,243.4	1,865.2	2,413.9	3,090.7	3,561.1	3,905.5

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-9.5**	66.0	8.3	**-363.6**	**-468.2**	**-312.7**	**-93.8**	42.4	**-8.9**	**-14.6**	**-43.3**	35.7
20%	33.4	42.5	**-55.6**	**-371.7**	**-291.3**	**-73.5**	**-46.7**	10.9	75.6	**-11.0**	**-21.5**	**-17.8**
30%	56.9	11.1	4.4	**-261.3**	**-239.0**	**-68.7**	**-123.3**	**-16.9**	110.6	5.8	**-90.4**	8.4
40%	**-4.8**	13.4	**-118.5**	**-482.7**	**-47.2**	**-61.8**	**-39.8**	66.6	230.1	**-32.0**	**-127.9**	**-90.1**
50%	**-22.1**	41.8	**-19.8**	**-298.7**	**-43.9**	**-24.3**	**-22.3**	65.0	132.2	**-22.3**	**-98.7**	**-66.6**
60%	**-32.7**	19.9	16.1	**-158.1**	**-21.3**	1.2	**-8.8**	53.5	81.8	**-76.4**	**-14.9**	**-38.3**
70%	**-11.0**	**-5.9**	**-290.5**	**-18.3**	**-0.4**	**-0.4**	11.2	2.3	66.0	**-84.8**	**-73.8**	**-64.6**
80%	5.2	**-19.7**	**-21.6**	**-2.4**	**-0.2**	**-0.1**	**-0.9**	29.0	55.3	16.9	**-67.4**	**-27.7**
90%	67.5	**-79.8**	**-1.0**	**-0.1**	0.1	**-0.2**	**-0.2**	0.3	37.0	9.6	**-80.4**	1.8
Long Term												
Full Simulation Period[b]	18.9	31.0	**-45.9**	**-179.1**	**-118.0**	**-60.5**	**-31.4**	11.8	81.1	**-20.7**	**-50.1**	**-24.6**
Water Year Types[c]												
Wet (32%)	**-15.9**	19.0	**-43.0**	**-58.3**	**-5.0**	1.8	0.2	24.7	77.2	**-22.2**	**-53.6**	**-15.1**
Above Normal (16%)	67.9	27.9	**-102.4**	**-160.9**	**-53.6**	**-8.4**	**-12.1**	23.2	113.4	**-21.8**	**-52.3**	**-20.8**
Below Normal (13%)	51.1	63.2	5.8	**-391.7**	**-229.0**	**-76.5**	**-46.5**	21.5	223.6	**-33.9**	**-140.3**	**-118.3**
Dry (24%)	**-7.8**	23.8	**-23.6**	**-296.8**	**-186.6**	**-90.1**	**-53.3**	15.7	50.7	**-21.5**	**-30.5**	**-8.6**
Critical (15%)	56.4	42.8	**-75.3**	**-69.2**	**-216.8**	**-187.6**	**-70.4**	**-43.5**	**-25.4**	**-3.2**	10.1	9.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.16.6. Sacramento River at Mallard Slough, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,250.7	4,314.5	3,765.9	3,038.4	1,582.1	1,184.6	1,254.0	1,619.2	2,008.3	2,762.1	3,502.7	3,858.6
20%	3,909.5	3,848.8	3,725.0	2,663.1	889.8	672.9	894.9	1,343.2	1,733.9	2,436.3	3,135.8	3,648.2
30%	3,810.5	3,765.9	3,464.4	2,225.6	562.1	301.0	701.2	1,225.3	1,554.4	2,263.5	3,022.9	3,516.2
40%	3,749.6	3,691.9	3,277.4	1,482.1	252.6	238.4	478.8	845.2	1,312.4	1,778.6	2,660.3	3,332.3
50%	3,631.4	3,584.4	2,841.3	991.3	136.5	110.1	318.6	677.3	1,184.6	1,615.7	2,369.1	3,151.6
60%	3,530.3	3,431.9	2,092.8	439.3	44.9	29.4	165.0	449.0	1,054.1	1,358.6	2,226.2	3,030.1
70%	3,459.6	3,363.6	1,104.9	62.1	20.6	19.4	57.9	305.4	850.2	1,267.7	2,170.8	2,985.5
80%	3,338.6	3,067.7	480.2	23.2	18.5	17.8	21.6	76.5	576.7	1,087.7	2,106.7	2,918.2
90%	2,991.4	1,664.6	106.4	17.3	16.6	17.0	17.2	18.1	132.3	915.0	1,972.8	2,820.6
Long Term												
Full Simulation Period[b]	3,528.9	3,257.1	2,292.5	1,249.8	502.1	341.2	481.9	780.9	1,213.0	1,747.8	2,572.0	3,187.6
Water Year Types[c]												
Wet (32%)	3,181.2	2,759.1	923.1	253.4	33.7	36.7	93.2	202.4	520.6	979.9	2,025.4	2,681.5
Above Normal (16%)	3,740.6	3,172.3	2,232.7	1,756.2	133.6	65.4	173.0	431.3	961.6	1,249.8	2,121.9	2,978.5
Below Normal (13%)	3,399.8	3,040.6	2,599.9	1,756.2	676.2	455.5	618.7	915.8	1,259.8	1,675.1	2,482.8	3,224.3
Dry (24%)	3,676.1	3,632.6	3,163.9	2,015.6	744.8	404.7	613.8	1,009.1	1,515.1	2,302.0	3,037.0	3,536.5
Critical (15%)	3,926.2	4,001.0	3,590.2	2,347.6	1,352.3	1,089.4	1,313.8	1,908.7	2,439.3	3,093.9	3,551.0	3,895.6

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4,293.7	4,345.7	3,764.7	2,374.0	1,056.9	874.4	1,014.1	1,313.3	1,961.5	2,775.6	3,404.4	3,826.0
20%	3,966.6	3,872.0	3,135.0	2,018.5	597.5	606.8	659.9	1,137.6	1,699.1	2,376.0	3,096.7	3,606.0
30%	3,896.2	3,740.9	2,268.7	1,603.0	300.1	233.1	433.7	942.9	1,640.7	2,211.4	2,939.6	3,527.3
40%	3,783.0	3,184.6	1,940.6	890.2	163.3	168.9	243.9	579.5	1,435.9	1,793.9	2,534.8	3,286.5
50%	3,442.7	1,713.0	1,722.2	644.3	81.9	75.1	162.6	414.0	1,198.2	1,586.2	2,310.1	2,920.1
60%	1,745.8	1,607.6	1,515.1	283.0	26.9	29.7	75.3	265.3	1,092.5	1,257.2	2,206.0	1,645.4
70%	853.7	845.8	602.4	44.9	20.7	19.3	39.2	150.4	815.7	1,158.4	2,108.8	889.6
80%	822.4	768.2	198.5	20.6	18.3	17.6	20.3	44.2	479.2	1,056.3	1,987.2	811.7
90%	779.1	722.7	44.2	17.2	16.8	16.8	17.4	17.7	121.5	905.1	1,921.1	790.3
Long Term												
Full Simulation Period[b]	2,561.5	2,286.6	1,749.0	970.3	384.0	280.7	351.0	596.7	1,199.6	1,695.3	2,497.3	2,355.7
Water Year Types[c]												
Wet (32%)	1,888.0	1,483.3	567.3	169.1	27.3	33.3	51.7	118.7	525.6	917.9	1,966.9	801.3
Above Normal (16%)	3,093.7	2,312.9	1,531.9	401.2	87.3	58.3	90.5	258.4	1,006.5	1,203.4	2,036.7	1,638.7
Below Normal (13%)	1,922.9	1,839.4	1,849.4	1,173.8	436.3	381.4	421.2	685.0	1,391.6	1,634.0	2,343.2	3,151.1
Dry (24%)	2,780.3	2,695.5	2,486.2	1,546.8	563.2	315.7	422.6	795.8	1,478.1	2,284.1	2,974.6	3,493.1
Critical (15%)	3,664.9	3,727.3	3,223.7	2,175.6	1,131.4	906.8	1,097.6	1,586.2	2,229.1	2,987.1	3,491.1	3,875.3

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	43.0	31.2	-1.3	-664.4	-525.1	-310.2	-239.9	-305.9	-46.8	13.4	-98.4	-32.6
20%	57.1	23.2	-590.0	-644.7	-292.3	-66.1	-235.1	-205.6	-34.8	-60.3	-39.1	-42.2
30%	85.7	-25.0	-1,195.6	-622.7	-261.9	-67.9	-267.5	-282.5	86.3	-52.1	-83.3	11.1
40%	33.4	-507.2	-1,336.7	-591.9	-89.3	-69.5	-234.9	-265.6	123.5	15.3	-125.4	-45.9
50%	-188.7	-1,871.4	-1,119.1	-347.0	-54.6	-35.0	-156.0	-263.3	13.6	-29.5	-59.1	-231.5
60%	-1,784.5	-1,824.3	-577.7	-156.3	-18.0	0.3	-89.8	-183.7	38.4	-101.3	-20.3	-1,384.7
70%	-2,605.9	-2,517.7	-502.5	-17.2	0.1	-0.2	-18.7	-155.0	-34.5	-109.3	-62.0	-2,095.9
80%	-2,516.2	-2,299.5	-281.7	-2.5	-0.2	-0.2	-1.2	-32.3	-97.5	-31.5	-119.5	-2,106.6
90%	-2,212.3	-941.9	-62.1	-0.1	0.2	-0.2	0.2	-0.5	-10.8	-9.9	-51.7	-2,030.3
Long Term												
Full Simulation Period[b]	-967.4	-970.5	-543.5	-279.5	-118.1	-60.6	-131.0	-184.2	-13.4	-52.5	-74.7	-831.9
Water Year Types[c]												
Wet (32%)	-1,293.2	-1,275.7	-355.7	-84.3	-6.3	-3.4	-41.4	-83.7	5.0	-62.0	-58.5	-1,880.3
Above Normal (16%)	-646.9	-859.5	-700.8	-221.4	-46.3	-7.1	-82.5	-172.9	44.8	-46.4	-85.2	-1,339.8
Below Normal (13%)	-1,476.9	-1,201.2	-750.5	-582.4	-239.9	-74.1	-197.5	-230.8	131.8	-41.1	-139.7	-73.2
Dry (24%)	-895.8	-937.1	-677.6	-468.9	-181.6	-89.0	-191.2	-213.4	-37.0	-17.8	-62.3	-43.3
Critical (15%)	-261.3	-273.7	-366.5	-172.0	-220.9	-182.5	-216.2	-322.5	-210.2	-106.8	-59.9	-20.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.17. Jones Pumping Plant Chloride Concentration

Table 6E.B.17.1. Jones Pumping Plant, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	159.1	179.5	188.5	178.4	182.6	174.1	125.8	110.0	87.9	76.0	114.1	136.6
20%	150.0	146.0	168.2	167.4	153.1	141.7	104.6	104.8	74.4	64.9	97.4	128.6
30%	143.7	131.4	153.7	150.5	146.1	125.6	85.6	91.9	66.5	60.0	88.3	117.6
40%	133.5	123.8	135.4	140.1	136.2	114.2	74.8	77.9	63.1	57.1	73.1	109.5
50%	123.3	105.3	101.6	132.1	122.2	101.1	55.7	63.2	61.3	52.8	67.2	102.5
60%	62.2	65.7	90.8	122.5	104.1	72.2	44.2	57.3	59.3	49.0	56.5	95.6
70%	58.4	54.7	79.4	112.8	87.9	54.3	38.9	53.2	55.7	48.0	50.7	90.0
80%	53.7	48.0	74.0	97.7	66.4	40.0	30.5	40.1	51.3	44.0	47.2	80.3
90%	51.3	45.1	70.5	78.8	42.8	32.0	22.7	18.7	45.6	38.7	43.2	74.2
Long Term												
Full Simulation Period[b]	102.8	101.1	118.1	129.3	116.6	98.1	66.8	68.5	63.0	56.6	72.8	102.8
Water Year Types[c]												
Wet (32%)	85.0	77.9	91.5	97.9	67.4	47.0	30.0	37.1	50.9	49.4	47.3	82.0
Above Normal (16%)	122.8	119.7	121.0	128.0	113.5	79.3	50.8	57.4	60.6	47.9	51.1	77.7
Below Normal (13%)	86.1	81.0	109.9	129.6	127.0	102.3	66.0	73.4	64.9	47.6	69.1	118.3
Dry (24%)	102.9	105.7	128.9	147.1	141.7	127.6	88.6	87.3	65.6	59.5	98.2	117.6
Critical (15%)	135.0	141.9	162.3	168.8	175.0	175.9	128.3	112.6	85.7	85.0	112.7	135.9

Alternative 1

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	165.1	180.0	186.8	184.3	166.4	139.4	99.7	80.1	78.3	71.6	103.6	139.1
20%	156.4	154.5	171.3	166.2	150.1	122.4	86.6	71.0	70.0	60.4	87.1	129.7
30%	151.9	143.3	162.8	158.8	131.6	105.1	68.8	64.7	62.4	55.2	80.5	121.2
40%	147.4	135.4	155.2	152.3	112.6	95.0	58.1	51.3	56.3	50.5	73.5	113.6
50%	143.2	130.9	150.3	144.5	104.5	85.4	51.9	48.1	53.3	48.2	64.1	112.0
60%	136.7	124.2	144.5	114.2	91.4	71.5	43.3	43.5	50.2	45.5	54.9	108.0
70%	131.6	117.3	128.5	95.3	76.0	56.8	38.1	40.1	47.6	44.0	51.3	104.5
80%	126.3	110.5	103.7	81.8	61.6	41.1	30.7	35.6	44.3	41.3	48.2	98.0
90%	105.6	85.7	72.7	73.2	42.4	34.0	23.0	18.6	35.0	35.8	42.9	83.6
Long Term												
Full Simulation Period[b]	137.5	129.7	140.6	128.6	104.7	86.7	57.4	50.8	56.1	53.4	69.2	110.5
Water Year Types[c]												
Wet (32%)	123.7	115.7	112.5	87.3	59.4	47.3	29.0	30.2	46.3	47.2	46.0	88.3
Above Normal (16%)	150.7	137.2	139.5	126.8	96.0	69.6	43.4	41.5	51.9	44.3	52.0	111.2
Below Normal (13%)	126.4	115.1	141.0	141.8	120.8	92.5	62.0	53.4	49.1	44.3	69.2	111.9
Dry (24%)	141.8	133.5	156.0	150.2	124.8	102.2	72.0	62.2	59.7	52.3	86.5	120.5
Critical (15%)	156.3	159.3	176.9	172.0	163.8	159.4	105.2	84.3	82.6	87.0	109.2	139.6

Alternative 1 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6.0	0.4	-1.6	5.9	-16.2	-34.7	-26.1	-29.9	-9.7	-4.4	-10.5	2.5
20%	6.4	8.5	3.1	-1.2	-2.9	-19.3	-18.0	-33.8	-4.3	-4.5	-10.2	1.1
30%	8.2	11.8	9.0	8.3	-14.5	-20.5	-16.9	-27.2	-4.2	-4.8	-7.8	3.6
40%	13.9	11.5	19.8	12.2	-23.6	-19.2	-16.7	-26.7	-6.8	-6.5	0.4	4.2
50%	19.9	25.6	48.7	12.4	-17.7	-15.6	-3.8	-15.1	-7.9	-4.6	-3.1	9.5
60%	74.4	58.5	53.6	-8.3	-12.7	-0.6	-0.8	-13.8	-9.1	-3.5	-1.6	12.3
70%	73.2	62.6	49.1	-17.6	-12.0	2.5	-0.9	-13.1	-8.2	-4.0	0.7	14.5
80%	72.6	62.5	29.7	-16.0	-4.8	1.1	0.1	-4.5	-7.0	-2.7	1.0	17.6
90%	54.3	40.6	2.3	-5.6	-0.4	2.1	0.3	-0.2	-10.6	-2.9	-0.3	9.4
Long Term												
Full Simulation Period[b]	34.7	28.7	22.5	-0.7	-11.9	-11.3	-9.4	-17.7	-6.9	-3.2	-3.6	7.7
Water Year Types[c]												
Wet (32%)	38.7	37.8	20.9	-10.6	-8.1	0.3	-0.9	-6.9	-4.6	-2.2	-1.2	6.3
Above Normal (16%)	28.0	17.5	18.5	-1.1	-17.5	-9.7	-7.4	-15.9	-8.7	-3.6	0.9	33.4
Below Normal (13%)	40.3	34.1	31.1	12.2	-6.1	-9.7	-4.0	-20.0	-15.8	-3.3	0.1	-6.4
Dry (24%)	38.9	27.9	27.1	3.1	-16.9	-25.4	-16.6	-25.1	-5.9	-7.2	-11.7	2.9
Critical (15%)	21.3	17.4	14.6	3.2	-11.2	-16.4	-23.1	-28.3	-3.1	2.0	-3.5	3.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.17.2. Jones Pumping Plant, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	159.1	179.5	188.5	178.4	182.6	174.1	125.8	110.0	87.9	76.0	114.1	136.6
20%	150.0	146.0	168.2	167.4	153.1	141.7	104.6	104.8	74.4	64.9	97.4	128.6
30%	143.7	131.4	153.7	150.5	146.1	125.6	85.6	91.9	66.5	60.0	88.3	117.6
40%	133.5	123.8	135.4	140.1	136.2	114.2	74.8	77.9	63.1	57.1	73.1	109.5
50%	123.3	105.3	101.6	132.1	122.2	101.1	55.7	63.2	61.3	52.8	67.2	102.5
60%	62.2	65.7	90.8	122.5	104.1	72.2	44.2	57.3	59.3	49.0	56.5	95.6
70%	58.4	54.7	79.4	112.8	87.9	54.3	38.9	53.2	55.7	48.0	50.7	90.0
80%	53.7	48.0	74.0	97.7	66.4	40.0	30.5	40.1	51.3	44.0	47.2	80.3
90%	51.3	45.1	70.5	78.8	42.8	32.0	22.7	18.7	45.6	38.7	43.2	74.2
Long Term												
Full Simulation Period[b]	102.8	101.1	118.1	129.3	116.6	98.1	66.8	68.5	63.0	56.6	72.8	102.8
Water Year Types[c]												
Wet (32%)	85.0	77.9	91.5	97.9	67.4	47.0	30.0	37.1	50.9	49.4	47.3	82.0
Above Normal (16%)	122.8	119.7	121.0	128.0	113.5	79.3	50.8	57.4	60.6	47.9	51.1	77.7
Below Normal (13%)	86.1	81.0	109.9	129.6	127.0	102.3	66.0	73.4	64.9	47.6	69.1	118.3
Dry (24%)	102.9	105.7	128.9	147.1	141.7	127.6	88.6	87.3	65.6	59.5	98.2	117.6
Critical (15%)	135.0	141.9	162.3	168.8	175.0	175.9	128.3	112.6	85.7	85.0	112.7	135.9

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	164.9	178.7	187.1	180.1	181.1	171.3	126.0	114.2	70.5	77.3	115.9	139.9
20%	156.3	153.1	171.1	171.9	159.1	141.8	99.3	100.0	63.8	64.8	96.1	131.1
30%	152.5	141.4	161.3	163.0	144.8	124.5	85.6	85.6	58.7	59.3	83.7	124.3
40%	146.4	134.5	157.6	155.2	133.3	111.6	63.3	72.0	55.1	54.7	74.6	116.9
50%	139.3	129.9	151.5	150.0	119.2	92.7	54.5	55.0	51.3	51.6	66.1	112.3
60%	135.6	126.4	143.9	131.8	99.6	75.8	41.4	49.3	48.7	49.5	55.3	107.7
70%	130.3	121.5	129.9	120.0	80.7	56.0	37.8	44.0	45.2	46.8	49.9	103.6
80%	125.1	111.4	103.6	92.3	61.2	39.5	29.2	37.3	41.4	44.4	45.9	98.7
90%	105.5	90.3	79.1	75.0	36.9	32.3	22.6	18.8	34.7	37.5	40.9	78.5
Long Term												
Full Simulation Period[b]	137.2	131.8	141.8	134.6	113.9	96.1	64.7	65.3	53.4	56.6	71.1	110.8
Water Year Types[c]												
Wet (32%)	122.4	117.6	115.8	97.4	61.8	46.8	28.7	33.4	44.3	49.6	45.0	85.0
Above Normal (16%)	153.8	142.6	143.3	138.4	106.9	73.6	45.7	48.7	47.1	47.4	51.7	112.4
Below Normal (13%)	126.1	114.1	142.0	145.2	125.2	98.4	66.2	72.8	49.9	49.7	72.1	122.0
Dry (24%)	139.4	136.6	157.7	155.3	142.3	124.7	85.9	83.8	54.8	57.8	92.9	120.0
Critical (15%)	157.7	159.1	169.7	166.7	176.8	177.4	126.8	114.7	81.1	86.0	111.2	139.4

Alternative 3 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5.8	-0.9	-1.3	1.8	-1.5	-2.8	0.1	4.2	-17.4	1.3	1.9	3.2
20%	6.4	7.1	2.9	4.5	6.0	0.1	-5.4	-4.8	-10.6	-0.1	-1.3	2.5
30%	8.8	10.0	7.5	12.5	-1.3	-1.0	0.0	-6.2	-7.8	-0.7	-4.5	6.7
40%	12.9	10.7	22.3	15.1	-2.9	-2.6	-11.6	-6.0	-8.0	-2.4	1.5	7.5
50%	16.0	24.6	49.9	17.9	-3.0	-8.4	-1.2	-8.2	-10.0	-1.2	-1.1	9.8
60%	73.4	60.7	53.1	9.3	-4.5	3.7	-2.8	-8.0	-10.6	0.5	-1.2	12.1
70%	72.0	66.9	50.5	7.2	-7.3	1.7	-1.1	-9.1	-10.6	-1.2	-0.7	13.6
80%	71.4	63.3	29.6	-5.4	-5.2	-0.5	-1.3	-2.8	-10.0	0.3	-1.3	18.4
90%	54.2	45.2	8.6	-3.8	-5.9	0.4	-0.1	0.1	-10.9	-1.2	-2.3	4.3
Long Term												
Full Simulation Period[b]	34.4	30.7	23.6	5.3	-2.7	-2.0	-2.1	-3.2	-9.6	0.0	-1.7	8.0
Water Year Types[c]												
Wet (32%)	37.4	39.7	24.2	-0.5	-5.7	-0.2	-1.3	-3.8	-6.6	0.2	-2.3	3.0
Above Normal (16%)	31.1	22.9	22.2	10.4	-6.6	-5.7	-5.1	-8.7	-13.5	-0.4	0.5	34.7
Below Normal (13%)	40.0	33.2	32.1	15.7	-1.8	-3.9	0.3	-0.6	-15.1	2.1	3.0	3.7
Dry (24%)	36.5	30.9	28.9	8.2	0.6	-2.9	-2.7	-3.5	-10.8	-1.7	-5.2	2.4
Critical (15%)	22.7	17.2	7.4	-2.1	1.9	1.5	-1.4	2.1	-4.6	1.0	-1.5	3.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.17.3. Jones Pumping Plant, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	159.1	179.5	188.5	178.4	182.6	174.1	125.8	110.0	87.9	76.0	114.1	136.6
20%	150.0	146.0	168.2	167.4	153.1	141.7	104.6	104.8	74.4	64.9	97.4	128.6
30%	143.7	131.4	153.7	150.5	146.1	125.6	85.6	91.9	66.5	60.0	88.3	117.6
40%	133.5	123.8	135.4	140.1	136.2	114.2	74.8	77.9	63.1	57.1	73.1	109.5
50%	123.3	105.3	101.6	132.1	122.2	101.1	55.7	63.2	61.3	52.8	67.2	102.5
60%	62.2	65.7	90.8	122.5	104.1	72.2	44.2	57.3	59.3	49.0	56.5	95.6
70%	58.4	54.7	79.4	112.8	87.9	54.3	38.9	53.2	55.7	48.0	50.7	90.0
80%	53.7	48.0	74.0	97.7	66.4	40.0	30.5	40.1	51.3	44.0	47.2	80.3
90%	51.3	45.1	70.5	78.8	42.8	32.0	22.7	18.7	45.6	38.7	43.2	74.2
Long Term												
Full Simulation Period[b]	102.8	101.1	118.1	129.3	116.6	98.1	66.8	68.5	63.0	56.6	72.8	102.8
Water Year Types[c]												
Wet (32%)	85.0	77.9	91.5	97.9	67.4	47.0	30.0	37.1	50.9	49.4	47.3	82.0
Above Normal (16%)	122.8	119.7	121.0	128.0	113.5	79.3	50.8	57.4	60.6	47.9	51.1	77.7
Below Normal (13%)	86.1	81.0	109.9	129.6	127.0	102.3	66.0	73.4	64.9	47.6	69.1	118.3
Dry (24%)	102.9	105.7	128.9	147.1	141.7	127.6	88.6	87.3	65.6	59.5	98.2	117.6
Critical (15%)	135.0	141.9	162.3	168.8	175.0	175.9	128.3	112.6	85.7	85.0	112.7	135.9

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	166.9	178.1	187.1	178.5	182.6	174.1	124.7	105.9	101.3	79.2	117.0	136.0
20%	151.7	152.4	166.1	167.5	154.8	141.7	105.5	102.2	81.0	66.2	102.3	129.6
30%	141.3	132.7	155.9	150.1	146.3	125.5	81.7	87.2	73.7	61.4	91.8	121.9
40%	135.6	124.7	137.1	139.8	136.2	114.2	71.2	73.0	68.7	58.6	73.9	113.5
50%	122.5	107.7	101.9	131.8	122.2	101.1	57.6	62.0	64.0	54.2	66.5	103.3
60%	63.2	66.2	90.9	122.6	104.2	72.2	44.2	54.3	61.6	50.9	56.8	96.7
70%	59.0	53.0	80.2	113.7	87.9	55.1	39.0	51.9	57.7	48.5	51.1	88.5
80%	53.9	48.2	72.3	97.8	66.4	40.4	30.3	40.1	52.3	44.4	47.8	80.5
90%	51.9	45.2	70.4	78.8	42.8	32.0	23.0	18.8	48.3	39.0	43.2	73.5
Long Term												
Full Simulation Period[b]	104.0	101.4	118.1	129.6	116.7	98.3	65.9	66.7	67.3	57.3	74.0	104.1
Water Year Types[c]												
Wet (32%)	85.6	79.0	92.2	97.8	67.5	47.5	30.0	35.6	51.0	49.8	47.5	82.1
Above Normal (16%)	125.9	118.9	119.7	127.6	113.5	79.3	49.9	54.2	61.2	48.0	51.3	77.7
Below Normal (13%)	86.0	81.5	109.9	129.5	126.8	102.2	65.7	73.7	68.5	48.4	69.3	119.8
Dry (24%)	104.2	105.5	128.5	148.6	142.4	127.7	87.2	88.5	74.6	62.3	102.4	121.0
Critical (15%)	136.1	142.2	162.4	169.2	174.9	176.2	125.8	105.1	96.4	83.5	113.2	137.8

Alternative 5 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7.8	-1.5	-1.3	0.2	0.0	0.0	-1.1	-4.1	13.4	3.1	2.9	-0.6
20%	1.7	6.4	-2.1	0.1	1.7	0.0	0.8	-2.7	6.6	1.3	4.9	1.0
30%	-2.4	1.3	2.2	-0.4	0.2	-0.1	-3.9	-4.6	7.1	1.3	3.5	4.3
40%	2.2	0.9	1.7	-0.3	0.0	0.0	-3.6	-5.0	5.7	1.5	0.8	4.1
50%	-0.8	2.4	0.3	-0.3	0.0	0.0	1.9	-1.3	2.7	1.4	-0.6	0.8
60%	0.9	0.5	0.1	0.1	0.1	0.0	0.0	-2.9	2.2	1.9	0.3	1.0
70%	0.7	-1.7	0.7	0.8	0.0	0.8	0.0	-1.3	2.0	0.4	0.4	-1.4
80%	0.1	0.2	-1.7	0.1	0.0	0.4	-0.2	0.0	1.0	0.4	0.6	0.2
90%	0.6	0.1	0.0	0.0	0.0	0.0	0.3	0.0	2.7	0.3	-0.1	-0.6
Long Term												
Full Simulation Period[b]	1.1	0.3	-0.1	0.4	0.1	0.2	-0.9	-1.8	4.3	0.7	1.2	1.3
Water Year Types[c]												
Wet (32%)	0.6	1.1	0.6	-0.1	0.0	0.5	0.0	-1.5	0.1	0.3	0.3	0.1
Above Normal (16%)	3.1	-0.8	-1.3	-0.3	0.0	0.0	-0.9	-3.2	0.5	0.1	0.1	-0.1
Below Normal (13%)	-0.1	0.5	0.0	-0.1	-0.2	-0.1	-0.2	0.3	3.5	0.8	0.2	1.5
Dry (24%)	1.3	-0.2	-0.4	1.6	0.7	0.1	-1.4	1.2	8.9	2.8	4.2	3.4
Critical (15%)	1.1	0.3	0.1	0.4	-0.1	0.4	-2.5	-7.6	10.7	-1.5	0.6	1.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.17.4. Jones Pumping Plant, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	165.1	180.0	186.8	184.3	166.4	139.4	99.7	80.1	78.3	71.6	103.6	139.1
20%	156.4	154.5	171.3	166.2	150.1	122.4	86.6	71.0	70.0	60.4	87.1	129.7
30%	151.9	143.3	162.8	158.8	131.6	105.1	68.8	64.7	62.4	55.2	80.5	121.2
40%	147.4	135.4	155.2	152.3	112.6	95.0	58.1	51.3	56.3	50.5	73.5	113.6
50%	143.2	130.9	150.3	144.5	104.5	85.4	51.9	48.1	53.3	48.2	64.1	112.0
60%	136.7	124.2	144.5	114.2	91.4	71.5	43.3	43.5	50.2	45.5	54.9	108.0
70%	131.6	117.3	128.5	95.3	76.0	56.8	38.1	40.1	47.6	44.0	51.3	104.5
80%	126.3	110.5	103.7	81.8	61.6	41.1	30.7	35.6	44.3	41.3	48.2	98.0
90%	105.6	85.7	72.7	73.2	42.4	34.0	23.0	18.6	35.0	35.8	42.9	83.6
Long Term												
Full Simulation Period[b]	137.5	129.7	140.6	128.6	104.7	86.7	57.4	50.8	56.1	53.4	69.2	110.5
Water Year Types[c]												
Wet (32%)	123.7	115.7	112.5	87.3	59.4	47.3	29.0	30.2	46.3	47.2	46.0	88.3
Above Normal (16%)	150.7	137.2	139.5	126.8	96.0	69.6	43.4	41.5	51.9	44.3	52.0	111.2
Below Normal (13%)	126.4	115.1	141.0	141.8	120.8	92.5	62.0	53.4	49.1	44.3	69.2	111.9
Dry (24%)	141.8	133.5	156.0	150.2	124.8	102.2	72.0	62.2	59.7	52.3	86.5	120.5
Critical (15%)	156.3	159.3	176.9	172.0	163.8	159.4	105.2	84.3	82.6	87.0	109.2	139.6

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	159.1	179.5	188.5	178.4	182.6	174.1	125.8	110.0	87.9	76.0	114.1	136.6
20%	150.0	146.0	168.2	167.4	153.1	141.7	104.6	104.8	74.4	64.9	97.4	128.6
30%	143.7	131.4	153.7	150.5	146.1	125.6	85.6	91.9	66.5	60.0	88.3	117.6
40%	133.5	123.8	135.4	140.1	136.2	114.2	74.8	77.9	63.1	57.1	73.1	109.5
50%	123.3	105.3	101.6	132.1	122.2	101.1	55.7	63.2	61.3	52.8	67.2	102.5
60%	62.2	65.7	90.8	122.5	104.1	72.2	44.2	57.3	59.3	49.0	56.5	95.6
70%	58.4	54.7	79.4	112.8	87.9	54.3	38.9	53.2	55.7	48.0	50.7	90.0
80%	53.7	48.0	74.0	97.7	66.4	40.0	30.5	40.1	51.3	44.0	47.2	80.3
90%	51.3	45.1	70.5	78.8	42.8	32.0	22.7	18.7	45.6	38.7	43.2	74.2
Long Term												
Full Simulation Period[b]	102.8	101.1	118.1	129.3	116.6	98.1	66.8	68.5	63.0	56.6	72.8	102.8
Water Year Types[c]												
Wet (32%)	85.0	77.9	91.5	97.9	67.4	47.0	30.0	37.1	50.9	49.4	47.3	82.0
Above Normal (16%)	122.8	119.7	121.0	128.0	113.5	79.3	50.8	57.4	60.6	47.9	51.1	77.7
Below Normal (13%)	86.1	81.0	109.9	129.6	127.0	102.3	66.0	73.4	64.9	47.6	69.1	118.3
Dry (24%)	102.9	105.7	128.9	147.1	141.7	127.6	88.6	87.3	65.6	59.5	98.2	117.6
Critical (15%)	135.0	141.9	162.3	168.8	175.0	175.9	128.3	112.6	85.7	85.0	112.7	135.9

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-6.0	-0.4	1.6	-5.9	16.2	34.7	26.1	29.9	9.7	4.4	10.5	-2.5
20%	-6.4	-8.5	-3.1	1.2	2.9	19.3	18.0	33.8	4.3	4.5	10.2	-1.1
30%	-8.2	-11.8	-9.0	-8.3	14.5	20.5	16.9	27.2	4.2	4.8	7.8	-3.6
40%	-13.9	-11.5	-19.8	-12.2	23.6	19.2	16.7	26.7	6.8	6.5	-0.4	-4.2
50%	-19.9	-25.6	-48.7	-12.4	17.7	15.6	3.8	15.1	7.9	4.6	3.1	-9.5
60%	-74.4	-58.5	-53.6	8.3	12.7	0.6	0.8	13.8	9.1	3.5	1.6	-12.3
70%	-73.2	-62.6	-49.1	17.6	12.0	-2.5	0.9	13.1	8.2	4.0	-0.7	-14.5
80%	-72.6	-62.5	-29.7	16.0	4.8	-1.1	-0.1	4.5	7.0	2.7	-1.0	-17.6
90%	-54.3	-40.6	-2.3	5.6	0.4	-2.1	-0.3	0.2	10.6	2.9	0.3	-9.4
Long Term												
Full Simulation Period[b]	-34.7	-28.7	-22.5	0.7	11.9	11.3	9.4	17.7	6.9	3.2	3.6	-7.7
Water Year Types[c]												
Wet (32%)	-38.7	-37.8	-20.9	10.6	8.1	-0.3	0.9	6.9	4.6	2.2	1.2	-6.3
Above Normal (16%)	-28.0	-17.5	-18.5	1.1	17.5	9.7	7.4	15.9	8.7	3.6	-0.9	-33.4
Below Normal (13%)	-40.3	-34.1	-31.1	-12.2	6.1	9.7	4.0	20.0	15.8	3.3	-0.1	6.4
Dry (24%)	-38.9	-27.9	-27.1	-3.1	16.9	25.4	16.6	25.1	5.9	7.2	11.7	-2.9
Critical (15%)	-21.3	-17.4	-14.6	-3.2	11.2	16.4	23.1	28.3	3.1	-2.0	3.5	-3.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.17.5. Jones Pumping Plant, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	165.1	180.0	186.8	184.3	166.4	139.4	99.7	80.1	78.3	71.6	103.6	139.1
20%	156.4	154.5	171.3	166.2	150.1	122.4	86.6	71.0	70.0	60.4	87.1	129.7
30%	151.9	143.3	162.8	158.8	131.6	105.1	68.8	64.7	62.4	55.2	80.5	121.2
40%	147.4	135.4	155.2	152.3	112.6	95.0	58.1	51.3	56.3	50.5	73.5	113.6
50%	143.2	130.9	150.3	144.5	104.5	85.4	51.9	48.1	53.3	48.2	64.1	112.0
60%	136.7	124.2	144.5	114.2	91.4	71.5	43.3	43.5	50.2	45.5	54.9	108.0
70%	131.6	117.3	128.5	95.3	76.0	56.8	38.1	40.1	47.6	44.0	51.3	104.5
80%	126.3	110.5	103.7	81.8	61.6	41.1	30.7	35.6	44.3	41.3	48.2	98.0
90%	105.6	85.7	72.7	73.2	42.4	34.0	23.0	18.6	35.0	35.8	42.9	83.6
Long Term												
Full Simulation Period[b]	137.5	129.7	140.6	128.6	104.7	86.7	57.4	50.8	56.1	53.4	69.2	110.5
Water Year Types[c]												
Wet (32%)	123.7	115.7	112.5	87.3	59.4	47.3	29.0	30.2	46.3	47.2	46.0	88.3
Above Normal (16%)	150.7	137.2	139.5	126.8	96.0	69.6	43.4	41.5	51.9	44.3	52.0	111.2
Below Normal (13%)	126.4	115.1	141.0	141.8	120.8	92.5	62.0	53.4	49.1	44.3	69.2	111.9
Dry (24%)	141.8	133.5	156.0	150.2	124.8	102.2	72.0	62.2	59.7	52.3	86.5	120.5
Critical (15%)	156.3	159.3	176.9	172.0	163.8	159.4	105.2	84.3	82.6	87.0	109.2	139.6

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	164.9	178.7	187.1	180.1	181.1	171.3	126.0	114.2	70.5	77.3	115.9	139.9
20%	156.3	153.1	171.1	171.9	159.1	141.8	99.3	100.0	63.8	64.8	96.1	131.1
30%	152.5	141.4	161.3	163.0	144.8	124.5	85.6	85.6	58.7	59.3	83.7	124.3
40%	146.4	134.5	157.6	155.2	133.3	111.6	63.3	72.0	55.1	54.7	74.6	116.9
50%	139.3	129.9	151.5	150.0	119.2	92.7	54.5	55.0	51.3	51.6	66.1	112.3
60%	135.6	126.4	143.9	131.8	99.6	75.8	41.4	49.3	48.7	49.5	55.3	107.7
70%	130.3	121.5	129.9	120.0	80.7	56.0	37.8	44.0	45.2	46.8	49.9	103.6
80%	125.1	111.4	103.6	92.3	61.2	39.5	29.2	37.3	41.4	44.4	45.9	98.7
90%	105.5	90.3	79.1	75.0	36.9	32.3	22.6	18.8	34.7	37.5	40.9	78.5
Long Term												
Full Simulation Period[b]	137.2	131.8	141.8	134.6	113.9	96.1	64.7	65.3	53.4	56.6	71.1	110.8
Water Year Types[c]												
Wet (32%)	122.4	117.6	115.8	97.4	61.8	46.8	28.7	33.4	44.3	49.6	45.0	85.0
Above Normal (16%)	153.8	142.6	143.3	138.4	106.9	73.6	45.7	48.7	47.1	47.4	51.7	112.4
Below Normal (13%)	126.1	114.1	142.0	145.2	125.2	98.4	66.2	72.8	49.9	49.7	72.1	122.0
Dry (24%)	139.4	136.6	157.7	155.3	142.3	124.7	85.9	83.8	54.8	57.8	92.9	120.0
Critical (15%)	157.7	159.1	169.7	166.7	176.8	177.4	126.8	114.7	81.1	86.0	111.2	139.4

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.2	-1.3	0.3	-4.1	14.7	31.9	26.3	34.1	-7.8	5.6	12.3	0.7
20%	0.0	-1.5	-0.2	5.7	9.0	19.4	12.6	29.0	-6.2	4.4	8.9	1.4
30%	0.7	-1.8	-1.5	4.2	13.2	19.5	16.9	21.0	-3.6	4.1	3.3	3.1
40%	-0.9	-0.9	2.5	2.9	20.8	16.6	5.2	20.7	-1.2	4.1	1.1	3.3
50%	-3.8	-1.0	1.2	5.5	14.7	7.2	2.6	7.0	-2.1	3.4	2.0	0.3
60%	-1.1	2.3	-0.6	17.7	8.2	4.3	-2.0	5.8	-1.5	4.0	0.4	-0.2
70%	-1.3	4.3	1.4	24.7	4.7	-0.8	-0.3	4.0	-2.4	2.8	-1.4	-0.9
80%	-1.2	0.9	-0.1	10.5	-0.4	-1.6	-1.5	1.7	-3.0	3.1	-2.3	0.7
90%	-0.1	4.6	6.4	1.8	-5.5	-1.7	-0.4	0.2	-0.3	1.7	-2.0	-5.1
Long Term												
Full Simulation Period[b]	-0.3	2.1	1.2	6.0	9.2	9.4	7.4	14.5	-2.7	3.2	1.9	0.4
Water Year Types[c]												
Wet (32%)	-1.3	1.9	3.3	10.1	2.4	-0.5	-0.4	3.2	-2.0	2.4	-1.1	-3.2
Above Normal (16%)	3.1	5.4	3.8	11.6	10.8	4.0	2.3	7.2	-4.8	3.1	-0.4	1.2
Below Normal (13%)	-0.2	-0.9	1.0	3.5	4.3	5.9	4.3	19.4	0.8	5.4	2.9	10.1
Dry (24%)	-2.3	3.1	1.8	5.1	17.5	22.5	13.9	21.6	-4.9	5.5	6.4	-0.5
Critical (15%)	1.4	-0.1	-7.2	-5.3	13.1	17.9	21.6	30.4	-1.5	-1.0	2.0	-0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.17.6. Jones Pumping Plant, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	165.1	180.0	186.8	184.3	166.4	139.4	99.7	80.1	78.3	71.6	103.6	139.1
20%	156.4	154.5	171.3	166.2	150.1	122.4	86.6	71.0	70.0	60.4	87.1	129.7
30%	151.9	143.3	162.8	158.8	131.6	105.1	68.8	64.7	62.4	55.2	80.5	121.2
40%	147.4	135.4	155.2	152.3	112.6	95.0	58.1	51.3	56.3	50.5	73.5	113.6
50%	143.2	130.9	150.3	144.5	104.5	85.4	51.9	48.1	53.3	48.2	64.1	112.0
60%	136.7	124.2	144.5	114.2	91.4	71.5	43.3	43.5	50.2	45.5	54.9	108.0
70%	131.6	117.3	128.5	95.3	76.0	56.8	38.1	40.1	47.6	44.0	51.3	104.5
80%	126.3	110.5	103.7	81.8	61.6	41.1	30.7	35.6	44.3	41.3	48.2	98.0
90%	105.6	85.7	72.7	73.2	42.4	34.0	23.0	18.6	35.0	35.8	42.9	83.6
Long Term												
Full Simulation Period[b]	137.5	129.7	140.6	128.6	104.7	86.7	57.4	50.8	56.1	53.4	69.2	110.5
Water Year Types[c]												
Wet (32%)	123.7	115.7	112.5	87.3	59.4	47.3	29.0	30.2	46.3	47.2	46.0	88.3
Above Normal (16%)	150.7	137.2	139.5	126.8	96.0	69.6	43.4	41.5	51.9	44.3	52.0	111.2
Below Normal (13%)	126.4	115.1	141.0	141.8	120.8	92.5	62.0	53.4	49.1	44.3	69.2	111.9
Dry (24%)	141.8	133.5	156.0	150.2	124.8	102.2	72.0	62.2	59.7	52.3	86.5	120.5
Critical (15%)	156.3	159.3	176.9	172.0	163.8	159.4	105.2	84.3	82.6	87.0	109.2	139.6

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	166.9	178.1	187.1	178.5	182.6	174.1	124.7	105.9	101.3	79.2	117.0	136.0
20%	151.7	152.4	166.1	167.5	154.8	141.7	105.5	102.2	81.0	66.2	102.3	129.6
30%	141.3	132.7	155.9	150.1	146.3	125.5	81.7	87.2	73.7	61.4	91.8	121.9
40%	135.6	124.7	137.1	139.8	136.2	114.2	71.2	73.0	68.7	58.6	73.9	113.5
50%	122.5	107.7	101.9	131.8	122.2	101.1	57.6	62.0	64.0	54.2	66.5	103.3
60%	63.2	66.2	90.9	122.6	104.2	72.2	44.2	54.3	61.6	50.9	56.8	96.7
70%	59.0	53.0	80.2	113.7	87.9	55.1	39.0	51.9	57.7	48.5	51.1	88.5
80%	53.9	48.2	72.3	97.8	66.4	40.4	30.3	40.1	52.3	44.4	47.8	80.5
90%	51.9	45.2	70.4	78.8	42.8	32.0	23.0	18.8	48.3	39.0	43.2	73.5
Long Term												
Full Simulation Period[b]	104.0	101.4	118.1	129.6	116.7	98.3	65.9	66.7	67.3	57.3	74.0	104.1
Water Year Types[c]												
Wet (32%)	85.6	79.0	92.2	97.8	67.5	47.5	30.0	35.6	51.0	49.8	47.5	82.1
Above Normal (16%)	125.9	118.9	119.7	127.6	113.5	79.3	49.9	54.2	61.2	48.0	51.3	77.7
Below Normal (13%)	86.0	81.5	109.9	129.5	126.8	102.2	65.7	73.7	68.5	48.4	69.3	119.8
Dry (24%)	104.2	105.5	128.5	148.6	142.4	127.7	87.2	88.5	74.6	62.3	102.4	121.0
Critical (15%)	136.1	142.2	162.4	169.2	174.9	176.2	125.8	105.1	96.4	83.5	113.2	137.8

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1.8	-1.9	0.3	-5.7	16.2	34.7	25.0	25.8	23.0	7.5	13.4	-3.1
20%	-4.7	-2.2	-5.2	1.3	4.6	19.2	18.9	31.2	10.9	5.8	15.2	0.0
30%	-10.6	-10.5	-6.9	-8.7	14.7	20.4	13.0	22.5	11.3	6.2	11.3	0.7
40%	-11.7	-10.7	-18.1	-12.5	23.6	19.2	13.1	21.7	12.4	8.1	0.4	-0.1
50%	-20.7	-23.2	-48.4	-12.7	17.7	15.6	5.7	13.9	10.7	6.0	2.5	-8.7
60%	-73.5	-58.0	-53.5	8.4	12.8	0.6	0.8	10.8	11.3	5.4	1.9	-11.3
70%	-72.6	-64.3	-48.4	18.4	12.0	-1.7	0.9	11.8	10.2	4.5	-0.3	-15.9
80%	-72.5	-62.3	-31.4	16.1	4.8	-0.7	-0.3	4.5	8.0	3.1	-0.4	-17.4
90%	-53.7	-40.5	-2.3	5.6	0.4	-2.1	0.0	0.2	13.3	3.3	0.3	-10.0
Long Term												
Full Simulation Period[b]	-33.6	-28.4	-22.5	1.0	12.1	11.5	8.6	15.9	11.2	3.9	4.8	-6.4
Water Year Types[c]												
Wet (32%)	-38.1	-36.7	-20.3	10.5	8.1	0.1	1.0	5.4	4.7	2.6	1.5	-6.2
Above Normal (16%)	-24.9	-18.3	-19.7	0.8	17.5	9.7	6.5	12.7	9.3	3.7	-0.8	-33.5
Below Normal (13%)	-40.4	-33.6	-31.1	-12.2	6.0	9.7	3.7	20.3	19.3	4.2	0.1	7.9
Dry (24%)	-37.6	-28.1	-27.4	-1.6	17.6	25.4	15.2	26.3	14.8	10.0	15.9	0.5
Critical (15%)	-20.2	-17.0	-14.4	-2.8	11.1	16.8	20.6	20.8	13.8	-3.5	4.0	-1.8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.18. Banks Pumping Plant Chloride Concentration

Table 6E.B.18.1. Banks Pumping Plant, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	169.9	187.4	203.2	187.8	141.3	125.2	108.4	96.5	87.0	73.0	111.3	135.5
20%	156.4	148.1	167.6	168.1	121.7	103.2	92.8	88.8	71.2	53.7	88.3	124.6
30%	145.0	135.0	145.3	135.0	108.7	90.5	78.5	81.7	61.9	45.5	71.0	114.5
40%	140.5	129.1	124.0	113.6	102.7	81.8	69.6	72.9	56.3	41.8	60.3	102.6
50%	122.5	110.0	75.2	103.1	94.3	69.9	62.2	57.1	52.8	38.7	55.8	99.0
60%	57.4	48.8	56.6	94.6	88.1	64.0	47.5	49.6	49.5	35.7	44.6	94.6
70%	52.7	42.0	45.3	79.4	73.9	55.2	38.8	44.1	46.3	33.1	39.6	86.3
80%	47.0	38.6	37.5	71.6	56.1	46.0	32.9	38.0	41.8	30.5	35.2	76.8
90%	40.4	34.5	34.1	64.8	49.1	35.2	24.8	17.7	30.6	28.2	31.5	70.3
Long Term												
Full Simulation Period[b]	102.4	98.7	101.8	114.0	95.0	76.5	64.7	61.8	57.1	45.4	62.4	99.7
Water Year Types[c]												
Wet (32%)	84.0	72.1	67.4	76.6	62.4	44.8	31.3	32.2	39.4	33.5	37.2	82.6
Above Normal (16%)	124.1	120.7	108.7	109.1	92.8	66.4	52.2	51.7	50.3	31.5	38.4	73.7
Below Normal (13%)	86.1	74.8	88.3	111.8	100.5	82.2	68.8	68.9	62.0	38.4	57.7	116.0
Dry (24%)	100.7	103.4	113.1	136.5	108.7	91.2	82.3	76.5	60.4	49.6	89.5	113.8
Critical (15%)	136.3	146.4	162.4	164.8	140.1	126.2	117.4	106.1	92.6	85.5	102.5	126.5

Alternative 1

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	166.0	185.8	193.1	193.8	142.0	105.3	80.7	69.3	71.3	67.6	99.2	131.1
20%	159.4	159.2	176.8	179.0	123.6	83.0	68.8	63.8	63.0	48.1	73.6	125.4
30%	157.2	149.8	167.2	158.0	100.3	72.4	56.4	58.1	47.0	42.9	66.5	116.8
40%	150.0	140.9	156.1	148.6	83.3	65.2	50.9	45.0	42.4	40.1	61.4	110.6
50%	146.0	136.6	148.1	140.5	77.9	60.0	45.8	41.2	39.2	37.6	52.1	106.4
60%	142.6	130.8	140.7	84.4	67.2	53.2	41.7	36.8	36.6	33.9	42.4	103.6
70%	135.7	123.4	124.7	69.5	56.9	45.8	37.3	35.3	34.6	30.9	38.5	100.6
80%	129.3	113.8	93.0	62.1	50.5	40.1	31.6	31.2	31.8	28.6	35.4	89.1
90%	112.7	85.2	45.2	50.0	39.9	34.7	22.4	19.9	29.5	27.1	31.9	82.3
Long Term												
Full Simulation Period[b]	140.5	134.4	137.7	122.0	85.7	64.3	51.6	47.2	45.8	42.9	57.9	106.4
Water Year Types[c]												
Wet (32%)	127.3	120.0	106.7	70.3	50.1	41.9	29.3	27.2	34.4	33.3	35.8	86.9
Above Normal (16%)	151.8	140.2	135.0	118.9	75.9	55.4	41.3	36.8	35.9	30.1	38.9	108.0
Below Normal (13%)	130.8	119.2	135.1	136.5	109.9	76.2	57.9	48.8	37.0	33.7	58.6	107.7
Dry (24%)	144.9	139.3	155.6	149.5	97.9	68.1	57.4	55.9	50.8	45.1	74.3	116.0
Critical (15%)	158.4	165.1	180.6	178.5	131.0	105.5	95.8	86.0	81.2	82.5	98.4	129.7

Alternative 1 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.9	-1.6	-10.1	6.1	0.8	-19.9	-27.7	-27.1	-15.6	-5.5	-12.2	-4.4
20%	3.0	11.1	9.3	10.9	1.8	-20.2	-24.0	-24.9	-8.1	-5.6	-14.7	0.9
30%	12.1	14.8	22.0	23.1	-8.3	-18.1	-22.0	-23.6	-14.9	-2.6	-4.5	2.3
40%	9.5	11.8	32.1	35.1	-19.3	-16.6	-18.7	-27.9	-13.9	-1.7	1.0	8.0
50%	23.5	26.5	72.9	37.3	-16.4	-10.0	-16.4	-15.8	-13.6	-1.1	-3.8	7.4
60%	85.2	82.0	84.1	-10.2	-20.8	-10.8	-5.8	-12.9	-12.9	-1.8	-2.3	9.0
70%	83.1	81.4	79.4	-10.0	-17.0	-9.4	-1.5	-8.8	-11.8	-2.2	-1.1	14.3
80%	82.3	75.1	55.4	-9.5	-5.6	-6.0	-1.2	-6.8	-10.0	-1.9	0.2	12.3
90%	72.3	50.8	11.2	-14.8	-9.2	-0.5	-2.4	2.2	-1.1	-1.0	0.4	12.0
Long Term												
Full Simulation Period[b]	38.1	35.7	35.9	8.0	-9.3	-12.2	-13.0	-14.6	-11.2	-2.5	-4.5	6.7
Water Year Types[c]												
Wet (32%)	43.3	47.9	39.2	-6.3	-12.3	-3.0	-2.0	-4.9	-5.0	-0.2	-1.4	4.4
Above Normal (16%)	27.7	19.5	26.3	9.8	-16.9	-11.0	-10.9	-14.9	-14.4	-1.4	0.5	34.3
Below Normal (13%)	44.7	44.4	46.8	24.6	9.4	-6.0	-10.9	-20.1	-25.0	-4.7	0.9	-8.3
Dry (24%)	44.2	35.9	42.6	13.0	-10.8	-23.1	-24.9	-20.7	-9.6	-4.5	-15.2	2.2
Critical (15%)	22.1	18.7	18.1	13.7	-9.2	-20.7	-21.6	-20.1	-11.5	-3.0	-4.1	3.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.18.2. Banks Pumping Plant, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	169.9	187.4	203.2	187.8	141.3	125.2	108.4	96.5	87.0	73.0	111.3	135.5
20%	156.4	148.1	167.6	168.1	121.7	103.2	92.8	88.8	71.2	53.7	88.3	124.6
30%	145.0	135.0	145.3	135.0	108.7	90.5	78.5	81.7	61.9	45.5	71.0	114.5
40%	140.5	129.1	124.0	113.6	102.7	81.8	69.6	72.9	56.3	41.8	60.3	102.6
50%	122.5	110.0	75.2	103.1	94.3	69.9	62.2	57.1	52.8	38.7	55.8	99.0
60%	57.4	48.8	56.6	94.6	88.1	64.0	47.5	49.6	49.5	35.7	44.6	94.6
70%	52.7	42.0	45.3	79.4	73.9	55.2	38.8	44.1	46.3	33.1	39.6	86.3
80%	47.0	38.6	37.5	71.6	56.1	46.0	32.9	38.0	41.8	30.5	35.2	76.8
90%	40.4	34.5	34.1	64.8	49.1	35.2	24.8	17.7	30.6	28.2	31.5	70.3
Long Term												
Full Simulation Period[b]	102.4	98.7	101.8	114.0	95.0	76.5	64.7	61.8	57.1	45.4	62.4	99.7
Water Year Types[c]												
Wet (32%)	84.0	72.1	67.4	76.6	62.4	44.8	31.3	32.2	39.4	33.5	37.2	82.6
Above Normal (16%)	124.1	120.7	108.7	109.1	92.8	66.4	52.2	51.7	50.3	31.5	38.4	73.7
Below Normal (13%)	86.1	74.8	88.3	111.8	100.5	82.2	68.8	68.9	62.0	38.4	57.7	116.0
Dry (24%)	100.7	103.4	113.1	136.5	108.7	91.2	82.3	76.5	60.4	49.6	89.5	113.8
Critical (15%)	136.3	146.4	162.4	164.8	140.1	126.2	117.4	106.1	92.6	85.5	102.5	126.5

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	172.3	185.8	196.2	192.0	136.6	116.0	103.4	91.5	63.5	70.8	113.3	139.8
20%	159.3	160.5	175.1	177.8	120.1	99.5	90.4	78.3	52.5	50.0	79.8	128.9
30%	151.8	147.4	164.1	165.5	110.5	87.9	74.2	61.9	44.8	43.2	67.8	118.4
40%	149.3	141.0	157.8	149.9	96.8	76.9	61.0	48.4	39.3	41.0	61.6	113.4
50%	145.0	133.7	149.3	139.1	89.8	63.3	50.3	43.1	35.7	39.1	54.6	108.5
60%	138.6	131.8	140.0	96.4	77.3	57.2	43.0	37.6	33.7	35.8	44.3	103.1
70%	133.0	126.7	125.1	82.5	67.9	49.2	36.9	33.8	31.4	31.4	37.4	100.1
80%	127.8	113.4	97.1	69.8	52.0	39.6	31.3	31.1	28.9	29.0	35.7	90.7
90%	112.8	97.7	46.3	60.0	39.6	35.4	25.0	21.0	27.2	27.0	29.9	77.2
Long Term												
Full Simulation Period[b]	139.6	136.6	138.9	126.3	89.1	71.8	59.3	51.7	43.3	44.1	60.3	107.3
Water Year Types[c]												
Wet (32%)	125.9	121.7	110.3	81.3	54.4	41.7	29.8	27.5	30.4	32.9	35.6	83.9
Above Normal (16%)	154.7	146.8	138.6	129.7	87.2	58.7	42.9	36.7	32.5	30.2	38.6	109.6
Below Normal (13%)	130.6	117.6	135.3	142.5	102.2	77.3	62.7	56.0	40.6	38.5	61.9	120.5
Dry (24%)	141.3	142.1	157.8	153.2	104.9	86.6	74.6	62.1	44.6	47.9	82.5	115.6
Critical (15%)	158.5	166.4	173.2	160.3	128.1	121.7	112.4	99.3	83.3	82.1	98.9	129.7

Alternative 3 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2.4	-1.6	-7.0	4.3	-4.7	-9.3	-5.0	-4.9	-23.4	-2.2	2.0	4.3
20%	2.9	12.4	7.5	9.7	-1.6	-3.7	-2.4	-10.5	-18.7	-3.7	-8.5	4.4
30%	6.7	12.4	18.8	30.5	1.9	-2.5	-4.3	-19.8	-17.1	-2.3	-3.1	4.0
40%	8.9	11.9	33.9	36.3	-5.9	-4.9	-8.6	-24.5	-17.0	-0.8	1.3	10.8
50%	22.5	23.6	74.1	36.0	-4.5	-6.6	-11.9	-13.9	-17.1	0.4	-1.3	9.4
60%	81.2	83.0	83.4	1.8	-10.8	-6.8	-4.5	-12.0	-15.9	0.1	-0.3	8.5
70%	80.3	84.7	79.8	3.0	-6.1	-6.0	-1.9	-10.3	-14.9	-1.7	-2.2	13.8
80%	80.8	74.8	59.5	-1.8	-4.0	-6.4	-1.6	-6.9	-12.8	-1.4	0.5	13.9
90%	72.4	63.2	12.2	-4.8	-9.5	0.2	0.2	3.3	-3.4	-1.2	-1.7	6.9
Long Term												
Full Simulation Period[b]	37.3	38.0	37.1	12.3	-5.9	-4.7	-5.4	-10.1	-13.8	-1.3	-2.1	7.6
Water Year Types[c]												
Wet (32%)	41.9	49.6	42.9	4.7	-8.0	-3.2	-1.5	-4.7	-9.0	-0.6	-1.6	1.4
Above Normal (16%)	30.6	26.1	29.9	20.7	-5.6	-7.7	-9.3	-15.0	-17.8	-1.3	0.3	35.8
Below Normal (13%)	44.5	42.7	47.1	30.7	1.7	-5.0	-6.1	-12.9	-21.5	0.1	4.1	4.5
Dry (24%)	40.6	38.7	44.7	16.7	-3.8	-4.7	-7.6	-14.5	-15.8	-1.7	-7.0	1.7
Critical (15%)	22.2	20.1	10.8	-4.5	-12.0	-4.4	-5.1	-6.8	-9.3	-3.4	-3.6	3.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.18.3. Banks Pumping Plant, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	169.9	187.4	203.2	187.8	141.3	125.2	108.4	96.5	87.0	73.0	111.3	135.5
20%	156.4	148.1	167.6	168.1	121.7	103.2	92.8	88.8	71.2	53.7	88.3	124.6
30%	145.0	135.0	145.3	135.0	108.7	90.5	78.5	81.7	61.9	45.5	71.0	114.5
40%	140.5	129.1	124.0	113.6	102.7	81.8	69.6	72.9	56.3	41.8	60.3	102.6
50%	122.5	110.0	75.2	103.1	94.3	69.9	62.2	57.1	52.8	38.7	55.8	99.0
60%	57.4	48.8	56.6	94.6	88.1	64.0	47.5	49.6	49.5	35.7	44.6	94.6
70%	52.7	42.0	45.3	79.4	73.9	55.2	38.8	44.1	46.3	33.1	39.6	86.3
80%	47.0	38.6	37.5	71.6	56.1	46.0	32.9	38.0	41.8	30.5	35.2	76.8
90%	40.4	34.5	34.1	64.8	49.1	35.2	24.8	17.7	30.6	28.2	31.5	70.3
Long Term												
Full Simulation Period[b]	102.4	98.7	101.8	114.0	95.0	76.5	64.7	61.8	57.1	45.4	62.4	99.7
Water Year Types[c]												
Wet (32%)	84.0	72.1	67.4	76.6	62.4	44.8	31.3	32.2	39.4	33.5	37.2	82.6
Above Normal (16%)	124.1	120.7	108.7	109.1	92.8	66.4	52.2	51.7	50.3	31.5	38.4	73.7
Below Normal (13%)	86.1	74.8	88.3	111.8	100.5	82.2	68.8	68.9	62.0	38.4	57.7	116.0
Dry (24%)	100.7	103.4	113.1	136.5	108.7	91.2	82.3	76.5	60.4	49.6	89.5	113.8
Critical (15%)	136.3	146.4	162.4	164.8	140.1	126.2	117.4	106.1	92.6	85.5	102.5	126.5

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	168.9	188.6	203.7	188.5	141.3	125.1	118.5	109.3	103.1	80.2	114.0	135.3
20%	159.9	158.7	169.7	167.8	122.1	103.3	96.7	95.4	82.2	59.0	94.3	125.6
30%	147.0	135.9	146.0	134.8	108.8	90.5	82.6	83.1	74.9	47.5	77.1	118.7
40%	141.8	130.7	124.0	113.1	102.8	81.6	69.2	65.4	60.9	42.3	61.8	112.6
50%	128.1	113.1	75.4	102.3	94.5	70.0	62.9	55.6	53.5	39.5	56.0	100.0
60%	58.5	48.5	56.6	94.6	88.1	63.9	47.6	47.7	49.7	37.0	44.6	95.0
70%	52.9	41.1	45.4	79.4	74.0	55.9	39.1	43.4	46.7	33.3	39.6	89.2
80%	48.5	39.0	36.7	71.8	57.5	46.1	32.7	37.8	44.5	30.2	34.3	77.3
90%	40.8	34.6	34.4	65.1	49.0	35.8	24.9	17.9	30.8	28.6	30.0	69.1
Long Term												
Full Simulation Period[b]	103.7	99.6	101.8	114.3	95.3	76.9	66.5	64.0	62.7	46.7	64.3	101.4
Water Year Types[c]												
Wet (32%)	84.5	73.5	69.0	76.6	62.6	45.1	31.4	31.1	39.2	33.5	37.1	82.3
Above Normal (16%)	127.7	122.8	106.9	108.6	92.8	66.4	51.7	49.0	50.1	31.7	38.3	73.5
Below Normal (13%)	85.8	75.4	88.4	111.7	100.3	82.0	68.5	64.8	64.1	39.4	57.9	117.8
Dry (24%)	102.4	103.4	112.1	138.6	109.8	91.6	85.6	82.7	72.6	52.7	96.0	118.3
Critical (15%)	137.7	146.7	162.3	164.2	140.4	127.7	124.6	119.3	109.9	88.4	104.2	129.8

Alternative 5 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.9	1.2	0.5	0.8	0.0	-0.1	10.1	12.8	16.2	7.1	2.6	-0.2
20%	3.5	10.5	2.2	-0.3	0.4	0.1	4.0	6.6	11.0	5.3	6.0	1.0
30%	2.0	1.0	0.8	-0.1	0.1	0.0	4.1	1.4	13.0	2.0	6.1	4.2
40%	1.3	1.6	0.0	-0.4	0.2	-0.1	-0.4	-7.4	4.6	0.6	1.5	9.9
50%	5.6	3.0	0.2	-0.8	0.1	0.1	0.7	-1.5	0.7	0.8	0.2	0.9
60%	1.1	-0.2	0.0	0.0	0.0	-0.1	0.0	-2.0	0.1	1.3	-0.1	0.4
70%	0.2	-1.0	0.2	0.0	0.1	0.6	0.3	-0.7	0.4	0.2	0.0	2.8
80%	1.5	0.3	-0.9	0.2	1.4	0.0	-0.2	-0.2	2.7	-0.3	-0.9	0.5
90%	0.4	0.2	0.3	0.3	0.0	0.6	0.1	0.2	0.2	0.4	-1.5	-1.2
Long Term												
Full Simulation Period[b]	1.3	0.9	0.0	0.3	0.3	0.4	1.8	2.1	5.6	1.4	1.8	1.7
Water Year Types[c]												
Wet (32%)	0.5	1.4	1.6	0.0	0.1	0.3	0.1	-1.1	-0.2	0.0	-0.1	-0.3
Above Normal (16%)	3.6	2.1	-1.8	-0.5	0.0	0.0	-0.5	-2.7	-0.2	0.2	-0.1	-0.3
Below Normal (13%)	-0.3	0.6	0.2	-0.2	-0.2	-0.2	-0.3	-4.1	2.0	1.0	0.2	1.8
Dry (24%)	1.7	0.0	-1.0	2.1	1.2	0.4	3.3	6.2	12.1	3.1	6.5	4.5
Critical (15%)	1.4	0.3	-0.2	-0.6	0.2	1.5	7.2	13.2	17.2	2.9	1.7	3.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.18.4. Banks Pumping Plant, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	166.0	185.8	193.1	193.8	142.0	105.3	80.7	69.3	71.3	67.6	99.2	131.1
20%	159.4	159.2	176.8	179.0	123.6	83.0	68.8	63.8	63.0	48.1	73.6	125.4
30%	157.2	149.8	167.2	158.0	100.3	72.4	56.4	58.1	47.0	42.9	66.5	116.8
40%	150.0	140.9	156.1	148.6	83.3	65.2	50.9	45.0	42.4	40.1	61.4	110.6
50%	146.0	136.6	148.1	140.5	77.9	60.0	45.8	41.2	39.2	37.6	52.1	106.4
60%	142.6	130.8	140.7	84.4	67.2	53.2	41.7	36.8	36.6	33.9	42.4	103.6
70%	135.7	123.4	124.7	69.5	56.9	45.8	37.3	35.3	34.6	30.9	38.5	100.6
80%	129.3	113.8	93.0	62.1	50.5	40.1	31.6	31.2	31.8	28.6	35.4	89.1
90%	112.7	85.2	45.2	50.0	39.9	34.7	22.4	19.9	29.5	27.1	31.9	82.3
Long Term												
Full Simulation Period[b]	140.5	134.4	137.7	122.0	85.7	64.3	51.6	47.2	45.8	42.9	57.9	106.4
Water Year Types[c]												
Wet (32%)	127.3	120.0	106.7	70.3	50.1	41.9	29.3	27.2	34.4	33.3	35.8	86.9
Above Normal (16%)	151.8	140.2	135.0	118.9	75.9	55.4	41.3	36.8	35.9	30.1	38.9	108.0
Below Normal (13%)	130.8	119.2	135.1	136.5	109.9	76.2	57.9	48.8	37.0	33.7	58.6	107.7
Dry (24%)	144.9	139.3	155.6	149.5	97.9	68.1	57.4	55.9	50.8	45.1	74.3	116.0
Critical (15%)	158.4	165.1	180.6	178.5	131.0	105.5	95.8	86.0	81.2	82.5	98.4	129.7

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	169.9	187.4	203.2	187.8	141.3	125.2	108.4	96.5	87.0	73.0	111.3	135.5
20%	156.4	148.1	167.6	168.1	121.7	103.2	92.8	88.8	71.2	53.7	88.3	124.6
30%	145.0	135.0	145.3	135.0	108.7	90.5	78.5	81.7	61.9	45.5	71.0	114.5
40%	140.5	129.1	124.0	113.6	102.7	81.8	69.6	72.9	56.3	41.8	60.3	102.6
50%	122.5	110.0	75.2	103.1	94.3	69.9	62.2	57.1	52.8	38.7	55.8	99.0
60%	57.4	48.8	56.6	94.6	88.1	64.0	47.5	49.6	49.5	35.7	44.6	94.6
70%	52.7	42.0	45.3	79.4	73.9	55.2	38.8	44.1	46.3	33.1	39.6	86.3
80%	47.0	38.6	37.5	71.6	56.1	46.0	32.9	38.0	41.8	30.5	35.2	76.8
90%	40.4	34.5	34.1	64.8	49.1	35.2	24.8	17.7	30.6	28.2	31.5	70.3
Long Term												
Full Simulation Period[b]	102.4	98.7	101.8	114.0	95.0	76.5	64.7	61.8	57.1	45.4	62.4	99.7
Water Year Types[c]												
Wet (32%)	84.0	72.1	67.4	76.6	62.4	44.8	31.3	32.2	39.4	33.5	37.2	82.6
Above Normal (16%)	124.1	120.7	108.7	109.1	92.8	66.4	52.2	51.7	50.3	31.5	38.4	73.7
Below Normal (13%)	86.1	74.8	88.3	111.8	100.5	82.2	68.8	68.9	62.0	38.4	57.7	116.0
Dry (24%)	100.7	103.4	113.1	136.5	108.7	91.2	82.3	76.5	60.4	49.6	89.5	113.8
Critical (15%)	136.3	146.4	162.4	164.8	140.1	126.2	117.4	106.1	92.6	85.5	102.5	126.5

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3.9	1.6	10.1	**-6.1**	**-0.8**	19.9	27.7	27.1	15.6	5.5	12.2	4.4
20%	**-3.0**	**-11.1**	**-9.3**	**-10.9**	**-1.8**	20.2	24.0	24.9	8.1	5.6	14.7	**-0.9**
30%	**-12.1**	**-14.8**	**-22.0**	**-23.1**	8.3	18.1	22.0	23.6	14.9	2.6	4.5	**-2.3**
40%	**-9.5**	**-11.8**	**-32.1**	**-35.1**	19.3	16.6	18.7	27.9	13.9	1.7	**-1.0**	**-8.0**
50%	**-23.5**	**-26.5**	**-72.9**	**-37.3**	16.4	10.0	16.4	15.8	13.6	1.1	3.8	**-7.4**
60%	**-85.2**	**-82.0**	**-84.1**	10.2	20.8	10.8	5.8	12.9	12.9	1.8	2.3	**-9.0**
70%	**-83.1**	**-81.4**	**-79.4**	10.0	17.0	9.4	1.5	8.8	11.8	2.2	1.1	**-14.3**
80%	**-82.3**	**-75.1**	**-55.4**	9.5	5.6	6.0	1.2	6.8	10.0	1.9	**-0.2**	**-12.3**
90%	**-72.3**	**-50.8**	**-11.2**	14.8	9.2	0.5	2.4	**-2.2**	1.1	1.0	**-0.4**	**-12.0**
Long Term												
Full Simulation Period[b]	**-38.1**	**-35.7**	**-35.9**	**-8.0**	9.3	12.2	13.0	14.6	11.2	2.5	4.5	**-6.7**
Water Year Types[c]												
Wet (32%)	**-43.3**	**-47.9**	**-39.2**	6.3	12.3	3.0	2.0	4.9	5.0	0.2	1.4	**-4.4**
Above Normal (16%)	**-27.7**	**-19.5**	**-26.3**	**-9.8**	16.9	11.0	10.9	14.9	14.4	1.4	**-0.5**	**-34.3**
Below Normal (13%)	**-44.7**	**-44.4**	**-46.8**	**-24.6**	**-9.4**	6.0	10.9	20.1	25.0	4.7	**-0.9**	8.3
Dry (24%)	**-44.2**	**-35.9**	**-42.6**	**-13.0**	10.8	23.1	24.9	20.7	9.6	4.5	15.2	**-2.2**
Critical (15%)	**-22.1**	**-18.7**	**-18.1**	**-13.7**	9.2	20.7	21.6	20.1	11.5	3.0	4.1	**-3.2**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.18.5. Banks Pumping Plant, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	166.0	185.8	193.1	193.8	142.0	105.3	80.7	69.3	71.3	67.6	99.2	131.1
20%	159.4	159.2	176.8	179.0	123.6	83.0	68.8	63.8	63.0	48.1	73.6	125.4
30%	157.2	149.8	167.2	158.0	100.3	72.4	56.4	58.1	47.0	42.9	66.5	116.8
40%	150.0	140.9	156.1	148.6	83.3	65.2	50.9	45.0	42.4	40.1	61.4	110.6
50%	146.0	136.6	148.1	140.5	77.9	60.0	45.8	41.2	39.2	37.6	52.1	106.4
60%	142.6	130.8	140.7	84.4	67.2	53.2	41.7	36.8	36.6	33.9	42.4	103.6
70%	135.7	123.4	124.7	69.5	56.9	45.8	37.3	35.3	34.6	30.9	38.5	100.6
80%	129.3	113.8	93.0	62.1	50.5	40.1	31.6	31.2	31.8	28.6	35.4	89.1
90%	112.7	85.2	45.2	50.0	39.9	34.7	22.4	19.9	29.5	27.1	31.9	82.3
Long Term												
Full Simulation Period[b]	140.5	134.4	137.7	122.0	85.7	64.3	51.6	47.2	45.8	42.9	57.9	106.4
Water Year Types[c]												
Wet (32%)	127.3	120.0	106.7	70.3	50.1	41.9	29.3	27.2	34.4	33.3	35.8	86.9
Above Normal (16%)	151.8	140.2	135.0	118.9	75.9	55.4	41.3	36.8	35.9	30.1	38.9	108.0
Below Normal (13%)	130.8	119.2	135.1	136.5	109.9	76.2	57.9	48.8	37.0	33.7	58.6	107.7
Dry (24%)	144.9	139.3	155.6	149.5	97.9	68.1	57.4	55.9	50.8	45.1	74.3	116.0
Critical (15%)	158.4	165.1	180.6	178.5	131.0	105.5	95.8	86.0	81.2	82.5	98.4	129.7

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	172.3	185.8	196.2	192.0	136.6	116.0	103.4	91.5	63.5	70.8	113.3	139.8
20%	159.3	160.5	175.1	177.8	120.1	99.5	90.4	78.3	52.5	50.0	79.8	128.9
30%	151.8	147.4	164.1	165.5	110.5	87.9	74.2	61.9	44.8	43.2	67.8	118.4
40%	149.3	141.0	157.8	149.9	96.8	76.9	61.0	48.4	39.3	41.0	61.6	113.4
50%	145.0	133.7	149.3	139.1	89.8	63.3	50.3	43.1	35.7	39.1	54.6	108.5
60%	138.6	131.8	140.0	96.4	77.3	57.2	43.0	37.6	33.7	35.8	44.3	103.1
70%	133.0	126.7	125.1	82.5	67.9	49.2	36.9	33.8	31.4	31.4	37.4	100.1
80%	127.8	113.4	97.1	69.8	52.0	39.6	31.3	31.1	28.9	29.0	35.7	90.7
90%	112.8	97.7	46.3	60.0	39.6	35.4	25.0	21.0	27.2	27.0	29.9	77.2
Long Term												
Full Simulation Period[b]	139.6	136.6	138.9	126.3	89.1	71.8	59.3	51.7	43.3	44.1	60.3	107.3
Water Year Types[c]												
Wet (32%)	125.9	121.7	110.3	81.3	54.4	41.7	29.8	27.5	30.4	32.9	35.6	83.9
Above Normal (16%)	154.7	146.8	138.6	129.7	87.2	58.7	42.9	36.7	32.5	30.2	38.6	109.6
Below Normal (13%)	130.6	117.6	135.3	142.5	102.2	77.3	62.7	56.0	40.6	38.5	61.9	120.5
Dry (24%)	141.3	142.1	157.8	153.2	104.9	86.6	74.6	62.1	44.6	47.9	82.5	115.6
Critical (15%)	158.5	166.4	173.2	160.3	128.1	121.7	112.4	99.3	83.3	82.1	98.9	129.7

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6.3	0.0	3.1	-1.8	-5.5	10.7	22.6	22.2	-7.8	3.2	14.2	8.7
20%	-0.1	1.3	-1.8	-1.2	-3.5	16.5	21.6	14.5	-10.6	1.9	6.2	3.5
30%	-5.4	-2.4	-3.1	7.5	10.2	15.6	17.8	3.8	-2.2	0.3	1.4	1.7
40%	-0.7	0.1	1.7	1.3	13.5	11.7	10.2	3.4	-3.1	0.9	0.3	2.8
50%	-1.1	-2.9	1.2	-1.3	11.9	3.4	4.5	1.9	-3.6	1.5	2.5	2.1
60%	-4.0	1.0	-0.7	12.0	10.1	4.0	1.2	0.9	-2.9	1.9	1.9	-0.5
70%	-2.7	3.3	0.4	13.0	11.0	3.4	-0.5	-1.5	-3.1	0.5	-1.1	-0.5
80%	-1.5	-0.4	4.1	7.7	1.6	-0.5	-0.4	-0.1	-2.9	0.4	0.3	1.6
90%	0.1	12.5	1.1	10.0	-0.3	0.8	2.6	1.1	-2.3	-0.1	-2.0	-5.1
Long Term												
Full Simulation Period[b]	-0.9	2.2	1.2	4.3	3.4	7.5	7.7	4.5	-2.6	1.2	2.4	0.9
Water Year Types[c]												
Wet (32%)	-1.4	1.7	3.6	11.0	4.3	-0.2	0.5	0.2	-4.1	-0.4	-0.2	-3.0
Above Normal (16%)	2.9	6.5	3.6	10.8	11.3	3.3	1.6	-0.1	-3.4	0.1	-0.3	1.5
Below Normal (13%)	-0.1	-1.7	0.2	6.1	-7.7	1.1	4.8	7.2	3.6	4.8	3.3	12.8
Dry (24%)	-3.6	2.8	2.2	3.7	7.0	18.5	17.2	6.2	-6.2	2.8	8.2	-0.5
Critical (15%)	0.1	1.4	-7.4	-18.2	-2.8	16.2	16.5	13.3	2.2	-0.4	0.5	-0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.18.6. Banks Pumping Plant, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	166.0	185.8	193.1	193.8	142.0	105.3	80.7	69.3	71.3	67.6	99.2	131.1
20%	159.4	159.2	176.8	179.0	123.6	83.0	68.8	63.8	63.0	48.1	73.6	125.4
30%	157.2	149.8	167.2	158.0	100.3	72.4	56.4	58.1	47.0	42.9	66.5	116.8
40%	150.0	140.9	156.1	148.6	83.3	65.2	50.9	45.0	42.4	40.1	61.4	110.6
50%	146.0	136.6	148.1	140.5	77.9	60.0	45.8	41.2	39.2	37.6	52.1	106.4
60%	142.6	130.8	140.7	84.4	67.2	53.2	41.7	36.8	36.6	33.9	42.4	103.6
70%	135.7	123.4	124.7	69.5	56.9	45.8	37.3	35.3	34.6	30.9	38.5	100.6
80%	129.3	113.8	93.0	62.1	50.5	40.1	31.6	31.2	31.8	28.6	35.4	89.1
90%	112.7	85.2	45.2	50.0	39.9	34.7	22.4	19.9	29.5	27.1	31.9	82.3
Long Term												
Full Simulation Period[b]	140.5	134.4	137.7	122.0	85.7	64.3	51.6	47.2	45.8	42.9	57.9	106.4
Water Year Types[c]												
Wet (32%)	127.3	120.0	106.7	70.3	50.1	41.9	29.3	27.2	34.4	33.3	35.8	86.9
Above Normal (16%)	151.8	140.2	135.0	118.9	75.9	55.4	41.3	36.8	35.9	30.1	38.9	108.0
Below Normal (13%)	130.8	119.2	135.1	136.5	109.9	76.2	57.9	48.8	37.0	33.7	58.6	107.7
Dry (24%)	144.9	139.3	155.6	149.5	97.9	68.1	57.4	55.9	50.8	45.1	74.3	116.0
Critical (15%)	158.4	165.1	180.6	178.5	131.0	105.5	95.8	86.0	81.2	82.5	98.4	129.7

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	168.9	188.6	203.7	188.5	141.3	125.1	118.5	109.3	103.1	80.2	114.0	135.3
20%	159.9	158.7	169.7	167.8	122.1	103.3	96.7	95.4	82.2	59.0	94.3	125.6
30%	147.0	135.9	146.0	134.8	108.8	90.5	82.6	83.1	74.9	47.5	77.1	118.7
40%	141.8	130.7	124.0	113.1	102.8	81.6	69.2	65.4	60.9	42.3	61.8	112.6
50%	128.1	113.1	75.4	102.3	94.5	70.0	62.9	55.6	53.5	39.5	56.0	100.0
60%	58.5	48.5	56.6	94.6	88.1	63.9	47.6	47.7	49.7	37.0	44.6	95.0
70%	52.9	41.1	45.4	79.4	74.0	55.9	39.1	43.4	46.7	33.3	39.6	89.2
80%	48.5	39.0	36.7	71.8	57.5	46.1	32.7	37.8	44.5	30.2	34.3	77.3
90%	40.8	34.6	34.4	65.1	49.0	35.8	24.9	17.9	30.8	28.6	30.0	69.1
Long Term												
Full Simulation Period[b]	103.7	99.6	101.8	114.3	95.3	76.9	66.5	64.0	62.7	46.7	64.3	101.4
Water Year Types[c]												
Wet (32%)	84.5	73.5	69.0	76.6	62.6	45.1	31.4	31.1	39.2	33.5	37.1	82.3
Above Normal (16%)	127.7	122.8	106.9	108.6	92.8	66.4	51.7	49.0	50.1	31.7	38.3	73.5
Below Normal (13%)	85.8	75.4	88.4	111.7	100.3	82.0	68.5	64.8	64.1	39.4	57.9	117.8
Dry (24%)	102.4	103.4	112.1	138.6	109.8	91.6	85.6	82.7	72.6	52.7	96.0	118.3
Critical (15%)	137.7	146.7	162.3	164.2	140.4	127.7	124.6	119.3	109.9	88.4	104.2	129.8

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2.9	2.7	10.6	-5.3	-0.7	19.8	37.8	39.9	31.8	12.6	14.8	4.2
20%	0.6	-0.6	-7.1	-11.2	-1.4	20.2	27.9	31.6	19.1	10.9	20.6	0.2
30%	-10.2	-13.9	-21.2	-23.2	8.4	18.1	26.1	25.0	27.8	4.5	10.6	1.9
40%	-8.2	-10.2	-32.1	-35.5	19.5	16.4	18.4	20.5	18.5	2.2	0.4	1.9
50%	-17.9	-23.5	-72.8	-38.1	16.5	10.0	17.1	14.4	14.2	1.9	3.9	-6.4
60%	-84.1	-82.3	-84.1	10.2	20.8	10.7	5.8	10.9	13.0	3.1	2.2	-8.6
70%	-82.8	-82.4	-79.3	10.0	17.1	10.1	1.8	8.1	12.2	2.4	1.1	-11.4
80%	-80.8	-74.8	-56.3	9.7	7.0	6.0	1.0	6.6	12.7	1.6	-1.1	-11.8
90%	-71.9	-50.6	-10.9	15.1	9.2	1.1	2.5	-2.0	1.3	1.4	-1.9	-13.1
Long Term												
Full Simulation Period[b]	-36.8	-34.8	-36.0	-7.7	9.6	12.5	14.8	16.7	16.9	3.8	6.4	-5.0
Water Year Types[c]												
Wet (32%)	-42.8	-46.5	-37.7	6.3	12.4	3.3	2.1	3.9	4.7	0.2	1.3	-4.7
Above Normal (16%)	-24.1	-17.4	-28.1	-10.3	16.9	11.0	10.4	12.2	14.2	1.6	-0.6	-34.6
Below Normal (13%)	-44.9	-43.8	-46.7	-24.8	-9.6	5.8	10.6	15.9	27.1	5.7	-0.7	10.1
Dry (24%)	-42.5	-35.9	-43.6	-11.0	12.0	23.5	28.2	26.8	21.7	7.6	21.7	2.3
Critical (15%)	-20.7	-18.4	-18.3	-14.3	9.4	22.2	28.8	33.3	28.7	5.9	5.8	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.19. Old River at Rock Slough Chloride Concentration

Table 6E.B.19.1. Old River at Rock Slough, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	255.2	275.8	258.9	201.0	95.1	61.2	63.0	58.8	40.3	89.3	155.8	207.5
20%	233.0	212.0	226.9	165.4	84.7	47.7	54.8	52.8	31.5	58.8	135.7	191.7
30%	213.2	183.6	190.0	126.9	65.6	40.1	47.8	49.9	28.9	50.0	111.1	178.8
40%	196.7	168.5	120.7	104.2	59.5	36.1	44.8	46.3	28.1	44.7	91.2	164.3
50%	181.9	124.1	72.5	86.8	49.9	32.7	41.2	43.9	27.1	30.2	78.6	140.9
60%	32.8	37.2	50.1	72.7	43.2	29.4	39.9	41.1	26.4	26.1	66.1	123.3
70%	30.3	24.7	38.6	50.8	34.7	27.0	35.7	36.9	25.3	24.8	55.2	114.5
80%	29.1	23.0	28.6	39.1	31.5	24.2	30.5	29.7	23.9	23.4	50.0	96.0
90%	27.7	21.8	24.2	30.8	27.8	23.3	26.3	20.0	22.9	21.9	42.0	85.7
Long Term												
Full Simulation Period[b]	133.3	125.6	118.7	102.3	58.7	38.1	43.3	42.5	31.2	47.5	90.2	143.4
Water Year Types[c]												
Wet (32%)	95.1	80.5	60.7	51.3	42.8	31.9	33.0	34.4	24.6	23.4	49.2	103.3
Above Normal (16%)	177.3	159.9	119.0	86.0	48.5	30.3	46.3	49.3	26.2	25.3	57.1	89.6
Below Normal (13%)	93.9	87.2	104.5	103.1	56.8	34.9	50.3	51.2	29.1	41.4	85.5	181.0
Dry (24%)	134.8	134.2	143.2	137.1	65.1	39.7	44.2	39.8	28.3	66.0	127.9	172.5
Critical (15%)	202.0	207.0	215.9	171.7	94.8	59.9	54.2	49.3	58.0	98.4	156.7	205.6

Alternative 1

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	257.7	275.2	280.8	231.3	145.5	59.5	40.3	37.7	39.9	86.2	150.0	209.0
20%	236.7	236.6	245.5	201.4	99.0	48.8	33.3	31.4	31.1	50.6	113.7	195.6
30%	224.6	215.3	239.7	181.6	69.6	42.7	30.3	27.9	28.1	45.9	101.2	185.5
40%	218.2	199.1	229.5	165.4	56.6	31.1	27.0	26.4	26.3	37.9	91.5	173.3
50%	210.2	191.5	197.8	120.7	47.0	28.8	25.7	25.2	24.2	29.3	74.3	169.4
60%	204.9	184.6	178.5	86.1	37.0	26.5	25.0	24.5	23.1	26.1	65.1	164.3
70%	196.0	173.4	148.4	42.8	33.1	24.4	24.2	23.4	22.1	24.9	51.0	161.2
80%	187.2	140.7	98.8	33.8	29.6	23.1	23.0	22.5	21.5	23.1	45.0	145.0
90%	164.1	90.2	31.6	27.4	23.4	21.0	21.8	20.7	20.7	22.2	38.8	123.3
Long Term												
Full Simulation Period[b]	205.5	188.4	183.9	124.6	65.1	36.6	30.0	28.0	30.1	44.3	83.9	168.1
Water Year Types[c]												
Wet (32%)	182.9	169.9	126.1	53.6	37.4	32.4	27.8	22.4	23.0	23.2	44.5	134.4
Above Normal (16%)	228.2	193.7	177.4	115.3	46.0	27.6	25.7	23.4	22.0	24.8	56.0	169.5
Below Normal (13%)	186.4	164.8	187.7	154.4	94.3	38.7	29.6	26.9	24.2	40.9	85.3	170.7
Dry (24%)	211.0	195.1	219.0	163.6	77.1	34.0	27.9	29.1	27.9	53.2	110.8	181.9
Critical (15%)	238.4	233.2	254.5	196.0	99.3	58.1	43.2	44.0	62.9	99.0	153.2	213.8

Alternative 1 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2.6	-0.6	21.9	30.3	50.4	-1.7	-22.7	-21.1	-0.4	-3.1	-5.8	1.6
20%	3.7	24.5	18.6	36.1	14.3	1.1	-21.5	-21.4	-0.4	-8.2	-21.9	3.9
30%	11.3	31.7	49.7	54.7	3.9	2.5	-17.4	-21.9	-0.8	-4.1	-9.8	6.8
40%	21.6	30.7	108.8	61.1	-2.9	-4.9	-17.8	-19.9	-1.8	-6.8	0.3	9.0
50%	28.3	67.4	125.3	33.9	-2.9	-3.8	-15.5	-18.7	-2.9	-0.9	-4.3	28.5
60%	172.2	147.4	128.5	13.5	-6.2	-2.8	-14.9	-16.6	-3.3	-0.1	-1.0	41.0
70%	165.7	148.7	109.8	-8.0	-1.5	-2.6	-11.6	-13.5	-3.2	0.1	-4.2	46.6
80%	158.1	117.7	70.2	-5.2	-1.9	-1.2	-7.4	-7.2	-2.3	-0.2	-5.0	49.0
90%	136.4	68.4	7.5	-3.4	-4.4	-2.3	-4.5	0.7	-2.2	0.3	-3.1	37.6
Long Term												
Full Simulation Period[b]	72.2	62.8	65.3	22.3	6.5	-1.4	-13.3	-14.6	-1.2	-3.2	-6.4	24.7
Water Year Types[c]												
Wet (32%)	87.8	89.3	65.4	2.2	-5.4	0.5	-5.2	-12.0	-1.6	-0.1	-4.7	31.1
Above Normal (16%)	50.8	33.8	58.4	29.4	-2.6	-2.7	-20.6	-25.9	-4.2	-0.4	-1.0	79.9
Below Normal (13%)	92.5	77.6	83.2	51.3	37.5	3.8	-20.7	-24.3	-4.9	-0.5	-0.1	-10.3
Dry (24%)	76.2	60.9	75.8	26.5	12.0	-5.7	-16.3	-10.6	-0.3	-12.7	-17.2	9.5
Critical (15%)	36.4	26.2	38.6	24.3	4.4	-1.8	-11.0	-5.4	4.9	0.6	-3.6	8.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.19.2. Old River at Rock Slough, Monthly Chloride Concentration

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	255.2	275.8	258.9	201.0	95.1	61.2	63.0	58.8	40.3	89.3	155.8	207.5
20%	233.0	212.0	226.9	165.4	84.7	47.7	54.8	52.8	31.5	58.8	135.7	191.7
30%	213.2	183.6	190.0	126.9	65.6	40.1	47.8	49.9	28.9	50.0	111.1	178.8
40%	196.7	168.5	120.7	104.2	59.5	36.1	44.8	46.3	28.1	44.7	91.2	164.3
50%	181.9	124.1	72.5	86.8	49.9	32.7	41.2	43.9	27.1	30.2	78.6	140.9
60%	32.8	37.2	50.1	72.7	43.2	29.4	39.9	41.1	26.4	26.1	66.1	123.3
70%	30.3	24.7	38.6	50.8	34.7	27.0	35.7	36.9	25.3	24.8	55.2	114.5
80%	29.1	23.0	28.6	39.1	31.5	24.2	30.5	29.7	23.9	23.4	50.0	96.0
90%	27.7	21.8	24.2	30.8	27.8	23.3	26.3	20.0	22.9	21.9	42.0	85.7
Long Term												
Full Simulation Period[b]	133.3	125.6	118.7	102.3	58.7	38.1	43.3	42.5	31.2	47.5	90.2	143.4
Water Year Types[c]												
Wet (32%)	95.1	80.5	60.7	51.3	42.8	31.9	33.0	34.4	24.6	23.4	49.2	103.3
Above Normal (16%)	177.3	159.9	119.0	86.0	48.5	30.3	46.3	49.3	26.2	25.3	57.1	89.6
Below Normal (13%)	93.9	87.2	104.5	103.1	56.8	34.9	50.3	51.2	29.1	41.4	85.5	181.0
Dry (24%)	134.8	134.2	143.2	137.1	65.1	39.7	44.2	39.8	28.3	66.0	127.9	172.5
Critical (15%)	202.0	207.0	215.9	171.7	94.8	59.9	54.2	49.3	58.0	98.4	156.7	205.6

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	256.5	270.6	280.0	204.8	94.0	52.7	48.3	39.4	36.8	106.4	158.9	217.0
20%	237.6	237.7	251.2	184.1	77.5	45.1	38.7	32.4	29.4	59.2	131.4	194.0
30%	227.5	215.5	235.5	167.5	65.3	38.5	33.6	27.1	26.5	53.9	102.4	184.5
40%	219.4	197.8	225.3	143.0	56.8	33.5	29.8	25.3	24.7	43.1	95.3	179.6
50%	208.4	190.1	195.7	121.4	45.5	30.5	27.7	23.8	22.7	29.9	81.8	172.0
60%	200.5	183.0	176.3	82.0	39.9	27.5	25.2	23.0	22.0	26.7	64.1	164.6
70%	191.0	175.1	142.8	46.7	35.5	25.5	24.3	22.0	21.0	25.0	52.1	159.2
80%	185.4	158.7	95.0	39.6	29.1	23.5	23.5	21.1	20.2	23.9	43.4	144.5
90%	169.1	105.3	35.0	28.3	24.8	21.9	22.0	19.3	19.2	22.7	36.3	126.7
Long Term												
Full Simulation Period[b]	205.6	192.5	180.7	114.9	55.8	36.0	31.7	27.4	28.6	48.5	87.1	168.2
Water Year Types[c]												
Wet (32%)	180.9	173.5	126.0	58.3	39.2	30.3	26.4	21.0	21.1	23.6	43.3	129.5
Above Normal (16%)	234.8	204.3	175.4	109.7	44.4	27.4	26.4	22.5	21.1	25.7	56.0	171.2
Below Normal (13%)	187.4	161.4	188.8	137.3	60.7	32.7	31.5	27.8	24.7	48.0	91.4	185.5
Dry (24%)	208.6	202.1	218.7	150.0	62.1	37.3	32.7	28.1	26.4	65.0	121.1	179.5
Critical (15%)	239.1	233.0	234.4	163.8	89.3	58.7	47.6	45.1	60.4	100.2	155.5	213.9

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	1.3	-5.2	21.1	3.8	-1.1	-8.4	-14.7	-19.4	-3.6	17.1	3.2	9.5
20%	4.6	25.7	24.4	18.7	-7.2	-2.7	-16.1	-20.4	-2.0	0.4	-4.3	2.4
30%	14.3	31.9	45.5	40.6	-0.3	-1.6	-14.2	-22.8	-2.3	3.9	-8.6	5.7
40%	22.7	29.3	104.6	38.7	-2.7	-2.6	-15.0	-21.0	-3.4	-1.6	4.0	15.3
50%	26.5	66.0	123.1	34.5	-4.4	-2.2	-13.5	-20.0	-4.5	-0.4	3.2	31.1
60%	167.7	145.9	126.2	9.3	-3.4	-1.9	-14.7	-18.1	-4.4	0.6	-2.0	41.3
70%	160.7	150.4	104.2	-4.0	0.8	-1.6	-11.4	-14.9	-4.3	0.2	-3.2	44.7
80%	156.3	135.6	66.4	0.6	-2.4	-0.8	-7.0	-8.5	-3.7	0.5	-6.7	48.6
90%	141.4	83.5	10.9	-2.5	-2.9	-1.4	-4.3	-0.7	-3.7	0.7	-5.7	41.0
Long Term												
Full Simulation Period[b]	72.3	66.8	62.1	12.6	-2.8	-2.0	-11.5	-15.1	-2.6	1.1	-3.1	24.8
Water Year Types[c]												
Wet (32%)	85.8	93.0	65.3	7.0	-3.6	-1.6	-6.6	-13.4	-3.5	0.2	-5.9	26.1
Above Normal (16%)	57.4	44.4	56.3	23.7	-4.1	-2.8	-19.9	-26.8	-5.1	0.5	-1.1	81.6
Below Normal (13%)	93.5	74.2	84.3	34.3	3.9	-2.2	-18.8	-23.4	-4.4	6.6	6.0	4.5
Dry (24%)	73.8	67.9	75.6	12.9	-3.0	-2.4	-11.5	-11.6	-1.9	-1.0	-6.8	7.0
Critical (15%)	37.1	26.0	18.5	-7.9	-5.6	-1.2	-6.7	-4.3	2.4	1.8	-1.2	8.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.19.3. Old River at Rock Slough, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	255.2	275.8	258.9	201.0	95.1	61.2	63.0	58.8	40.3	89.3	155.8	207.5
20%	233.0	212.0	226.9	165.4	84.7	47.7	54.8	52.8	31.5	58.8	135.7	191.7
30%	213.2	183.6	190.0	126.9	65.6	40.1	47.8	49.9	28.9	50.0	111.1	178.8
40%	196.7	168.5	120.7	104.2	59.5	36.1	44.8	46.3	28.1	44.7	91.2	164.3
50%	181.9	124.1	72.5	86.8	49.9	32.7	41.2	43.9	27.1	30.2	78.6	140.9
60%	32.8	37.2	50.1	72.7	43.2	29.4	39.9	41.1	26.4	26.1	66.1	123.3
70%	30.3	24.7	38.6	50.8	34.7	27.0	35.7	36.9	25.3	24.8	55.2	114.5
80%	29.1	23.0	28.6	39.1	31.5	24.2	30.5	29.7	23.9	23.4	50.0	96.0
90%	27.7	21.8	24.2	30.8	27.8	23.3	26.3	20.0	22.9	21.9	42.0	85.7
Long Term												
Full Simulation Period[b]	133.3	125.6	118.7	102.3	58.7	38.1	43.3	42.5	31.2	47.5	90.2	143.4
Water Year Types[c]												
Wet (32%)	95.1	80.5	60.7	51.3	42.8	31.9	33.0	34.4	24.6	23.4	49.2	103.3
Above Normal (16%)	177.3	159.9	119.0	86.0	48.5	30.3	46.3	49.3	26.2	25.3	57.1	89.6
Below Normal (13%)	93.9	87.2	104.5	103.1	56.8	34.9	50.3	51.2	29.1	41.4	85.5	181.0
Dry (24%)	134.8	134.2	143.2	137.1	65.1	39.7	44.2	39.8	28.3	66.0	127.9	172.5
Critical (15%)	202.0	207.0	215.9	171.7	94.8	59.9	54.2	49.3	58.0	98.4	156.7	205.6

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	265.2	274.3	257.6	214.2	95.4	61.1	82.8	87.5	49.7	93.2	159.7	208.8
20%	233.8	224.5	220.5	168.4	84.8	48.0	71.4	83.3	40.6	68.0	144.1	192.4
30%	216.1	187.1	191.2	127.9	67.2	39.7	65.3	77.5	33.7	52.5	115.6	185.5
40%	203.4	166.2	135.2	104.7	59.6	36.2	60.5	67.3	30.2	46.1	93.6	168.2
50%	178.1	127.0	67.3	87.5	49.7	32.7	53.1	61.3	28.6	29.9	79.1	144.5
60%	33.0	36.8	49.6	72.0	43.5	29.3	46.2	53.2	27.3	26.1	64.4	123.2
70%	30.2	24.5	39.1	48.5	34.6	27.0	41.5	48.6	26.0	24.9	56.2	114.4
80%	29.2	23.0	28.5	39.1	31.5	24.2	34.5	43.3	25.1	23.6	49.2	97.2
90%	28.1	21.8	24.2	30.8	27.8	23.3	26.6	20.0	23.8	21.8	41.9	84.4
Long Term												
Full Simulation Period[b]	134.6	126.0	118.6	103.2	59.7	38.4	54.8	59.9	34.0	48.4	92.8	145.7
Water Year Types[c]												
Wet (32%)	95.4	83.3	62.5	51.3	43.3	32.1	33.2	35.7	25.0	23.4	49.2	102.5
Above Normal (16%)	181.7	158.1	116.3	85.4	48.6	30.3	47.6	53.3	27.1	25.4	56.7	89.2
Below Normal (13%)	93.6	88.2	104.3	102.9	56.5	34.7	58.5	67.1	32.7	42.7	85.8	183.6
Dry (24%)	136.5	132.9	142.6	140.4	66.0	39.9	67.7	75.5	35.1	71.5	137.0	179.0
Critical (15%)	202.7	206.9	215.7	173.2	99.8	62.1	84.6	86.9	60.3	94.2	159.2	210.4

Alternative 5 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	10.1	-1.5	-1.3	13.3	0.3	-0.1	19.8	28.7	9.3	3.9	4.0	1.3
20%	0.7	12.5	-6.4	3.1	0.2	0.3	16.6	30.5	9.2	9.2	8.4	0.7
30%	2.9	3.5	1.2	1.1	1.6	-0.4	17.6	27.6	4.9	2.5	4.6	6.7
40%	6.7	-2.2	14.5	0.5	0.2	0.1	15.7	21.0	2.0	1.5	2.4	3.9
50%	-3.8	2.9	-5.2	0.7	-0.2	0.0	11.9	17.4	1.5	-0.4	0.5	3.6
60%	0.3	-0.3	-0.4	-0.7	0.3	0.0	6.3	12.1	0.9	0.0	-1.7	-0.1
70%	-0.2	-0.1	0.5	-2.3	0.0	0.0	5.8	11.7	0.7	0.1	1.0	-0.1
80%	0.1	-0.1	0.0	0.0	0.0	0.0	4.0	13.7	1.2	0.3	-0.8	1.2
90%	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.0	-0.1	0.0	-1.4
Long Term												
Full Simulation Period[b]	1.3	0.4	-0.1	0.9	1.1	0.4	11.5	17.4	2.7	0.9	2.5	2.3
Water Year Types[c]												
Wet (32%)	0.3	2.8	1.8	0.0	0.5	0.2	0.2	1.3	0.3	0.0	0.0	-0.9
Above Normal (16%)	4.4	-1.8	-2.7	-0.6	0.1	0.0	1.3	4.0	0.9	0.2	-0.4	-0.4
Below Normal (13%)	-0.3	1.0	-0.2	-0.2	-0.3	-0.2	8.2	15.9	3.5	1.3	0.3	2.6
Dry (24%)	1.7	-1.3	-0.5	3.3	0.9	0.2	23.5	35.7	6.9	5.5	9.0	6.5
Critical (15%)	0.7	-0.2	-0.3	1.5	4.9	2.2	30.3	37.5	2.3	-4.1	2.5	4.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.19.4. Old River at Rock Slough, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	257.7	275.2	280.8	231.3	145.5	59.5	40.3	37.7	39.9	86.2	150.0	209.0
20%	236.7	236.6	245.5	201.4	99.0	48.8	33.3	31.4	31.1	50.6	113.7	195.6
30%	224.6	215.3	239.7	181.6	69.6	42.7	30.3	27.9	28.1	45.9	101.2	185.5
40%	218.2	199.1	229.5	165.4	56.6	31.1	27.0	26.4	26.3	37.9	91.5	173.3
50%	210.2	191.5	197.8	120.7	47.0	28.8	25.7	25.2	24.2	29.3	74.3	169.4
60%	204.9	184.6	178.5	86.1	37.0	26.5	25.0	24.5	23.1	26.1	65.1	164.3
70%	196.0	173.4	148.4	42.8	33.1	24.4	24.2	23.4	22.1	24.9	51.0	161.2
80%	187.2	140.7	98.8	33.8	29.6	23.1	23.0	22.5	21.5	23.1	45.0	145.0
90%	164.1	90.2	31.6	27.4	23.4	21.0	21.8	20.7	20.7	22.2	38.8	123.3
Long Term												
Full Simulation Period[b]	205.5	188.4	183.9	124.6	65.1	36.6	30.0	28.0	30.1	44.3	83.9	168.1
Water Year Types[c]												
Wet (32%)	182.9	169.9	126.1	53.6	37.4	32.4	27.8	22.4	23.0	23.2	44.5	134.4
Above Normal (16%)	228.2	193.7	177.4	115.3	46.0	27.6	25.7	23.4	22.0	24.8	56.0	169.5
Below Normal (13%)	186.4	164.8	187.7	154.4	94.3	38.7	29.6	26.9	24.2	40.9	85.3	170.7
Dry (24%)	211.0	195.1	219.0	163.6	77.1	34.0	27.9	29.1	27.9	53.2	110.8	181.9
Critical (15%)	238.4	233.2	254.5	196.0	99.3	58.1	43.2	44.0	62.9	99.0	153.2	213.8

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	255.2	275.8	258.9	201.0	95.1	61.2	63.0	58.8	40.3	89.3	155.8	207.5
20%	233.0	212.0	226.9	165.4	84.7	47.7	54.8	52.8	31.5	58.8	135.7	191.7
30%	213.2	183.6	190.0	126.9	65.6	40.1	47.8	49.9	28.9	50.0	111.1	178.8
40%	196.7	168.5	120.7	104.2	59.5	36.1	44.8	46.3	28.1	44.7	91.2	164.3
50%	181.9	124.1	72.5	86.8	49.9	32.7	41.2	43.9	27.1	30.2	78.6	140.9
60%	32.8	37.2	50.1	72.7	43.2	29.4	39.9	41.1	26.4	26.1	66.1	123.3
70%	30.3	24.7	38.6	50.8	34.7	27.0	35.7	36.9	25.3	24.8	55.2	114.5
80%	29.1	23.0	28.6	39.1	31.5	24.2	30.5	29.7	23.9	23.4	50.0	96.0
90%	27.7	21.8	24.2	30.8	27.8	23.3	26.3	20.0	22.9	21.9	42.0	85.7
Long Term												
Full Simulation Period[b]	133.3	125.6	118.7	102.3	58.7	38.1	43.3	42.5	31.2	47.5	90.2	143.4
Water Year Types[c]												
Wet (32%)	95.1	80.5	60.7	51.3	42.8	31.9	33.0	34.4	24.6	23.4	49.2	103.3
Above Normal (16%)	177.3	159.9	119.0	86.0	48.5	30.3	46.3	49.3	26.2	25.3	57.1	89.6
Below Normal (13%)	93.9	87.2	104.5	103.1	56.8	34.9	50.3	51.2	29.1	41.4	85.5	181.0
Dry (24%)	134.8	134.2	143.2	137.1	65.1	39.7	44.2	39.8	28.3	66.0	127.9	172.5
Critical (15%)	202.0	207.0	215.9	171.7	94.8	59.9	54.2	49.3	58.0	98.4	156.7	205.6

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-2.6	0.6	-21.9	-30.3	-50.4	1.7	22.7	21.1	0.4	3.1	5.8	-1.6
20%	-3.7	-24.5	-18.6	-36.1	-14.3	-1.1	21.5	21.4	0.4	8.2	21.9	-3.9
30%	-11.3	-31.7	-49.7	-54.7	-3.9	-2.5	17.4	21.9	0.8	4.1	9.8	-6.8
40%	-21.6	-30.7	-108.8	-61.1	2.9	4.9	17.8	19.9	1.8	6.8	-0.3	-9.0
50%	-28.3	-67.4	-125.3	-33.9	2.9	3.8	15.5	18.7	2.9	0.9	4.3	-28.5
60%	-172.2	-147.4	-128.5	-13.5	6.2	2.8	14.9	16.6	3.3	0.1	1.0	-41.0
70%	-165.7	-148.7	-109.8	8.0	1.5	2.6	11.6	13.5	3.2	-0.1	4.2	-46.6
80%	-158.1	-117.7	-70.2	5.2	1.9	1.2	7.4	7.2	2.3	0.2	5.0	-49.0
90%	-136.4	-68.4	-7.5	3.4	4.4	2.3	4.5	-0.7	2.2	-0.3	3.1	-37.6
Long Term												
Full Simulation Period[b]	-72.2	-62.8	-65.3	-22.3	-6.5	1.4	13.3	14.6	1.2	3.2	6.4	-24.7
Water Year Types[c]												
Wet (32%)	-87.8	-89.3	-65.4	-2.2	5.4	-0.5	5.2	12.0	1.6	0.1	4.7	-31.1
Above Normal (16%)	-50.8	-33.8	-58.4	-29.4	2.6	2.7	20.6	25.9	4.2	0.4	1.0	-79.9
Below Normal (13%)	-92.5	-77.6	-83.2	-51.3	-37.5	-3.8	20.7	24.3	4.9	0.5	0.1	10.3
Dry (24%)	-76.2	-60.9	-75.8	-26.5	-12.0	5.7	16.3	10.6	0.3	12.7	17.2	-9.5
Critical (15%)	-36.4	-26.2	-38.6	-24.3	-4.4	1.8	11.0	5.4	-4.9	-0.6	3.6	-8.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.19.5. Old River at Rock Slough, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	257.7	275.2	280.8	231.3	145.5	59.5	40.3	37.7	39.9	86.2	150.0	209.0
20%	236.7	236.6	245.5	201.4	99.0	48.8	33.3	31.4	31.1	50.6	113.7	195.6
30%	224.6	215.3	239.7	181.6	69.6	42.7	30.3	27.9	28.1	45.9	101.2	185.5
40%	218.2	199.1	229.5	165.4	56.6	31.1	27.0	26.4	26.3	37.9	91.5	173.3
50%	210.2	191.5	197.8	120.7	47.0	28.8	25.7	25.2	24.2	29.3	74.3	169.4
60%	204.9	184.6	178.5	86.1	37.0	26.5	25.0	24.5	23.1	26.1	65.1	164.3
70%	196.0	173.4	148.4	42.8	33.1	24.4	24.2	23.4	22.1	24.9	51.0	161.2
80%	187.2	140.7	98.8	33.8	29.6	23.1	23.0	22.5	21.5	23.1	45.0	145.0
90%	164.1	90.2	31.6	27.4	23.4	21.0	21.8	20.7	20.7	22.2	38.8	123.3
Long Term												
Full Simulation Period[b]	205.5	188.4	183.9	124.6	65.1	36.6	30.0	28.0	30.1	44.3	83.9	168.1
Water Year Types[c]												
Wet (32%)	182.9	169.9	126.1	53.6	37.4	32.4	27.8	22.4	23.0	23.2	44.5	134.4
Above Normal (16%)	228.2	193.7	177.4	115.3	46.0	27.6	25.7	23.4	22.0	24.8	56.0	169.5
Below Normal (13%)	186.4	164.8	187.7	154.4	94.3	38.7	29.6	26.9	24.2	40.9	85.3	170.7
Dry (24%)	211.0	195.1	219.0	163.6	77.1	34.0	27.9	29.1	27.9	53.2	110.8	181.9
Critical (15%)	238.4	233.2	254.5	196.0	99.3	58.1	43.2	44.0	62.9	99.0	153.2	213.8

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	256.5	270.6	280.0	204.8	94.0	52.7	48.3	39.4	36.8	106.4	158.9	217.0
20%	237.6	237.7	251.2	184.1	77.5	45.1	38.7	32.4	29.4	59.2	131.4	194.0
30%	227.5	215.5	235.5	167.5	65.3	38.5	33.6	27.1	26.5	53.9	102.4	184.5
40%	219.4	197.8	225.3	143.0	56.8	33.5	29.8	25.3	24.7	43.1	95.3	179.6
50%	208.4	190.1	195.7	121.4	45.5	30.5	27.7	23.8	22.7	29.9	81.8	172.0
60%	200.5	183.0	176.3	82.0	39.9	27.5	25.2	23.0	22.0	26.7	64.1	164.6
70%	191.0	175.1	142.8	46.7	35.5	25.5	24.3	22.0	21.0	25.0	52.1	159.2
80%	185.4	158.7	95.0	39.6	29.1	23.5	23.5	21.1	20.2	23.9	43.4	144.5
90%	169.1	105.3	35.0	28.3	24.8	21.9	22.0	19.3	19.2	22.7	36.3	126.7
Long Term												
Full Simulation Period[b]	205.6	192.5	180.7	114.9	55.8	36.0	31.7	27.4	28.6	48.5	87.1	168.2
Water Year Types[c]												
Wet (32%)	180.9	173.5	126.0	58.3	39.2	30.3	26.4	21.0	21.1	23.6	43.3	129.5
Above Normal (16%)	234.8	204.3	175.4	109.7	44.4	27.4	26.4	22.5	21.1	25.7	56.0	171.2
Below Normal (13%)	187.4	161.4	188.8	137.3	60.7	32.7	31.5	27.8	24.7	48.0	91.4	185.5
Dry (24%)	208.6	202.1	218.7	150.0	62.1	37.3	32.7	28.1	26.4	65.0	121.1	179.5
Critical (15%)	239.1	233.0	234.4	163.8	89.3	58.7	47.6	45.1	60.4	100.2	155.5	213.9

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1.2	-4.6	-0.8	-26.5	-51.5	-6.7	8.0	1.7	-3.2	20.2	8.9	8.0
20%	0.9	1.1	5.8	-17.4	-21.5	-3.7	5.4	1.0	-1.6	8.5	17.7	-1.6
30%	2.9	0.2	-4.2	-14.1	-4.2	-4.2	3.2	-0.9	-1.6	8.0	1.2	-1.0
40%	1.1	-1.3	-4.1	-22.4	0.2	2.4	2.8	-1.1	-1.6	5.2	3.7	6.2
50%	-1.8	-1.4	-2.2	0.6	-1.6	1.7	2.1	-1.3	-1.5	0.6	7.5	2.6
60%	-4.5	-1.6	-2.3	-4.1	2.9	1.0	0.2	-1.5	-1.1	0.7	-1.0	0.3
70%	-5.0	1.7	-5.6	4.0	2.4	1.0	0.1	-1.3	-1.1	0.2	1.0	-1.9
80%	-1.8	18.0	-3.8	5.8	-0.5	0.4	0.4	-1.4	-1.3	0.8	-1.7	-0.4
90%	5.0	15.1	3.4	0.9	1.4	0.9	0.2	-1.4	-1.5	0.5	-2.5	3.4
Long Term												
Full Simulation Period[b]	0.1	4.1	-3.2	-9.7	-9.3	-0.6	1.7	-0.5	-1.4	4.2	3.3	0.1
Water Year Types[c]												
Wet (32%)	-2.0	3.7	-0.1	4.8	1.8	-2.1	-1.4	-1.4	-1.9	0.3	-1.3	-5.0
Above Normal (16%)	6.6	10.6	-2.1	-5.7	-1.6	-0.2	0.7	-0.9	-0.9	0.9	-0.1	1.7
Below Normal (13%)	1.0	-3.4	1.1	-17.0	-33.6	-6.0	1.9	0.9	0.5	7.1	6.1	14.8
Dry (24%)	-2.4	7.0	-0.3	-13.7	-15.0	3.3	4.8	-1.0	-1.6	11.7	10.3	-2.5
Critical (15%)	0.7	-0.2	-20.1	-32.2	-10.0	0.5	4.4	1.1	-2.5	1.2	2.3	0.1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.19.6. Old River at Rock Slough, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	257.7	275.2	280.8	231.3	145.5	59.5	40.3	37.7	39.9	86.2	150.0	209.0
20%	236.7	236.6	245.5	201.4	99.0	48.8	33.3	31.4	31.1	50.6	113.7	195.6
30%	224.6	215.3	239.7	181.6	69.6	42.7	30.3	27.9	28.1	45.9	101.2	185.5
40%	218.2	199.1	229.5	165.4	56.6	31.1	27.0	26.4	26.3	37.9	91.5	173.3
50%	210.2	191.5	197.8	120.7	47.0	28.8	25.7	25.2	24.2	29.3	74.3	169.4
60%	204.9	184.6	178.5	86.1	37.0	26.5	25.0	24.5	23.1	26.1	65.1	164.3
70%	196.0	173.4	148.4	42.8	33.1	24.4	24.2	23.4	22.1	24.9	51.0	161.2
80%	187.2	140.7	98.8	33.8	29.6	23.1	23.0	22.5	21.5	23.1	45.0	145.0
90%	164.1	90.2	31.6	27.4	23.4	21.0	21.8	20.7	20.7	22.2	38.8	123.3
Long Term												
Full Simulation Period[b]	205.5	188.4	183.9	124.6	65.1	36.6	30.0	28.0	30.1	44.3	83.9	168.1
Water Year Types[c]												
Wet (32%)	182.9	169.9	126.1	53.6	37.4	32.4	27.8	22.4	23.0	23.2	44.5	134.4
Above Normal (16%)	228.2	193.7	177.4	115.3	46.0	27.6	25.7	23.4	22.0	24.8	56.0	169.5
Below Normal (13%)	186.4	164.8	187.7	154.4	94.3	38.7	29.6	26.9	24.2	40.9	85.3	170.7
Dry (24%)	211.0	195.1	219.0	163.6	77.1	34.0	27.9	29.1	27.9	53.2	110.8	181.9
Critical (15%)	238.4	233.2	254.5	196.0	99.3	58.1	43.2	44.0	62.9	99.0	153.2	213.8

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	265.2	274.3	257.6	214.2	95.4	61.1	82.8	87.5	49.7	93.2	159.7	208.8
20%	233.8	224.5	220.5	168.4	84.8	48.0	71.4	83.3	40.6	68.0	144.1	192.4
30%	216.1	187.1	191.2	127.9	67.2	39.7	65.3	77.5	33.7	52.5	115.6	185.5
40%	203.4	166.2	135.2	104.7	59.6	36.2	60.5	67.3	30.2	46.1	93.6	168.2
50%	178.1	127.0	67.3	87.5	49.7	32.7	53.1	61.3	28.6	29.9	79.1	144.5
60%	33.0	36.8	49.6	72.0	43.5	29.3	46.2	53.2	27.3	26.1	64.4	123.2
70%	30.2	24.5	39.1	48.5	34.6	27.0	41.5	48.6	26.0	24.9	56.2	114.4
80%	29.2	23.0	28.5	39.1	31.5	24.2	34.5	43.3	25.1	23.6	49.2	97.2
90%	28.1	21.8	24.2	30.8	27.8	23.3	26.6	20.0	23.8	21.8	41.9	84.4
Long Term												
Full Simulation Period[b]	134.6	126.0	118.6	103.2	59.7	38.4	54.8	59.9	34.0	48.4	92.8	145.7
Water Year Types[c]												
Wet (32%)	95.4	83.3	62.5	51.3	43.3	32.1	33.2	35.7	25.0	23.4	49.2	102.5
Above Normal (16%)	181.7	158.1	116.3	85.4	48.6	30.3	47.6	53.3	27.1	25.4	56.7	89.2
Below Normal (13%)	93.6	88.2	104.3	102.9	56.5	34.7	58.5	67.1	32.7	42.7	85.8	183.6
Dry (24%)	136.5	132.9	142.6	140.4	66.0	39.9	67.7	75.5	35.1	71.5	137.0	179.0
Critical (15%)	202.7	206.9	215.7	173.2	99.8	62.1	84.6	86.9	60.3	94.2	159.2	210.4

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	7.5	-0.9	-23.2	-17.1	-50.1	1.6	42.5	49.8	9.7	7.0	9.8	-0.3
20%	-2.9	-12.1	-25.0	-33.0	-14.2	-0.8	38.2	52.0	9.6	17.4	30.3	-3.2
30%	-8.5	-28.2	-48.5	-53.7	-2.4	-2.9	35.0	49.6	5.6	6.6	14.4	0.0
40%	-14.9	-32.9	-94.3	-60.6	3.0	5.0	33.5	40.9	3.9	8.3	2.1	-5.1
50%	-32.1	-64.5	-130.5	-33.2	2.6	3.8	27.5	36.1	4.4	0.6	4.8	-25.0
60%	-171.9	-147.8	-128.9	-14.2	6.5	2.8	21.2	28.8	4.2	0.1	-0.7	-41.1
70%	-165.8	-148.9	-109.3	5.7	1.5	2.6	17.3	25.2	3.9	0.0	5.1	-46.8
80%	-158.0	-117.7	-70.2	5.2	1.9	1.2	11.4	20.8	3.5	0.5	4.2	-47.8
90%	-136.0	-68.4	-7.4	3.4	4.4	2.3	4.8	-0.7	3.2	-0.4	3.1	-39.0
Long Term												
Full Simulation Period[b]	-71.0	-62.4	-65.4	-21.3	-5.4	1.8	24.8	31.9	3.9	4.1	8.9	-22.4
Water Year Types[c]												
Wet (32%)	-87.5	-86.5	-63.6	-2.2	5.9	-0.4	5.4	13.3	2.0	0.1	4.6	-32.0
Above Normal (16%)	-46.4	-35.6	-61.1	-29.9	2.6	2.7	21.9	30.0	5.0	0.6	0.6	-80.4
Below Normal (13%)	-92.8	-76.6	-83.4	-51.5	-37.8	-4.0	28.9	40.1	8.4	1.8	0.4	12.9
Dry (24%)	-74.5	-62.2	-76.4	-23.2	-11.1	5.9	39.8	46.3	7.2	18.3	26.2	-3.0
Critical (15%)	-35.7	-26.3	-38.8	-22.8	0.5	3.9	41.4	42.9	-2.7	-4.8	6.1	-3.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.20. Contra Costa Water District Old River Intake Chloride Concentration

Table 6E.B.20.1. Contra Costa Water District Old River Intake, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	205.4	227.2	231.3	199.2	122.5	99.6	98.5	86.0	66.3	73.7	130.0	166.2
20%	190.2	178.6	194.1	168.6	108.0	78.6	81.3	78.1	53.6	55.0	110.4	155.8
30%	175.1	155.7	163.5	140.2	94.4	70.5	70.9	74.2	44.9	46.6	91.4	141.4
40%	164.9	143.7	126.2	112.9	82.4	60.4	64.7	66.3	42.1	42.5	74.7	130.4
50%	153.1	116.5	73.0	103.8	77.1	54.0	55.0	61.9	39.0	32.5	66.2	115.3
60%	45.9	44.0	54.4	88.4	70.2	49.2	42.3	57.0	38.4	29.6	54.2	108.1
70%	42.1	33.8	39.7	78.0	55.0	44.4	38.2	51.6	36.5	28.5	46.1	99.0
80%	39.5	29.1	32.9	59.8	51.0	38.7	29.8	37.9	32.0	27.6	42.4	85.0
90%	35.8	27.8	29.9	49.6	40.9	29.8	22.0	17.7	27.9	26.7	36.4	79.4
Long Term												
Full Simulation Period[b]	115.6	109.6	108.3	112.5	82.1	61.7	57.1	59.1	43.9	44.9	74.4	119.4
Water Year Types[c]												
Wet (32%)	88.7	75.5	63.8	72.3	57.0	42.4	28.9	36.5	32.7	28.0	42.4	92.5
Above Normal (16%)	147.3	137.1	112.7	104.5	76.5	49.3	47.6	58.0	37.9	28.2	46.7	81.2
Below Normal (13%)	88.7	79.3	94.4	109.0	84.5	61.1	66.2	74.2	46.3	39.1	70.3	145.9
Dry (24%)	115.3	116.7	126.0	138.6	92.1	70.9	71.7	66.1	44.0	56.3	106.1	139.9
Critical (15%)	164.6	170.0	183.4	168.2	123.8	101.9	95.5	83.5	72.3	85.9	124.9	160.8

Alternative 1

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	206.8	225.9	237.8	210.5	145.7	90.8	66.0	60.1	63.3	71.7	119.6	165.3
20%	194.0	193.4	209.4	189.8	115.4	71.4	57.5	53.7	49.5	48.4	91.4	157.9
30%	186.6	179.1	201.8	170.3	89.6	59.6	45.4	46.3	37.7	43.6	83.3	148.6
40%	181.0	166.8	188.0	159.2	70.2	49.1	40.7	36.3	34.2	37.3	75.2	139.7
50%	175.0	159.0	171.0	136.8	63.0	44.6	35.9	32.2	30.5	32.9	62.1	134.8
60%	171.1	154.3	154.1	92.9	54.9	40.2	31.9	30.4	28.9	29.5	52.5	130.9
70%	161.9	147.0	137.5	60.0	51.4	33.7	30.0	29.1	27.8	27.7	43.5	128.0
80%	156.7	127.3	89.9	49.2	39.9	29.6	29.0	28.5	26.8	27.0	39.8	115.0
90%	138.4	88.9	41.6	38.3	30.8	27.4	24.3	26.5	25.4	26.1	35.5	101.1
Long Term												
Full Simulation Period[b]	169.3	158.1	159.5	125.0	77.3	52.1	42.9	39.7	38.0	42.6	69.4	134.4
Water Year Types[c]												
Wet (32%)	152.1	142.6	116.9	66.3	47.6	40.8	29.4	26.3	28.8	27.9	39.7	108.7
Above Normal (16%)	186.0	163.7	155.2	120.5	62.2	40.7	34.2	30.1	28.6	27.4	46.7	136.3
Below Normal (13%)	155.7	139.5	159.8	145.1	104.3	56.7	44.8	38.8	29.7	37.2	71.0	136.8
Dry (24%)	173.9	163.5	185.2	156.6	88.9	51.0	46.3	46.6	39.9	47.8	90.6	145.8
Critical (15%)	193.6	193.3	213.1	186.2	114.0	86.8	74.3	68.6	72.9	87.1	121.8	166.8

Alternative 1 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1.4	-1.3	6.5	11.2	23.2	-8.9	-32.5	-25.9	-3.0	-2.0	-10.4	-0.9
20%	3.8	14.7	15.3	21.2	7.4	-7.2	-23.8	-24.4	-4.2	-6.6	-19.0	2.1
30%	11.5	23.3	38.3	30.1	-4.9	-10.9	-25.4	-27.9	-7.2	-3.0	-8.0	7.2
40%	16.0	23.0	61.8	46.3	-12.2	-11.3	-24.0	-30.0	-7.9	-5.3	0.5	9.3
50%	21.8	42.6	98.0	33.0	-14.2	-9.4	-19.2	-29.7	-8.4	0.4	-4.1	19.5
60%	125.1	110.3	99.7	4.4	-15.4	-9.0	-10.4	-26.5	-9.5	-0.2	-1.7	22.8
70%	119.8	113.2	97.8	-18.1	-3.6	-10.8	-8.2	-22.5	-8.7	-0.8	-2.6	29.0
80%	117.2	98.2	57.1	-10.6	-11.1	-9.1	-0.9	-9.3	-5.3	-0.7	-2.5	30.0
90%	102.6	61.1	11.7	-11.3	-10.1	-2.4	2.3	8.8	-2.5	-0.6	-0.9	21.7
Long Term												
Full Simulation Period[b]	53.8	48.4	51.1	12.5	-4.8	-9.5	-14.1	-19.3	-5.9	-2.3	-5.0	15.0
Water Year Types[c]												
Wet (32%)	63.4	67.1	53.1	-6.0	-9.4	-1.7	0.5	-10.2	-4.0	-0.2	-2.8	16.2
Above Normal (16%)	38.7	26.6	42.5	16.0	-14.3	-8.6	-13.4	-27.9	-9.3	-0.8	0.0	55.1
Below Normal (13%)	67.0	60.2	65.4	36.1	19.7	-4.4	-21.5	-35.4	-16.6	-1.9	0.7	-9.1
Dry (24%)	58.6	46.8	59.2	18.0	-3.2	-19.8	-25.4	-19.5	-4.1	-8.4	-15.5	5.9
Critical (15%)	29.0	23.3	29.7	18.0	-9.8	-15.1	-21.2	-14.9	0.6	1.2	-3.1	6.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.20.2. Contra Costa Water District Old River Intake, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	205.4	227.2	231.3	199.2	122.5	99.6	98.5	86.0	66.3	73.7	130.0	166.2
20%	190.2	178.6	194.1	168.6	108.0	78.6	81.3	78.1	53.6	55.0	110.4	155.8
30%	175.1	155.7	163.5	140.2	94.4	70.5	70.9	74.2	44.9	46.6	91.4	141.4
40%	164.9	143.7	126.2	112.9	82.4	60.4	64.7	66.3	42.1	42.5	74.7	130.4
50%	153.1	116.5	73.0	103.8	77.1	54.0	55.0	61.9	39.0	32.5	66.2	115.3
60%	45.9	44.0	54.4	88.4	70.2	49.2	42.3	57.0	38.4	29.6	54.2	108.1
70%	42.1	33.8	39.7	78.0	55.0	44.4	38.2	51.6	36.5	28.5	46.1	99.0
80%	39.5	29.1	32.9	59.8	51.0	38.7	29.8	37.9	32.0	27.6	42.4	85.0
90%	35.8	27.8	29.9	49.6	40.9	29.8	22.0	17.7	27.9	26.7	36.4	79.4
Long Term												
Full Simulation Period[b]	115.6	109.6	108.3	112.5	82.1	61.7	57.1	59.1	43.9	44.9	74.4	119.4
Water Year Types[c]												
Wet (32%)	88.7	75.5	63.8	72.3	57.0	42.4	28.9	36.5	32.7	28.0	42.4	92.5
Above Normal (16%)	147.3	137.1	112.7	104.5	76.5	49.3	47.6	58.0	37.9	28.2	46.7	81.2
Below Normal (13%)	88.7	79.3	94.4	109.0	84.5	61.1	66.2	74.2	46.3	39.1	70.3	145.9
Dry (24%)	115.3	116.7	126.0	138.6	92.1	70.9	71.7	66.1	44.0	56.3	106.1	139.9
Critical (15%)	164.6	170.0	183.4	168.2	123.8	101.9	95.5	83.5	72.3	85.9	124.9	160.8

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	207.2	221.7	232.4	198.0	123.0	95.6	85.7	74.1	59.7	85.0	130.1	172.6
20%	195.8	196.1	212.7	183.9	107.2	74.7	68.6	57.0	39.3	52.5	104.8	157.7
30%	183.9	178.1	196.5	159.5	94.4	65.2	60.3	43.0	34.7	48.5	83.2	148.1
40%	179.8	163.8	185.8	148.3	84.8	58.9	52.6	37.0	30.9	41.2	77.0	142.8
50%	173.5	158.4	169.9	137.7	73.4	51.2	41.2	31.4	28.6	32.9	66.9	137.5
60%	166.2	153.5	157.6	95.6	64.6	44.1	35.5	29.5	27.2	29.5	53.1	131.5
70%	161.8	149.3	138.7	71.9	55.0	37.1	32.4	27.9	26.1	28.3	44.3	127.6
80%	155.2	134.0	92.9	62.6	46.3	32.2	30.1	26.7	25.5	27.2	39.3	114.2
90%	138.2	101.6	43.0	40.3	35.1	27.4	27.4	24.7	24.2	26.1	32.7	99.6
Long Term												
Full Simulation Period[b]	168.8	161.0	158.3	124.4	77.7	57.4	50.0	41.1	35.0	45.2	72.2	134.8
Water Year Types[c]												
Wet (32%)	150.4	145.3	118.1	76.2	51.6	38.7	30.5	25.2	26.0	28.0	38.9	104.8
Above Normal (16%)	190.3	171.9	156.5	127.5	70.8	42.9	34.2	29.3	26.9	27.9	46.4	137.9
Below Normal (13%)	155.8	137.0	160.5	141.4	88.2	55.8	52.7	43.4	31.7	42.9	75.3	150.5
Dry (24%)	171.0	168.5	186.2	153.4	88.7	67.0	61.0	46.9	33.9	55.4	99.9	144.4
Critical (15%)	193.4	192.9	198.6	161.5	113.6	98.8	88.4	76.3	68.4	86.3	123.6	166.5

Alternative 3 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1.8	-5.5	1.1	-1.2	0.5	-4.0	-12.8	-11.9	-6.6	11.3	0.2	6.3
20%	5.6	17.5	18.6	15.3	-0.8	-3.9	-12.6	-21.1	-14.3	-2.5	-5.6	2.0
30%	8.8	22.4	32.9	19.3	-0.1	-5.3	-10.6	-31.2	-10.2	1.9	-8.2	6.6
40%	14.8	20.0	59.5	35.4	2.4	-1.6	-12.1	-29.4	-11.2	-1.3	2.3	12.4
50%	20.4	42.0	96.9	33.9	-3.8	-2.8	-13.8	-30.5	-10.4	0.4	0.8	22.2
60%	120.2	109.4	103.1	7.2	-5.6	-5.1	-6.8	-27.4	-11.2	-0.1	-1.1	23.4
70%	119.7	115.5	99.0	-6.1	0.0	-7.4	-5.8	-23.7	-10.4	-0.2	-1.8	28.6
80%	115.7	104.9	60.0	2.8	-4.7	-6.5	0.3	-11.2	-6.5	-0.4	-3.1	29.2
90%	102.4	73.8	13.0	-9.3	-5.8	-2.4	5.4	7.0	-3.7	-0.6	-3.7	20.3
Long Term												
Full Simulation Period[b]	53.2	51.4	49.9	11.8	-4.4	-4.3	-7.1	-18.0	-8.9	0.3	-2.2	15.4
Water Year Types[c]												
Wet (32%)	61.7	69.8	54.2	3.9	-5.3	-3.7	1.5	-11.3	-6.8	-0.1	-3.5	12.3
Above Normal (16%)	43.0	34.7	43.8	23.0	-5.7	-6.4	-13.4	-28.6	-11.0	-0.3	-0.3	56.7
Below Normal (13%)	67.0	57.7	66.1	32.4	3.6	-5.3	-13.6	-30.8	-14.6	3.8	5.0	4.5
Dry (24%)	55.7	51.8	60.3	14.7	-3.4	-3.9	-10.7	-19.2	-10.0	-0.8	-6.1	4.5
Critical (15%)	28.8	23.0	15.2	-6.8	-10.1	-3.1	-7.1	-7.2	-3.9	0.4	-1.3	5.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.20.3. Contra Costa Water District Old River Intake, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	205.4	227.2	231.3	199.2	122.5	99.6	98.5	86.0	66.3	73.7	130.0	166.2
20%	190.2	178.6	194.1	168.6	108.0	78.6	81.3	78.1	53.6	55.0	110.4	155.8
30%	175.1	155.7	163.5	140.2	94.4	70.5	70.9	74.2	44.9	46.6	91.4	141.4
40%	164.9	143.7	126.2	112.9	82.4	60.4	64.7	66.3	42.1	42.5	74.7	130.4
50%	153.1	116.5	73.0	103.8	77.1	54.0	55.0	61.9	39.0	32.5	66.2	115.3
60%	45.9	44.0	54.4	88.4	70.2	49.2	42.3	57.0	38.4	29.6	54.2	108.1
70%	42.1	33.8	39.7	78.0	55.0	44.4	38.2	51.6	36.5	28.5	46.1	99.0
80%	39.5	29.1	32.9	59.8	51.0	38.7	29.8	37.9	32.0	27.6	42.4	85.0
90%	35.8	27.8	29.9	49.6	40.9	29.8	22.0	17.7	27.9	26.7	36.4	79.4
Long Term												
Full Simulation Period[b]	115.6	109.6	108.3	112.5	82.1	61.7	57.1	59.1	43.9	44.9	74.4	119.4
Water Year Types[c]												
Wet (32%)	88.7	75.5	63.8	72.3	57.0	42.4	28.9	36.5	32.7	28.0	42.4	92.5
Above Normal (16%)	147.3	137.1	112.7	104.5	76.5	49.3	47.6	58.0	37.9	28.2	46.7	81.2
Below Normal (13%)	88.7	79.3	94.4	109.0	84.5	61.1	66.2	74.2	46.3	39.1	70.3	145.9
Dry (24%)	115.3	116.7	126.0	138.6	92.1	70.9	71.7	66.1	44.0	56.3	106.1	139.9
Critical (15%)	164.6	170.0	183.4	168.2	123.8	101.9	95.5	83.5	72.3	85.9	124.9	160.8

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	210.0	226.3	228.4	200.6	122.6	98.9	108.2	104.6	85.3	77.2	129.8	167.4
20%	193.1	185.6	190.2	172.6	108.2	79.3	98.2	101.8	61.6	57.1	117.5	157.9
30%	178.2	159.2	163.7	142.1	91.4	70.6	81.0	89.0	55.6	49.7	97.3	145.5
40%	168.4	141.4	129.0	112.8	82.6	59.8	66.0	74.9	47.5	44.0	75.9	136.9
50%	152.0	119.5	71.5	103.8	77.1	53.9	56.9	62.1	42.9	32.7	66.4	117.5
60%	46.8	43.5	57.4	88.1	70.5	49.4	42.2	54.3	39.2	29.6	53.2	109.4
70%	42.2	32.2	39.4	78.0	58.8	44.4	38.3	51.2	37.9	28.7	46.7	101.3
80%	39.3	29.3	32.9	59.8	50.6	38.7	29.2	37.9	34.6	27.5	42.7	87.3
90%	35.7	27.9	29.9	49.7	40.6	29.9	22.2	17.7	27.9	26.8	35.3	76.2
Long Term												
Full Simulation Period[b]	116.8	110.1	108.4	113.1	82.8	62.0	61.6	66.1	49.8	45.8	76.7	121.3
Water Year Types[c]												
Wet (32%)	89.1	77.4	66.0	72.4	57.6	42.4	29.0	34.7	33.1	28.1	42.4	91.9
Above Normal (16%)	151.2	136.7	110.4	103.8	76.5	49.3	46.8	54.4	39.3	28.3	46.5	80.8
Below Normal (13%)	88.5	80.0	94.4	108.8	83.9	60.7	63.3	73.8	51.9	40.2	70.6	148.1
Dry (24%)	116.8	116.0	125.2	141.3	93.0	71.1	82.3	86.7	55.9	60.5	113.7	145.3
Critical (15%)	165.5	170.0	183.2	168.2	125.8	103.9	112.0	105.7	85.3	83.4	127.5	164.2

Alternative 5 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4.7	-0.9	-3.0	1.3	0.1	-0.7	9.6	18.6	19.0	3.5	-0.2	1.1
20%	2.9	7.0	-3.9	4.1	0.2	0.7	17.0	23.7	8.0	2.1	7.1	2.1
30%	3.2	3.5	0.1	1.8	-3.0	0.1	10.2	14.8	10.6	3.1	5.9	4.1
40%	3.5	-2.4	2.7	0.0	0.3	-0.7	1.3	8.6	5.4	1.5	1.2	6.5
50%	-1.1	3.0	-1.4	0.0	-0.1	0.0	1.9	0.2	3.9	0.2	0.2	2.2
60%	0.9	-0.5	2.9	-0.4	0.3	0.2	-0.2	-2.7	0.8	0.0	-0.9	1.3
70%	0.2	-1.6	-0.3	0.0	3.8	0.0	0.1	-0.4	1.5	0.1	0.6	2.3
80%	-0.1	0.2	0.0	0.1	-0.4	0.0	-0.6	0.0	2.5	-0.1	0.3	2.3
90%	-0.1	0.1	0.0	0.1	-0.2	0.1	0.1	0.0	0.0	0.1	-1.1	-3.2
Long Term												
Full Simulation Period[b]	1.2	0.5	0.1	0.6	0.7	0.3	4.5	7.1	5.9	0.9	2.2	1.9
Water Year Types[c]												
Wet (32%)	0.4	1.9	2.2	0.1	0.7	0.0	0.1	-1.8	0.4	0.0	-0.1	-0.6
Above Normal (16%)	3.9	-0.4	-2.3	-0.7	0.0	0.0	-0.8	-3.5	1.3	0.1	-0.2	-0.3
Below Normal (13%)	-0.2	0.7	-0.1	-0.2	-0.6	-0.4	-2.9	-0.4	5.6	1.1	0.2	2.2
Dry (24%)	1.5	-0.7	-0.8	2.7	1.0	0.2	10.6	20.6	11.9	4.2	7.6	5.4
Critical (15%)	0.9	0.0	-0.2	-0.1	2.0	2.0	16.5	22.2	13.0	-2.4	2.6	3.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.20.4. Contra Costa Water District Old River Intake, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	206.8	225.9	237.8	210.5	145.7	90.8	66.0	60.1	63.3	71.7	119.6	165.3
20%	194.0	193.4	209.4	189.8	115.4	71.4	57.5	53.7	49.5	48.4	91.4	157.9
30%	186.6	179.1	201.8	170.3	89.6	59.6	45.4	46.3	37.7	43.6	83.3	148.6
40%	181.0	166.8	188.0	159.2	70.2	49.1	40.7	36.3	34.2	37.3	75.2	139.7
50%	175.0	159.0	171.0	136.8	63.0	44.6	35.9	32.2	30.5	32.9	62.1	134.8
60%	171.1	154.3	154.1	92.9	54.9	40.2	31.9	30.4	28.9	29.5	52.5	130.9
70%	161.9	147.0	137.5	60.0	51.4	33.7	30.0	29.1	27.8	27.7	43.5	128.0
80%	156.7	127.3	89.9	49.2	39.9	29.6	29.0	28.5	26.8	27.0	39.8	115.0
90%	138.4	88.9	41.6	38.3	30.8	27.4	24.3	26.5	25.4	26.1	35.5	101.1
Long Term												
Full Simulation Period[b]	169.3	158.1	159.5	125.0	77.3	52.1	42.9	39.7	38.0	42.6	69.4	134.4
Water Year Types[c]												
Wet (32%)	152.1	142.6	116.9	66.3	47.6	40.8	29.4	26.3	28.8	27.9	39.7	108.7
Above Normal (16%)	186.0	163.7	155.2	120.5	62.2	40.7	34.2	30.1	28.6	27.4	46.7	136.3
Below Normal (13%)	155.7	139.5	159.8	145.1	104.3	56.7	44.8	38.8	29.7	37.2	71.0	136.8
Dry (24%)	173.9	163.5	185.2	156.6	88.9	51.0	46.3	46.6	39.9	47.8	90.6	145.8
Critical (15%)	193.6	193.3	213.1	186.2	114.0	86.8	74.3	68.6	72.9	87.1	121.8	166.8

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	205.4	227.2	231.3	199.2	122.5	99.6	98.5	86.0	66.3	73.7	130.0	166.2
20%	190.2	178.6	194.1	168.6	108.0	78.6	81.3	78.1	53.6	55.0	110.4	155.8
30%	175.1	155.7	163.5	140.2	94.4	70.5	70.9	74.2	44.9	46.6	91.4	141.4
40%	164.9	143.7	126.2	112.9	82.4	60.4	64.7	66.3	42.1	42.5	74.7	130.4
50%	153.1	116.5	73.0	103.8	77.1	54.0	55.0	61.9	39.0	32.5	66.2	115.3
60%	45.9	44.0	54.4	88.4	70.2	49.2	42.3	57.0	38.4	29.6	54.2	108.1
70%	42.1	33.8	39.7	78.0	55.0	44.4	38.2	51.6	36.5	28.5	46.1	99.0
80%	39.5	29.1	32.9	59.8	51.0	38.7	29.8	37.9	32.0	27.6	42.4	85.0
90%	35.8	27.8	29.9	49.6	40.9	29.8	22.0	17.7	27.9	26.7	36.4	79.4
Long Term												
Full Simulation Period[b]	115.6	109.6	108.3	112.5	82.1	61.7	57.1	59.1	43.9	44.9	74.4	119.4
Water Year Types[c]												
Wet (32%)	88.7	75.5	63.8	72.3	57.0	42.4	28.9	36.5	32.7	28.0	42.4	92.5
Above Normal (16%)	147.3	137.1	112.7	104.5	76.5	49.3	47.6	58.0	37.9	28.2	46.7	81.2
Below Normal (13%)	88.7	79.3	94.4	109.0	84.5	61.1	66.2	74.2	46.3	39.1	70.3	145.9
Dry (24%)	115.3	116.7	126.0	138.6	92.1	70.9	71.7	66.1	44.0	56.3	106.1	139.9
Critical (15%)	164.6	170.0	183.4	168.2	123.8	101.9	95.5	83.5	72.3	85.9	124.9	160.8

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	-1.4	1.3	-6.5	-11.2	-23.2	8.9	32.5	25.9	3.0	2.0	10.4	0.9
20%	-3.8	-14.7	-15.3	-21.2	-7.4	7.2	23.8	24.4	4.2	6.6	19.0	-2.1
30%	-11.5	-23.3	-38.3	-30.1	4.9	10.9	25.4	27.9	7.2	3.0	8.0	-7.2
40%	-16.0	-23.0	-61.8	-46.3	12.2	11.3	24.0	30.0	7.9	5.3	-0.5	-9.3
50%	-21.8	-42.6	-98.0	-33.0	14.2	9.4	19.2	29.7	8.4	-0.4	4.1	-19.5
60%	-125.1	-110.3	-99.7	-4.4	15.4	9.0	10.4	26.5	9.5	0.2	1.7	-22.8
70%	-119.8	-113.2	-97.8	18.1	3.6	10.8	8.2	22.5	8.7	0.8	2.6	-29.0
80%	-117.2	-98.2	-57.1	10.6	11.1	9.1	0.9	9.3	5.3	0.7	2.5	-30.0
90%	-102.6	-61.1	-11.7	11.3	10.1	2.4	-2.3	-8.8	2.5	0.6	0.9	-21.7
Long Term												
Full Simulation Period[b]	-53.8	-48.4	-51.1	-12.5	4.8	9.5	14.1	19.3	5.9	2.3	5.0	-15.0
Water Year Types[c]												
Wet (32%)	-63.4	-67.1	-53.1	6.0	9.4	1.7	-0.5	10.2	4.0	0.2	2.8	-16.2
Above Normal (16%)	-38.7	-26.6	-42.5	-16.0	14.3	8.6	13.4	27.9	9.3	0.8	0.0	-55.1
Below Normal (13%)	-67.0	-60.2	-65.4	-36.1	-19.7	4.4	21.5	35.4	16.6	1.9	-0.7	9.1
Dry (24%)	-58.6	-46.8	-59.2	-18.0	3.2	19.8	25.4	19.5	4.1	8.4	15.5	-5.9
Critical (15%)	-29.0	-23.3	-29.7	-18.0	9.8	15.1	21.2	14.9	-0.6	-1.2	3.1	-6.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.20.5. Contra Costa Water District Old River Intake, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	206.8	225.9	237.8	210.5	145.7	90.8	66.0	60.1	63.3	71.7	119.6	165.3
20%	194.0	193.4	209.4	189.8	115.4	71.4	57.5	53.7	49.5	48.4	91.4	157.9
30%	186.6	179.1	201.8	170.3	89.6	59.6	45.4	46.3	37.7	43.6	83.3	148.6
40%	181.0	166.8	188.0	159.2	70.2	49.1	40.7	36.3	34.2	37.3	75.2	139.7
50%	175.0	159.0	171.0	136.8	63.0	44.6	35.9	32.2	30.5	32.9	62.1	134.8
60%	171.1	154.3	154.1	92.9	54.9	40.2	31.9	30.4	28.9	29.5	52.5	130.9
70%	161.9	147.0	137.5	60.0	51.4	33.7	30.0	29.1	27.8	27.7	43.5	128.0
80%	156.7	127.3	89.9	49.2	39.9	29.6	29.0	28.5	26.8	27.0	39.8	115.0
90%	138.4	88.9	41.6	38.3	30.8	27.4	24.3	26.5	25.4	26.1	35.5	101.1
Long Term												
Full Simulation Period[b]	169.3	158.1	159.5	125.0	77.3	52.1	42.9	39.7	38.0	42.6	69.4	134.4
Water Year Types[c]												
Wet (32%)	152.1	142.6	116.9	66.3	47.6	40.8	29.4	26.3	28.8	27.9	39.7	108.7
Above Normal (16%)	186.0	163.7	155.2	120.5	62.2	40.7	34.2	30.1	28.6	27.4	46.7	136.3
Below Normal (13%)	155.7	139.5	159.8	145.1	104.3	56.7	44.8	38.8	29.7	37.2	71.0	136.8
Dry (24%)	173.9	163.5	185.2	156.6	88.9	51.0	46.3	46.6	39.9	47.8	90.6	145.8
Critical (15%)	193.6	193.3	213.1	186.2	114.0	86.8	74.3	68.6	72.9	87.1	121.8	166.8

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	207.2	221.7	232.4	198.0	123.0	95.6	85.7	74.1	59.7	85.0	130.1	172.6
20%	195.8	196.1	212.7	183.9	107.2	74.7	68.6	57.0	39.3	52.5	104.8	157.7
30%	183.9	178.1	196.5	159.5	94.4	65.2	60.3	43.0	34.7	48.5	83.2	148.1
40%	179.8	163.8	185.8	148.3	84.8	58.9	52.6	37.0	30.9	41.2	77.0	142.8
50%	173.5	158.4	169.9	137.7	73.4	51.2	41.2	31.4	28.6	32.9	66.9	137.5
60%	166.2	153.5	157.6	95.6	64.6	44.1	35.5	29.5	27.2	29.5	53.1	131.5
70%	161.8	149.3	138.7	71.9	55.0	37.1	32.4	27.9	26.1	28.3	44.3	127.6
80%	155.2	134.0	92.9	62.6	46.3	32.2	30.1	26.7	25.5	27.2	39.3	114.2
90%	138.2	101.6	43.0	40.3	35.1	27.4	27.4	24.7	24.2	26.1	32.7	99.6
Long Term												
Full Simulation Period[b]	168.8	161.0	158.3	124.4	77.7	57.4	50.0	41.1	35.0	45.2	72.2	134.8
Water Year Types[c]												
Wet (32%)	150.4	145.3	118.1	76.2	51.6	38.7	30.5	25.2	26.0	28.0	38.9	104.8
Above Normal (16%)	190.3	171.9	156.5	127.5	70.8	42.9	34.2	29.3	26.9	27.9	46.4	137.9
Below Normal (13%)	155.8	137.0	160.5	141.4	88.2	55.8	52.7	43.4	31.7	42.9	75.3	150.5
Dry (24%)	171.0	168.5	186.2	153.4	88.7	67.0	61.0	46.9	33.9	55.4	99.9	144.4
Critical (15%)	193.4	192.9	198.6	161.5	113.6	98.8	88.4	76.3	68.4	86.3	123.6	166.5

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.4	-4.2	-5.4	-12.5	-22.6	4.9	19.7	14.0	-3.6	13.4	10.5	7.3
20%	1.8	2.8	3.3	-5.9	-8.2	3.3	11.2	3.3	-10.1	4.0	13.3	-0.1
30%	-2.7	-0.9	-5.4	-10.8	4.8	5.6	14.8	-3.3	-3.0	4.9	-0.2	-0.5
40%	-1.2	-3.0	-2.3	-10.9	14.6	9.8	11.9	0.7	-3.3	3.9	1.7	3.0
50%	-1.5	-0.6	-1.1	0.9	10.4	6.6	5.3	-0.8	-2.0	0.0	4.8	2.7
60%	-4.9	-0.9	3.4	2.7	9.7	3.9	3.6	-0.9	-1.8	0.0	0.6	0.5
70%	-0.1	2.3	1.2	12.0	3.6	3.4	2.4	-1.1	-1.7	0.6	0.8	-0.3
80%	-1.4	6.7	2.9	13.4	6.4	2.6	1.2	-1.8	-1.2	0.3	-0.5	-0.8
90%	-0.2	12.7	1.4	2.0	4.3	0.0	3.1	-1.8	-1.2	0.0	-2.8	-1.4
Long Term												
Full Simulation Period[b]	-0.6	3.0	-1.2	-0.7	0.4	5.2	7.0	1.3	-3.0	2.6	2.8	0.4
Water Year Types[c]												
Wet (32%)	-1.7	2.7	1.2	9.9	4.1	-2.0	1.1	-1.1	-2.8	0.1	-0.8	-3.9
Above Normal (16%)	4.3	8.1	1.3	7.0	8.5	2.2	0.0	-0.7	-1.7	0.5	-0.3	1.6
Below Normal (13%)	0.1	-2.5	0.7	-3.7	-16.1	-0.9	7.9	4.6	2.0	5.7	4.2	13.6
Dry (24%)	-2.9	5.0	1.0	-3.2	-0.2	15.9	14.7	0.3	-6.0	7.6	9.4	-1.4
Critical (15%)	-0.2	-0.3	-14.5	-24.8	-0.4	12.0	14.0	7.7	-4.4	-0.8	1.8	-0.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.20.6. Contra Costa Water District Old River Intake, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	206.8	225.9	237.8	210.5	145.7	90.8	66.0	60.1	63.3	71.7	119.6	165.3
20%	194.0	193.4	209.4	189.8	115.4	71.4	57.5	53.7	49.5	48.4	91.4	157.9
30%	186.6	179.1	201.8	170.3	89.6	59.6	45.4	46.3	37.7	43.6	83.3	148.6
40%	181.0	166.8	188.0	159.2	70.2	49.1	40.7	36.3	34.2	37.3	75.2	139.7
50%	175.0	159.0	171.0	136.8	63.0	44.6	35.9	32.2	30.5	32.9	62.1	134.8
60%	171.1	154.3	154.1	92.9	54.9	40.2	31.9	30.4	28.9	29.5	52.5	130.9
70%	161.9	147.0	137.5	60.0	51.4	33.7	30.0	29.1	27.8	27.7	43.5	128.0
80%	156.7	127.3	89.9	49.2	39.9	29.6	29.0	28.5	26.8	27.0	39.8	115.0
90%	138.4	88.9	41.6	38.3	30.8	27.4	24.3	26.5	25.4	26.1	35.5	101.1
Long Term												
Full Simulation Period[b]	169.3	158.1	159.5	125.0	77.3	52.1	42.9	39.7	38.0	42.6	69.4	134.4
Water Year Types[c]												
Wet (32%)	152.1	142.6	116.9	66.3	47.6	40.8	29.4	26.3	28.8	27.9	39.7	108.7
Above Normal (16%)	186.0	163.7	155.2	120.5	62.2	40.7	34.2	30.1	28.6	27.4	46.7	136.3
Below Normal (13%)	155.7	139.5	159.8	145.1	104.3	56.7	44.8	38.8	29.7	37.2	71.0	136.8
Dry (24%)	173.9	163.5	185.2	156.6	88.9	51.0	46.3	46.6	39.9	47.8	90.6	145.8
Critical (15%)	193.6	193.3	213.1	186.2	114.0	86.8	74.3	68.6	72.9	87.1	121.8	166.8

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	210.0	226.3	228.4	200.6	122.6	98.9	108.2	104.6	85.3	77.2	129.8	167.4
20%	193.1	185.6	190.2	172.6	108.2	79.3	98.2	101.8	61.6	57.1	117.5	157.9
30%	178.2	159.2	163.7	142.1	91.4	70.6	81.0	89.0	55.6	49.7	97.3	145.5
40%	168.4	141.4	129.0	112.8	82.6	59.8	66.0	74.9	47.5	44.0	75.9	136.9
50%	152.0	119.5	71.5	103.8	77.1	53.9	56.9	62.1	42.9	32.7	66.4	117.5
60%	46.8	43.5	57.4	88.1	70.5	49.4	42.2	54.3	39.2	29.6	53.2	109.4
70%	42.2	32.2	39.4	78.0	58.8	44.4	38.3	51.2	37.9	28.7	46.7	101.3
80%	39.3	29.3	32.9	59.8	50.6	38.7	29.2	37.9	34.6	27.5	42.7	87.3
90%	35.7	27.9	29.9	49.7	40.6	29.9	22.2	17.7	27.9	26.8	35.3	76.2
Long Term												
Full Simulation Period[b]	116.8	110.1	108.4	113.1	82.8	62.0	61.6	66.1	49.8	45.8	76.7	121.3
Water Year Types[c]												
Wet (32%)	89.1	77.4	66.0	72.4	57.6	42.4	29.0	34.7	33.1	28.1	42.4	91.9
Above Normal (16%)	151.2	136.7	110.4	103.8	76.5	49.3	46.8	54.4	39.3	28.3	46.5	80.8
Below Normal (13%)	88.5	80.0	94.4	108.8	83.9	60.7	63.3	73.8	51.9	40.2	70.6	148.1
Dry (24%)	116.8	116.0	125.2	141.3	93.0	71.1	82.3	86.7	55.9	60.5	113.7	145.3
Critical (15%)	165.5	170.0	183.2	168.2	125.8	103.9	112.0	105.7	85.3	83.4	127.5	164.2

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3.2	0.4	-9.4	-9.9	-23.1	8.1	42.1	44.5	22.0	5.5	10.2	2.1
20%	-0.9	-7.7	-19.2	-17.1	-7.2	7.9	40.8	48.1	12.2	8.6	26.0	0.0
30%	-8.3	-19.8	-38.1	-28.3	1.9	11.0	35.6	42.6	17.8	6.1	14.0	-3.1
40%	-12.5	-25.4	-59.0	-46.3	12.5	10.7	25.3	38.6	13.3	6.7	0.7	-2.8
50%	-22.9	-39.5	-99.4	-33.1	14.1	9.4	21.1	29.9	12.3	-0.2	4.3	-17.3
60%	-124.3	-110.8	-96.8	-4.8	15.7	9.2	10.2	23.8	10.2	0.1	0.8	-21.5
70%	-119.6	-114.8	-98.1	18.1	7.4	10.7	8.3	22.1	10.1	1.0	3.2	-26.7
80%	-117.3	-98.0	-57.1	10.7	10.7	9.1	0.3	9.3	7.8	0.6	2.9	-27.7
90%	-102.7	-61.0	-11.7	11.4	9.8	2.5	-2.1	-8.8	2.5	0.7	-0.2	-24.9
Long Term												
Full Simulation Period[b]	-52.5	-47.9	-51.0	-12.0	5.5	9.8	18.6	26.4	11.8	3.2	7.2	-13.1
Water Year Types[c]												
Wet (32%)	-63.0	-65.2	-50.9	6.0	10.1	1.6	-0.4	8.4	4.3	0.2	2.7	-16.8
Above Normal (16%)	-34.8	-27.0	-44.8	-16.7	14.3	8.6	12.5	24.3	10.7	0.9	-0.2	-55.5
Below Normal (13%)	-67.2	-59.5	-65.4	-36.3	-20.4	4.0	18.6	35.0	22.2	3.0	-0.5	11.3
Dry (24%)	-57.1	-47.6	-60.0	-15.3	4.2	20.1	36.0	40.1	16.0	12.7	23.2	-0.5
Critical (15%)	-28.1	-23.3	-29.9	-18.1	11.8	17.1	37.6	37.1	12.4	-3.7	5.7	-2.5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.21. Contra Costa Water District Victoria Canal Intake Chloride Concentration

Table 6E.B.21.1. Contra Costa Victoria Canal Intake, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	113.4	124.0	146.2	160.4	141.4	117.2	113.6	88.1	71.9	56.9	76.0	91.4
20%	102.8	103.3	122.2	141.7	120.6	111.5	98.9	82.9	63.0	49.5	63.4	83.6
30%	96.4	93.5	108.5	120.8	111.3	98.7	89.8	79.2	56.6	44.5	58.7	80.1
40%	91.4	87.7	95.6	110.7	104.9	93.5	80.5	75.7	54.3	38.5	45.1	73.7
50%	84.6	73.4	67.3	100.4	99.6	85.1	69.9	61.4	53.2	35.7	39.2	70.5
60%	58.9	55.0	55.7	93.3	94.5	75.4	45.7	56.0	51.4	32.9	36.1	68.2
70%	56.5	51.8	48.6	86.2	87.1	63.9	37.3	49.3	48.9	30.9	33.4	63.7
80%	50.7	49.2	40.6	81.1	71.9	49.1	28.9	37.2	45.9	28.9	28.8	54.2
90%	44.8	45.3	33.5	69.8	53.8	37.6	21.8	17.2	38.0	27.0	26.9	49.3
Long Term												
Full Simulation Period[b]	77.5	77.0	82.4	107.2	98.3	82.2	65.3	60.9	53.9	40.1	47.5	70.2
Water Year Types[c]												
Wet (32%)	67.1	62.4	62.3	85.3	71.1	50.4	29.5	35.3	43.7	39.0	31.6	60.8
Above Normal (16%)	88.0	89.4	87.1	106.6	99.3	75.1	52.4	57.0	52.1	32.8	30.1	51.2
Below Normal (13%)	69.7	64.7	71.8	102.7	105.2	93.2	77.7	74.6	57.0	30.8	39.5	74.3
Dry (24%)	76.9	78.9	87.1	119.0	109.3	99.3	88.9	72.8	55.0	36.9	64.6	77.5
Critical (15%)	96.9	103.6	122.4	139.8	131.5	119.7	106.0	88.1	73.5	64.3	80.0	95.6

Alternative 1

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	118.3	126.7	133.5	151.5	124.0	104.0	94.8	80.9	75.4	53.7	69.0	95.4
20%	107.2	101.7	119.5	136.5	112.8	86.0	79.7	75.2	61.0	48.1	54.8	83.9
30%	100.3	99.0	114.1	127.2	97.1	83.3	68.8	70.2	53.5	43.7	49.3	77.5
40%	97.6	93.6	107.5	116.9	89.3	74.2	63.4	57.4	48.8	39.3	44.7	71.7
50%	93.5	88.3	102.3	109.8	80.7	67.5	58.4	49.5	45.5	35.3	40.4	69.4
60%	89.9	84.9	99.4	83.1	69.6	61.3	51.1	45.3	42.4	31.2	35.6	67.0
70%	86.4	77.4	89.2	74.8	65.5	53.6	44.4	41.2	39.6	28.6	33.5	63.0
80%	81.2	71.3	67.8	69.1	57.1	47.1	37.0	37.0	38.3	27.9	29.6	61.1
90%	66.4	63.8	44.0	54.3	47.9	39.2	27.1	22.9	31.8	26.2	28.0	51.5
Long Term												
Full Simulation Period[b]	92.6	89.4	97.5	103.6	83.9	69.0	58.2	53.3	49.3	39.6	45.1	70.5
Water Year Types[c]												
Wet (32%)	82.6	76.9	78.5	72.6	57.8	47.9	33.6	31.2	39.8	38.4	31.8	54.6
Above Normal (16%)	101.0	95.9	96.5	104.1	79.1	62.5	51.2	45.0	42.9	31.7	31.2	67.5
Below Normal (13%)	82.8	77.2	93.2	109.8	103.9	82.6	67.8	57.9	41.1	28.2	41.5	69.5
Dry (24%)	95.3	92.4	106.9	117.8	92.0	74.3	69.3	66.3	53.3	36.1	53.9	77.4
Critical (15%)	109.5	115.4	128.3	141.1	113.9	100.7	91.9	84.2	77.7	66.6	77.8	97.5

Alternative 1 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	4.8	2.7	-12.7	-8.9	-17.4	-13.2	-18.8	-7.2	3.5	-3.2	-7.0	4.0
20%	4.3	-1.6	-2.7	-5.1	-7.9	-25.6	-19.1	-7.7	-2.0	-1.4	-8.7	0.3
30%	3.9	5.5	5.5	6.3	-14.2	-15.4	-21.0	-9.0	-3.0	-0.8	-9.4	-2.6
40%	6.3	5.9	12.0	6.2	-15.6	-19.3	-17.1	-18.3	-5.5	0.8	-0.4	-1.9
50%	8.9	14.9	35.0	9.4	-18.8	-17.5	-11.5	-11.9	-7.7	-0.5	1.2	-1.1
60%	31.0	29.9	43.6	-10.2	-25.0	-14.1	5.3	-10.6	-8.9	-1.7	-0.5	-1.2
70%	30.0	25.6	40.6	-11.4	-21.6	-10.3	7.1	-8.1	-9.4	-2.3	0.1	-0.7
80%	30.4	22.1	27.2	-12.0	-14.8	-2.0	8.1	-0.2	-7.6	-1.0	0.8	6.9
90%	21.6	18.5	10.4	-15.5	-5.9	1.6	5.3	5.7	-6.2	-0.9	1.1	2.2
Long Term												
Full Simulation Period[b]	15.0	12.3	15.2	-3.6	-14.4	-13.1	-7.0	-7.6	-4.6	-0.6	-2.4	0.2
Water Year Types[c]												
Wet (32%)	15.4	14.5	16.2	-12.7	-13.3	-2.6	4.2	-4.1	-3.9	-0.6	0.2	-6.2
Above Normal (16%)	13.0	6.5	9.3	-2.6	-20.2	-12.7	-1.3	-12.0	-9.2	-1.2	1.0	16.3
Below Normal (13%)	13.1	12.5	21.4	7.1	-1.3	-10.7	-9.9	-16.6	-15.9	-2.6	2.0	-4.8
Dry (24%)	18.4	13.5	19.8	-1.3	-17.3	-25.0	-19.6	-6.5	-1.6	-0.8	-10.7	-0.1
Critical (15%)	12.6	11.8	5.9	1.2	-17.6	-19.0	-14.1	-3.9	4.2	2.3	-2.1	1.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.21.2. Contra Costa Victoria Canal Intake, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	113.4	124.0	146.2	160.4	141.4	117.2	113.6	88.1	71.9	56.9	76.0	91.4
20%	102.8	103.3	122.2	141.7	120.6	111.5	98.9	82.9	63.0	49.5	63.4	83.6
30%	96.4	93.5	108.5	120.8	111.3	98.7	89.8	79.2	56.6	44.5	58.7	80.1
40%	91.4	87.7	95.6	110.7	104.9	93.5	80.5	75.7	54.3	38.5	45.1	73.7
50%	84.6	73.4	67.3	100.4	99.6	85.1	69.9	61.4	53.2	35.7	39.2	70.5
60%	58.9	55.0	55.7	93.3	94.5	75.4	45.7	56.0	51.4	32.9	36.1	68.2
70%	56.5	51.8	48.6	86.2	87.1	63.9	37.3	49.3	48.9	30.9	33.4	63.7
80%	50.7	49.2	40.6	81.1	71.9	49.1	28.9	37.2	45.9	28.9	28.8	54.2
90%	44.8	45.3	33.5	69.8	53.8	37.6	21.8	17.2	38.0	27.0	26.9	49.3
Long Term												
Full Simulation Period[b]	77.5	77.0	82.4	107.2	98.3	82.2	65.3	60.9	53.9	40.1	47.5	70.2
Water Year Types[c]												
Wet (32%)	67.1	62.4	62.3	85.3	71.1	50.4	29.5	35.3	43.7	39.0	31.6	60.8
Above Normal (16%)	88.0	89.4	87.1	106.6	99.3	75.1	52.4	57.0	52.1	32.8	30.1	51.2
Below Normal (13%)	69.7	64.7	71.8	102.7	105.2	93.2	77.7	74.6	57.0	30.8	39.5	74.3
Dry (24%)	76.9	78.9	87.1	119.0	109.3	99.3	88.9	72.8	55.0	36.9	64.6	77.5
Critical (15%)	96.9	103.6	122.4	139.8	131.5	119.7	106.0	88.1	73.5	64.3	80.0	95.6

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	117.1	125.1	131.6	152.6	127.9	117.2	105.3	82.1	56.7	55.8	77.3	89.3
20%	107.1	104.1	119.2	140.0	116.2	106.7	93.2	71.6	50.9	50.7	60.3	85.3
30%	101.8	98.0	115.6	133.8	110.1	96.0	83.1	60.8	48.0	44.5	54.1	79.6
40%	97.1	93.8	108.9	123.7	103.9	89.6	73.5	47.2	43.8	36.1	46.2	76.0
50%	93.8	88.4	103.8	115.7	95.1	77.1	61.8	44.8	41.2	33.5	39.4	71.3
60%	88.7	84.0	97.6	96.4	84.9	67.6	51.5	40.8	38.3	31.0	36.7	68.2
70%	85.6	76.6	89.7	86.9	76.2	60.4	44.5	37.4	35.1	29.8	33.5	64.2
80%	80.9	71.9	74.5	77.6	60.5	45.1	34.7	34.3	32.6	28.1	29.2	60.6
90%	66.6	63.1	49.6	68.5	46.9	38.5	28.0	23.1	28.8	25.7	27.4	48.0
Long Term												
Full Simulation Period[b]	92.3	90.5	99.0	111.0	91.8	77.9	64.6	49.7	43.5	39.4	46.7	71.3
Water Year Types[c]												
Wet (32%)	81.9	78.0	81.5	84.3	62.9	47.3	34.4	29.3	36.0	38.3	31.8	52.8
Above Normal (16%)	102.3	98.9	100.2	117.9	92.6	67.6	51.8	40.0	38.3	30.9	30.6	68.4
Below Normal (13%)	83.0	76.4	93.2	118.9	105.1	87.3	72.3	55.6	42.1	29.8	41.9	76.6
Dry (24%)	93.8	93.9	108.7	125.6	104.6	96.0	84.6	60.0	43.1	36.3	60.2	78.2
Critical (15%)	109.9	116.0	125.1	130.0	119.7	116.2	103.2	82.0	67.2	64.9	78.4	97.9

Alternative 3 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3.7	1.1	-14.6	-7.8	-13.5	0.0	-8.3	-6.0	-15.2	-1.1	1.3	-2.1
20%	4.2	0.7	-3.0	-1.7	-4.4	-4.8	-5.6	-11.2	-12.1	1.3	-3.1	1.6
30%	5.4	4.5	7.1	13.0	-1.2	-2.7	-6.6	-18.4	-8.6	0.0	-4.6	-0.5
40%	5.8	6.1	13.3	13.0	-1.0	-3.8	-7.1	-28.5	-10.5	-2.4	1.1	2.3
50%	9.2	15.0	36.4	15.3	-4.4	-8.0	-8.1	-16.6	-12.0	-2.2	0.2	0.8
60%	29.8	29.0	41.9	3.1	-9.7	-7.8	5.7	-15.2	-13.0	-1.9	0.6	-0.1
70%	29.1	24.8	41.1	0.8	-10.8	-3.5	7.2	-11.9	-13.9	-1.1	0.1	0.5
80%	30.2	22.7	33.9	-3.4	-11.4	-4.0	5.7	-2.9	-13.3	-0.8	0.4	6.4
90%	21.9	17.7	16.1	-1.3	-7.0	0.9	6.2	6.0	-9.2	-1.3	0.5	-1.3
Long Term												
Full Simulation Period[b]	14.7	13.5	16.7	3.8	-6.5	-4.3	-0.7	-11.1	-10.5	-0.8	-0.8	1.0
Water Year Types[c]												
Wet (32%)	14.7	15.6	19.2	-1.0	-8.1	-3.1	5.0	-5.9	-7.7	-0.8	0.2	-8.0
Above Normal (16%)	14.3	9.5	13.0	11.2	-6.7	-7.5	-0.7	-17.0	-13.8	-1.9	0.5	17.2
Below Normal (13%)	13.3	11.7	21.4	16.2	-0.1	-6.0	-5.3	-19.0	-14.9	-1.0	2.4	2.3
Dry (24%)	16.8	15.0	21.6	6.5	-4.6	-3.3	-4.3	-12.8	-11.9	-0.6	-4.3	0.7
Critical (15%)	13.0	12.4	2.7	-9.9	-11.8	-3.4	-2.8	-6.1	-6.4	0.6	-1.6	2.3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.21.3. Contra Costa Victoria Canal Intake, Monthly Chloride Concentration

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	113.4	124.0	146.2	160.4	141.4	117.2	113.6	88.1	71.9	56.9	76.0	91.4
20%	102.8	103.3	122.2	141.7	120.6	111.5	98.9	82.9	63.0	49.5	63.4	83.6
30%	96.4	93.5	108.5	120.8	111.3	98.7	89.8	79.2	56.6	44.5	58.7	80.1
40%	91.4	87.7	95.6	110.7	104.9	93.5	80.5	75.7	54.3	38.5	45.1	73.7
50%	84.6	73.4	67.3	100.4	99.6	85.1	69.9	61.4	53.2	35.7	39.2	70.5
60%	58.9	55.0	55.7	93.3	94.5	75.4	45.7	56.0	51.4	32.9	36.1	68.2
70%	56.5	51.8	48.6	86.2	87.1	63.9	37.3	49.3	48.9	30.9	33.4	63.7
80%	50.7	49.2	40.6	81.1	71.9	49.1	28.9	37.2	45.9	28.9	28.8	54.2
90%	44.8	45.3	33.5	69.8	53.8	37.6	21.8	17.2	38.0	27.0	26.9	49.3
Long Term												
Full Simulation Period[b]	77.5	77.0	82.4	107.2	98.3	82.2	65.3	60.9	53.9	40.1	47.5	70.2
Water Year Types[c]												
Wet (32%)	67.1	62.4	62.3	85.3	71.1	50.4	29.5	35.3	43.7	39.0	31.6	60.8
Above Normal (16%)	88.0	89.4	87.1	106.6	99.3	75.1	52.4	57.0	52.1	32.8	30.1	51.2
Below Normal (13%)	69.7	64.7	71.8	102.7	105.2	93.2	77.7	74.6	57.0	30.8	39.5	74.3
Dry (24%)	76.9	78.9	87.1	119.0	109.3	99.3	88.9	72.8	55.0	36.9	64.6	77.5
Critical (15%)	96.9	103.6	122.4	139.8	131.5	119.7	106.0	88.1	73.5	64.3	80.0	95.6

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	115.0	125.3	147.3	160.3	141.4	117.2	115.1	101.4	89.3	56.4	80.7	91.2
20%	105.5	107.8	123.9	141.6	120.2	111.9	106.4	98.7	74.1	50.4	65.8	85.1
30%	97.2	92.8	108.8	120.8	112.3	98.6	95.2	85.2	67.0	45.1	58.9	81.9
40%	93.0	88.2	90.3	110.5	106.8	93.4	77.6	71.1	59.2	40.5	45.6	75.6
50%	85.2	75.4	67.6	100.4	99.6	85.0	68.1	59.3	55.9	36.7	39.0	70.7
60%	60.0	54.8	55.8	93.5	94.6	75.3	45.7	51.5	53.4	33.4	36.1	68.9
70%	56.3	51.7	48.2	86.2	87.0	63.7	37.7	47.8	51.4	31.7	32.6	64.3
80%	50.6	49.2	42.2	80.8	71.9	49.1	28.9	36.0	46.8	29.3	28.9	54.9
90%	44.6	45.5	33.5	69.8	53.8	37.6	22.2	17.2	40.5	27.4	27.0	48.7
Long Term												
Full Simulation Period[b]	78.3	77.5	82.3	107.4	98.7	82.4	67.2	63.6	59.9	40.4	48.1	70.9
Water Year Types[c]												
Wet (32%)	67.6	63.1	63.3	85.3	71.7	50.8	29.5	32.9	43.8	39.1	31.5	60.8
Above Normal (16%)	90.0	90.0	85.8	106.3	99.4	75.2	51.2	51.8	52.8	33.0	30.1	51.1
Below Normal (13%)	69.8	65.2	71.9	102.6	104.8	93.1	73.6	70.4	62.5	31.4	39.5	75.2
Dry (24%)	77.7	79.1	86.4	120.5	110.0	99.5	92.6	83.7	67.0	38.5	68.1	79.6
Critical (15%)	97.4	103.8	122.5	138.9	132.3	120.8	117.6	103.4	88.1	62.6	78.0	95.8

Alternative 5 minus No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1.6	1.3	1.1	-0.1	0.0	-0.1	1.5	13.4	17.3	-0.5	4.7	-0.2
20%	2.7	4.5	1.7	-0.1	-0.4	0.3	7.6	15.9	11.1	1.0	2.4	1.5
30%	0.8	-0.6	0.2	-0.1	1.0	-0.1	5.4	6.0	10.4	0.6	0.2	1.8
40%	1.7	0.5	-5.2	-0.1	1.9	-0.1	-3.0	-4.7	4.9	1.9	0.4	1.9
50%	0.6	2.1	0.3	0.0	0.1	-0.1	-1.8	-2.1	2.7	1.0	-0.2	0.3
60%	1.1	-0.2	0.0	0.2	0.0	-0.1	0.0	-4.5	2.0	0.5	0.1	0.7
70%	-0.2	-0.1	-0.4	0.0	0.0	-0.2	0.4	-1.5	2.5	0.8	-0.8	0.6
80%	-0.2	0.0	1.6	-0.3	0.0	0.0	0.0	-1.2	0.9	0.4	0.1	0.7
90%	-0.1	0.1	-0.1	0.0	0.0	0.0	0.4	0.0	2.5	0.3	0.1	-0.6
Long Term												
Full Simulation Period[b]	0.7	0.5	0.0	0.1	0.5	0.3	1.9	2.8	5.9	0.2	0.5	0.6
Water Year Types[c]												
Wet (32%)	0.5	0.7	1.0	0.0	0.6	0.4	0.1	-2.4	0.1	0.0	-0.1	0.0
Above Normal (16%)	2.0	0.7	-1.3	-0.3	0.1	0.0	-1.2	-5.2	0.7	0.2	0.0	-0.1
Below Normal (13%)	0.1	0.5	0.1	-0.1	-0.3	-0.2	-4.0	-4.1	5.5	0.5	0.0	0.8
Dry (24%)	0.8	0.2	-0.7	1.4	0.7	0.1	3.7	10.9	12.0	1.6	3.5	2.1
Critical (15%)	0.5	0.2	0.0	-0.9	0.7	1.1	11.5	15.3	14.6	-1.8	-2.0	0.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.21.4. Contra Costa Victoria Canal Intake, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	118.3	126.7	133.5	151.5	124.0	104.0	94.8	80.9	75.4	53.7	69.0	95.4
20%	107.2	101.7	119.5	136.5	112.8	86.0	79.7	75.2	61.0	48.1	54.8	83.9
30%	100.3	99.0	114.1	127.2	97.1	83.3	68.8	70.2	53.5	43.7	49.3	77.5
40%	97.6	93.6	107.5	116.9	89.3	74.2	63.4	57.4	48.8	39.3	44.7	71.7
50%	93.5	88.3	102.3	109.8	80.7	67.5	58.4	49.5	45.5	35.3	40.4	69.4
60%	89.9	84.9	99.4	83.1	69.6	61.3	51.1	45.3	42.4	31.2	35.6	67.0
70%	86.4	77.4	89.2	74.8	65.5	53.6	44.4	41.2	39.6	28.6	33.5	63.0
80%	81.2	71.3	67.8	69.1	57.1	47.1	37.0	37.0	38.3	27.9	29.6	61.1
90%	66.4	63.8	44.0	54.3	47.9	39.2	27.1	22.9	31.8	26.2	28.0	51.5
Long Term												
Full Simulation Period[b]	92.6	89.4	97.5	103.6	83.9	69.0	58.2	53.3	49.3	39.6	45.1	70.5
Water Year Types[c]												
Wet (32%)	82.6	76.9	78.5	72.6	57.8	47.9	33.6	31.2	39.8	38.4	31.8	54.6
Above Normal (16%)	101.0	95.9	96.5	104.1	79.1	62.5	51.2	45.0	42.9	31.7	31.2	67.5
Below Normal (13%)	82.8	77.2	93.2	109.8	103.9	82.6	67.8	57.9	41.1	28.2	41.5	69.5
Dry (24%)	95.3	92.4	106.9	117.8	92.0	74.3	69.3	66.3	53.3	36.1	53.9	77.4
Critical (15%)	109.5	115.4	128.3	141.1	113.9	100.7	91.9	84.2	77.7	66.6	77.8	97.5

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	113.4	124.0	146.2	160.4	141.4	117.2	113.6	88.1	71.9	56.9	76.0	91.4
20%	102.8	103.3	122.2	141.7	120.6	111.5	98.9	82.9	63.0	49.5	63.4	83.6
30%	96.4	93.5	108.5	120.8	111.3	98.7	89.8	79.2	56.6	44.5	58.7	80.1
40%	91.4	87.7	95.6	110.7	104.9	93.5	80.5	75.7	54.3	38.5	45.1	73.7
50%	84.6	73.4	67.3	100.4	99.6	85.1	69.9	61.4	53.2	35.7	39.2	70.5
60%	58.9	55.0	55.7	93.3	94.5	75.4	45.7	56.0	51.4	32.9	36.1	68.2
70%	56.5	51.8	48.6	86.2	87.1	63.9	37.3	49.3	48.9	30.9	33.4	63.7
80%	50.7	49.2	40.6	81.1	71.9	49.1	28.9	37.2	45.9	28.9	28.8	54.2
90%	44.8	45.3	33.5	69.8	53.8	37.6	21.8	17.2	38.0	27.0	26.9	49.3
Long Term												
Full Simulation Period[b]	77.5	77.0	82.4	107.2	98.3	82.2	65.3	60.9	53.9	40.1	47.5	70.2
Water Year Types[c]												
Wet (32%)	67.1	62.4	62.3	85.3	71.1	50.4	29.5	35.3	43.7	39.0	31.6	60.8
Above Normal (16%)	88.0	89.4	87.1	106.6	99.3	75.1	52.4	57.0	52.1	32.8	30.1	51.2
Below Normal (13%)	69.7	64.7	71.8	102.7	105.2	93.2	77.7	74.6	57.0	30.8	39.5	74.3
Dry (24%)	76.9	78.9	87.1	119.0	109.3	99.3	88.9	72.8	55.0	36.9	64.6	77.5
Critical (15%)	96.9	103.6	122.4	139.8	131.5	119.7	106.0	88.1	73.5	64.3	80.0	95.6

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4.8	-2.7	12.7	8.9	17.4	13.2	18.8	7.2	-3.5	3.2	7.0	-4.0
20%	-4.3	1.6	2.7	5.1	7.9	25.6	19.1	7.7	2.0	1.4	8.7	-0.3
30%	-3.9	-5.5	-5.5	-6.3	14.2	15.4	21.0	9.0	3.0	0.8	9.4	2.6
40%	-6.3	-5.9	-12.0	-6.2	15.6	19.3	17.1	18.3	5.5	-0.8	0.4	1.9
50%	-8.9	-14.9	-35.0	-9.4	18.8	17.5	11.5	11.9	7.7	0.5	-1.2	1.1
60%	-31.0	-29.9	-43.6	10.2	25.0	14.1	-5.3	10.6	8.9	1.7	0.5	1.2
70%	-30.0	-25.6	-40.6	11.4	21.6	10.3	-7.1	8.1	9.4	2.3	-0.1	0.7
80%	-30.4	-22.1	-27.2	12.0	14.8	2.0	-8.1	0.2	7.6	1.0	-0.8	-6.9
90%	-21.6	-18.5	-10.4	15.5	5.9	-1.6	-5.3	-5.7	6.2	0.9	-1.1	-2.2
Long Term												
Full Simulation Period[b]	-15.0	-12.3	-15.2	3.6	14.4	13.1	7.0	7.6	4.6	0.6	2.4	-0.2
Water Year Types[c]												
Wet (32%)	-15.4	-14.5	-16.2	12.7	13.3	2.6	-4.2	4.1	3.9	0.6	-0.2	6.2
Above Normal (16%)	-13.0	-6.5	-9.3	2.6	20.2	12.7	1.3	12.0	9.2	1.2	-1.0	-16.3
Below Normal (13%)	-13.1	-12.5	-21.4	-7.1	1.3	10.7	9.9	16.6	15.9	2.6	-2.0	4.8
Dry (24%)	-18.4	-13.5	-19.8	1.3	17.3	25.0	19.6	6.5	1.6	0.8	10.7	0.1
Critical (15%)	-12.6	-11.8	-5.9	-1.2	17.6	19.0	14.1	3.9	-4.2	-2.3	2.1	-1.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.21.5. Contra Costa Victoria Canal Intake, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	118.3	126.7	133.5	151.5	124.0	104.0	94.8	80.9	75.4	53.7	69.0	95.4
20%	107.2	101.7	119.5	136.5	112.8	86.0	79.7	75.2	61.0	48.1	54.8	83.9
30%	100.3	99.0	114.1	127.2	97.1	83.3	68.8	70.2	53.5	43.7	49.3	77.5
40%	97.6	93.6	107.5	116.9	89.3	74.2	63.4	57.4	48.8	39.3	44.7	71.7
50%	93.5	88.3	102.3	109.8	80.7	67.5	58.4	49.5	45.5	35.3	40.4	69.4
60%	89.9	84.9	99.4	83.1	69.6	61.3	51.1	45.3	42.4	31.2	35.6	67.0
70%	86.4	77.4	89.2	74.8	65.5	53.6	44.4	41.2	39.6	28.6	33.5	63.0
80%	81.2	71.3	67.8	69.1	57.1	47.1	37.0	37.0	38.3	27.9	29.6	61.1
90%	66.4	63.8	44.0	54.3	47.9	39.2	27.1	22.9	31.8	26.2	28.0	51.5
Long Term												
Full Simulation Period[b]	92.6	89.4	97.5	103.6	83.9	69.0	58.2	53.3	49.3	39.6	45.1	70.5
Water Year Types[c]												
Wet (32%)	82.6	76.9	78.5	72.6	57.8	47.9	33.6	31.2	39.8	38.4	31.8	54.6
Above Normal (16%)	101.0	95.9	96.5	104.1	79.1	62.5	51.2	45.0	42.9	31.7	31.2	67.5
Below Normal (13%)	82.8	77.2	93.2	109.8	103.9	82.6	67.8	57.9	41.1	28.2	41.5	69.5
Dry (24%)	95.3	92.4	106.9	117.8	92.0	74.3	69.3	66.3	53.3	36.1	53.9	77.4
Critical (15%)	109.5	115.4	128.3	141.1	113.9	100.7	91.9	84.2	77.7	66.6	77.8	97.5

Alternative 3

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	117.1	125.1	131.6	152.6	127.9	117.2	105.3	82.1	56.7	55.8	77.3	89.3
20%	107.1	104.1	119.2	140.0	116.2	106.7	93.2	71.6	50.9	50.7	60.3	85.3
30%	101.8	98.0	115.6	133.8	110.1	96.0	83.1	60.8	48.0	44.5	54.1	79.6
40%	97.1	93.8	108.9	123.7	103.9	89.6	73.5	47.2	43.8	36.1	46.2	76.0
50%	93.8	88.4	103.8	115.7	95.1	77.1	61.8	44.8	41.2	33.5	39.4	71.3
60%	88.7	84.0	97.6	96.4	84.9	67.6	51.5	40.8	38.3	31.0	36.7	68.2
70%	85.6	76.6	89.7	86.9	76.2	60.4	44.5	37.4	35.1	29.8	33.5	64.2
80%	80.9	71.9	74.5	77.6	60.5	45.1	34.7	34.3	32.6	28.1	29.2	60.6
90%	66.6	63.1	49.6	68.5	46.9	38.5	28.0	23.1	28.8	25.7	27.4	48.0
Long Term												
Full Simulation Period[b]	92.3	90.5	99.0	111.0	91.8	77.9	64.6	49.7	43.5	39.4	46.7	71.3
Water Year Types[c]												
Wet (32%)	81.9	78.0	81.5	84.3	62.9	47.3	34.4	29.3	36.0	38.3	31.8	52.8
Above Normal (16%)	102.3	98.9	100.2	117.9	92.6	67.6	51.8	40.0	38.3	30.9	30.6	68.4
Below Normal (13%)	83.0	76.4	93.2	118.9	105.1	87.3	72.3	55.6	42.1	29.8	41.9	76.6
Dry (24%)	93.8	93.9	108.7	125.6	104.6	96.0	84.6	60.0	43.1	36.3	60.2	78.2
Critical (15%)	109.9	116.0	125.1	130.0	119.7	116.2	103.2	82.0	67.2	64.9	78.4	97.9

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-1.2**	**-1.6**	**-1.9**	1.1	3.9	13.2	10.5	1.2	**-18.7**	2.1	8.3	**-6.1**
20%	**-0.1**	2.4	**-0.3**	3.4	3.5	20.7	13.5	**-3.6**	**-10.1**	2.6	5.5	1.4
30%	1.5	**-1.0**	1.5	6.6	13.0	12.7	14.4	**-9.5**	**-5.6**	0.8	4.8	2.1
40%	**-0.5**	0.2	1.3	6.8	14.6	15.4	10.1	**-10.2**	**-4.9**	**-3.2**	1.5	4.2
50%	0.3	0.1	1.4	5.9	14.4	9.6	3.4	**-4.7**	**-4.3**	**-1.8**	**-1.0**	1.9
60%	**-1.2**	**-0.9**	**-1.7**	13.3	15.3	6.3	0.4	**-4.5**	**-4.1**	**-0.2**	1.1	1.1
70%	**-0.8**	**-0.8**	0.5	12.2	10.8	6.8	0.1	**-3.7**	**-4.5**	1.3	**0.0**	1.3
80%	**-0.2**	0.6	6.7	8.6	3.4	**-2.1**	**-2.4**	**-2.7**	**-5.7**	0.3	**-0.4**	**-0.5**
90%	0.2	**-0.8**	5.7	14.2	**-1.1**	**-0.7**	0.9	0.2	**-3.0**	**-0.5**	**-0.5**	**-3.5**
Long Term												
Full Simulation Period[b]	**-0.3**	1.1	1.5	7.4	7.8	8.8	6.3	**-3.5**	**-5.8**	**-0.2**	1.6	0.8
Water Year Types[c]												
Wet (32%)	**-0.7**	1.1	3.0	11.7	5.1	**-0.5**	0.8	**-1.8**	**-3.8**	**-0.2**	0.0	**-1.8**
Above Normal (16%)	1.3	3.0	3.7	13.8	13.4	5.1	0.6	**-5.0**	**-4.6**	**-0.7**	**-0.5**	0.9
Below Normal (13%)	0.2	**-0.8**	0.0	9.1	1.2	4.7	4.5	**-2.3**	1.0	1.6	0.4	7.1
Dry (24%)	**-1.6**	1.4	1.8	7.8	12.6	21.7	15.3	**-6.3**	**-10.2**	0.2	6.4	0.9
Critical (15%)	0.4	0.6	**-3.2**	**-11.1**	5.9	15.5	11.2	**-2.1**	**-10.6**	**-1.7**	0.6	0.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.21.6. Contra Costa Victoria Canal Intake, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	118.3	126.7	133.5	151.5	124.0	104.0	94.8	80.9	75.4	53.7	69.0	95.4
20%	107.2	101.7	119.5	136.5	112.8	86.0	79.7	75.2	61.0	48.1	54.8	83.9
30%	100.3	99.0	114.1	127.2	97.1	83.3	68.8	70.2	53.5	43.7	49.3	77.5
40%	97.6	93.6	107.5	116.9	89.3	74.2	63.4	57.4	48.8	39.3	44.7	71.7
50%	93.5	88.3	102.3	109.8	80.7	67.5	58.4	49.5	45.5	35.3	40.4	69.4
60%	89.9	84.9	99.4	83.1	69.6	61.3	51.1	45.3	42.4	31.2	35.6	67.0
70%	86.4	77.4	89.2	74.8	65.5	53.6	44.4	41.2	39.6	28.6	33.5	63.0
80%	81.2	71.3	67.8	69.1	57.1	47.1	37.0	37.0	38.3	27.9	29.6	61.1
90%	66.4	63.8	44.0	54.3	47.9	39.2	27.1	22.9	31.8	26.2	28.0	51.5
Long Term												
Full Simulation Period[b]	92.6	89.4	97.5	103.6	83.9	69.0	58.2	53.3	49.3	39.6	45.1	70.5
Water Year Types[c]												
Wet (32%)	82.6	76.9	78.5	72.6	57.8	47.9	33.6	31.2	39.8	38.4	31.8	54.6
Above Normal (16%)	101.0	95.9	96.5	104.1	79.1	62.5	51.2	45.0	42.9	31.7	31.2	67.5
Below Normal (13%)	82.8	77.2	93.2	109.8	103.9	82.6	67.8	57.9	41.1	28.2	41.5	69.5
Dry (24%)	95.3	92.4	106.9	117.8	92.0	74.3	69.3	66.3	53.3	36.1	53.9	77.4
Critical (15%)	109.5	115.4	128.3	141.1	113.9	100.7	91.9	84.2	77.7	66.6	77.8	97.5

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	115.0	125.3	147.3	160.3	141.4	117.2	115.1	101.4	89.3	56.4	80.7	91.2
20%	105.5	107.8	123.9	141.6	120.2	111.9	106.4	98.7	74.1	50.4	65.8	85.1
30%	97.2	92.8	108.8	120.8	112.3	98.6	95.2	85.2	67.0	45.1	58.9	81.9
40%	93.0	88.2	90.3	110.5	106.8	93.4	77.6	71.1	59.2	40.5	45.6	75.6
50%	85.2	75.4	67.6	100.4	99.6	85.0	68.1	59.3	55.9	36.7	39.0	70.7
60%	60.0	54.8	55.8	93.5	94.6	75.3	45.7	51.5	53.4	33.4	36.1	68.9
70%	56.3	51.7	48.2	86.2	87.0	63.7	37.7	47.8	51.4	31.7	32.6	64.3
80%	50.6	49.2	42.2	80.8	71.9	49.1	28.9	36.0	46.8	29.3	28.9	54.9
90%	44.6	45.5	33.5	69.8	53.8	37.6	22.2	17.2	40.5	27.4	27.0	48.7
Long Term												
Full Simulation Period[b]	78.3	77.5	82.3	107.4	98.7	82.4	67.2	63.6	59.9	40.4	48.1	70.9
Water Year Types[c]												
Wet (32%)	67.6	63.1	63.3	85.3	71.7	50.8	29.5	32.9	43.8	39.1	31.5	60.8
Above Normal (16%)	90.0	90.0	85.8	106.3	99.4	75.2	51.2	51.8	52.8	33.0	30.1	51.1
Below Normal (13%)	69.8	65.2	71.9	102.6	104.8	93.1	73.6	70.4	62.5	31.4	39.5	75.2
Dry (24%)	77.7	79.1	86.4	120.5	110.0	99.5	92.6	83.7	67.0	38.5	68.1	79.6
Critical (15%)	97.4	103.8	122.5	138.9	132.3	120.8	117.6	103.4	88.1	62.6	78.0	95.8

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-3.2	-1.5	13.8	8.8	17.4	13.2	20.4	20.5	13.9	2.7	11.7	-4.2
20%	-1.6	6.2	4.4	5.1	7.4	25.9	26.7	23.5	13.2	2.3	11.1	1.2
30%	-3.1	-6.1	-5.3	-6.4	15.2	15.3	26.4	14.9	13.5	1.4	9.6	4.4
40%	-4.6	-5.4	-17.2	-6.4	17.5	19.2	14.1	13.6	10.4	1.2	0.9	3.8
50%	-8.3	-12.9	-34.7	-9.4	18.9	17.4	9.7	9.8	10.3	1.4	-1.4	1.3
60%	-29.9	-30.1	-43.6	10.4	25.0	14.0	-5.4	6.2	10.9	2.2	0.5	1.9
70%	-30.1	-25.6	-40.9	11.4	21.6	10.1	-6.7	6.6	11.9	3.1	-0.8	1.3
80%	-30.6	-22.1	-25.6	11.7	14.8	2.0	-8.1	-1.0	8.5	1.4	-0.8	-6.2
90%	-21.8	-18.4	-10.5	15.4	5.9	-1.5	-4.9	-5.7	8.7	1.2	-1.0	-2.8
Long Term												
Full Simulation Period[b]	-14.3	-11.9	-15.2	3.7	14.8	13.4	8.9	10.4	10.6	0.8	3.0	0.4
Water Year Types[c]												
Wet (32%)	-15.0	-13.8	-15.2	12.7	13.9	3.0	-4.1	1.8	4.0	0.6	-0.3	6.2
Above Normal (16%)	-11.0	-5.9	-10.6	2.2	20.3	12.7	0.0	6.8	9.9	1.3	-1.0	-16.4
Below Normal (13%)	-13.0	-12.0	-21.3	-7.2	0.9	10.5	5.8	12.5	21.4	3.1	-2.0	5.6
Dry (24%)	-17.6	-13.3	-20.5	2.7	18.0	25.2	23.3	17.4	13.6	2.4	14.2	2.2
Critical (15%)	-12.1	-11.6	-5.9	-2.2	18.4	20.0	25.6	19.3	10.4	-4.0	0.2	-1.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.22. Antioch Chloride Concentration

Table 6E.B.22.1. Antioch, Monthly Chloride Concentration

No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,306.8	2,378.9	1,877.6	896.3	275.6	169.8	243.1	413.9	574.8	1,181.9	1,634.2	1,991.5
20%	2,029.7	1,951.0	1,489.9	724.0	142.6	98.4	110.6	306.3	508.7	950.6	1,390.3	1,853.0
30%	1,987.9	1,847.5	864.7	524.3	81.6	39.3	61.6	212.9	453.7	831.9	1,325.3	1,801.7
40%	1,902.8	1,463.3	712.0	300.6	51.8	27.3	32.1	88.2	381.6	596.4	1,070.0	1,654.6
50%	1,698.8	556.1	571.1	243.4	32.5	24.2	25.4	51.5	277.9	480.9	935.8	1,419.7
60%	504.0	474.1	466.9	72.5	27.6	22.7	22.9	30.9	227.7	321.5	875.4	590.5
70%	177.2	170.5	152.8	27.1	23.8	21.4	21.7	23.7	140.0	278.6	814.8	353.0
80%	162.3	143.4	74.7	23.1	21.6	20.1	20.9	21.2	65.8	251.3	751.3	326.8
90%	136.7	126.9	22.7	20.2	19.8	18.0	19.9	18.0	19.4	186.2	700.1	297.5
Long Term												
Full Simulation Period[b]	1,191.9	1,037.9	740.4	359.1	115.2	64.3	82.1	159.1	345.8	599.4	1,066.3	1,139.3
Water Year Types[c]												
Wet (32%)	788.6	570.4	198.8	62.0	25.3	21.1	21.4	26.7	109.7	212.5	749.2	304.4
Above Normal (16%)	1,556.8	1,108.7	623.9	160.1	33.0	22.1	23.0	37.7	224.5	305.3	770.2	589.2
Below Normal (13%)	810.0	761.1	727.9	396.3	116.1	66.4	74.2	141.5	362.7	509.0	950.8	1,575.6
Dry (24%)	1,287.5	1,230.9	1,063.7	557.0	161.5	67.1	86.0	187.1	408.4	887.7	1,344.1	1,790.2
Critical (15%)	1,860.9	1,906.5	1,513.1	854.5	321.3	197.1	278.6	546.6	869.0	1,358.8	1,716.9	2,059.1

Alternative 1

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,265.0	2,355.0	1,907.3	1,272.0	492.3	269.2	293.5	441.8	585.2	1,185.7	1,725.6	2,024.3
20%	1,989.6	1,973.6	1,852.9	1,080.6	267.2	115.6	164.1	306.8	504.9	950.1	1,463.9	1,915.1
30%	1,940.6	1,926.3	1,738.7	840.7	163.3	52.8	110.4	278.8	413.0	833.4	1,359.2	1,776.1
40%	1,883.9	1,853.0	1,562.7	487.3	89.4	34.9	64.6	142.7	315.6	570.4	1,146.3	1,678.9
50%	1,822.7	1,785.0	1,224.9	346.5	48.4	26.3	36.1	91.7	246.1	488.7	943.4	1,564.7
60%	1,785.1	1,679.0	789.1	173.4	28.3	23.6	24.3	55.6	204.4	348.3	891.2	1,486.9
70%	1,717.9	1,628.2	390.6	33.1	24.3	22.0	21.0	29.6	158.1	315.1	836.9	1,443.8
80%	1,629.3	1,437.3	231.9	23.7	20.9	20.0	19.6	18.4	79.9	251.7	786.8	1,381.2
90%	1,329.1	532.1	74.8	20.2	19.5	17.9	18.7	16.4	19.2	193.0	710.8	1,277.3
Long Term												
Full Simulation Period[b]	1,768.0	1,625.2	1,095.5	503.4	168.1	83.8	100.2	187.2	337.2	607.7	1,100.7	1,585.7
Water Year Types[c]												
Wet (32%)	1,560.8	1,366.5	426.2	92.4	27.4	21.2	23.8	37.0	99.7	226.7	761.2	1,243.5
Above Normal (16%)	1,916.5	1,571.0	1,047.8	285.6	51.2	22.6	29.2	65.4	196.2	317.2	809.4	1,433.2
Below Normal (13%)	1,647.4	1,433.8	1,199.6	735.0	243.8	96.9	107.8	190.2	304.9	524.4	1,023.0	1,608.1
Dry (24%)	1,848.5	1,825.8	1,518.3	788.7	236.1	88.0	110.8	216.2	408.0	873.5	1,387.6	1,827.7
Critical (15%)	2,032.6	2,085.8	1,797.1	941.8	417.1	266.8	318.1	593.5	916.2	1,381.0	1,744.9	2,068.3

Alternative 1 minus No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	**-41.8**	**-23.9**	29.8	375.7	216.7	99.4	50.4	27.9	10.3	3.8	91.4	32.8
20%	**-40.1**	22.6	363.0	356.6	124.5	17.2	53.4	0.6	**-3.8**	**-0.6**	73.6	62.0
30%	**-47.3**	78.8	874.0	316.4	81.8	13.4	48.8	65.9	**-40.7**	1.5	33.9	**-25.7**
40%	**-18.8**	389.7	850.7	186.8	37.6	7.6	32.5	54.5	**-66.0**	**-26.0**	76.3	24.3
50%	123.9	1,228.9	653.8	103.0	16.0	2.1	10.6	40.2	**-31.7**	7.8	7.6	145.0
60%	1,281.0	1,205.0	322.2	100.8	0.7	0.9	1.5	24.8	**-23.2**	26.9	15.7	896.5
70%	1,540.7	1,457.7	237.8	6.0	0.6	0.6	**-0.7**	5.9	18.1	36.5	22.1	1,090.7
80%	1,467.0	1,294.0	157.2	0.6	**-0.7**	**-0.1**	**-1.3**	**-2.8**	14.2	0.4	35.5	1,054.4
90%	1,192.3	405.2	52.1	0.0	**-0.3**	**-0.2**	**-1.2**	**-1.6**	**-0.2**	6.8	10.8	979.8
Long Term												
Full Simulation Period[b]	576.1	587.3	355.0	144.3	52.9	19.5	18.1	28.1	**-8.6**	8.2	34.4	446.4
Water Year Types[c]												
Wet (32%)	772.2	796.1	227.4	30.4	2.1	0.2	2.4	10.3	**-10.0**	14.2	12.0	939.1
Above Normal (16%)	359.7	462.3	424.0	125.4	18.2	0.5	6.2	27.7	**-28.4**	11.9	39.2	843.9
Below Normal (13%)	837.4	672.7	471.7	338.7	127.6	30.5	33.6	48.7	**-57.8**	15.4	72.2	32.5
Dry (24%)	561.0	594.9	454.6	231.7	74.5	20.8	24.8	29.1	**-0.5**	**-14.2**	43.5	37.5
Critical (15%)	171.7	179.4	284.0	87.3	95.8	69.7	39.4	46.9	47.2	22.2	28.0	9.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.22.2. Antioch, Monthly Chloride Concentration

No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,306.8	2,378.9	1,877.6	896.3	275.6	169.8	243.1	413.9	574.8	1,181.9	1,634.2	1,991.5
20%	2,029.7	1,951.0	1,489.9	724.0	142.6	98.4	110.6	306.3	508.7	950.6	1,390.3	1,853.0
30%	1,987.9	1,847.5	864.7	524.3	81.6	39.3	61.6	212.9	453.7	831.9	1,325.3	1,801.7
40%	1,902.8	1,463.3	712.0	300.6	51.8	27.3	32.1	88.2	381.6	596.4	1,070.0	1,654.6
50%	1,698.8	556.1	571.1	243.4	32.5	24.2	25.4	51.5	277.9	480.9	935.8	1,419.7
60%	504.0	474.1	466.9	72.5	27.6	22.7	22.9	30.9	227.7	321.5	875.4	590.5
70%	177.2	170.5	152.8	27.1	23.8	21.4	21.7	23.7	140.0	278.6	814.8	353.0
80%	162.3	143.4	74.7	23.1	21.6	20.1	20.9	21.2	65.8	251.3	751.3	326.8
90%	136.7	126.9	22.7	20.2	19.8	18.0	19.9	18.0	19.4	186.2	700.1	297.5
Long Term												
Full Simulation Period[b]	1,191.9	1,037.9	740.4	359.1	115.2	64.3	82.1	159.1	345.8	599.4	1,066.3	1,139.3
Water Year Types[c]												
Wet (32%)	788.6	570.4	198.8	62.0	25.3	21.1	21.4	26.7	109.7	212.5	749.2	304.4
Above Normal (16%)	1,556.8	1,108.7	623.9	160.1	33.0	22.1	23.0	37.7	224.5	305.3	770.2	589.2
Below Normal (13%)	810.0	761.1	727.9	396.3	116.1	66.4	74.2	141.5	362.7	509.0	950.8	1,575.6
Dry (24%)	1,287.5	1,230.9	1,063.7	557.0	161.5	67.1	86.0	187.1	408.4	887.7	1,344.1	1,790.2
Critical (15%)	1,860.9	1,906.5	1,513.1	854.5	321.3	197.1	278.6	546.6	869.0	1,358.8	1,716.9	2,059.1

Alternative 3

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,263.5	2,383.5	1,905.6	1,036.4	287.5	164.4	238.6	463.7	603.2	1,094.6	1,653.6	2,026.6
20%	2,029.1	2,019.2	1,843.4	846.5	144.7	101.1	148.0	328.2	527.8	950.8	1,466.8	1,897.7
30%	1,961.3	1,923.3	1,696.0	662.1	83.9	35.5	93.0	251.0	476.0	837.9	1,302.0	1,792.8
40%	1,887.4	1,875.6	1,442.8	352.8	48.3	26.9	53.0	161.4	396.4	556.5	1,075.1	1,622.3
50%	1,824.1	1,793.3	1,220.7	242.8	31.7	24.2	34.9	112.8	303.4	499.7	915.8	1,520.4
60%	1,752.5	1,700.4	788.5	95.7	27.2	22.6	24.3	69.9	242.0	330.2	873.4	1,455.8
70%	1,710.1	1,614.7	332.7	28.3	23.9	21.0	20.6	30.1	180.3	284.8	779.3	1,394.5
80%	1,636.5	1,409.1	234.3	23.5	21.3	19.8	19.5	18.8	99.5	263.0	765.0	1,355.0
90%	1,438.5	595.6	89.2	21.4	19.5	17.8	18.4	16.4	20.6	193.9	686.6	1,316.7
Long Term												
Full Simulation Period[b]	1,786.9	1,649.7	1,064.4	409.9	119.2	64.5	91.5	190.0	371.9	604.1	1,073.0	1,568.1
Water Year Types[c]												
Wet (32%)	1,550.8	1,384.8	410.3	73.6	24.6	21.2	23.4	43.0	128.1	221.3	731.2	1,232.1
Above Normal (16%)	1,985.9	1,594.9	982.2	200.1	31.7	21.0	27.7	70.3	235.7	311.9	784.4	1,418.3
Below Normal (13%)	1,677.7	1,465.7	1,202.6	512.9	126.9	69.1	97.2	197.0	404.0	514.3	944.1	1,525.3
Dry (24%)	1,850.8	1,852.8	1,501.1	624.9	158.7	66.5	97.8	222.1	439.1	871.8	1,365.7	1,819.3
Critical (15%)	2,076.6	2,113.1	1,716.3	913.2	346.3	198.1	292.6	578.5	906.0	1,385.8	1,756.4	2,079.1

Alternative 3 minus No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-43.3	4.6	28.0	140.1	12.0	-5.4	-4.6	49.8	28.4	-87.2	19.4	35.1
20%	-0.6	68.2	353.5	122.5	2.1	2.7	37.4	21.9	19.1	0.1	76.6	44.7
30%	-26.6	75.8	831.3	137.8	2.4	-3.8	31.4	38.1	22.3	6.0	-23.3	-8.9
40%	-15.4	412.3	730.8	52.3	-3.4	-0.4	20.9	73.1	14.8	-39.9	5.1	-32.3
50%	125.3	1,237.2	649.6	-0.7	-0.8	0.0	9.5	61.3	25.5	18.7	-20.0	100.7
60%	1,248.5	1,226.3	321.6	23.2	-0.4	-0.1	1.4	39.0	14.3	8.8	-2.0	865.4
70%	1,532.9	1,444.3	179.9	1.2	0.1	-0.3	-1.1	6.3	40.3	6.2	-35.5	1,041.5
80%	1,474.2	1,265.8	159.6	0.4	-0.3	-0.3	-1.4	-2.4	33.7	11.7	13.7	1,028.1
90%	1,301.8	468.7	66.5	1.3	-0.3	-0.2	-1.5	-1.6	1.3	7.8	-13.4	1,019.2
Long Term												
Full Simulation Period[b]	595.0	611.8	324.0	50.8	4.0	0.2	9.4	31.0	26.0	4.6	6.7	428.8
Water Year Types[c]												
Wet (32%)	762.2	814.4	211.5	11.6	-0.7	0.1	1.9	16.3	18.4	8.8	-18.0	927.6
Above Normal (16%)	429.1	486.3	358.3	40.0	-1.2	-1.2	4.7	32.6	11.1	6.7	14.2	829.1
Below Normal (13%)	867.7	704.6	474.7	116.7	10.8	2.7	23.0	55.4	41.3	5.3	-6.7	-50.3
Dry (24%)	563.3	621.9	437.4	67.9	-2.8	-0.7	11.8	35.0	30.7	-15.9	21.6	29.1
Critical (15%)	215.7	206.6	203.2	58.6	25.0	1.0	14.0	31.9	37.0	27.0	39.5	20.0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.22.3. Antioch, Monthly Chloride Concentration

No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,306.8	2,378.9	1,877.6	896.3	275.6	169.8	243.1	413.9	574.8	1,181.9	1,634.2	1,991.5
20%	2,029.7	1,951.0	1,489.9	724.0	142.6	98.4	110.6	306.3	508.7	950.6	1,390.3	1,853.0
30%	1,987.9	1,847.5	864.7	524.3	81.6	39.3	61.6	212.9	453.7	831.9	1,325.3	1,801.7
40%	1,902.8	1,463.3	712.0	300.6	51.8	27.3	32.1	88.2	381.6	596.4	1,070.0	1,654.6
50%	1,698.8	556.1	571.1	243.4	32.5	24.2	25.4	51.5	277.9	480.9	935.8	1,419.7
60%	504.0	474.1	466.9	72.5	27.6	22.7	22.9	30.9	227.7	321.5	875.4	590.5
70%	177.2	170.5	152.8	27.1	23.8	21.4	21.7	23.7	140.0	278.6	814.8	353.0
80%	162.3	143.4	74.7	23.1	21.6	20.1	20.9	21.2	65.8	251.3	751.3	326.8
90%	136.7	126.9	22.7	20.2	19.8	18.0	19.9	18.0	19.4	186.2	700.1	297.5
Long Term												
Full Simulation Period[b]	1,191.9	1,037.9	740.4	359.1	115.2	64.3	82.1	159.1	345.8	599.4	1,066.3	1,139.3
Water Year Types[c]												
Wet (32%)	788.6	570.4	198.8	62.0	25.3	21.1	21.4	26.7	109.7	212.5	749.2	304.4
Above Normal (16%)	1,556.8	1,108.7	623.9	160.1	33.0	22.1	23.0	37.7	224.5	305.3	770.2	589.2
Below Normal (13%)	810.0	761.1	727.9	396.3	116.1	66.4	74.2	141.5	362.7	509.0	950.8	1,575.6
Dry (24%)	1,287.5	1,230.9	1,063.7	557.0	161.5	67.1	86.0	187.1	408.4	887.7	1,344.1	1,790.2
Critical (15%)	1,860.9	1,906.5	1,513.1	854.5	321.3	197.1	278.6	546.6	869.0	1,358.8	1,716.9	2,059.1

Alternative 5

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,318.4	2,329.0	1,880.5	894.9	283.0	171.2	180.5	305.6	542.6	1,168.9	1,645.8	2,019.5
20%	2,067.2	1,960.8	1,453.7	728.0	142.6	98.5	96.5	216.1	474.0	930.8	1,405.6	1,866.4
30%	1,996.2	1,845.5	867.0	525.0	85.1	39.5	51.0	157.7	436.7	824.4	1,346.1	1,814.0
40%	1,889.7	1,458.6	711.9	300.4	51.7	27.3	30.8	79.3	361.9	597.7	1,066.2	1,659.4
50%	1,662.8	554.9	572.7	243.2	32.5	24.2	25.5	45.9	268.8	482.3	930.9	1,386.6
60%	504.4	471.1	466.9	72.3	27.5	22.7	23.2	30.6	226.5	322.3	875.2	591.4
70%	175.4	170.6	162.5	27.2	23.7	21.3	21.8	23.7	141.9	281.2	809.1	355.0
80%	160.9	143.3	60.8	23.2	21.6	20.0	20.8	21.4	66.5	251.3	737.0	325.4
90%	136.6	126.3	22.5	20.2	19.8	18.1	19.9	18.0	19.4	189.6	691.9	297.5
Long Term												
Full Simulation Period[b]	1,190.8	1,034.6	742.1	365.7	119.4	64.8	68.8	128.1	326.1	592.7	1,063.4	1,138.9
Water Year Types[c]												
Wet (32%)	788.0	578.0	200.3	62.0	25.3	21.1	21.4	25.4	109.7	210.2	740.5	304.0
Above Normal (16%)	1,556.0	1,087.3	616.5	159.7	33.0	22.1	23.1	36.9	224.1	305.7	769.6	590.6
Below Normal (13%)	812.6	762.8	728.3	397.2	116.0	66.4	62.7	116.2	355.8	507.7	944.0	1,562.5
Dry (24%)	1,285.7	1,223.1	1,071.6	563.7	163.0	67.4	66.8	147.9	391.0	884.2	1,347.1	1,795.2
Critical (15%)	1,855.9	1,901.7	1,515.8	888.2	347.6	199.8	230.0	426.9	769.9	1,324.0	1,717.6	2,060.0

Alternative 5 minus No Action Alternative

	Monthly Chloride Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	11.6	-49.9	2.9	-1.4	7.4	1.4	-62.6	-108.3	-32.2	-13.0	11.6	28.0
20%	37.6	9.9	-36.2	4.0	0.0	0.0	-14.1	-90.2	-34.6	-19.9	15.3	13.4
30%	8.2	-2.0	2.3	0.7	3.6	0.1	-10.7	-55.2	-17.1	-7.5	20.9	12.2
40%	-13.1	-4.7	-0.1	-0.2	-0.1	0.0	-1.3	-8.9	-19.7	1.2	-3.8	4.7
50%	-35.9	-1.1	1.6	-0.2	0.1	0.0	0.1	-5.6	-9.1	1.3	-4.9	-33.1
60%	0.4	-3.0	0.0	-0.2	-0.1	0.0	0.3	-0.3	-1.2	0.8	-0.2	0.9
70%	-1.8	0.1	9.7	0.1	0.0	-0.1	0.1	0.0	2.0	2.6	-5.7	2.0
80%	-1.5	-0.1	-13.9	0.1	0.0	-0.1	0.0	0.3	0.8	0.0	-14.3	-1.5
90%	-0.1	-0.6	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	3.4	-8.1	0.0
Long Term												
Full Simulation Period[b]	-1.1	-3.3	1.7	6.6	4.2	0.5	-13.3	-31.0	-19.8	-6.8	-2.9	-0.3
Water Year Types[c]												
Wet (32%)	-0.6	7.6	1.5	0.0	0.0	0.0	0.0	-1.3	0.0	-2.3	-8.7	-0.4
Above Normal (16%)	-0.8	-21.3	-7.4	-0.4	0.0	0.0	0.1	-0.8	-0.5	0.4	-0.6	1.4
Below Normal (13%)	2.6	1.7	0.4	0.9	-0.1	-0.1	-11.5	-25.3	-6.9	-1.3	-6.8	-13.1
Dry (24%)	-1.8	-7.7	7.9	6.7	1.5	0.3	-19.2	-39.2	-17.4	-3.5	3.0	5.0
Critical (15%)	-4.9	-4.8	2.7	33.7	26.2	2.7	-48.6	-119.7	-99.1	-34.8	0.7	0.9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.22.4. Antioch, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,265.0	2,355.0	1,907.3	1,272.0	492.3	269.2	293.5	441.8	585.2	1,185.7	1,725.6	2,024.3
20%	1,989.6	1,973.6	1,852.9	1,080.6	267.2	115.6	164.1	306.8	504.9	950.1	1,463.9	1,915.1
30%	1,940.6	1,926.3	1,738.7	840.7	163.3	52.8	110.4	278.8	413.0	833.4	1,359.2	1,776.1
40%	1,883.9	1,853.0	1,562.7	487.3	89.4	34.9	64.6	142.7	315.6	570.4	1,146.3	1,678.9
50%	1,822.7	1,785.0	1,224.9	346.5	48.4	26.3	36.1	91.7	246.1	488.7	943.4	1,564.7
60%	1,785.1	1,679.0	789.1	173.4	28.3	23.6	24.3	55.6	204.4	348.3	891.2	1,486.9
70%	1,717.9	1,628.2	390.6	33.1	24.3	22.0	21.0	29.6	158.1	315.1	836.9	1,443.8
80%	1,629.3	1,437.3	231.9	23.7	20.9	20.0	19.6	18.4	79.9	251.7	786.8	1,381.2
90%	1,329.1	532.1	74.8	20.2	19.5	17.9	18.7	16.4	19.2	193.0	710.8	1,277.3
Long Term												
Full Simulation Period[b]	1,768.0	1,625.2	1,095.5	503.4	168.1	83.8	100.2	187.2	337.2	607.7	1,100.7	1,585.7
Water Year Types[c]												
Wet (32%)	1,560.8	1,366.5	426.2	92.4	27.4	21.2	23.8	37.0	99.7	226.7	761.2	1,243.5
Above Normal (16%)	1,916.5	1,571.0	1,047.8	285.6	51.2	22.6	29.2	65.4	196.2	317.2	809.4	1,433.2
Below Normal (13%)	1,647.4	1,433.8	1,199.6	735.0	243.8	96.9	107.8	190.2	304.9	524.4	1,023.0	1,608.1
Dry (24%)	1,848.5	1,825.8	1,518.3	788.7	236.1	88.0	110.8	216.2	408.0	873.5	1,387.6	1,827.7
Critical (15%)	2,032.6	2,085.8	1,797.1	941.8	417.1	266.8	318.1	593.5	916.2	1,381.0	1,744.9	2,068.3

No Action Alternative

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,306.8	2,378.9	1,877.6	896.3	275.6	169.8	243.1	413.9	574.8	1,181.9	1,634.2	1,991.5
20%	2,029.7	1,951.0	1,489.9	724.0	142.6	98.4	110.6	306.3	508.7	950.6	1,390.3	1,853.0
30%	1,987.9	1,847.5	864.7	524.3	81.6	39.3	61.6	212.9	453.7	831.9	1,325.3	1,801.7
40%	1,902.8	1,463.3	712.0	300.6	51.8	27.3	32.1	88.2	381.6	596.4	1,070.0	1,654.6
50%	1,698.8	556.1	571.1	243.4	32.5	24.2	25.4	51.5	277.9	480.9	935.8	1,419.7
60%	504.0	474.1	466.9	72.5	27.6	22.7	22.9	30.9	227.7	321.5	875.4	590.5
70%	177.2	170.5	152.8	27.1	23.8	21.4	21.7	23.7	140.0	278.6	814.8	353.0
80%	162.3	143.4	74.7	23.1	21.6	20.1	20.9	21.2	65.8	251.3	751.3	326.8
90%	136.7	126.9	22.7	20.2	19.8	18.0	19.9	18.0	19.4	186.2	700.1	297.5
Long Term												
Full Simulation Period[b]	1,191.9	1,037.9	740.4	359.1	115.2	64.3	82.1	159.1	345.8	599.4	1,066.3	1,139.3
Water Year Types[c]												
Wet (32%)	788.6	570.4	198.8	62.0	25.3	21.1	21.4	26.7	109.7	212.5	749.2	304.4
Above Normal (16%)	1,556.8	1,108.7	623.9	160.1	33.0	22.1	23.0	37.7	224.5	305.3	770.2	589.2
Below Normal (13%)	810.0	761.1	727.9	396.3	116.1	66.4	74.2	141.5	362.7	509.0	950.8	1,575.6
Dry (24%)	1,287.5	1,230.9	1,063.7	557.0	161.5	67.1	86.0	187.1	408.4	887.7	1,344.1	1,790.2
Critical (15%)	1,860.9	1,906.5	1,513.1	854.5	321.3	197.1	278.6	546.6	869.0	1,358.8	1,716.9	2,059.1

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	41.8	23.9	-29.8	-375.7	-216.7	-99.4	-50.4	-27.9	-10.3	-3.8	-91.4	-32.8
20%	40.1	-22.6	-363.0	-356.6	-124.5	-17.2	-53.4	-0.6	3.8	0.6	-73.6	-62.0
30%	47.3	-78.8	-874.0	-316.4	-81.8	-13.4	-48.8	-65.9	40.7	-1.5	-33.9	25.7
40%	18.8	-389.7	-850.7	-186.8	-37.6	-7.6	-32.5	-54.5	66.0	26.0	-76.3	-24.3
50%	-123.9	-1,228.9	-653.8	-103.0	-16.0	-2.1	-10.6	-40.2	31.7	-7.8	-7.6	-145.0
60%	-1,281.0	-1,205.0	-322.2	-100.8	-0.7	-0.9	-1.5	-24.8	23.2	-26.9	-15.7	-896.5
70%	-1,540.7	-1,457.7	-237.8	-6.0	-0.6	-0.6	0.7	-5.9	-18.1	-36.5	-22.1	-1,090.7
80%	-1,467.0	-1,294.0	-157.2	-0.6	0.7	0.1	1.3	2.8	-14.2	-0.4	-35.5	-1,054.4
90%	-1,192.3	-405.2	-52.1	0.0	0.3	0.2	1.2	1.6	0.2	-6.8	-10.8	-979.8
Long Term												
Full Simulation Period[b]	-576.1	-587.3	-355.0	-144.3	-52.9	-19.5	-18.1	-28.1	8.6	-8.2	-34.4	-446.4
Water Year Types[c]												
Wet (32%)	-772.2	-796.1	-227.4	-30.4	-2.1	-0.2	-2.4	-10.3	10.0	-14.2	-12.0	-939.1
Above Normal (16%)	-359.7	-462.3	-424.0	-125.4	-18.2	-0.5	-6.2	-27.7	28.4	-11.9	-39.2	-843.9
Below Normal (13%)	-837.4	-672.7	-471.7	-338.7	-127.6	-30.5	-33.6	-48.7	57.8	-15.4	-72.2	-32.5
Dry (24%)	-561.0	-594.9	-454.6	-231.7	-74.5	-20.8	-24.8	-29.1	0.5	14.2	-43.5	-37.5
Critical (15%)	-171.7	-179.4	-284.0	-87.3	-95.8	-69.7	-39.4	-46.9	-47.2	-22.2	-28.0	-9.2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.22.5. Antioch, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	2,265.0	2,355.0	1,907.3	1,272.0	492.3	269.2	293.5	441.8	585.2	1,185.7	1,725.6	2,024.3
20%	1,989.6	1,973.6	1,852.9	1,080.6	267.2	115.6	164.1	306.8	504.9	950.1	1,463.9	1,915.1
30%	1,940.6	1,926.3	1,738.7	840.7	163.3	52.8	110.4	278.8	413.0	833.4	1,359.2	1,776.1
40%	1,883.9	1,853.0	1,562.7	487.3	89.4	34.9	64.6	142.7	315.6	570.4	1,146.3	1,678.9
50%	1,822.7	1,785.0	1,224.9	346.5	48.4	26.3	36.1	91.7	246.1	488.7	943.4	1,564.7
60%	1,785.1	1,679.0	789.1	173.4	28.3	23.6	24.3	55.6	204.4	348.3	891.2	1,486.9
70%	1,717.9	1,628.2	390.6	33.1	24.3	22.0	21.0	29.6	158.1	315.1	836.9	1,443.8
80%	1,629.3	1,437.3	231.9	23.7	20.9	20.0	19.6	18.4	79.9	251.7	786.8	1,381.2
90%	1,329.1	532.1	74.8	20.2	19.5	17.9	18.7	16.4	19.2	193.0	710.8	1,277.3
Long Term												
Full Simulation Period[b]	1,768.0	1,625.2	1,095.5	503.4	168.1	83.8	100.2	187.2	337.2	607.7	1,100.7	1,585.7
Water Year Types[c]												
Wet (32%)	1,560.8	1,366.5	426.2	92.4	27.4	21.2	23.8	37.0	99.7	226.7	761.2	1,243.5
Above Normal (16%)	1,916.5	1,571.0	1,047.8	285.6	51.2	22.6	29.2	65.4	196.2	317.2	809.4	1,433.2
Below Normal (13%)	1,647.4	1,433.8	1,199.6	735.0	243.8	96.9	107.8	190.2	304.9	524.4	1,023.0	1,608.1
Dry (24%)	1,848.5	1,825.8	1,518.3	788.7	236.1	88.0	110.8	216.2	408.0	873.5	1,387.6	1,827.7
Critical (15%)	2,032.6	2,085.8	1,797.1	941.8	417.1	266.8	318.1	593.5	916.2	1,381.0	1,744.9	2,068.3

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	2,263.5	2,383.5	1,905.6	1,036.4	287.5	164.4	238.6	463.7	603.2	1,094.6	1,653.6	2,026.6
20%	2,029.1	2,019.2	1,843.4	846.5	144.7	101.1	148.0	328.2	527.8	950.8	1,466.8	1,897.7
30%	1,961.3	1,923.3	1,696.0	662.1	83.9	35.5	93.0	251.0	476.0	837.9	1,302.0	1,792.8
40%	1,887.4	1,875.6	1,442.8	352.8	48.3	26.9	53.0	161.4	396.4	556.5	1,075.1	1,622.3
50%	1,824.1	1,793.3	1,220.7	242.8	31.7	24.2	34.9	112.8	303.4	499.7	915.8	1,520.4
60%	1,752.5	1,700.4	788.5	95.7	27.2	22.6	24.3	69.9	242.0	330.2	873.4	1,455.8
70%	1,710.1	1,614.7	332.7	28.3	23.9	21.0	20.6	30.1	180.3	284.8	779.3	1,394.5
80%	1,636.5	1,409.1	234.3	23.5	21.3	19.8	19.5	18.8	99.5	263.0	765.0	1,355.0
90%	1,438.5	595.6	89.2	21.4	19.5	17.8	18.4	16.4	20.6	193.9	686.6	1,316.7
Long Term												
Full Simulation Period[b]	1,786.9	1,649.7	1,064.4	409.9	119.2	64.5	91.5	190.0	371.9	604.1	1,073.0	1,568.1
Water Year Types[c]												
Wet (32%)	1,550.8	1,384.8	410.3	73.6	24.6	21.2	23.4	43.0	128.1	221.3	731.2	1,232.1
Above Normal (16%)	1,985.9	1,594.9	982.2	200.1	31.7	21.0	27.7	70.3	235.7	311.9	784.4	1,418.3
Below Normal (13%)	1,677.7	1,465.7	1,202.6	512.9	126.9	69.1	97.2	197.0	404.0	514.3	944.1	1,525.3
Dry (24%)	1,850.8	1,852.8	1,501.1	624.9	158.7	66.5	97.8	222.1	439.1	871.8	1,365.7	1,819.3
Critical (15%)	2,076.6	2,113.1	1,716.3	913.2	346.3	198.1	292.6	578.5	906.0	1,385.8	1,756.4	2,079.1

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Chloride Concentration (mg/L)											
Probability of Exceedance[a]												
10%	-1.5	28.5	-1.8	-235.6	-204.8	-104.8	-54.9	21.9	18.1	-91.1	-72.0	2.3
20%	39.5	45.6	-9.5	-234.1	-122.4	-14.5	-16.0	21.4	22.9	0.7	3.0	-17.4
30%	20.7	-3.0	-42.7	-178.6	-79.4	-17.2	-17.4	-27.7	63.0	4.5	-57.2	16.8
40%	3.5	22.6	-119.9	-134.5	-41.1	-8.1	-11.6	18.7	80.8	-13.9	-71.2	-56.6
50%	1.4	8.3	-4.2	-103.7	-16.7	-2.0	-1.1	21.1	57.3	11.0	-27.6	-44.3
60%	-32.5	21.4	-0.6	-77.7	-1.1	-1.0	0.0	14.3	37.5	-18.1	-17.8	-31.1
70%	-7.8	-13.4	-58.0	-4.8	-0.4	-0.9	-0.3	0.4	22.2	-30.3	-57.6	-49.3
80%	7.2	-28.2	2.4	-0.2	0.4	-0.2	-0.1	0.4	19.6	11.3	-21.8	-26.3
90%	109.5	63.5	14.4	1.2	0.0	0.0	-0.3	-0.1	1.5	0.9	-24.2	39.4
Long Term												
Full Simulation Period[b]	18.9	24.5	-31.1	-93.5	-48.9	-19.3	-8.7	2.8	34.7	-3.6	-27.7	-17.6
Water Year Types[c]												
Wet (32%)	-10.0	18.3	-15.9	-18.8	-2.9	-0.1	-0.4	6.0	28.4	-5.4	-30.0	-11.5
Above Normal (16%)	69.4	23.9	-65.6	-85.5	-19.4	-1.7	-1.5	4.9	39.5	-5.2	-25.0	-14.9
Below Normal (13%)	30.3	31.9	3.0	-222.1	-116.9	-27.8	-10.6	6.7	99.1	-10.0	-78.9	-82.8
Dry (24%)	2.3	27.0	-17.2	-163.9	-77.4	-21.5	-13.0	5.9	31.2	-1.7	-21.9	-8.4
Critical (15%)	44.0	27.3	-80.8	-28.6	-70.8	-68.7	-25.4	-15.0	-10.3	4.8	11.5	10.7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.22.6. Antioch, Monthly Chloride Concentration

Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,265.0	2,355.0	1,907.3	1,272.0	492.3	269.2	293.5	441.8	585.2	1,185.7	1,725.6	2,024.3
20%	1,989.6	1,973.6	1,852.9	1,080.6	267.2	115.6	164.1	306.8	504.9	950.1	1,463.9	1,915.1
30%	1,940.6	1,926.3	1,738.7	840.7	163.3	52.8	110.4	278.8	413.0	833.4	1,359.2	1,776.1
40%	1,883.9	1,853.0	1,562.7	487.3	89.4	34.9	64.6	142.7	315.6	570.4	1,146.3	1,678.9
50%	1,822.7	1,785.0	1,224.9	346.5	48.4	26.3	36.1	91.7	246.1	488.7	943.4	1,564.7
60%	1,785.1	1,679.0	789.1	173.4	28.3	23.6	24.3	55.6	204.4	348.3	891.2	1,486.9
70%	1,717.9	1,628.2	390.6	33.1	24.3	22.0	21.0	29.6	158.1	315.1	836.9	1,443.8
80%	1,629.3	1,437.3	231.9	23.7	20.9	20.0	19.6	18.4	79.9	251.7	786.8	1,381.2
90%	1,329.1	532.1	74.8	20.2	19.5	17.9	18.7	16.4	19.2	193.0	710.8	1,277.3
Long Term												
Full Simulation Period[b]	1,768.0	1,625.2	1,095.5	503.4	168.1	83.8	100.2	187.2	337.2	607.7	1,100.7	1,585.7
Water Year Types[c]												
Wet (32%)	1,560.8	1,366.5	426.2	92.4	27.4	21.2	23.8	37.0	99.7	226.7	761.2	1,243.5
Above Normal (16%)	1,916.5	1,571.0	1,047.8	285.6	51.2	22.6	29.2	65.4	196.2	317.2	809.4	1,433.2
Below Normal (13%)	1,647.4	1,433.8	1,199.6	735.0	243.8	96.9	107.8	190.2	304.9	524.4	1,023.0	1,608.1
Dry (24%)	1,848.5	1,825.8	1,518.3	788.7	236.1	88.0	110.8	216.2	408.0	873.5	1,387.6	1,827.7
Critical (15%)	2,032.6	2,085.8	1,797.1	941.8	417.1	266.8	318.1	593.5	916.2	1,381.0	1,744.9	2,068.3

Alternative 5

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	2,318.4	2,329.0	1,880.5	894.9	283.0	171.2	180.5	305.6	542.6	1,168.9	1,645.8	2,019.5
20%	2,067.2	1,960.8	1,453.7	728.0	142.6	98.5	96.5	216.1	474.0	930.8	1,405.6	1,866.4
30%	1,996.2	1,845.5	867.0	525.0	85.1	39.5	51.0	157.7	436.7	824.4	1,346.1	1,814.0
40%	1,889.7	1,458.6	711.9	300.4	51.7	27.3	30.8	79.3	361.9	597.7	1,066.2	1,659.4
50%	1,662.8	554.9	572.7	243.2	32.5	24.2	25.5	45.9	268.8	482.3	930.9	1,386.6
60%	504.4	471.1	466.9	72.3	27.5	22.7	23.2	30.6	226.5	322.3	875.2	591.4
70%	175.4	170.6	162.5	27.2	23.7	21.3	21.8	23.7	141.9	281.2	809.1	355.0
80%	160.9	143.3	60.8	23.2	21.6	20.0	20.8	21.4	66.5	251.3	737.0	325.4
90%	136.6	126.3	22.5	20.2	19.8	18.1	19.9	18.0	19.4	189.6	691.9	297.5
Long Term												
Full Simulation Period[b]	1,190.8	1,034.6	742.1	365.7	119.4	64.8	68.8	128.1	326.1	592.7	1,063.4	1,138.9
Water Year Types[c]												
Wet (32%)	788.0	578.0	200.3	62.0	25.3	21.1	21.4	25.4	109.7	210.2	740.5	304.0
Above Normal (16%)	1,556.0	1,087.3	616.5	159.7	33.0	22.1	23.1	36.9	224.1	305.7	769.6	590.6
Below Normal (13%)	812.6	762.8	728.3	397.2	116.0	66.4	62.7	116.2	355.8	507.7	944.0	1,562.5
Dry (24%)	1,285.7	1,223.1	1,071.6	563.7	163.0	67.4	66.8	147.9	391.0	884.2	1,347.1	1,795.2
Critical (15%)	1,855.9	1,901.7	1,515.8	888.2	347.6	199.8	230.0	426.9	769.9	1,324.0	1,717.6	2,060.0

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Chloride Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	53.4	-26.0	-26.9	-377.1	-209.3	-98.0	-113.0	-136.2	-42.6	-16.8	-79.8	-4.8
20%	77.7	-12.7	-399.2	-352.6	-124.6	-17.2	-67.5	-90.8	-30.9	-19.3	-58.3	-48.6
30%	55.5	-80.8	-871.7	-315.7	-78.2	-13.3	-59.4	-121.1	23.6	-9.0	-13.1	37.9
40%	5.7	-394.4	-850.8	-186.9	-37.7	-7.6	-33.9	-63.3	46.3	27.3	-80.1	-19.6
50%	-159.8	-1,230.1	-652.2	-103.3	-15.9	-2.1	-10.6	-45.8	22.7	-6.5	-12.5	-178.1
60%	-1,280.7	-1,207.9	-322.2	-101.1	-0.8	-0.9	-1.2	-25.1	22.0	-26.0	-16.0	-895.5
70%	-1,542.5	-1,457.6	-228.1	-5.9	-0.6	-0.7	0.8	-5.9	-16.1	-33.9	-27.8	-1,088.7
80%	-1,468.4	-1,294.0	-171.1	-0.5	0.7	0.0	1.3	3.1	-13.4	-0.4	-49.7	-1,055.9
90%	-1,192.4	-405.8	-52.2	-0.1	0.3	0.2	1.2	1.6	0.2	-3.5	-18.9	-979.8
Long Term												
Full Simulation Period[b]	-577.3	-590.6	-353.3	-137.6	-48.7	-19.1	-31.4	-59.1	-11.1	-15.0	-37.3	-446.8
Water Year Types[c]												
Wet (32%)	-772.7	-788.4	-225.9	-30.4	-2.1	-0.2	-2.4	-11.5	10.0	-16.5	-20.7	-939.5
Above Normal (16%)	-360.5	-483.7	-431.3	-125.9	-18.2	-0.5	-6.1	-28.5	27.9	-11.5	-39.8	-842.6
Below Normal (13%)	-834.8	-671.0	-471.3	-337.8	-127.8	-30.6	-45.1	-74.0	51.0	-16.6	-79.1	-45.6
Dry (24%)	-562.8	-602.6	-446.7	-225.0	-73.1	-20.6	-44.0	-68.3	-17.0	10.7	-40.5	-32.5
Critical (15%)	-176.7	-184.1	-281.3	-53.5	-69.5	-67.1	-88.1	-166.6	-146.3	-57.0	-27.3	-8.4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.23. Jones Pumping Plant Bromide Concentration

Table 6E.B.23.1. Jones Pumping Plant, Monthly Bromide Concentration

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.50	0.55	0.58	0.55	0.44	0.28	0.21	0.19	0.16	0.25	0.36	0.43
20%	0.47	0.46	0.52	0.51	0.29	0.23	0.18	0.18	0.14	0.19	0.32	0.41
30%	0.45	0.41	0.48	0.46	0.24	0.21	0.15	0.16	0.13	0.17	0.29	0.37
40%	0.42	0.39	0.43	0.42	0.23	0.19	0.14	0.14	0.12	0.13	0.25	0.35
50%	0.39	0.34	0.32	0.39	0.21	0.18	0.11	0.12	0.12	0.12	0.23	0.33
60%	0.20	0.16	0.17	0.26	0.18	0.14	0.10	0.11	0.12	0.11	0.20	0.31
70%	0.12	0.11	0.15	0.20	0.16	0.11	0.09	0.11	0.11	0.10	0.18	0.29
80%	0.11	0.10	0.14	0.17	0.13	0.09	0.08	0.09	0.11	0.10	0.17	0.27
90%	0.11	0.10	0.13	0.14	0.09	0.08	0.06	0.05	0.10	0.09	0.09	0.25
Long Term												
Full Simulation Period[b]	0.30	0.30	0.33	0.34	0.23	0.17	0.13	0.13	0.12	0.15	0.24	0.33
Water Year Types[c]												
Wet (32%)	0.25	0.22	0.22	0.19	0.13	0.10	0.07	0.08	0.10	0.10	0.14	0.26
Above Normal (16%)	0.38	0.36	0.34	0.33	0.19	0.14	0.10	0.11	0.12	0.10	0.18	0.26
Below Normal (13%)	0.25	0.22	0.28	0.37	0.23	0.18	0.13	0.14	0.12	0.14	0.23	0.38
Dry (24%)	0.30	0.31	0.38	0.44	0.29	0.21	0.16	0.16	0.13	0.19	0.32	0.37
Critical (15%)	0.41	0.44	0.49	0.50	0.38	0.28	0.21	0.19	0.15	0.25	0.36	0.43

Alternative 1

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.51	0.56	0.58	0.57	0.50	0.31	0.17	0.15	0.15	0.23	0.33	0.44
20%	0.49	0.48	0.53	0.52	0.44	0.21	0.16	0.13	0.14	0.17	0.29	0.41
30%	0.47	0.45	0.51	0.49	0.29	0.18	0.13	0.12	0.12	0.15	0.27	0.39
40%	0.46	0.43	0.48	0.48	0.20	0.17	0.12	0.11	0.11	0.12	0.25	0.36
50%	0.45	0.41	0.47	0.45	0.18	0.15	0.11	0.10	0.11	0.11	0.22	0.36
60%	0.43	0.39	0.45	0.26	0.16	0.13	0.09	0.09	0.10	0.10	0.19	0.35
70%	0.42	0.37	0.41	0.17	0.14	0.11	0.09	0.09	0.10	0.10	0.18	0.34
80%	0.40	0.35	0.33	0.15	0.12	0.09	0.08	0.08	0.10	0.09	0.16	0.32
90%	0.34	0.28	0.14	0.14	0.09	0.08	0.06	0.05	0.08	0.08	0.10	0.28
Long Term												
Full Simulation Period[b]	0.43	0.41	0.43	0.36	0.25	0.17	0.12	0.10	0.12	0.14	0.22	0.35
Water Year Types[c]												
Wet (32%)	0.39	0.36	0.33	0.19	0.12	0.10	0.07	0.07	0.10	0.10	0.14	0.29
Above Normal (16%)	0.47	0.43	0.41	0.35	0.19	0.13	0.09	0.09	0.11	0.10	0.17	0.36
Below Normal (13%)	0.40	0.37	0.42	0.41	0.28	0.21	0.12	0.11	0.10	0.14	0.23	0.36
Dry (24%)	0.44	0.42	0.49	0.45	0.33	0.20	0.13	0.12	0.12	0.15	0.28	0.38
Critical (15%)	0.49	0.50	0.55	0.52	0.42	0.28	0.21	0.15	0.21	0.24	0.35	0.44

Alternative 1 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.02	0.00	**0.00**	0.02	0.07	0.03	**-0.04**	**-0.04**	**0.00**	**-0.02**	**-0.03**	0.01
20%	0.02	0.02	0.01	0.01	0.15	**-0.02**	**-0.03**	**-0.05**	**0.00**	**-0.02**	**-0.03**	0.00
30%	0.02	0.03	0.03	0.04	0.05	**-0.03**	**-0.02**	**-0.04**	**-0.01**	**-0.03**	**-0.02**	0.01
40%	0.04	0.03	0.06	0.05	**-0.03**	**-0.03**	**-0.02**	**-0.04**	**-0.01**	**-0.01**	0.00	0.01
50%	0.06	0.07	0.15	0.06	**-0.02**	**-0.02**	**-0.01**	**-0.02**	**-0.01**	**-0.01**	**-0.01**	0.03
60%	0.23	0.24	0.28	**0.00**	**-0.02**	**0.00**	**0.00**	**-0.02**	**-0.01**	**-0.01**	**0.00**	0.04
70%	0.30	0.26	0.26	**-0.03**	**-0.02**	0.00	**0.00**	**-0.02**	**-0.01**	**-0.01**	**0.00**	0.04
80%	0.29	0.25	0.20	**-0.02**	**-0.01**	0.00	0.00	**-0.01**	**-0.01**	**0.00**	**-0.01**	0.05
90%	0.23	0.19	0.00	**-0.01**	**0.00**	0.00	0.00	**0.00**	**-0.01**	**0.00**	0.01	0.03
Long Term												
Full Simulation Period[b]	0.13	0.11	0.10	0.01	0.02	0.00	**-0.01**	**-0.02**	**0.00**	**-0.01**	**-0.01**	0.02
Water Year Types[c]												
Wet (32%)	0.14	0.15	0.11	0.00	**-0.01**	0.00	**0.00**	**-0.01**	**-0.01**	**0.00**	**-0.01**	0.02
Above Normal (16%)	0.09	0.07	0.07	0.01	**-0.01**	**-0.01**	**-0.01**	**-0.02**	**-0.01**	**-0.01**	**0.00**	0.10
Below Normal (13%)	0.15	0.15	0.14	0.04	0.05	0.04	**-0.01**	**-0.03**	**-0.02**	**0.00**	0.00	**-0.02**
Dry (24%)	0.15	0.11	0.11	0.01	0.03	**-0.01**	**-0.02**	**-0.04**	**-0.01**	**-0.04**	**-0.03**	0.01
Critical (15%)	0.08	0.06	0.05	0.02	0.04	0.00	0.00	**-0.04**	0.06	**0.00**	**-0.01**	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.23.2. Jones Pumping Plant, Monthly Bromide Concentration

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.50	0.55	0.58	0.55	0.44	0.28	0.21	0.19	0.16	0.25	0.36	0.43
20%	0.47	0.46	0.52	0.51	0.29	0.23	0.18	0.18	0.14	0.19	0.32	0.41
30%	0.45	0.41	0.48	0.46	0.24	0.21	0.15	0.16	0.13	0.17	0.29	0.37
40%	0.42	0.39	0.43	0.42	0.23	0.19	0.14	0.14	0.12	0.13	0.25	0.35
50%	0.39	0.34	0.32	0.39	0.21	0.18	0.11	0.12	0.12	0.12	0.23	0.33
60%	0.20	0.16	0.17	0.26	0.18	0.14	0.10	0.11	0.12	0.11	0.20	0.31
70%	0.12	0.11	0.15	0.20	0.16	0.11	0.09	0.11	0.11	0.10	0.18	0.29
80%	0.11	0.10	0.14	0.17	0.13	0.09	0.08	0.09	0.11	0.10	0.17	0.27
90%	0.11	0.10	0.13	0.14	0.09	0.08	0.06	0.05	0.10	0.09	0.09	0.25
Long Term												
Full Simulation Period[b]	0.30	0.30	0.33	0.34	0.23	0.17	0.13	0.13	0.12	0.15	0.24	0.33
Water Year Types[c]												
Wet (32%)	0.25	0.22	0.22	0.19	0.13	0.10	0.07	0.08	0.10	0.10	0.14	0.26
Above Normal (16%)	0.38	0.36	0.34	0.33	0.19	0.14	0.10	0.11	0.12	0.10	0.18	0.26
Below Normal (13%)	0.25	0.22	0.28	0.37	0.23	0.18	0.13	0.14	0.12	0.14	0.23	0.38
Dry (24%)	0.30	0.31	0.38	0.44	0.29	0.21	0.16	0.16	0.13	0.19	0.32	0.37
Critical (15%)	0.41	0.44	0.49	0.50	0.38	0.28	0.21	0.19	0.15	0.25	0.36	0.43

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.51	0.55	0.58	0.56	0.47	0.27	0.21	0.19	0.15	0.26	0.37	0.44
20%	0.49	0.48	0.53	0.53	0.29	0.23	0.17	0.17	0.12	0.19	0.31	0.41
30%	0.48	0.44	0.50	0.51	0.24	0.21	0.15	0.15	0.12	0.17	0.28	0.39
40%	0.46	0.42	0.49	0.48	0.22	0.19	0.12	0.13	0.11	0.13	0.25	0.37
50%	0.44	0.41	0.47	0.46	0.20	0.16	0.11	0.11	0.11	0.12	0.23	0.36
60%	0.43	0.40	0.45	0.25	0.17	0.14	0.09	0.10	0.10	0.11	0.19	0.35
70%	0.41	0.39	0.41	0.20	0.15	0.11	0.09	0.10	0.10	0.10	0.18	0.33
80%	0.40	0.36	0.33	0.16	0.12	0.09	0.07	0.09	0.09	0.10	0.11	0.32
90%	0.34	0.30	0.14	0.14	0.09	0.08	0.06	0.05	0.08	0.09	0.09	0.26
Long Term												
Full Simulation Period[b]	0.43	0.41	0.43	0.37	0.23	0.17	0.12	0.12	0.12	0.15	0.23	0.35
Water Year Types[c]												
Wet (32%)	0.38	0.37	0.34	0.21	0.12	0.10	0.07	0.07	0.09	0.10	0.13	0.27
Above Normal (16%)	0.48	0.45	0.42	0.37	0.20	0.14	0.10	0.10	0.10	0.10	0.17	0.36
Below Normal (13%)	0.40	0.36	0.43	0.42	0.25	0.17	0.13	0.14	0.10	0.15	0.24	0.39
Dry (24%)	0.44	0.43	0.49	0.46	0.28	0.21	0.15	0.15	0.11	0.18	0.30	0.38
Critical (15%)	0.49	0.50	0.53	0.49	0.40	0.31	0.21	0.19	0.20	0.25	0.36	0.44

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.02	0.00	0.00	0.01	0.03	0.00	0.00	0.01	-0.01	0.01	0.01	0.01
20%	0.02	0.02	0.01	0.02	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.01
30%	0.03	0.03	0.02	0.05	0.00	0.00	0.00	-0.01	-0.01	0.00	-0.01	0.02
40%	0.04	0.03	0.06	0.06	-0.01	0.00	-0.02	-0.01	-0.01	0.01	0.00	0.02
50%	0.05	0.07	0.15	0.06	0.00	-0.01	0.00	-0.01	-0.01	0.00	0.00	0.03
60%	0.22	0.24	0.28	-0.01	-0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.04
70%	0.30	0.27	0.27	0.01	-0.01	0.00	0.00	-0.01	-0.01	0.00	0.00	0.04
80%	0.29	0.26	0.19	-0.01	-0.01	0.00	0.00	0.00	-0.01	0.00	-0.06	0.05
90%	0.23	0.20	0.01	-0.01	-0.01	0.00	0.00	0.00	-0.02	0.00	0.00	0.01
Long Term												
Full Simulation Period[b]	0.13	0.12	0.10	0.02	0.00	0.00	0.00	0.00	-0.01	0.00	-0.01	0.02
Water Year Types[c]												
Wet (32%)	0.14	0.15	0.12	0.02	-0.01	0.00	0.00	-0.01	-0.01	0.00	-0.02	0.01
Above Normal (16%)	0.10	0.08	0.08	0.03	0.01	-0.01	-0.01	-0.01	-0.02	0.00	0.00	0.10
Below Normal (13%)	0.15	0.14	0.14	0.05	0.02	-0.01	0.00	0.00	-0.02	0.01	0.01	0.01
Dry (24%)	0.14	0.12	0.11	0.02	-0.01	0.00	0.00	0.00	-0.02	0.00	-0.02	0.01
Critical (15%)	0.08	0.06	0.03	-0.01	0.02	0.03	0.00	0.00	0.05	0.00	0.00	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.23.3. Jones Pumping Plant, Monthly Bromide Concentration

No Action Alternative

	Monthly Bromide Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.50	0.55	0.58	0.55	0.44	0.28	0.21	0.19	0.16	0.25	0.36	0.43
20%	0.47	0.46	0.52	0.51	0.29	0.23	0.18	0.18	0.14	0.19	0.32	0.41
30%	0.45	0.41	0.48	0.46	0.24	0.21	0.15	0.16	0.13	0.17	0.29	0.37
40%	0.42	0.39	0.43	0.42	0.23	0.19	0.14	0.14	0.12	0.13	0.25	0.35
50%	0.39	0.34	0.32	0.39	0.21	0.18	0.11	0.12	0.12	0.12	0.23	0.33
60%	0.20	0.16	0.17	0.26	0.18	0.14	0.10	0.11	0.12	0.11	0.20	0.31
70%	0.12	0.11	0.15	0.20	0.16	0.11	0.09	0.11	0.11	0.10	0.18	0.29
80%	0.11	0.10	0.14	0.17	0.13	0.09	0.08	0.09	0.11	0.10	0.17	0.27
90%	0.11	0.10	0.13	0.14	0.09	0.08	0.06	0.05	0.10	0.09	0.09	0.25
Long Term												
Full Simulation Period[b]	0.30	0.30	0.33	0.34	0.23	0.17	0.13	0.13	0.12	0.15	0.24	0.33
Water Year Types[c]												
Wet (32%)	0.25	0.22	0.22	0.19	0.13	0.10	0.07	0.08	0.10	0.10	0.14	0.26
Above Normal (16%)	0.38	0.36	0.34	0.33	0.19	0.14	0.10	0.11	0.12	0.10	0.18	0.26
Below Normal (13%)	0.25	0.22	0.28	0.37	0.23	0.18	0.13	0.14	0.12	0.14	0.23	0.38
Dry (24%)	0.30	0.31	0.38	0.44	0.29	0.21	0.16	0.16	0.13	0.19	0.32	0.37
Critical (15%)	0.41	0.44	0.49	0.50	0.38	0.28	0.21	0.19	0.15	0.25	0.36	0.43

Alternative 5

	Monthly Bromide Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.55	0.58	0.55	0.46	0.28	0.21	0.18	0.18	0.24	0.37	0.43
20%	0.47	0.48	0.52	0.51	0.30	0.23	0.18	0.18	0.15	0.21	0.33	0.41
30%	0.44	0.42	0.49	0.46	0.24	0.21	0.15	0.16	0.14	0.18	0.30	0.39
40%	0.43	0.40	0.43	0.43	0.23	0.19	0.13	0.14	0.13	0.13	0.25	0.36
50%	0.39	0.35	0.32	0.39	0.21	0.18	0.11	0.12	0.12	0.12	0.23	0.33
60%	0.21	0.14	0.17	0.25	0.18	0.14	0.10	0.11	0.12	0.11	0.20	0.31
70%	0.12	0.11	0.15	0.20	0.16	0.11	0.09	0.11	0.11	0.10	0.18	0.29
80%	0.11	0.10	0.14	0.17	0.13	0.09	0.08	0.09	0.11	0.10	0.17	0.27
90%	0.11	0.10	0.13	0.14	0.09	0.08	0.06	0.05	0.10	0.09	0.10	0.25
Long Term												
Full Simulation Period[b]	0.31	0.30	0.33	0.35	0.24	0.17	0.12	0.13	0.13	0.15	0.24	0.33
Water Year Types[c]												
Wet (32%)	0.25	0.22	0.22	0.19	0.13	0.10	0.07	0.08	0.10	0.10	0.15	0.26
Above Normal (16%)	0.39	0.36	0.33	0.33	0.19	0.14	0.10	0.11	0.12	0.10	0.18	0.26
Below Normal (13%)	0.24	0.22	0.28	0.37	0.23	0.18	0.13	0.14	0.13	0.14	0.23	0.38
Dry (24%)	0.30	0.31	0.38	0.45	0.29	0.21	0.16	0.16	0.14	0.20	0.33	0.38
Critical (15%)	0.41	0.44	0.49	0.50	0.43	0.28	0.21	0.18	0.17	0.24	0.36	0.43

Alternative 5 minus No Action Alternative

	Monthly Bromide Concentration (mg/L)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.02	0.00	0.00	0.00	0.02	0.00	0.00	-0.01	0.02	0.00	0.01	0.00
20%	0.00	0.02	-0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.00
30%	-0.01	0.00	0.01	0.00	0.00	0.00	-0.01	-0.01	0.01	0.01	0.01	0.01
40%	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.01	0.00	0.00	0.01
50%	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60%	0.01	-0.02	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Long Term												
Full Simulation Period[b]	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00
Water Year Types[c]												
Wet (32%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Above Normal (16%)	0.01	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Below Normal (13%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dry (24%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Critical (15%)	0.00	0.00	0.00	0.00	0.05	0.00	0.00	-0.01	0.02	-0.01	0.00	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.23.4. Jones Pumping Plant, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.51	0.56	0.58	0.57	0.50	0.31	0.17	0.15	0.15	0.23	0.33	0.44
20%	0.49	0.48	0.53	0.52	0.44	0.21	0.16	0.13	0.14	0.17	0.29	0.41
30%	0.47	0.45	0.51	0.49	0.29	0.18	0.13	0.12	0.12	0.15	0.27	0.39
40%	0.46	0.43	0.48	0.48	0.20	0.17	0.12	0.11	0.11	0.12	0.25	0.36
50%	0.45	0.41	0.47	0.45	0.18	0.15	0.11	0.10	0.11	0.11	0.22	0.36
60%	0.43	0.39	0.45	0.26	0.16	0.13	0.09	0.09	0.10	0.10	0.19	0.35
70%	0.42	0.37	0.41	0.17	0.14	0.11	0.09	0.09	0.10	0.10	0.18	0.34
80%	0.40	0.35	0.33	0.15	0.12	0.09	0.08	0.08	0.10	0.09	0.16	0.32
90%	0.34	0.28	0.14	0.14	0.09	0.08	0.06	0.05	0.08	0.08	0.10	0.28
Long Term												
Full Simulation Period[b]	0.43	0.41	0.43	0.36	0.25	0.17	0.12	0.10	0.12	0.14	0.22	0.35
Water Year Types[c]												
Wet (32%)	0.39	0.36	0.33	0.19	0.12	0.10	0.07	0.07	0.10	0.10	0.14	0.29
Above Normal (16%)	0.47	0.43	0.41	0.35	0.19	0.13	0.09	0.09	0.11	0.10	0.17	0.36
Below Normal (13%)	0.40	0.37	0.42	0.41	0.28	0.21	0.12	0.11	0.10	0.14	0.23	0.36
Dry (24%)	0.44	0.42	0.49	0.45	0.33	0.20	0.13	0.12	0.12	0.15	0.28	0.38
Critical (15%)	0.49	0.50	0.55	0.52	0.42	0.28	0.21	0.15	0.21	0.24	0.35	0.44

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.50	0.55	0.58	0.55	0.44	0.28	0.21	0.19	0.16	0.25	0.36	0.43
20%	0.47	0.46	0.52	0.51	0.29	0.23	0.18	0.18	0.14	0.19	0.32	0.41
30%	0.45	0.41	0.48	0.46	0.24	0.21	0.15	0.16	0.13	0.17	0.29	0.37
40%	0.42	0.39	0.43	0.42	0.23	0.19	0.14	0.14	0.12	0.13	0.25	0.35
50%	0.39	0.34	0.32	0.39	0.21	0.18	0.11	0.12	0.12	0.12	0.23	0.33
60%	0.20	0.16	0.17	0.26	0.18	0.14	0.10	0.11	0.12	0.11	0.20	0.31
70%	0.12	0.11	0.15	0.20	0.16	0.11	0.09	0.11	0.11	0.10	0.18	0.29
80%	0.11	0.10	0.14	0.17	0.13	0.09	0.08	0.09	0.11	0.10	0.17	0.27
90%	0.11	0.10	0.13	0.14	0.09	0.08	0.06	0.05	0.10	0.09	0.09	0.25
Long Term												
Full Simulation Period[b]	0.30	0.30	0.33	0.34	0.23	0.17	0.13	0.13	0.12	0.15	0.24	0.33
Water Year Types[c]												
Wet (32%)	0.25	0.22	0.22	0.19	0.13	0.10	0.07	0.08	0.10	0.10	0.14	0.26
Above Normal (16%)	0.38	0.36	0.34	0.33	0.19	0.14	0.10	0.11	0.12	0.10	0.18	0.26
Below Normal (13%)	0.25	0.22	0.28	0.37	0.23	0.18	0.13	0.14	0.12	0.14	0.23	0.38
Dry (24%)	0.30	0.31	0.38	0.44	0.29	0.21	0.16	0.16	0.13	0.19	0.32	0.37
Critical (15%)	0.41	0.44	0.49	0.50	0.38	0.28	0.21	0.19	0.15	0.25	0.36	0.43

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.02	0.00	0.00	-0.02	-0.07	-0.03	0.04	0.04	0.00	0.02	0.03	-0.01
20%	-0.02	-0.02	-0.01	-0.01	-0.15	0.02	0.03	0.05	0.00	0.02	0.03	0.00
30%	-0.02	-0.03	-0.03	-0.04	-0.05	0.03	0.02	0.04	0.01	0.03	0.02	-0.01
40%	-0.04	-0.03	-0.06	-0.05	0.03	0.03	0.02	0.04	0.01	0.01	0.00	-0.01
50%	-0.06	-0.07	-0.15	-0.06	0.02	0.02	0.01	0.02	0.01	0.01	0.01	-0.03
60%	-0.23	-0.24	-0.28	0.00	0.02	0.00	0.00	0.02	0.01	0.01	0.00	-0.04
70%	-0.30	-0.26	-0.26	0.03	0.02	0.00	0.00	0.02	0.01	0.01	0.00	-0.04
80%	-0.29	-0.25	-0.20	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-0.05
90%	-0.23	-0.19	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	-0.01	-0.03
Long Term												
Full Simulation Period[b]	-0.13	-0.11	-0.10	-0.01	-0.02	0.00	0.01	0.02	0.00	0.01	0.01	-0.02
Water Year Types[c]												
Wet (32%)	-0.14	-0.15	-0.11	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	-0.02
Above Normal (16%)	-0.09	-0.07	-0.07	-0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.00	-0.10
Below Normal (13%)	-0.15	-0.15	-0.14	-0.04	-0.05	-0.04	0.01	0.03	0.02	0.00	0.00	0.02
Dry (24%)	-0.15	-0.11	-0.11	-0.01	-0.03	0.01	0.02	0.04	0.01	0.04	0.03	-0.01
Critical (15%)	-0.08	-0.06	-0.05	-0.02	-0.04	0.00	0.00	0.04	-0.06	0.00	0.01	-0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.23.5. Jones Pumping Plant, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.51	0.56	0.58	0.57	0.50	0.31	0.17	0.15	0.15	0.23	0.33	0.44
20%	0.49	0.48	0.53	0.52	0.44	0.21	0.16	0.13	0.14	0.17	0.29	0.41
30%	0.47	0.45	0.51	0.49	0.29	0.18	0.13	0.12	0.12	0.15	0.27	0.39
40%	0.46	0.43	0.48	0.48	0.20	0.17	0.12	0.11	0.11	0.12	0.25	0.36
50%	0.45	0.41	0.47	0.45	0.18	0.15	0.11	0.10	0.11	0.11	0.22	0.36
60%	0.43	0.39	0.45	0.26	0.16	0.13	0.09	0.09	0.10	0.10	0.19	0.35
70%	0.42	0.37	0.41	0.17	0.14	0.11	0.09	0.09	0.10	0.10	0.18	0.34
80%	0.40	0.35	0.33	0.15	0.12	0.09	0.08	0.08	0.10	0.09	0.16	0.32
90%	0.34	0.28	0.14	0.14	0.09	0.08	0.06	0.05	0.08	0.08	0.10	0.28
Long Term												
Full Simulation Period[b]	0.43	0.41	0.43	0.36	0.25	0.17	0.12	0.10	0.12	0.14	0.22	0.35
Water Year Types[c]												
Wet (32%)	0.39	0.36	0.33	0.19	0.12	0.10	0.07	0.07	0.10	0.10	0.14	0.29
Above Normal (16%)	0.47	0.43	0.41	0.35	0.19	0.13	0.09	0.09	0.11	0.10	0.17	0.36
Below Normal (13%)	0.40	0.37	0.42	0.41	0.28	0.21	0.12	0.11	0.10	0.14	0.23	0.36
Dry (24%)	0.44	0.42	0.49	0.45	0.33	0.20	0.13	0.12	0.12	0.15	0.28	0.38
Critical (15%)	0.49	0.50	0.55	0.52	0.42	0.28	0.21	0.15	0.21	0.24	0.35	0.44

Alternative 3

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.51	0.55	0.58	0.56	0.47	0.27	0.21	0.19	0.15	0.26	0.37	0.44
20%	0.49	0.48	0.53	0.53	0.29	0.23	0.17	0.17	0.12	0.19	0.31	0.41
30%	0.48	0.44	0.50	0.51	0.24	0.21	0.15	0.15	0.12	0.17	0.28	0.39
40%	0.46	0.42	0.49	0.48	0.22	0.19	0.12	0.13	0.11	0.13	0.25	0.37
50%	0.44	0.41	0.47	0.46	0.20	0.16	0.11	0.11	0.11	0.12	0.23	0.36
60%	0.43	0.40	0.45	0.25	0.17	0.14	0.09	0.10	0.10	0.11	0.19	0.35
70%	0.41	0.39	0.41	0.20	0.15	0.11	0.09	0.10	0.10	0.10	0.18	0.33
80%	0.40	0.36	0.33	0.16	0.12	0.09	0.07	0.09	0.09	0.10	0.11	0.32
90%	0.34	0.30	0.14	0.14	0.09	0.08	0.06	0.05	0.08	0.09	0.09	0.26
Long Term												
Full Simulation Period[b]	0.43	0.41	0.43	0.37	0.23	0.17	0.12	0.12	0.12	0.15	0.23	0.35
Water Year Types[c]												
Wet (32%)	0.38	0.37	0.34	0.21	0.12	0.10	0.07	0.07	0.09	0.10	0.13	0.27
Above Normal (16%)	0.48	0.45	0.42	0.37	0.20	0.14	0.10	0.10	0.10	0.10	0.17	0.36
Below Normal (13%)	0.40	0.36	0.43	0.42	0.25	0.17	0.13	0.14	0.10	0.15	0.24	0.39
Dry (24%)	0.44	0.43	0.49	0.46	0.28	0.21	0.15	0.15	0.11	0.18	0.30	0.38
Critical (15%)	0.49	0.50	0.53	0.49	0.40	0.31	0.21	0.19	0.20	0.25	0.36	0.44

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.00	0.00	0.00	-0.01	-0.04	-0.04	0.04	0.05	0.00	0.03	0.04	0.00
20%	0.00	0.00	0.00	0.02	-0.15	0.02	0.02	0.04	-0.01	0.02	0.03	0.00
30%	0.00	-0.01	0.00	0.01	-0.05	0.03	0.02	0.03	-0.01	0.03	0.01	0.01
40%	0.00	0.00	0.01	0.01	0.02	0.02	0.01	0.03	0.00	0.01	0.00	0.01
50%	-0.01	0.00	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.00
60%	0.00	0.01	0.00	-0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00
70%	0.00	0.01	0.00	0.04	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00
80%	0.00	0.00	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.05	0.00
90%	0.00	0.01	0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Long Term												
Full Simulation Period[b]	0.00	0.01	0.00	0.01	-0.02	0.00	0.01	0.02	-0.01	0.01	0.00	0.00
Water Year Types[c]												
Wet (32%)	0.00	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Above Normal (16%)	0.01	0.02	0.01	0.02	0.01	0.01	0.00	0.01	-0.01	0.00	0.00	0.00
Below Normal (13%)	0.00	0.00	0.00	0.01	-0.03	-0.04	0.01	0.03	0.00	0.01	0.01	0.03
Dry (24%)	-0.01	0.01	0.00	0.01	-0.05	0.01	0.02	0.03	-0.01	0.03	0.02	0.00
Critical (15%)	0.00	0.00	-0.02	-0.03	-0.03	0.03	0.00	0.04	-0.01	0.01	0.01	0.00

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.23.6. Jones Pumping Plant, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.51	0.56	0.58	0.57	0.50	0.31	0.17	0.15	0.15	0.23	0.33	0.44
20%	0.49	0.48	0.53	0.52	0.44	0.21	0.16	0.13	0.14	0.17	0.29	0.41
30%	0.47	0.45	0.51	0.49	0.29	0.18	0.13	0.12	0.12	0.15	0.27	0.39
40%	0.46	0.43	0.48	0.48	0.20	0.17	0.12	0.11	0.11	0.12	0.25	0.36
50%	0.45	0.41	0.47	0.45	0.18	0.15	0.11	0.10	0.11	0.11	0.22	0.36
60%	0.43	0.39	0.45	0.26	0.16	0.13	0.09	0.09	0.10	0.10	0.19	0.35
70%	0.42	0.37	0.41	0.17	0.14	0.11	0.09	0.09	0.10	0.10	0.18	0.34
80%	0.40	0.35	0.33	0.15	0.12	0.09	0.08	0.08	0.10	0.09	0.16	0.32
90%	0.34	0.28	0.14	0.14	0.09	0.08	0.06	0.05	0.08	0.08	0.10	0.28
Long Term												
Full Simulation Period[b]	0.43	0.41	0.43	0.36	0.25	0.17	0.12	0.10	0.12	0.14	0.22	0.35
Water Year Types[c]												
Wet (32%)	0.39	0.36	0.33	0.19	0.12	0.10	0.07	0.07	0.10	0.10	0.14	0.29
Above Normal (16%)	0.47	0.43	0.41	0.35	0.19	0.13	0.09	0.09	0.11	0.10	0.17	0.36
Below Normal (13%)	0.40	0.37	0.42	0.41	0.28	0.21	0.12	0.11	0.10	0.14	0.23	0.36
Dry (24%)	0.44	0.42	0.49	0.45	0.33	0.20	0.13	0.12	0.12	0.15	0.28	0.38
Critical (15%)	0.49	0.50	0.55	0.52	0.42	0.28	0.21	0.15	0.21	0.24	0.35	0.44

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.55	0.58	0.55	0.46	0.28	0.21	0.18	0.18	0.24	0.37	0.43
20%	0.47	0.48	0.52	0.51	0.30	0.23	0.18	0.18	0.15	0.21	0.33	0.41
30%	0.44	0.42	0.49	0.46	0.24	0.21	0.15	0.16	0.14	0.18	0.30	0.39
40%	0.43	0.40	0.43	0.43	0.23	0.19	0.13	0.14	0.13	0.13	0.25	0.36
50%	0.39	0.35	0.32	0.39	0.21	0.18	0.11	0.12	0.12	0.12	0.23	0.33
60%	0.21	0.14	0.17	0.25	0.18	0.14	0.10	0.11	0.12	0.11	0.20	0.31
70%	0.12	0.11	0.15	0.20	0.16	0.11	0.09	0.11	0.11	0.10	0.18	0.29
80%	0.11	0.10	0.14	0.17	0.13	0.09	0.08	0.09	0.11	0.10	0.17	0.27
90%	0.11	0.10	0.13	0.14	0.09	0.08	0.06	0.05	0.10	0.09	0.10	0.25
Long Term												
Full Simulation Period[b]	0.31	0.30	0.33	0.35	0.24	0.17	0.12	0.13	0.13	0.15	0.24	0.33
Water Year Types[c]												
Wet (32%)	0.25	0.22	0.22	0.19	0.13	0.10	0.07	0.08	0.10	0.10	0.15	0.26
Above Normal (16%)	0.39	0.36	0.33	0.33	0.19	0.14	0.10	0.11	0.12	0.10	0.18	0.26
Below Normal (13%)	0.24	0.22	0.28	0.37	0.23	0.18	0.13	0.14	0.13	0.14	0.23	0.38
Dry (24%)	0.30	0.31	0.38	0.45	0.29	0.21	0.16	0.16	0.14	0.20	0.33	0.38
Critical (15%)	0.41	0.44	0.49	0.50	0.43	0.28	0.21	0.18	0.17	0.24	0.36	0.43

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	**-0.01**	0.00	**-0.02**	**-0.05**	**-0.03**	0.04	0.04	0.02	0.02	0.04	**-0.01**
20%	**-0.01**	**-0.01**	**-0.02**	**0.00**	**-0.14**	0.02	0.03	0.04	0.01	0.04	0.04	**0.00**
30%	**-0.03**	**-0.03**	**-0.02**	**-0.04**	**-0.05**	0.03	0.02	0.03	0.02	0.03	0.03	0.00
40%	**-0.03**	**-0.03**	**-0.05**	**-0.05**	0.03	0.03	0.02	0.03	0.02	0.01	0.00	**0.00**
50%	**-0.06**	**-0.07**	**-0.15**	**-0.06**	0.02	0.02	0.01	0.02	0.01	0.01	0.01	**-0.03**
60%	**-0.22**	**-0.26**	**-0.28**	**-0.01**	0.02	0.00	0.00	0.02	0.02	0.01	0.01	**-0.03**
70%	**-0.30**	**-0.26**	**-0.26**	0.03	0.02	**0.00**	0.00	0.02	0.01	0.01	0.00	**-0.05**
80%	**-0.29**	**-0.25**	**-0.20**	0.02	0.01	**0.00**	**0.00**	0.01	0.01	0.00	0.01	**-0.05**
90%	**-0.23**	**-0.18**	**0.00**	0.01	0.00	**0.00**	0.00	0.00	0.02	0.00	0.00	**-0.03**
Long Term												
Full Simulation Period[b]	**-0.12**	**-0.11**	**-0.10**	**-0.01**	**-0.01**	**0.00**	0.01	0.02	0.01	0.01	0.02	**-0.02**
Water Year Types[c]												
Wet (32%)	**-0.14**	**-0.14**	**-0.11**	**0.00**	0.01	0.00	0.00	0.01	0.01	0.00	0.02	**-0.02**
Above Normal (16%)	**-0.08**	**-0.07**	**-0.09**	**-0.01**	0.01	0.01	0.01	0.02	0.01	0.01	0.01	**-0.10**
Below Normal (13%)	**-0.16**	**-0.14**	**-0.14**	**-0.04**	**-0.05**	**-0.04**	0.01	0.03	0.03	0.00	0.00	0.02
Dry (24%)	**-0.15**	**-0.11**	**-0.11**	**-0.01**	**-0.03**	0.01	0.02	0.04	0.02	0.05	0.05	0.00
Critical (15%)	**-0.07**	**-0.06**	**-0.05**	**-0.01**	0.00	**0.00**	**0.00**	0.03	**-0.05**	**0.00**	0.01	**-0.01**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.24. Banks Pumping Plant Bromide Concentration

Table 6E.B.24.1. Banks Pumping Plant, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.53	0.58	0.62	0.58	0.43	0.38	0.19	0.17	0.16	0.22	0.36	0.43
20%	0.49	0.46	0.52	0.52	0.37	0.19	0.16	0.16	0.13	0.16	0.29	0.39
30%	0.45	0.43	0.45	0.43	0.32	0.16	0.14	0.15	0.12	0.15	0.24	0.37
40%	0.44	0.41	0.39	0.36	0.27	0.15	0.13	0.14	0.11	0.10	0.21	0.33
50%	0.39	0.35	0.25	0.33	0.18	0.13	0.12	0.11	0.11	0.09	0.19	0.32
60%	0.20	0.13	0.19	0.26	0.16	0.12	0.10	0.10	0.10	0.09	0.16	0.31
70%	0.19	0.09	0.10	0.17	0.14	0.11	0.09	0.10	0.10	0.08	0.15	0.28
80%	0.17	0.09	0.09	0.14	0.11	0.10	0.08	0.09	0.09	0.08	0.14	0.26
90%	0.10	0.08	0.08	0.13	0.10	0.08	0.06	0.04	0.08	0.07	0.12	0.24
Long Term												
Full Simulation Period[b]	0.32	0.30	0.31	0.33	0.24	0.17	0.13	0.12	0.12	0.13	0.21	0.32
Water Year Types[c]												
Wet (32%)	0.27	0.21	0.20	0.18	0.13	0.10	0.07	0.07	0.09	0.08	0.13	0.27
Above Normal (16%)	0.39	0.37	0.33	0.30	0.20	0.13	0.11	0.11	0.10	0.08	0.14	0.25
Below Normal (13%)	0.28	0.21	0.26	0.35	0.27	0.18	0.13	0.13	0.12	0.12	0.20	0.37
Dry (24%)	0.32	0.31	0.35	0.42	0.32	0.20	0.15	0.14	0.12	0.16	0.29	0.36
Critical (15%)	0.42	0.45	0.50	0.51	0.40	0.32	0.24	0.20	0.18	0.23	0.32	0.40

Alternative 1

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.57	0.59	0.60	0.45	0.29	0.15	0.13	0.14	0.20	0.32	0.41
20%	0.50	0.50	0.55	0.55	0.39	0.21	0.13	0.12	0.12	0.14	0.25	0.40
30%	0.49	0.47	0.52	0.49	0.30	0.15	0.11	0.12	0.10	0.12	0.22	0.37
40%	0.47	0.44	0.49	0.46	0.22	0.13	0.11	0.10	0.09	0.10	0.21	0.35
50%	0.46	0.43	0.46	0.44	0.15	0.12	0.10	0.09	0.09	0.09	0.18	0.34
60%	0.45	0.41	0.44	0.28	0.14	0.11	0.09	0.09	0.09	0.08	0.15	0.33
70%	0.43	0.39	0.40	0.15	0.11	0.10	0.09	0.08	0.08	0.08	0.14	0.33
80%	0.41	0.36	0.30	0.12	0.10	0.09	0.08	0.08	0.08	0.07	0.13	0.29
90%	0.36	0.28	0.10	0.11	0.09	0.08	0.06	0.05	0.07	0.07	0.08	0.27
Long Term												
Full Simulation Period[b]	0.44	0.42	0.43	0.36	0.23	0.15	0.12	0.10	0.10	0.12	0.19	0.34
Water Year Types[c]												
Wet (32%)	0.40	0.38	0.33	0.18	0.10	0.09	0.07	0.07	0.08	0.08	0.12	0.28
Above Normal (16%)	0.47	0.44	0.42	0.34	0.17	0.12	0.09	0.09	0.08	0.07	0.14	0.35
Below Normal (13%)	0.41	0.38	0.41	0.41	0.32	0.20	0.12	0.10	0.09	0.11	0.20	0.35
Dry (24%)	0.45	0.44	0.49	0.46	0.29	0.16	0.12	0.11	0.11	0.13	0.25	0.37
Critical (15%)	0.49	0.51	0.56	0.55	0.39	0.28	0.23	0.18	0.19	0.23	0.31	0.41

Alternative 1 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.01	0.00	-0.03	0.02	0.01	-0.09	-0.04	-0.04	-0.02	-0.02	-0.04	-0.01
20%	0.01	0.03	0.03	0.03	0.02	0.02	-0.03	-0.03	-0.01	-0.02	-0.04	0.00
30%	0.04	0.04	0.06	0.07	-0.01	-0.02	-0.03	-0.03	-0.02	-0.03	-0.01	0.01
40%	0.03	0.03	0.09	0.10	-0.05	-0.02	-0.03	-0.04	-0.02	-0.01	0.00	0.02
50%	0.07	0.08	0.21	0.12	-0.03	-0.01	-0.02	-0.02	-0.02	0.00	-0.01	0.02
60%	0.25	0.28	0.25	0.01	-0.02	-0.02	-0.01	-0.02	-0.02	0.00	-0.01	0.03
70%	0.24	0.30	0.30	-0.02	-0.03	-0.01	0.00	-0.01	-0.02	0.00	0.00	0.04
80%	0.24	0.28	0.21	-0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00	-0.01	0.04
90%	0.26	0.20	0.02	-0.02	-0.01	0.00	-0.01	0.01	0.00	0.00	-0.04	0.03
Long Term												
Full Simulation Period[b]	0.11	0.13	0.12	0.03	-0.01	-0.02	-0.01	-0.02	-0.01	-0.01	-0.02	0.02
Water Year Types[c]												
Wet (32%)	0.13	0.17	0.13	0.00	-0.02	0.00	0.00	-0.01	-0.01	0.00	-0.01	0.01
Above Normal (16%)	0.08	0.07	0.08	0.05	-0.03	-0.01	-0.02	-0.02	-0.02	0.00	0.00	0.10
Below Normal (13%)	0.13	0.16	0.15	0.07	0.05	0.01	-0.02	-0.03	-0.04	-0.01	0.00	-0.02
Dry (24%)	0.14	0.13	0.13	0.04	-0.03	-0.04	-0.03	-0.03	-0.01	-0.03	-0.04	0.01
Critical (15%)	0.07	0.06	0.06	0.04	-0.01	-0.04	-0.01	-0.01	0.01	-0.01	-0.01	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.24.2. Banks Pumping Plant, Monthly Bromide Concentration

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.53	0.58	0.62	0.58	0.43	0.38	0.19	0.17	0.16	0.22	0.36	0.43
20%	0.49	0.46	0.52	0.52	0.37	0.19	0.16	0.16	0.13	0.16	0.29	0.39
30%	0.45	0.43	0.45	0.43	0.32	0.16	0.14	0.15	0.12	0.15	0.24	0.37
40%	0.44	0.41	0.39	0.36	0.27	0.15	0.13	0.14	0.11	0.10	0.21	0.33
50%	0.39	0.35	0.25	0.33	0.18	0.13	0.12	0.11	0.11	0.09	0.19	0.32
60%	0.20	0.13	0.19	0.26	0.16	0.12	0.10	0.10	0.10	0.09	0.16	0.31
70%	0.19	0.09	0.10	0.17	0.14	0.11	0.09	0.10	0.10	0.08	0.15	0.28
80%	0.17	0.09	0.09	0.14	0.11	0.10	0.08	0.09	0.09	0.08	0.14	0.26
90%	0.10	0.08	0.08	0.13	0.10	0.08	0.06	0.04	0.08	0.07	0.12	0.24
Long Term												
Full Simulation Period[b]	0.32	0.30	0.31	0.33	0.24	0.17	0.13	0.12	0.12	0.13	0.21	0.32
Water Year Types[c]												
Wet (32%)	0.27	0.21	0.20	0.18	0.13	0.10	0.07	0.07	0.09	0.08	0.13	0.27
Above Normal (16%)	0.39	0.37	0.33	0.30	0.20	0.13	0.11	0.11	0.10	0.08	0.14	0.25
Below Normal (13%)	0.28	0.21	0.26	0.35	0.27	0.18	0.13	0.13	0.12	0.12	0.20	0.37
Dry (24%)	0.32	0.31	0.35	0.42	0.32	0.20	0.15	0.14	0.12	0.16	0.29	0.36
Critical (15%)	0.42	0.45	0.50	0.51	0.40	0.32	0.24	0.20	0.18	0.23	0.32	0.40

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.53	0.57	0.60	0.59	0.43	0.36	0.18	0.16	0.14	0.23	0.36	0.44
20%	0.50	0.50	0.54	0.55	0.38	0.18	0.16	0.14	0.11	0.16	0.26	0.41
30%	0.47	0.46	0.51	0.51	0.34	0.16	0.14	0.12	0.10	0.15	0.23	0.38
40%	0.47	0.44	0.49	0.47	0.21	0.14	0.12	0.10	0.09	0.10	0.21	0.36
50%	0.45	0.42	0.47	0.44	0.17	0.12	0.10	0.09	0.08	0.09	0.18	0.35
60%	0.44	0.42	0.44	0.29	0.14	0.11	0.09	0.09	0.08	0.08	0.16	0.33
70%	0.42	0.40	0.40	0.16	0.13	0.10	0.09	0.08	0.08	0.08	0.14	0.32
80%	0.40	0.36	0.32	0.13	0.11	0.09	0.08	0.08	0.07	0.07	0.12	0.30
90%	0.36	0.32	0.10	0.12	0.09	0.08	0.06	0.05	0.07	0.07	0.08	0.26
Long Term												
Full Simulation Period[b]	0.44	0.43	0.43	0.36	0.23	0.16	0.12	0.11	0.10	0.12	0.20	0.34
Water Year Types[c]												
Wet (32%)	0.39	0.38	0.34	0.19	0.11	0.09	0.07	0.07	0.07	0.08	0.11	0.27
Above Normal (16%)	0.48	0.46	0.42	0.36	0.20	0.12	0.09	0.08	0.08	0.07	0.14	0.35
Below Normal (13%)	0.41	0.37	0.42	0.43	0.28	0.17	0.12	0.11	0.09	0.13	0.21	0.38
Dry (24%)	0.44	0.45	0.49	0.47	0.30	0.19	0.14	0.12	0.10	0.15	0.27	0.37
Critical (15%)	0.49	0.52	0.54	0.50	0.37	0.31	0.25	0.19	0.17	0.23	0.31	0.41

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.01	0.00	-0.02	0.01	-0.01	-0.02	-0.01	-0.01	-0.02	0.00	0.01	0.01
20%	0.01	0.04	0.02	0.03	0.01	0.00	0.00	-0.01	-0.03	0.00	-0.02	0.01
30%	0.02	0.04	0.05	0.09	0.03	0.00	-0.01	-0.03	-0.02	0.00	-0.01	0.01
40%	0.03	0.03	0.10	0.11	-0.06	-0.01	-0.01	-0.03	-0.02	-0.01	0.00	0.03
50%	0.07	0.07	0.21	0.11	-0.02	-0.01	-0.02	-0.02	-0.02	0.00	-0.01	0.03
60%	0.24	0.29	0.25	0.02	-0.02	-0.01	-0.01	-0.02	-0.02	0.00	0.00	0.02
70%	0.23	0.31	0.30	-0.01	-0.01	-0.01	0.00	-0.01	-0.02	0.00	-0.01	0.04
80%	0.23	0.27	0.22	0.00	-0.01	-0.01	0.00	-0.01	-0.02	0.00	-0.01	0.04
90%	0.26	0.23	0.02	-0.01	-0.01	0.00	0.00	0.01	-0.01	0.00	-0.04	0.02
Long Term												
Full Simulation Period[b]	0.11	0.13	0.12	0.04	-0.01	-0.01	-0.01	-0.01	-0.02	0.00	-0.01	0.02
Water Year Types[c]												
Wet (32%)	0.12	0.17	0.14	0.02	-0.01	0.00	0.00	-0.01	-0.01	0.00	-0.02	0.00
Above Normal (16%)	0.09	0.09	0.09	0.06	0.00	-0.01	-0.01	-0.02	-0.03	0.00	0.00	0.10
Below Normal (13%)	0.13	0.16	0.15	0.08	0.01	-0.01	-0.01	-0.02	-0.03	0.01	0.01	0.01
Dry (24%)	0.13	0.13	0.14	0.05	-0.02	-0.01	-0.01	-0.02	-0.02	-0.01	-0.02	0.00
Critical (15%)	0.07	0.06	0.04	-0.01	-0.03	-0.01	0.01	-0.01	-0.01	-0.01	-0.01	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.24.3. Banks Pumping Plant, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.53	0.58	0.62	0.58	0.43	0.38	0.19	0.17	0.16	0.22	0.36	0.43
20%	0.49	0.46	0.52	0.52	0.37	0.19	0.16	0.16	0.13	0.16	0.29	0.39
30%	0.45	0.43	0.45	0.43	0.32	0.16	0.14	0.15	0.12	0.15	0.24	0.37
40%	0.44	0.41	0.39	0.36	0.27	0.15	0.13	0.14	0.11	0.10	0.21	0.33
50%	0.39	0.35	0.25	0.33	0.18	0.13	0.12	0.11	0.11	0.09	0.19	0.32
60%	0.20	0.13	0.19	0.26	0.16	0.12	0.10	0.10	0.10	0.09	0.16	0.31
70%	0.19	0.09	0.10	0.17	0.14	0.11	0.09	0.10	0.10	0.08	0.15	0.28
80%	0.17	0.09	0.09	0.14	0.11	0.10	0.08	0.09	0.09	0.08	0.14	0.26
90%	0.10	0.08	0.08	0.13	0.10	0.08	0.06	0.04	0.08	0.07	0.12	0.24
Long Term												
Full Simulation Period[b]	0.32	0.30	0.31	0.33	0.24	0.17	0.13	0.12	0.12	0.13	0.21	0.32
Water Year Types[c]												
Wet (32%)	0.27	0.21	0.20	0.18	0.13	0.10	0.07	0.07	0.09	0.08	0.13	0.27
Above Normal (16%)	0.39	0.37	0.33	0.30	0.20	0.13	0.11	0.11	0.10	0.08	0.14	0.25
Below Normal (13%)	0.28	0.21	0.26	0.35	0.27	0.18	0.13	0.13	0.12	0.12	0.20	0.37
Dry (24%)	0.32	0.31	0.35	0.42	0.32	0.20	0.15	0.14	0.12	0.16	0.29	0.36
Critical (15%)	0.42	0.45	0.50	0.51	0.40	0.32	0.24	0.20	0.18	0.23	0.32	0.40

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.58	0.62	0.58	0.44	0.38	0.20	0.19	0.18	0.23	0.36	0.43
20%	0.50	0.49	0.53	0.52	0.37	0.19	0.17	0.17	0.15	0.17	0.31	0.40
30%	0.46	0.43	0.46	0.42	0.32	0.16	0.15	0.15	0.14	0.15	0.26	0.38
40%	0.44	0.41	0.39	0.36	0.27	0.15	0.13	0.13	0.12	0.12	0.21	0.36
50%	0.41	0.36	0.25	0.33	0.18	0.13	0.12	0.11	0.11	0.09	0.20	0.32
60%	0.20	0.10	0.19	0.26	0.16	0.12	0.10	0.10	0.10	0.09	0.16	0.31
70%	0.19	0.09	0.11	0.17	0.14	0.11	0.09	0.09	0.10	0.08	0.15	0.29
80%	0.17	0.09	0.09	0.14	0.11	0.10	0.08	0.09	0.10	0.08	0.13	0.26
90%	0.10	0.08	0.08	0.13	0.10	0.08	0.06	0.04	0.08	0.07	0.12	0.23
Long Term												
Full Simulation Period[b]	0.33	0.30	0.31	0.33	0.24	0.17	0.14	0.13	0.12	0.13	0.22	0.33
Water Year Types[c]												
Wet (32%)	0.27	0.21	0.20	0.18	0.13	0.10	0.07	0.07	0.09	0.08	0.13	0.27
Above Normal (16%)	0.40	0.38	0.33	0.31	0.20	0.13	0.11	0.10	0.10	0.08	0.14	0.25
Below Normal (13%)	0.28	0.22	0.26	0.35	0.27	0.18	0.13	0.12	0.12	0.12	0.20	0.38
Dry (24%)	0.32	0.31	0.35	0.43	0.32	0.20	0.16	0.15	0.14	0.18	0.31	0.38
Critical (15%)	0.43	0.45	0.50	0.51	0.40	0.32	0.27	0.26	0.19	0.24	0.34	0.41

Alternative 5 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00	0.01	0.00
20%	0.01	0.03	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.00
30%	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.02	0.01
40%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.01	0.02	0.00	0.03
50%	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
60%	0.00	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70%	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Long Term												
Full Simulation Period[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00
Water Year Types[c]												
Wet (32%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above Normal (16%)	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Below Normal (13%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.01
Dry (24%)	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.02	0.01	0.02	0.01
Critical (15%)	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.01	0.00	0.01	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.24.4. Banks Pumping Plant, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.57	0.59	0.60	0.45	0.29	0.15	0.13	0.14	0.20	0.32	0.41
20%	0.50	0.50	0.55	0.55	0.39	0.21	0.13	0.12	0.12	0.14	0.25	0.40
30%	0.49	0.47	0.52	0.49	0.30	0.15	0.11	0.12	0.10	0.12	0.22	0.37
40%	0.47	0.44	0.49	0.46	0.22	0.13	0.11	0.10	0.09	0.10	0.21	0.35
50%	0.46	0.43	0.46	0.44	0.15	0.12	0.10	0.09	0.09	0.09	0.18	0.34
60%	0.45	0.41	0.44	0.28	0.14	0.11	0.09	0.09	0.09	0.08	0.15	0.33
70%	0.43	0.39	0.40	0.15	0.11	0.10	0.09	0.08	0.08	0.08	0.14	0.33
80%	0.41	0.36	0.30	0.12	0.10	0.09	0.08	0.08	0.08	0.07	0.13	0.29
90%	0.36	0.28	0.10	0.11	0.09	0.08	0.06	0.05	0.07	0.07	0.08	0.27
Long Term												
Full Simulation Period[b]	0.44	0.42	0.43	0.36	0.23	0.15	0.12	0.10	0.10	0.12	0.19	0.34
Water Year Types[c]												
Wet (32%)	0.40	0.38	0.33	0.18	0.10	0.09	0.07	0.07	0.08	0.08	0.12	0.28
Above Normal (16%)	0.47	0.44	0.42	0.34	0.17	0.12	0.09	0.09	0.08	0.07	0.14	0.35
Below Normal (13%)	0.41	0.38	0.41	0.41	0.32	0.20	0.12	0.10	0.09	0.11	0.20	0.35
Dry (24%)	0.45	0.44	0.49	0.46	0.29	0.16	0.12	0.11	0.11	0.13	0.25	0.37
Critical (15%)	0.49	0.51	0.56	0.55	0.39	0.28	0.23	0.18	0.19	0.23	0.31	0.41

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.53	0.58	0.62	0.58	0.43	0.38	0.19	0.17	0.16	0.22	0.36	0.43
20%	0.49	0.46	0.52	0.52	0.37	0.19	0.16	0.16	0.13	0.16	0.29	0.39
30%	0.45	0.43	0.45	0.43	0.32	0.16	0.14	0.15	0.12	0.15	0.24	0.37
40%	0.44	0.41	0.39	0.36	0.27	0.15	0.13	0.14	0.11	0.10	0.21	0.33
50%	0.39	0.35	0.25	0.33	0.18	0.13	0.12	0.11	0.11	0.09	0.19	0.32
60%	0.20	0.13	0.19	0.26	0.16	0.12	0.10	0.10	0.10	0.09	0.16	0.31
70%	0.19	0.09	0.10	0.17	0.14	0.11	0.09	0.10	0.10	0.08	0.15	0.28
80%	0.17	0.09	0.09	0.14	0.11	0.10	0.08	0.09	0.09	0.08	0.14	0.26
90%	0.10	0.08	0.08	0.13	0.10	0.08	0.06	0.04	0.08	0.07	0.12	0.24
Long Term												
Full Simulation Period[b]	0.32	0.30	0.31	0.33	0.24	0.17	0.13	0.12	0.12	0.13	0.21	0.32
Water Year Types[c]												
Wet (32%)	0.27	0.21	0.20	0.18	0.13	0.10	0.07	0.07	0.09	0.08	0.13	0.27
Above Normal (16%)	0.39	0.37	0.33	0.30	0.20	0.13	0.11	0.11	0.10	0.08	0.14	0.25
Below Normal (13%)	0.28	0.21	0.26	0.35	0.27	0.18	0.13	0.13	0.12	0.12	0.20	0.37
Dry (24%)	0.32	0.31	0.35	0.42	0.32	0.20	0.15	0.14	0.12	0.16	0.29	0.36
Critical (15%)	0.42	0.45	0.50	0.51	0.40	0.32	0.24	0.20	0.18	0.23	0.32	0.40

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.00	0.03	-0.02	-0.01	0.09	0.04	0.04	0.02	0.02	0.04	0.01
20%	-0.01	-0.03	-0.03	-0.03	-0.02	-0.02	0.03	0.03	0.01	0.02	0.04	0.00
30%	-0.04	-0.04	-0.06	-0.07	0.01	0.02	0.03	0.03	0.02	0.03	0.01	-0.01
40%	-0.03	-0.03	-0.09	-0.10	0.05	0.02	0.03	0.04	0.02	0.01	0.00	-0.02
50%	-0.07	-0.08	-0.21	-0.12	0.03	0.01	0.02	0.02	0.02	0.00	0.01	-0.02
60%	-0.25	-0.28	-0.25	-0.01	0.02	0.02	0.01	0.02	0.02	0.00	0.01	-0.03
70%	-0.24	-0.30	-0.30	0.02	0.03	0.01	0.00	0.01	0.02	0.00	0.00	-0.04
80%	-0.24	-0.28	-0.21	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	-0.04
90%	-0.26	-0.20	-0.02	0.02	0.01	0.00	0.01	-0.01	0.00	0.00	0.04	-0.03
Long Term												
Full Simulation Period[b]	-0.11	-0.13	-0.12	-0.03	0.01	0.02	0.01	0.02	0.01	0.01	0.02	-0.02
Water Year Types[c]												
Wet (32%)	-0.13	-0.17	-0.13	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.01	-0.01
Above Normal (16%)	-0.08	-0.07	-0.08	-0.05	0.03	0.01	0.02	0.02	0.02	0.00	0.00	-0.10
Below Normal (13%)	-0.13	-0.16	-0.15	-0.07	-0.05	-0.01	0.02	0.03	0.04	0.01	0.00	0.02
Dry (24%)	-0.14	-0.13	-0.13	-0.04	0.03	0.04	0.03	0.03	0.01	0.03	0.04	-0.01
Critical (15%)	-0.07	-0.06	-0.06	-0.04	0.01	0.04	0.01	0.01	-0.01	0.01	0.01	-0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.24.5. Banks Pumping Plant, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.57	0.59	0.60	0.45	0.29	0.15	0.13	0.14	0.20	0.32	0.41
20%	0.50	0.50	0.55	0.55	0.39	0.21	0.13	0.12	0.12	0.14	0.25	0.40
30%	0.49	0.47	0.52	0.49	0.30	0.15	0.11	0.12	0.10	0.12	0.22	0.37
40%	0.47	0.44	0.49	0.46	0.22	0.13	0.11	0.10	0.09	0.10	0.21	0.35
50%	0.46	0.43	0.46	0.44	0.15	0.12	0.10	0.09	0.09	0.09	0.18	0.34
60%	0.45	0.41	0.44	0.28	0.14	0.11	0.09	0.09	0.09	0.08	0.15	0.33
70%	0.43	0.39	0.40	0.15	0.11	0.10	0.09	0.08	0.08	0.08	0.14	0.33
80%	0.41	0.36	0.30	0.12	0.10	0.09	0.08	0.08	0.08	0.07	0.13	0.29
90%	0.36	0.28	0.10	0.11	0.09	0.08	0.06	0.05	0.07	0.07	0.08	0.27
Long Term												
Full Simulation Period[b]	0.44	0.42	0.43	0.36	0.23	0.15	0.12	0.10	0.10	0.12	0.19	0.34
Water Year Types[c]												
Wet (32%)	0.40	0.38	0.33	0.18	0.10	0.09	0.07	0.07	0.08	0.08	0.12	0.28
Above Normal (16%)	0.47	0.44	0.42	0.34	0.17	0.12	0.09	0.09	0.08	0.07	0.14	0.35
Below Normal (13%)	0.41	0.38	0.41	0.41	0.32	0.20	0.12	0.10	0.09	0.11	0.20	0.35
Dry (24%)	0.45	0.44	0.49	0.46	0.29	0.16	0.12	0.11	0.11	0.13	0.25	0.37
Critical (15%)	0.49	0.51	0.56	0.55	0.39	0.28	0.23	0.18	0.19	0.23	0.31	0.41

Alternative 3

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.53	0.57	0.60	0.59	0.43	0.36	0.18	0.16	0.14	0.23	0.36	0.44
20%	0.50	0.50	0.54	0.55	0.38	0.18	0.16	0.14	0.11	0.16	0.26	0.41
30%	0.47	0.46	0.51	0.51	0.34	0.16	0.14	0.12	0.10	0.15	0.23	0.38
40%	0.47	0.44	0.49	0.47	0.21	0.14	0.12	0.10	0.09	0.10	0.21	0.36
50%	0.45	0.42	0.47	0.44	0.17	0.12	0.10	0.09	0.08	0.09	0.18	0.35
60%	0.44	0.42	0.44	0.29	0.14	0.11	0.09	0.09	0.08	0.08	0.16	0.33
70%	0.42	0.40	0.40	0.16	0.13	0.10	0.09	0.08	0.08	0.08	0.14	0.32
80%	0.40	0.36	0.32	0.13	0.11	0.09	0.08	0.08	0.07	0.07	0.12	0.30
90%	0.36	0.32	0.10	0.12	0.09	0.08	0.06	0.05	0.07	0.07	0.08	0.26
Long Term												
Full Simulation Period[b]	0.44	0.43	0.43	0.36	0.23	0.16	0.12	0.11	0.10	0.12	0.20	0.34
Water Year Types[c]												
Wet (32%)	0.39	0.38	0.34	0.19	0.11	0.09	0.07	0.07	0.07	0.08	0.11	0.27
Above Normal (16%)	0.48	0.46	0.42	0.36	0.20	0.12	0.09	0.08	0.08	0.07	0.14	0.35
Below Normal (13%)	0.41	0.37	0.42	0.43	0.28	0.17	0.12	0.11	0.09	0.13	0.21	0.38
Dry (24%)	0.44	0.45	0.49	0.47	0.30	0.19	0.14	0.12	0.10	0.15	0.27	0.37
Critical (15%)	0.49	0.52	0.54	0.50	0.37	0.31	0.25	0.19	0.17	0.23	0.31	0.41

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.02	**0.00**	0.01	**-0.01**	**-0.02**	0.07	0.03	0.03	0.00	0.02	0.04	0.03
20%	**0.00**	0.00	**-0.01**	**0.00**	**-0.01**	**-0.03**	0.03	0.02	**-0.01**	0.02	0.02	0.01
30%	**-0.02**	**-0.01**	**-0.01**	0.02	0.04	0.01	0.02	0.01	**0.00**	0.03	0.00	0.00
40%	**0.00**	0.00	0.01	0.00	**-0.01**	0.01	0.01	0.00	**0.00**	**0.00**	**0.00**	0.01
50%	**0.00**	**-0.01**	0.00	**0.00**	0.01	0.00	0.01	0.00	**0.00**	**0.00**	0.00	0.01
60%	**-0.01**	0.00	**0.00**	0.01	0.00	0.01	0.00	0.00	**0.00**	0.00	0.00	**0.00**
70%	**-0.01**	0.01	0.00	0.01	0.02	0.00	**0.00**	**0.00**	**0.00**	0.00	**0.00**	**0.00**
80%	**0.00**	**0.00**	0.01	0.01	0.00	**0.00**	**0.00**	**0.00**	**-0.01**	0.00	**0.00**	0.00
90%	0.00	0.04	0.00	0.01	**0.00**	0.00	0.01	0.00	**-0.01**	**0.00**	**0.00**	**-0.01**
Long Term												
Full Simulation Period[b]	**0.00**	0.01	0.00	0.01	**0.00**	0.01	0.01	0.00	**-0.01**	0.01	0.01	0.00
Water Year Types[c]												
Wet (32%)	**0.00**	0.00	0.01	0.02	0.01	**0.00**	0.00	0.00	**-0.01**	**0.00**	**-0.01**	**-0.01**
Above Normal (16%)	0.01	0.02	0.01	0.02	0.02	**0.00**	0.00	**0.00**	**-0.01**	0.00	0.00	0.00
Below Normal (13%)	**0.00**	**0.00**	0.00	0.01	**-0.05**	**-0.02**	0.01	0.01	0.01	0.02	0.01	0.04
Dry (24%)	**-0.01**	0.01	0.01	0.01	0.01	0.03	0.02	0.01	**-0.01**	0.02	0.02	**0.00**
Critical (15%)	0.00	0.00	**-0.02**	**-0.05**	**-0.02**	0.03	0.02	0.00	**-0.02**	**0.00**	0.00	**0.00**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.24.6. Banks Pumping Plant, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.57	0.59	0.60	0.45	0.29	0.15	0.13	0.14	0.20	0.32	0.41
20%	0.50	0.50	0.55	0.55	0.39	0.21	0.13	0.12	0.12	0.14	0.25	0.40
30%	0.49	0.47	0.52	0.49	0.30	0.15	0.11	0.12	0.10	0.12	0.22	0.37
40%	0.47	0.44	0.49	0.46	0.22	0.13	0.11	0.10	0.09	0.10	0.21	0.35
50%	0.46	0.43	0.46	0.44	0.15	0.12	0.10	0.09	0.09	0.09	0.18	0.34
60%	0.45	0.41	0.44	0.28	0.14	0.11	0.09	0.09	0.09	0.08	0.15	0.33
70%	0.43	0.39	0.40	0.15	0.11	0.10	0.09	0.08	0.08	0.08	0.14	0.33
80%	0.41	0.36	0.30	0.12	0.10	0.09	0.08	0.08	0.08	0.07	0.13	0.29
90%	0.36	0.28	0.10	0.11	0.09	0.08	0.06	0.05	0.07	0.07	0.08	0.27
Long Term												
Full Simulation Period[b]	0.44	0.42	0.43	0.36	0.23	0.15	0.12	0.10	0.10	0.12	0.19	0.34
Water Year Types[c]												
Wet (32%)	0.40	0.38	0.33	0.18	0.10	0.09	0.07	0.07	0.08	0.08	0.12	0.28
Above Normal (16%)	0.47	0.44	0.42	0.34	0.17	0.12	0.09	0.09	0.08	0.07	0.14	0.35
Below Normal (13%)	0.41	0.38	0.41	0.41	0.32	0.20	0.12	0.10	0.09	0.11	0.20	0.35
Dry (24%)	0.45	0.44	0.49	0.46	0.29	0.16	0.12	0.11	0.11	0.13	0.25	0.37
Critical (15%)	0.49	0.51	0.56	0.55	0.39	0.28	0.23	0.18	0.19	0.23	0.31	0.41

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.52	0.58	0.62	0.58	0.44	0.38	0.20	0.19	0.18	0.23	0.36	0.43
20%	0.50	0.49	0.53	0.52	0.37	0.19	0.17	0.17	0.15	0.17	0.31	0.40
30%	0.46	0.43	0.46	0.42	0.32	0.16	0.15	0.15	0.14	0.15	0.26	0.38
40%	0.44	0.41	0.39	0.36	0.27	0.15	0.13	0.13	0.12	0.12	0.21	0.36
50%	0.41	0.36	0.25	0.33	0.18	0.13	0.12	0.11	0.11	0.09	0.20	0.32
60%	0.20	0.10	0.19	0.26	0.16	0.12	0.10	0.10	0.10	0.09	0.16	0.31
70%	0.19	0.09	0.11	0.17	0.14	0.11	0.09	0.09	0.10	0.08	0.15	0.29
80%	0.17	0.09	0.09	0.14	0.11	0.10	0.08	0.09	0.10	0.08	0.13	0.26
90%	0.10	0.08	0.08	0.13	0.10	0.08	0.06	0.04	0.08	0.07	0.12	0.23
Long Term												
Full Simulation Period[b]	0.33	0.30	0.31	0.33	0.24	0.17	0.14	0.13	0.12	0.13	0.22	0.33
Water Year Types[c]												
Wet (32%)	0.27	0.21	0.20	0.18	0.13	0.10	0.07	0.07	0.09	0.08	0.13	0.27
Above Normal (16%)	0.40	0.38	0.33	0.31	0.20	0.13	0.11	0.10	0.10	0.08	0.14	0.25
Below Normal (13%)	0.28	0.22	0.26	0.35	0.27	0.18	0.13	0.12	0.12	0.12	0.20	0.38
Dry (24%)	0.32	0.31	0.35	0.43	0.32	0.20	0.16	0.15	0.14	0.18	0.31	0.38
Critical (15%)	0.43	0.45	0.50	0.51	0.40	0.32	0.27	0.26	0.19	0.24	0.34	0.41

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.01	0.03	-0.02	-0.01	0.09	0.05	0.06	0.04	0.02	0.04	0.01
20%	0.00	0.00	-0.02	-0.03	-0.02	-0.02	0.04	0.04	0.03	0.03	0.06	0.00
30%	-0.03	-0.04	-0.06	-0.07	0.01	0.02	0.04	0.04	0.04	0.04	0.03	0.01
40%	-0.02	-0.03	-0.09	-0.10	0.05	0.02	0.03	0.03	0.03	0.02	0.00	0.01
50%	-0.05	-0.07	-0.21	-0.12	0.03	0.01	0.02	0.02	0.02	0.00	0.01	-0.02
60%	-0.24	-0.31	-0.25	-0.01	0.02	0.02	0.01	0.02	0.02	0.00	0.01	-0.02
70%	-0.24	-0.30	-0.29	0.03	0.03	0.01	0.00	0.01	0.02	0.00	0.01	-0.03
80%	-0.23	-0.28	-0.21	0.02	0.01	0.01	0.00	0.01	0.02	0.00	0.00	-0.03
90%	-0.26	-0.20	-0.01	0.02	0.01	0.00	0.01	-0.01	0.00	0.00	0.04	-0.04
Long Term												
Full Simulation Period[b]	-0.11	-0.12	-0.12	-0.03	0.01	0.02	0.02	0.03	0.02	0.02	0.02	-0.01
Water Year Types[c]												
Wet (32%)	-0.13	-0.16	-0.13	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	-0.01
Above Normal (16%)	-0.07	-0.06	-0.09	-0.04	0.03	0.01	0.01	0.02	0.02	0.00	0.00	-0.10
Below Normal (13%)	-0.13	-0.16	-0.15	-0.07	-0.05	-0.01	0.01	0.02	0.04	0.01	0.00	0.03
Dry (24%)	-0.13	-0.13	-0.14	-0.03	0.03	0.04	0.04	0.04	0.03	0.05	0.06	0.01
Critical (15%)	-0.06	-0.06	-0.06	-0.04	0.01	0.04	0.04	0.07	0.00	0.01	0.03	0.00

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.25. Old River at Rock Slough Bromide Concentration

Table 6E.B.25.1. Old River at Rock Slough, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.77	0.83	0.78	0.62	0.31	0.13	0.12	0.12	0.09	0.29	0.49	0.64
20%	0.71	0.65	0.69	0.51	0.27	0.10	0.11	0.11	0.08	0.20	0.43	0.59
30%	0.65	0.57	0.58	0.40	0.17	0.09	0.10	0.10	0.07	0.18	0.36	0.55
40%	0.60	0.52	0.38	0.33	0.14	0.08	0.10	0.10	0.07	0.16	0.30	0.51
50%	0.56	0.39	0.24	0.28	0.12	0.08	0.09	0.10	0.07	0.12	0.26	0.44
60%	0.13	0.14	0.18	0.23	0.10	0.07	0.09	0.09	0.07	0.08	0.23	0.39
70%	0.12	0.06	0.14	0.11	0.08	0.07	0.08	0.09	0.06	0.06	0.19	0.37
80%	0.11	0.06	0.11	0.09	0.08	0.06	0.08	0.07	0.06	0.06	0.18	0.31
90%	0.11	0.05	0.06	0.08	0.07	0.06	0.07	0.05	0.06	0.05	0.16	0.28
Long Term												
Full Simulation Period[b]	0.42	0.38	0.37	0.31	0.16	0.10	0.09	0.09	0.08	0.15	0.29	0.45
Water Year Types[c]												
Wet (32%)	0.30	0.24	0.19	0.13	0.10	0.07	0.08	0.08	0.06	0.06	0.17	0.33
Above Normal (16%)	0.55	0.49	0.38	0.26	0.12	0.07	0.10	0.10	0.07	0.08	0.20	0.29
Below Normal (13%)	0.30	0.26	0.33	0.33	0.16	0.09	0.10	0.11	0.07	0.15	0.28	0.56
Dry (24%)	0.42	0.41	0.45	0.43	0.20	0.10	0.10	0.09	0.07	0.22	0.40	0.53
Critical (15%)	0.62	0.63	0.66	0.53	0.29	0.16	0.12	0.13	0.17	0.32	0.49	0.63

Alternative 1

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.78	0.83	0.85	0.70	0.46	0.19	0.10	0.09	0.12	0.28	0.47	0.64
20%	0.72	0.72	0.75	0.62	0.32	0.13	0.08	0.08	0.08	0.18	0.36	0.60
30%	0.69	0.66	0.73	0.56	0.22	0.10	0.08	0.07	0.07	0.17	0.33	0.57
40%	0.67	0.61	0.70	0.51	0.15	0.08	0.07	0.07	0.07	0.14	0.30	0.54
50%	0.64	0.59	0.61	0.38	0.12	0.07	0.06	0.06	0.06	0.11	0.25	0.53
60%	0.63	0.57	0.55	0.27	0.09	0.07	0.06	0.06	0.06	0.07	0.22	0.51
70%	0.60	0.54	0.46	0.13	0.08	0.06	0.06	0.06	0.05	0.06	0.18	0.50
80%	0.58	0.44	0.32	0.09	0.07	0.06	0.06	0.06	0.05	0.06	0.16	0.45
90%	0.51	0.30	0.12	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.15	0.39
Long Term												
Full Simulation Period[b]	0.63	0.58	0.56	0.38	0.19	0.10	0.07	0.07	0.08	0.14	0.28	0.52
Water Year Types[c]												
Wet (32%)	0.56	0.52	0.39	0.14	0.09	0.07	0.07	0.06	0.06	0.06	0.16	0.42
Above Normal (16%)	0.70	0.60	0.54	0.35	0.12	0.07	0.06	0.06	0.05	0.07	0.20	0.53
Below Normal (13%)	0.57	0.51	0.57	0.48	0.28	0.12	0.07	0.07	0.06	0.15	0.28	0.53
Dry (24%)	0.65	0.60	0.67	0.51	0.25	0.10	0.07	0.07	0.08	0.19	0.35	0.56
Critical (15%)	0.73	0.71	0.77	0.60	0.31	0.18	0.11	0.12	0.19	0.32	0.48	0.65

Alternative 1 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.00	0.06	0.09	0.15	0.06	-0.02	-0.03	0.03	-0.01	-0.02	0.00
20%	0.01	0.07	0.05	0.10	0.05	0.03	-0.03	-0.03	0.00	-0.02	-0.06	0.01
30%	0.03	0.09	0.14	0.16	0.05	0.01	-0.02	-0.03	0.00	-0.01	-0.03	0.02
40%	0.06	0.09	0.32	0.18	0.02	0.00	-0.03	-0.03	0.00	-0.02	0.00	0.03
50%	0.08	0.20	0.36	0.10	0.00	-0.01	-0.03	-0.03	-0.01	-0.01	-0.01	0.08
60%	0.50	0.43	0.37	0.04	-0.01	-0.01	-0.03	-0.03	-0.01	-0.01	0.00	0.12
70%	0.48	0.48	0.33	0.02	0.00	-0.01	-0.02	-0.03	-0.01	0.00	-0.01	0.14
80%	0.46	0.38	0.21	0.00	0.00	0.00	-0.02	-0.02	-0.01	0.00	-0.01	0.14
90%	0.40	0.24	0.06	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	0.00	-0.01	0.11
Long Term												
Full Simulation Period[b]	0.21	0.20	0.19	0.07	0.03	0.00	-0.02	-0.02	0.00	-0.01	-0.02	0.07
Water Year Types[c]												
Wet (32%)	0.26	0.28	0.20	0.01	-0.01	0.00	-0.01	-0.02	0.00	0.00	-0.01	0.09
Above Normal (16%)	0.15	0.11	0.17	0.09	0.01	-0.01	-0.04	-0.04	-0.01	0.00	0.00	0.23
Below Normal (13%)	0.27	0.25	0.25	0.15	0.12	0.03	-0.03	-0.04	-0.01	0.00	0.00	-0.03
Dry (24%)	0.23	0.19	0.22	0.08	0.04	-0.01	-0.02	-0.02	0.01	-0.04	-0.05	0.03
Critical (15%)	0.11	0.08	0.11	0.07	0.02	0.02	-0.01	-0.01	0.02	0.00	-0.01	0.02

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.25.2. Old River at Rock Slough, Monthly Bromide Concentration

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.77	0.83	0.78	0.62	0.31	0.13	0.12	0.12	0.09	0.29	0.49	0.64
20%	0.71	0.65	0.69	0.51	0.27	0.10	0.11	0.11	0.08	0.20	0.43	0.59
30%	0.65	0.57	0.58	0.40	0.17	0.09	0.10	0.10	0.07	0.18	0.36	0.55
40%	0.60	0.52	0.38	0.33	0.14	0.08	0.10	0.10	0.07	0.16	0.30	0.51
50%	0.56	0.39	0.24	0.28	0.12	0.08	0.09	0.10	0.07	0.12	0.26	0.44
60%	0.13	0.14	0.18	0.23	0.10	0.07	0.09	0.09	0.07	0.08	0.23	0.39
70%	0.12	0.06	0.14	0.11	0.08	0.07	0.08	0.09	0.06	0.06	0.19	0.37
80%	0.11	0.06	0.11	0.09	0.08	0.06	0.08	0.07	0.06	0.06	0.18	0.31
90%	0.11	0.05	0.06	0.08	0.07	0.06	0.07	0.05	0.06	0.05	0.16	0.28
Long Term												
Full Simulation Period[b]	0.42	0.38	0.37	0.31	0.16	0.10	0.09	0.09	0.08	0.15	0.29	0.45
Water Year Types[c]												
Wet (32%)	0.30	0.24	0.19	0.13	0.10	0.07	0.08	0.08	0.06	0.06	0.17	0.33
Above Normal (16%)	0.55	0.49	0.38	0.26	0.12	0.07	0.10	0.10	0.07	0.08	0.20	0.29
Below Normal (13%)	0.30	0.26	0.33	0.33	0.16	0.09	0.10	0.11	0.07	0.15	0.28	0.56
Dry (24%)	0.42	0.41	0.45	0.43	0.20	0.10	0.10	0.09	0.07	0.22	0.40	0.53
Critical (15%)	0.62	0.63	0.66	0.53	0.29	0.16	0.12	0.13	0.17	0.32	0.49	0.63

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.78	0.82	0.85	0.63	0.31	0.12	0.10	0.09	0.13	0.34	0.49	0.66
20%	0.72	0.72	0.76	0.57	0.25	0.10	0.09	0.08	0.08	0.21	0.41	0.60
30%	0.69	0.66	0.72	0.52	0.20	0.09	0.08	0.07	0.07	0.19	0.33	0.57
40%	0.67	0.61	0.69	0.45	0.13	0.08	0.08	0.06	0.06	0.16	0.31	0.55
50%	0.64	0.59	0.60	0.39	0.10	0.08	0.07	0.06	0.06	0.11	0.27	0.53
60%	0.62	0.56	0.54	0.20	0.09	0.07	0.06	0.06	0.05	0.10	0.22	0.51
70%	0.59	0.54	0.45	0.11	0.08	0.06	0.06	0.05	0.05	0.06	0.18	0.50
80%	0.57	0.49	0.31	0.09	0.07	0.06	0.06	0.05	0.05	0.06	0.16	0.45
90%	0.52	0.34	0.12	0.07	0.06	0.05	0.05	0.05	0.05	0.06	0.14	0.40
Long Term												
Full Simulation Period[b]	0.63	0.59	0.55	0.34	0.16	0.09	0.08	0.07	0.08	0.16	0.28	0.52
Water Year Types[c]												
Wet (32%)	0.55	0.53	0.39	0.15	0.09	0.07	0.06	0.05	0.05	0.06	0.15	0.41
Above Normal (16%)	0.71	0.63	0.54	0.33	0.11	0.07	0.06	0.06	0.05	0.09	0.20	0.53
Below Normal (13%)	0.58	0.50	0.58	0.42	0.18	0.09	0.07	0.07	0.07	0.17	0.30	0.57
Dry (24%)	0.64	0.62	0.67	0.47	0.19	0.10	0.08	0.07	0.07	0.22	0.38	0.55
Critical (15%)	0.73	0.71	0.71	0.51	0.28	0.16	0.11	0.12	0.19	0.32	0.48	0.65

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.00	-0.02	0.06	0.01	0.00	-0.01	-0.02	-0.03	0.04	0.05	0.01	0.03
20%	0.01	0.07	0.07	0.05	-0.02	0.00	-0.02	-0.03	0.01	0.00	-0.01	0.01
30%	0.04	0.09	0.13	0.12	0.02	0.00	-0.02	-0.04	-0.01	0.01	-0.03	0.02
40%	0.07	0.09	0.30	0.11	-0.01	0.00	-0.02	-0.04	-0.01	0.00	0.01	0.04
50%	0.08	0.19	0.36	0.10	-0.02	0.00	-0.02	-0.04	-0.01	-0.01	0.01	0.09
60%	0.49	0.42	0.37	-0.03	-0.01	0.00	-0.03	-0.03	-0.01	0.02	-0.01	0.12
70%	0.47	0.48	0.31	0.00	0.00	0.00	-0.02	-0.03	-0.01	0.00	-0.01	0.13
80%	0.46	0.44	0.20	0.00	0.00	0.00	-0.02	-0.02	-0.01	0.00	-0.02	0.14
90%	0.42	0.29	0.06	-0.01	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.02	0.12
Long Term												
Full Simulation Period[b]	0.21	0.21	0.19	0.03	-0.01	0.00	-0.02	-0.03	0.00	0.00	-0.01	0.07
Water Year Types[c]												
Wet (32%)	0.25	0.29	0.20	0.02	-0.01	0.00	-0.01	-0.02	-0.01	0.00	-0.02	0.08
Above Normal (16%)	0.17	0.14	0.16	0.07	-0.01	-0.01	-0.04	-0.05	-0.01	0.01	0.00	0.24
Below Normal (13%)	0.27	0.24	0.25	0.09	0.01	0.00	-0.03	-0.04	0.00	0.02	0.02	0.01
Dry (24%)	0.22	0.21	0.22	0.04	-0.01	-0.01	-0.02	-0.02	0.00	0.00	-0.02	0.02
Critical (15%)	0.11	0.08	0.05	-0.02	-0.01	-0.01	-0.01	-0.01	0.02	0.00	0.00	0.02

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.25.3. Old River at Rock Slough, Monthly Bromide Concentration

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.77	0.83	0.78	0.62	0.31	0.13	0.12	0.12	0.09	0.29	0.49	0.64
20%	0.71	0.65	0.69	0.51	0.27	0.10	0.11	0.11	0.08	0.20	0.43	0.59
30%	0.65	0.57	0.58	0.40	0.17	0.09	0.10	0.10	0.07	0.18	0.36	0.55
40%	0.60	0.52	0.38	0.33	0.14	0.08	0.10	0.10	0.07	0.16	0.30	0.51
50%	0.56	0.39	0.24	0.28	0.12	0.08	0.09	0.10	0.07	0.12	0.26	0.44
60%	0.13	0.14	0.18	0.23	0.10	0.07	0.09	0.09	0.07	0.08	0.23	0.39
70%	0.12	0.06	0.14	0.11	0.08	0.07	0.08	0.09	0.06	0.06	0.19	0.37
80%	0.11	0.06	0.11	0.09	0.08	0.06	0.08	0.07	0.06	0.06	0.18	0.31
90%	0.11	0.05	0.06	0.08	0.07	0.06	0.07	0.05	0.06	0.05	0.16	0.28
Long Term												
Full Simulation Period[b]	0.42	0.38	0.37	0.31	0.16	0.10	0.09	0.09	0.08	0.15	0.29	0.45
Water Year Types[c]												
Wet (32%)	0.30	0.24	0.19	0.13	0.10	0.07	0.08	0.08	0.06	0.06	0.17	0.33
Above Normal (16%)	0.55	0.49	0.38	0.26	0.12	0.07	0.10	0.10	0.07	0.08	0.20	0.29
Below Normal (13%)	0.30	0.26	0.33	0.33	0.16	0.09	0.10	0.11	0.07	0.15	0.28	0.56
Dry (24%)	0.42	0.41	0.45	0.43	0.20	0.10	0.10	0.09	0.07	0.22	0.40	0.53
Critical (15%)	0.62	0.63	0.66	0.53	0.29	0.16	0.12	0.13	0.17	0.32	0.49	0.63

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.80	0.83	0.78	0.66	0.31	0.13	0.15	0.16	0.11	0.30	0.50	0.64
20%	0.71	0.68	0.67	0.52	0.27	0.10	0.13	0.15	0.09	0.23	0.45	0.59
30%	0.66	0.58	0.59	0.40	0.19	0.09	0.13	0.14	0.08	0.19	0.37	0.57
40%	0.62	0.52	0.43	0.33	0.14	0.08	0.12	0.13	0.08	0.17	0.31	0.52
50%	0.55	0.40	0.23	0.28	0.12	0.08	0.11	0.12	0.07	0.11	0.26	0.45
60%	0.13	0.14	0.17	0.23	0.10	0.07	0.10	0.11	0.07	0.07	0.22	0.39
70%	0.12	0.06	0.14	0.11	0.08	0.07	0.09	0.10	0.06	0.06	0.20	0.37
80%	0.12	0.06	0.11	0.09	0.08	0.06	0.08	0.09	0.06	0.06	0.18	0.32
90%	0.11	0.05	0.06	0.08	0.07	0.06	0.07	0.05	0.06	0.05	0.16	0.28
Long Term												
Full Simulation Period[b]	0.42	0.38	0.37	0.31	0.17	0.10	0.11	0.12	0.08	0.16	0.30	0.46
Water Year Types[c]												
Wet (32%)	0.30	0.25	0.19	0.13	0.10	0.07	0.08	0.08	0.06	0.06	0.17	0.33
Above Normal (16%)	0.56	0.48	0.37	0.26	0.12	0.07	0.10	0.11	0.07	0.08	0.20	0.29
Below Normal (13%)	0.30	0.26	0.33	0.33	0.16	0.09	0.12	0.13	0.08	0.16	0.28	0.57
Dry (24%)	0.42	0.41	0.44	0.44	0.21	0.10	0.13	0.14	0.08	0.24	0.43	0.55
Critical (15%)	0.62	0.63	0.66	0.54	0.30	0.17	0.16	0.16	0.16	0.30	0.50	0.64

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.03	0.00	0.00	0.04	0.00	0.00	0.03	0.04	0.02	0.01	0.01	0.00
20%	0.00	0.04	-0.02	0.01	0.00	0.00	0.02	0.04	0.02	0.03	0.02	0.00
30%	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.04	0.01	0.01	0.01	0.02
40%	0.02	-0.01	0.04	0.00	0.01	0.00	0.02	0.03	0.01	0.00	0.01	0.01
50%	-0.01	0.01	-0.02	0.00	0.00	0.00	0.02	0.02	0.00	-0.01	0.00	0.01
60%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	-0.01	0.00	0.00
70%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00
80%	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00
90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Long Term												
Full Simulation Period[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01
Water Year Types[c]												
Wet (32%)	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above Normal (16%)	0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Below Normal (13%)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.00	0.00	0.01
Dry (24%)	0.00	0.00	0.00	0.01	0.01	0.00	0.03	0.05	0.01	0.02	0.03	0.02
Critical (15%)	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.03	-0.01	-0.02	0.01	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.25.4. Old River at Rock Slough, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.78	0.83	0.85	0.70	0.46	0.19	0.10	0.09	0.12	0.28	0.47	0.64
20%	0.72	0.72	0.75	0.62	0.32	0.13	0.08	0.08	0.08	0.18	0.36	0.60
30%	0.69	0.66	0.73	0.56	0.22	0.10	0.08	0.07	0.07	0.17	0.33	0.57
40%	0.67	0.61	0.70	0.51	0.15	0.08	0.07	0.07	0.07	0.14	0.30	0.54
50%	0.64	0.59	0.61	0.38	0.12	0.07	0.06	0.06	0.06	0.11	0.25	0.53
60%	0.63	0.57	0.55	0.27	0.09	0.07	0.06	0.06	0.06	0.07	0.22	0.51
70%	0.60	0.54	0.46	0.13	0.08	0.06	0.06	0.06	0.05	0.06	0.18	0.50
80%	0.58	0.44	0.32	0.09	0.07	0.06	0.06	0.06	0.05	0.06	0.16	0.45
90%	0.51	0.30	0.12	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.15	0.39
Long Term												
Full Simulation Period[b]	0.63	0.58	0.56	0.38	0.19	0.10	0.07	0.07	0.08	0.14	0.28	0.52
Water Year Types[c]												
Wet (32%)	0.56	0.52	0.39	0.14	0.09	0.07	0.07	0.06	0.06	0.06	0.16	0.42
Above Normal (16%)	0.70	0.60	0.54	0.35	0.12	0.07	0.06	0.06	0.05	0.07	0.20	0.53
Below Normal (13%)	0.57	0.51	0.57	0.48	0.28	0.12	0.07	0.07	0.06	0.15	0.28	0.53
Dry (24%)	0.65	0.60	0.67	0.51	0.25	0.10	0.07	0.07	0.08	0.19	0.35	0.56
Critical (15%)	0.73	0.71	0.77	0.60	0.31	0.18	0.11	0.12	0.19	0.32	0.48	0.65

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.77	0.83	0.78	0.62	0.31	0.13	0.12	0.12	0.09	0.29	0.49	0.64
20%	0.71	0.65	0.69	0.51	0.27	0.10	0.11	0.11	0.08	0.20	0.43	0.59
30%	0.65	0.57	0.58	0.40	0.17	0.09	0.10	0.10	0.07	0.18	0.36	0.55
40%	0.60	0.52	0.38	0.33	0.14	0.08	0.10	0.10	0.07	0.16	0.30	0.51
50%	0.56	0.39	0.24	0.28	0.12	0.08	0.09	0.10	0.07	0.12	0.26	0.44
60%	0.13	0.14	0.18	0.23	0.10	0.07	0.09	0.09	0.07	0.08	0.23	0.39
70%	0.12	0.06	0.14	0.11	0.08	0.07	0.08	0.09	0.06	0.06	0.19	0.37
80%	0.11	0.06	0.11	0.09	0.08	0.06	0.08	0.07	0.06	0.06	0.18	0.31
90%	0.11	0.05	0.06	0.08	0.07	0.06	0.07	0.05	0.06	0.05	0.16	0.28
Long Term												
Full Simulation Period[b]	0.42	0.38	0.37	0.31	0.16	0.10	0.09	0.09	0.08	0.15	0.29	0.45
Water Year Types[c]												
Wet (32%)	0.30	0.24	0.19	0.13	0.10	0.07	0.08	0.08	0.06	0.06	0.17	0.33
Above Normal (16%)	0.55	0.49	0.38	0.26	0.12	0.07	0.10	0.10	0.07	0.08	0.20	0.29
Below Normal (13%)	0.30	0.26	0.33	0.33	0.16	0.09	0.10	0.11	0.07	0.15	0.28	0.56
Dry (24%)	0.42	0.41	0.45	0.43	0.20	0.10	0.10	0.09	0.07	0.22	0.40	0.53
Critical (15%)	0.62	0.63	0.66	0.53	0.29	0.16	0.12	0.13	0.17	0.32	0.49	0.63

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.01	0.00	-0.06	-0.09	-0.15	-0.06	0.02	0.03	-0.03	0.01	0.02	0.00
20%	-0.01	-0.07	-0.05	-0.10	-0.05	-0.03	0.03	0.03	0.00	0.02	0.06	-0.01
30%	-0.03	-0.09	-0.14	-0.16	-0.05	-0.01	0.02	0.03	0.00	0.01	0.03	-0.02
40%	-0.06	-0.09	-0.32	-0.18	-0.02	0.00	0.03	0.03	0.00	0.02	0.00	-0.03
50%	-0.08	-0.20	-0.36	-0.10	0.00	0.01	0.03	0.03	0.01	0.01	0.01	-0.08
60%	-0.50	-0.43	-0.37	-0.04	0.01	0.01	0.03	0.03	0.01	0.01	0.00	-0.12
70%	-0.48	-0.48	-0.33	-0.02	0.00	0.01	0.02	0.03	0.01	0.00	0.01	-0.14
80%	-0.46	-0.38	-0.21	0.00	0.00	0.00	0.02	0.02	0.01	0.00	0.01	-0.14
90%	-0.40	-0.24	-0.06	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	-0.11
Long Term												
Full Simulation Period[b]	-0.21	-0.20	-0.19	-0.07	-0.03	0.00	0.02	0.02	0.00	0.01	0.02	-0.07
Water Year Types[c]												
Wet (32%)	-0.26	-0.28	-0.20	-0.01	0.01	0.00	0.01	0.02	0.00	0.00	0.01	-0.09
Above Normal (16%)	-0.15	-0.11	-0.17	-0.09	-0.01	0.01	0.04	0.04	0.01	0.00	0.00	-0.23
Below Normal (13%)	-0.27	-0.25	-0.25	-0.15	-0.12	-0.03	0.03	0.04	0.01	0.00	0.00	0.03
Dry (24%)	-0.23	-0.19	-0.22	-0.08	-0.04	0.01	0.02	0.02	-0.01	0.04	0.05	-0.03
Critical (15%)	-0.11	-0.08	-0.11	-0.07	-0.02	-0.02	0.01	0.01	-0.02	0.00	0.01	-0.02

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.25.5. Old River at Rock Slough, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.78	0.83	0.85	0.70	0.46	0.19	0.10	0.09	0.12	0.28	0.47	0.64
20%	0.72	0.72	0.75	0.62	0.32	0.13	0.08	0.08	0.08	0.18	0.36	0.60
30%	0.69	0.66	0.73	0.56	0.22	0.10	0.08	0.07	0.07	0.17	0.33	0.57
40%	0.67	0.61	0.70	0.51	0.15	0.08	0.07	0.07	0.07	0.14	0.30	0.54
50%	0.64	0.59	0.61	0.38	0.12	0.07	0.06	0.06	0.06	0.11	0.25	0.53
60%	0.63	0.57	0.55	0.27	0.09	0.07	0.06	0.06	0.06	0.07	0.22	0.51
70%	0.60	0.54	0.46	0.13	0.08	0.06	0.06	0.06	0.05	0.06	0.18	0.50
80%	0.58	0.44	0.32	0.09	0.07	0.06	0.06	0.06	0.05	0.06	0.16	0.45
90%	0.51	0.30	0.12	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.15	0.39
Long Term												
Full Simulation Period[b]	0.63	0.58	0.56	0.38	0.19	0.10	0.07	0.07	0.08	0.14	0.28	0.52
Water Year Types[c]												
Wet (32%)	0.56	0.52	0.39	0.14	0.09	0.07	0.07	0.06	0.06	0.06	0.16	0.42
Above Normal (16%)	0.70	0.60	0.54	0.35	0.12	0.07	0.06	0.06	0.05	0.07	0.20	0.53
Below Normal (13%)	0.57	0.51	0.57	0.48	0.28	0.12	0.07	0.07	0.06	0.15	0.28	0.53
Dry (24%)	0.65	0.60	0.67	0.51	0.25	0.10	0.07	0.07	0.08	0.19	0.35	0.56
Critical (15%)	0.73	0.71	0.77	0.60	0.31	0.18	0.11	0.12	0.19	0.32	0.48	0.65

Alternative 3

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.78	0.82	0.85	0.63	0.31	0.12	0.10	0.09	0.13	0.34	0.49	0.66
20%	0.72	0.72	0.76	0.57	0.25	0.10	0.09	0.08	0.08	0.21	0.41	0.60
30%	0.69	0.66	0.72	0.52	0.20	0.09	0.08	0.07	0.07	0.19	0.33	0.57
40%	0.67	0.61	0.69	0.45	0.13	0.08	0.08	0.06	0.06	0.16	0.31	0.55
50%	0.64	0.59	0.60	0.39	0.10	0.08	0.07	0.06	0.06	0.11	0.27	0.53
60%	0.62	0.56	0.54	0.20	0.09	0.07	0.06	0.06	0.05	0.10	0.22	0.51
70%	0.59	0.54	0.45	0.11	0.08	0.06	0.06	0.05	0.05	0.06	0.18	0.50
80%	0.57	0.49	0.31	0.09	0.07	0.06	0.06	0.05	0.05	0.06	0.16	0.45
90%	0.52	0.34	0.12	0.07	0.06	0.05	0.05	0.05	0.05	0.06	0.14	0.40
Long Term												
Full Simulation Period[b]	0.63	0.59	0.55	0.34	0.16	0.09	0.08	0.07	0.08	0.16	0.28	0.52
Water Year Types[c]												
Wet (32%)	0.55	0.53	0.39	0.15	0.09	0.07	0.06	0.05	0.05	0.06	0.15	0.41
Above Normal (16%)	0.71	0.63	0.54	0.33	0.11	0.07	0.06	0.06	0.05	0.09	0.20	0.53
Below Normal (13%)	0.58	0.50	0.58	0.42	0.18	0.09	0.07	0.07	0.07	0.17	0.30	0.57
Dry (24%)	0.64	0.62	0.67	0.47	0.19	0.10	0.08	0.07	0.07	0.22	0.38	0.55
Critical (15%)	0.73	0.71	0.71	0.51	0.28	0.16	0.11	0.12	0.19	0.32	0.48	0.65

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.00	-0.01	0.00	-0.08	-0.15	-0.07	0.00	0.00	0.01	0.06	0.03	0.02
20%	0.00	0.00	0.02	-0.05	-0.07	-0.03	0.01	0.00	0.00	0.02	0.05	0.00
30%	0.01	0.00	-0.01	-0.04	-0.02	-0.01	0.00	0.00	0.00	0.02	0.00	0.00
40%	0.00	0.00	-0.01	-0.07	-0.03	0.00	0.01	0.00	0.00	0.02	0.01	0.02
50%	-0.01	0.00	-0.01	0.00	-0.02	0.00	0.01	0.00	0.00	0.00	0.02	0.01
60%	-0.01	0.00	-0.01	-0.08	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
70%	-0.01	0.00	-0.02	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
80%	-0.01	0.05	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.01
Long Term												
Full Simulation Period[b]	0.00	0.01	-0.01	-0.03	-0.03	-0.01	0.00	0.00	0.00	0.02	0.01	0.00
Water Year Types[c]												
Wet (32%)	-0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	-0.01	0.01	-0.01	-0.01
Above Normal (16%)	0.02	0.03	-0.01	-0.02	-0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Below Normal (13%)	0.00	-0.01	0.00	-0.06	-0.10	-0.03	0.00	0.00	0.01	0.02	0.02	0.04
Dry (24%)	-0.01	0.02	0.00	-0.04	-0.05	0.00	0.01	0.00	0.00	0.03	0.03	-0.01
Critical (15%)	0.00	0.00	-0.06	-0.09	-0.04	-0.03	0.00	0.00	0.00	0.00	0.01	0.00

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.25.6. Old River at Rock Slough, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.78	0.83	0.85	0.70	0.46	0.19	0.10	0.09	0.12	0.28	0.47	0.64
20%	0.72	0.72	0.75	0.62	0.32	0.13	0.08	0.08	0.08	0.18	0.36	0.60
30%	0.69	0.66	0.73	0.56	0.22	0.10	0.08	0.07	0.07	0.17	0.33	0.57
40%	0.67	0.61	0.70	0.51	0.15	0.08	0.07	0.07	0.07	0.14	0.30	0.54
50%	0.64	0.59	0.61	0.38	0.12	0.07	0.06	0.06	0.06	0.11	0.25	0.53
60%	0.63	0.57	0.55	0.27	0.09	0.07	0.06	0.06	0.06	0.07	0.22	0.51
70%	0.60	0.54	0.46	0.13	0.08	0.06	0.06	0.06	0.05	0.06	0.18	0.50
80%	0.58	0.44	0.32	0.09	0.07	0.06	0.06	0.06	0.05	0.06	0.16	0.45
90%	0.51	0.30	0.12	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.15	0.39
Long Term												
Full Simulation Period[b]	0.63	0.58	0.56	0.38	0.19	0.10	0.07	0.07	0.08	0.14	0.28	0.52
Water Year Types[c]												
Wet (32%)	0.56	0.52	0.39	0.14	0.09	0.07	0.07	0.06	0.06	0.06	0.16	0.42
Above Normal (16%)	0.70	0.60	0.54	0.35	0.12	0.07	0.06	0.06	0.05	0.07	0.20	0.53
Below Normal (13%)	0.57	0.51	0.57	0.48	0.28	0.12	0.07	0.07	0.06	0.15	0.28	0.53
Dry (24%)	0.65	0.60	0.67	0.51	0.25	0.10	0.07	0.07	0.08	0.19	0.35	0.56
Critical (15%)	0.73	0.71	0.77	0.60	0.31	0.18	0.11	0.12	0.19	0.32	0.48	0.65

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.80	0.83	0.78	0.66	0.31	0.13	0.15	0.16	0.11	0.30	0.50	0.64
20%	0.71	0.68	0.67	0.52	0.27	0.10	0.13	0.15	0.09	0.23	0.45	0.59
30%	0.66	0.58	0.59	0.40	0.19	0.09	0.13	0.14	0.08	0.19	0.37	0.57
40%	0.62	0.52	0.43	0.33	0.14	0.08	0.12	0.13	0.08	0.17	0.31	0.52
50%	0.55	0.40	0.23	0.28	0.12	0.08	0.11	0.12	0.07	0.11	0.26	0.45
60%	0.13	0.14	0.17	0.23	0.10	0.07	0.10	0.11	0.07	0.07	0.22	0.39
70%	0.12	0.06	0.14	0.11	0.08	0.07	0.09	0.10	0.06	0.06	0.20	0.37
80%	0.12	0.06	0.11	0.09	0.08	0.06	0.08	0.09	0.06	0.06	0.18	0.32
90%	0.11	0.05	0.06	0.08	0.07	0.06	0.07	0.05	0.06	0.05	0.16	0.28
Long Term												
Full Simulation Period[b]	0.42	0.38	0.37	0.31	0.17	0.10	0.11	0.12	0.08	0.16	0.30	0.46
Water Year Types[c]												
Wet (32%)	0.30	0.25	0.19	0.13	0.10	0.07	0.08	0.08	0.06	0.06	0.17	0.33
Above Normal (16%)	0.56	0.48	0.37	0.26	0.12	0.07	0.10	0.11	0.07	0.08	0.20	0.29
Below Normal (13%)	0.30	0.26	0.33	0.33	0.16	0.09	0.12	0.13	0.08	0.16	0.28	0.57
Dry (24%)	0.42	0.41	0.44	0.44	0.21	0.10	0.13	0.14	0.08	0.24	0.43	0.55
Critical (15%)	0.62	0.63	0.66	0.54	0.30	0.17	0.16	0.16	0.16	0.30	0.50	0.64

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.02	0.00	-0.07	-0.05	-0.15	-0.06	0.05	0.07	-0.01	0.02	0.03	0.00
20%	-0.01	-0.03	-0.07	-0.10	-0.05	-0.03	0.05	0.07	0.01	0.05	0.09	-0.01
30%	-0.02	-0.08	-0.14	-0.16	-0.03	-0.01	0.05	0.07	0.01	0.02	0.04	0.00
40%	-0.04	-0.10	-0.27	-0.18	-0.01	0.01	0.05	0.06	0.01	0.02	0.01	-0.01
50%	-0.09	-0.19	-0.38	-0.10	0.00	0.01	0.04	0.06	0.01	0.00	0.01	-0.07
60%	-0.50	-0.43	-0.38	-0.04	0.02	0.01	0.04	0.05	0.01	0.00	0.00	-0.12
70%	-0.48	-0.48	-0.33	-0.02	0.00	0.01	0.03	0.04	0.01	0.00	0.01	-0.14
80%	-0.46	-0.38	-0.21	0.00	0.00	0.00	0.03	0.04	0.01	0.00	0.01	-0.14
90%	-0.40	-0.24	-0.06	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	-0.11
Long Term												
Full Simulation Period[b]	-0.21	-0.20	-0.20	-0.06	-0.02	0.00	0.04	0.05	0.00	0.01	0.03	-0.06
Water Year Types[c]												
Wet (32%)	-0.26	-0.27	-0.20	-0.01	0.01	0.00	0.01	0.02	0.01	0.00	0.01	-0.09
Above Normal (16%)	-0.14	-0.11	-0.18	-0.09	-0.01	0.01	0.04	0.05	0.01	0.00	0.00	-0.23
Below Normal (13%)	-0.27	-0.25	-0.25	-0.15	-0.12	-0.03	0.05	0.06	0.01	0.00	0.00	0.04
Dry (24%)	-0.22	-0.19	-0.22	-0.07	-0.04	0.01	0.06	0.07	0.00	0.06	0.08	-0.01
Critical (15%)	-0.10	-0.08	-0.11	-0.07	-0.01	-0.01	0.05	0.04	-0.02	-0.01	0.02	-0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.26. Contra Costa Water District Old River Intake Bromide Concentration

Table 6E.B.26.1. Contra Costa Water District Old River Intake, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.63	0.69	0.70	0.61	0.38	0.30	0.17	0.15	0.13	0.25	0.41	0.52
20%	0.59	0.55	0.60	0.52	0.32	0.15	0.15	0.14	0.11	0.19	0.35	0.49
30%	0.54	0.49	0.51	0.42	0.27	0.13	0.13	0.14	0.10	0.16	0.30	0.44
40%	0.51	0.45	0.40	0.35	0.22	0.12	0.12	0.13	0.09	0.15	0.25	0.41
50%	0.48	0.37	0.25	0.33	0.16	0.11	0.11	0.12	0.09	0.10	0.23	0.37
60%	0.17	0.16	0.19	0.28	0.14	0.10	0.09	0.11	0.09	0.08	0.19	0.35
70%	0.16	0.08	0.13	0.15	0.11	0.10	0.09	0.11	0.08	0.07	0.17	0.32
80%	0.15	0.07	0.09	0.12	0.11	0.09	0.08	0.09	0.08	0.07	0.16	0.28
90%	0.14	0.07	0.08	0.10	0.09	0.08	0.05	0.04	0.07	0.07	0.14	0.26
Long Term												
Full Simulation Period[b]	0.36	0.33	0.34	0.33	0.22	0.14	0.11	0.12	0.10	0.14	0.25	0.38
Water Year Types[c]												
Wet (32%)	0.28	0.23	0.19	0.17	0.12	0.09	0.07	0.08	0.08	0.07	0.15	0.30
Above Normal (16%)	0.46	0.42	0.36	0.30	0.17	0.10	0.10	0.11	0.09	0.07	0.17	0.27
Below Normal (13%)	0.29	0.23	0.29	0.34	0.23	0.13	0.13	0.14	0.10	0.14	0.24	0.46
Dry (24%)	0.36	0.36	0.39	0.43	0.28	0.16	0.13	0.13	0.10	0.19	0.34	0.44
Critical (15%)	0.51	0.52	0.57	0.52	0.36	0.27	0.18	0.16	0.18	0.26	0.40	0.50

Alternative 1

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.63	0.69	0.72	0.64	0.46	0.24	0.13	0.12	0.13	0.24	0.38	0.51
20%	0.60	0.59	0.64	0.58	0.37	0.17	0.11	0.11	0.10	0.17	0.30	0.49
30%	0.57	0.55	0.62	0.53	0.26	0.14	0.10	0.10	0.09	0.15	0.28	0.46
40%	0.56	0.52	0.58	0.50	0.18	0.11	0.09	0.08	0.08	0.12	0.25	0.44
50%	0.54	0.49	0.53	0.42	0.14	0.10	0.08	0.08	0.08	0.08	0.21	0.42
60%	0.53	0.48	0.48	0.30	0.12	0.09	0.08	0.08	0.07	0.07	0.19	0.41
70%	0.50	0.46	0.43	0.16	0.11	0.08	0.08	0.07	0.07	0.07	0.16	0.40
80%	0.49	0.40	0.29	0.11	0.09	0.07	0.07	0.07	0.07	0.07	0.15	0.37
90%	0.44	0.29	0.10	0.09	0.08	0.07	0.06	0.07	0.06	0.07	0.14	0.33
Long Term												
Full Simulation Period[b]	0.52	0.49	0.49	0.37	0.21	0.13	0.10	0.09	0.10	0.13	0.23	0.42
Water Year Types[c]												
Wet (32%)	0.47	0.44	0.36	0.17	0.10	0.09	0.07	0.07	0.07	0.07	0.14	0.35
Above Normal (16%)	0.57	0.51	0.48	0.36	0.15	0.09	0.08	0.07	0.07	0.07	0.17	0.43
Below Normal (13%)	0.49	0.44	0.49	0.45	0.31	0.16	0.10	0.09	0.07	0.14	0.24	0.43
Dry (24%)	0.54	0.51	0.57	0.48	0.27	0.13	0.10	0.10	0.09	0.16	0.30	0.46
Critical (15%)	0.60	0.59	0.65	0.57	0.35	0.24	0.16	0.14	0.20	0.26	0.39	0.52

Alternative 1 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.00	0.00	0.02	0.03	0.07	-0.06	-0.04	-0.04	0.00	-0.01	-0.03	0.00
20%	0.01	0.04	0.04	0.06	0.05	0.02	-0.03	-0.03	-0.01	-0.02	-0.06	0.01
30%	0.03	0.07	0.11	0.11	-0.01	0.01	-0.04	-0.04	-0.01	-0.01	-0.02	0.02
40%	0.05	0.07	0.18	0.14	-0.04	-0.01	-0.03	-0.04	-0.01	-0.03	0.00	0.03
50%	0.06	0.12	0.28	0.09	-0.03	-0.01	-0.03	-0.04	-0.01	-0.02	-0.01	0.06
60%	0.36	0.32	0.29	0.01	-0.02	-0.01	-0.01	-0.04	-0.01	0.00	0.00	0.07
70%	0.35	0.38	0.30	0.01	0.00	-0.02	-0.01	-0.03	-0.02	0.00	-0.01	0.08
80%	0.34	0.33	0.20	-0.01	-0.02	-0.01	0.00	-0.02	-0.01	0.00	-0.01	0.09
90%	0.30	0.22	0.02	-0.02	-0.01	-0.01	0.01	0.02	-0.01	0.00	0.00	0.06
Long Term												
Full Simulation Period[b]	0.16	0.16	0.15	0.04	0.00	-0.01	-0.02	-0.03	-0.01	-0.01	-0.02	0.04
Water Year Types[c]												
Wet (32%)	0.19	0.22	0.17	-0.01	-0.02	0.00	0.00	-0.01	-0.01	0.00	-0.01	0.05
Above Normal (16%)	0.12	0.09	0.12	0.06	-0.02	-0.01	-0.02	-0.04	-0.02	0.00	0.00	0.16
Below Normal (13%)	0.19	0.20	0.19	0.11	0.08	0.02	-0.03	-0.05	-0.02	0.00	0.00	-0.03
Dry (24%)	0.17	0.15	0.18	0.05	-0.01	-0.04	-0.03	-0.03	0.00	-0.04	-0.05	0.02
Critical (15%)	0.09	0.07	0.09	0.05	-0.01	-0.03	-0.02	-0.02	0.02	0.00	-0.01	0.02

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.26.2. Contra Costa Water District Old River Intake, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.63	0.69	0.70	0.61	0.38	0.30	0.17	0.15	0.13	0.25	0.41	0.52
20%	0.59	0.55	0.60	0.52	0.32	0.15	0.15	0.14	0.11	0.19	0.35	0.49
30%	0.54	0.49	0.51	0.42	0.27	0.13	0.13	0.14	0.10	0.16	0.30	0.44
40%	0.51	0.45	0.40	0.35	0.22	0.12	0.12	0.13	0.09	0.15	0.25	0.41
50%	0.48	0.37	0.25	0.33	0.16	0.11	0.11	0.12	0.09	0.10	0.23	0.37
60%	0.17	0.16	0.19	0.28	0.14	0.10	0.09	0.11	0.09	0.08	0.19	0.35
70%	0.16	0.08	0.13	0.15	0.11	0.10	0.09	0.11	0.08	0.07	0.17	0.32
80%	0.15	0.07	0.09	0.12	0.11	0.09	0.08	0.09	0.08	0.07	0.16	0.28
90%	0.14	0.07	0.08	0.10	0.09	0.08	0.05	0.04	0.07	0.07	0.14	0.26
Long Term												
Full Simulation Period[b]	0.36	0.33	0.34	0.33	0.22	0.14	0.11	0.12	0.10	0.14	0.25	0.38
Water Year Types[c]												
Wet (32%)	0.28	0.23	0.19	0.17	0.12	0.09	0.07	0.08	0.08	0.07	0.15	0.30
Above Normal (16%)	0.46	0.42	0.36	0.30	0.17	0.10	0.10	0.11	0.09	0.07	0.17	0.27
Below Normal (13%)	0.29	0.23	0.29	0.34	0.23	0.13	0.13	0.14	0.10	0.14	0.24	0.46
Dry (24%)	0.36	0.36	0.39	0.43	0.28	0.16	0.13	0.13	0.10	0.19	0.34	0.44
Critical (15%)	0.51	0.52	0.57	0.52	0.36	0.27	0.18	0.16	0.18	0.26	0.40	0.50

Alternative 3

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.63	0.68	0.71	0.61	0.39	0.17	0.15	0.14	0.13	0.28	0.41	0.53
20%	0.60	0.60	0.65	0.57	0.32	0.14	0.13	0.11	0.09	0.18	0.34	0.49
30%	0.57	0.55	0.60	0.50	0.28	0.13	0.12	0.09	0.08	0.17	0.27	0.46
40%	0.56	0.51	0.57	0.46	0.19	0.12	0.11	0.09	0.08	0.14	0.26	0.45
50%	0.54	0.49	0.53	0.43	0.14	0.11	0.09	0.08	0.07	0.11	0.23	0.43
60%	0.52	0.48	0.49	0.26	0.13	0.10	0.08	0.07	0.07	0.08	0.19	0.41
70%	0.50	0.47	0.44	0.15	0.11	0.09	0.08	0.07	0.07	0.07	0.16	0.40
80%	0.48	0.42	0.30	0.13	0.10	0.08	0.08	0.07	0.06	0.07	0.15	0.36
90%	0.43	0.33	0.10	0.09	0.08	0.07	0.07	0.06	0.06	0.07	0.13	0.32
Long Term												
Full Simulation Period[b]	0.52	0.50	0.49	0.36	0.21	0.13	0.10	0.09	0.09	0.14	0.24	0.42
Water Year Types[c]												
Wet (32%)	0.46	0.45	0.36	0.19	0.11	0.09	0.07	0.06	0.06	0.07	0.14	0.33
Above Normal (16%)	0.59	0.53	0.48	0.37	0.16	0.09	0.08	0.07	0.07	0.07	0.17	0.43
Below Normal (13%)	0.49	0.43	0.49	0.43	0.25	0.13	0.11	0.09	0.08	0.16	0.25	0.47
Dry (24%)	0.53	0.52	0.57	0.47	0.26	0.15	0.12	0.10	0.08	0.19	0.32	0.45
Critical (15%)	0.59	0.59	0.61	0.50	0.34	0.23	0.17	0.15	0.19	0.27	0.39	0.52

Alternative 3 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	-0.02	0.00	0.00	0.01	-0.13	-0.02	-0.02	0.00	0.03	0.00	0.02
20%	0.02	0.05	0.05	0.04	0.00	-0.01	-0.02	-0.03	-0.02	-0.01	-0.02	0.01
30%	0.03	0.06	0.10	0.08	0.01	-0.01	-0.01	-0.04	-0.01	0.01	-0.02	0.02
40%	0.04	0.06	0.17	0.11	-0.03	0.00	-0.02	-0.04	-0.02	-0.01	0.01	0.04
50%	0.06	0.12	0.28	0.11	-0.02	0.00	-0.02	-0.04	-0.02	0.01	0.00	0.06
60%	0.35	0.32	0.30	-0.02	-0.01	-0.01	-0.01	-0.04	-0.02	0.00	0.00	0.07
70%	0.35	0.39	0.31	0.00	0.00	-0.01	-0.01	-0.04	-0.02	0.00	-0.01	0.08
80%	0.34	0.35	0.21	0.01	-0.01	-0.01	0.00	-0.02	-0.02	0.00	-0.01	0.08
90%	0.30	0.26	0.03	-0.01	-0.01	-0.01	0.01	0.02	-0.01	0.00	-0.01	0.06
Long Term												
Full Simulation Period[b]	0.16	0.17	0.15	0.03	-0.01	-0.01	-0.01	-0.03	-0.01	0.00	-0.01	0.04
Water Year Types[c]												
Wet (32%)	0.18	0.22	0.17	0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00	-0.02	0.04
Above Normal (16%)	0.13	0.11	0.13	0.07	-0.01	-0.01	-0.02	-0.04	-0.02	0.00	0.00	0.16
Below Normal (13%)	0.19	0.20	0.20	0.09	0.01	-0.01	-0.02	-0.04	-0.02	0.02	0.01	0.01
Dry (24%)	0.17	0.17	0.18	0.04	-0.02	-0.02	-0.01	-0.03	-0.01	-0.01	-0.02	0.01
Critical (15%)	0.09	0.07	0.04	-0.02	-0.02	-0.04	-0.01	-0.01	0.01	0.00	0.00	0.02

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.26.3. Contra Costa Water District Old River Intake, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.63	0.69	0.70	0.61	0.38	0.30	0.17	0.15	0.13	0.25	0.41	0.52
20%	0.59	0.55	0.60	0.52	0.32	0.15	0.15	0.14	0.11	0.19	0.35	0.49
30%	0.54	0.49	0.51	0.42	0.27	0.13	0.13	0.14	0.10	0.16	0.30	0.44
40%	0.51	0.45	0.40	0.35	0.22	0.12	0.12	0.13	0.09	0.15	0.25	0.41
50%	0.48	0.37	0.25	0.33	0.16	0.11	0.11	0.12	0.09	0.10	0.23	0.37
60%	0.17	0.16	0.19	0.28	0.14	0.10	0.09	0.11	0.09	0.08	0.19	0.35
70%	0.16	0.08	0.13	0.15	0.11	0.10	0.09	0.11	0.08	0.07	0.17	0.32
80%	0.15	0.07	0.09	0.12	0.11	0.09	0.08	0.09	0.08	0.07	0.16	0.28
90%	0.14	0.07	0.08	0.10	0.09	0.08	0.05	0.04	0.07	0.07	0.14	0.26
Long Term												
Full Simulation Period[b]	0.36	0.33	0.34	0.33	0.22	0.14	0.11	0.12	0.10	0.14	0.25	0.38
Water Year Types[c]												
Wet (32%)	0.28	0.23	0.19	0.17	0.12	0.09	0.07	0.08	0.08	0.07	0.15	0.30
Above Normal (16%)	0.46	0.42	0.36	0.30	0.17	0.10	0.10	0.11	0.09	0.07	0.17	0.27
Below Normal (13%)	0.29	0.23	0.29	0.34	0.23	0.13	0.13	0.14	0.10	0.14	0.24	0.46
Dry (24%)	0.36	0.36	0.39	0.43	0.28	0.16	0.13	0.13	0.10	0.19	0.34	0.44
Critical (15%)	0.51	0.52	0.57	0.52	0.36	0.27	0.18	0.16	0.18	0.26	0.40	0.50

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.64	0.69	0.70	0.62	0.39	0.30	0.19	0.18	0.15	0.26	0.41	0.52
20%	0.59	0.57	0.59	0.53	0.32	0.15	0.17	0.18	0.12	0.20	0.37	0.49
30%	0.55	0.50	0.51	0.42	0.27	0.13	0.15	0.16	0.11	0.17	0.32	0.46
40%	0.52	0.44	0.41	0.35	0.22	0.12	0.13	0.14	0.10	0.15	0.25	0.43
50%	0.47	0.38	0.24	0.33	0.16	0.11	0.11	0.12	0.09	0.10	0.23	0.37
60%	0.17	0.16	0.19	0.28	0.14	0.10	0.09	0.11	0.09	0.08	0.19	0.35
70%	0.16	0.08	0.13	0.15	0.12	0.10	0.09	0.11	0.09	0.07	0.17	0.33
80%	0.15	0.07	0.09	0.12	0.10	0.09	0.07	0.09	0.08	0.07	0.16	0.29
90%	0.10	0.07	0.08	0.10	0.09	0.08	0.05	0.04	0.07	0.07	0.14	0.25
Long Term												
Full Simulation Period[b]	0.37	0.33	0.34	0.33	0.22	0.14	0.12	0.12	0.10	0.14	0.25	0.38
Water Year Types[c]												
Wet (32%)	0.28	0.23	0.20	0.17	0.12	0.09	0.07	0.07	0.08	0.07	0.15	0.30
Above Normal (16%)	0.47	0.42	0.35	0.30	0.17	0.10	0.10	0.11	0.09	0.07	0.17	0.27
Below Normal (13%)	0.29	0.24	0.29	0.34	0.23	0.13	0.12	0.14	0.11	0.14	0.24	0.46
Dry (24%)	0.37	0.35	0.39	0.44	0.28	0.17	0.15	0.16	0.11	0.21	0.36	0.46
Critical (15%)	0.51	0.52	0.56	0.52	0.36	0.27	0.19	0.18	0.15	0.26	0.40	0.51

Alternative 5 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.00	-0.01	0.00	0.00	0.00	0.01	0.03	0.02	0.01	0.00	0.00
20%	0.01	0.02	-0.01	0.01	0.00	0.00	0.02	0.03	0.01	0.01	0.02	0.01
30%	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01	0.02	0.01
40%	0.01	-0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.02
50%	0.00	0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01
60%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
70%	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
90%	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
Long Term												
Full Simulation Period[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01
Water Year Types[c]												
Wet (32%)	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above Normal (16%)	0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Below Normal (13%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Dry (24%)	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.03	0.02	0.01	0.02	0.02
Critical (15%)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	-0.03	-0.01	0.01	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.26.4. Contra Costa Water District Old River Intake, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.63	0.69	0.72	0.64	0.46	0.24	0.13	0.12	0.13	0.24	0.38	0.51
20%	0.60	0.59	0.64	0.58	0.37	0.17	0.11	0.11	0.10	0.17	0.30	0.49
30%	0.57	0.55	0.62	0.53	0.26	0.14	0.10	0.10	0.09	0.15	0.28	0.46
40%	0.56	0.52	0.58	0.50	0.18	0.11	0.09	0.08	0.08	0.12	0.25	0.44
50%	0.54	0.49	0.53	0.42	0.14	0.10	0.08	0.08	0.08	0.08	0.21	0.42
60%	0.53	0.48	0.48	0.30	0.12	0.09	0.08	0.08	0.07	0.07	0.19	0.41
70%	0.50	0.46	0.43	0.16	0.11	0.08	0.08	0.07	0.07	0.07	0.16	0.40
80%	0.49	0.40	0.29	0.11	0.09	0.07	0.07	0.07	0.07	0.07	0.15	0.37
90%	0.44	0.29	0.10	0.09	0.08	0.07	0.06	0.07	0.06	0.07	0.14	0.33
Long Term												
Full Simulation Period[b]	0.52	0.49	0.49	0.37	0.21	0.13	0.10	0.09	0.10	0.13	0.23	0.42
Water Year Types[c]												
Wet (32%)	0.47	0.44	0.36	0.17	0.10	0.09	0.07	0.07	0.07	0.07	0.14	0.35
Above Normal (16%)	0.57	0.51	0.48	0.36	0.15	0.09	0.08	0.07	0.07	0.07	0.17	0.43
Below Normal (13%)	0.49	0.44	0.49	0.45	0.31	0.16	0.10	0.09	0.07	0.14	0.24	0.43
Dry (24%)	0.54	0.51	0.57	0.48	0.27	0.13	0.10	0.10	0.09	0.16	0.30	0.46
Critical (15%)	0.60	0.59	0.65	0.57	0.35	0.24	0.16	0.14	0.20	0.26	0.39	0.52

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.63	0.69	0.70	0.61	0.38	0.30	0.17	0.15	0.13	0.25	0.41	0.52
20%	0.59	0.55	0.60	0.52	0.32	0.15	0.15	0.14	0.11	0.19	0.35	0.49
30%	0.54	0.49	0.51	0.42	0.27	0.13	0.13	0.14	0.10	0.16	0.30	0.44
40%	0.51	0.45	0.40	0.35	0.22	0.12	0.12	0.13	0.09	0.15	0.25	0.41
50%	0.48	0.37	0.25	0.33	0.16	0.11	0.11	0.12	0.09	0.10	0.23	0.37
60%	0.17	0.16	0.19	0.28	0.14	0.10	0.09	0.11	0.09	0.08	0.19	0.35
70%	0.16	0.08	0.13	0.15	0.11	0.10	0.09	0.11	0.08	0.07	0.17	0.32
80%	0.15	0.07	0.09	0.12	0.11	0.09	0.08	0.09	0.08	0.07	0.16	0.28
90%	0.14	0.07	0.08	0.10	0.09	0.08	0.05	0.04	0.07	0.07	0.14	0.26
Long Term												
Full Simulation Period[b]	0.36	0.33	0.34	0.33	0.22	0.14	0.11	0.12	0.10	0.14	0.25	0.38
Water Year Types[c]												
Wet (32%)	0.28	0.23	0.19	0.17	0.12	0.09	0.07	0.08	0.08	0.07	0.15	0.30
Above Normal (16%)	0.46	0.42	0.36	0.30	0.17	0.10	0.10	0.11	0.09	0.07	0.17	0.27
Below Normal (13%)	0.29	0.23	0.29	0.34	0.23	0.13	0.13	0.14	0.10	0.14	0.24	0.46
Dry (24%)	0.36	0.36	0.39	0.43	0.28	0.16	0.13	0.13	0.10	0.19	0.34	0.44
Critical (15%)	0.51	0.52	0.57	0.52	0.36	0.27	0.18	0.16	0.18	0.26	0.40	0.50

No Action Alternative minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	**0.00**	0.00	**-0.02**	**-0.03**	**-0.07**	0.06	0.04	0.04	0.00	0.01	0.03	0.00
20%	**-0.01**	**-0.04**	**-0.04**	**-0.06**	**-0.05**	**-0.02**	0.03	0.03	0.01	0.02	0.06	**-0.01**
30%	**-0.03**	**-0.07**	**-0.11**	**-0.11**	0.01	**-0.01**	0.04	0.04	0.01	0.01	0.02	**-0.02**
40%	**-0.05**	**-0.07**	**-0.18**	**-0.14**	0.04	0.01	0.03	0.04	0.01	0.03	**0.00**	**-0.03**
50%	**-0.06**	**-0.12**	**-0.28**	**-0.09**	0.03	0.01	0.03	0.04	0.01	0.02	0.01	**-0.06**
60%	**-0.36**	**-0.32**	**-0.29**	**-0.01**	0.02	0.01	0.01	0.04	0.01	0.00	0.00	**-0.07**
70%	**-0.35**	**-0.38**	**-0.30**	**-0.01**	0.00	0.02	0.01	0.03	0.02	0.00	0.01	**-0.08**
80%	**-0.34**	**-0.33**	**-0.20**	0.01	0.02	0.01	0.00	0.02	0.01	0.00	0.01	**-0.09**
90%	**-0.30**	**-0.22**	**-0.02**	0.02	0.01	0.01	**-0.01**	**-0.02**	0.01	0.00	0.00	**-0.06**
Long Term												
Full Simulation Period[b]	**-0.16**	**-0.16**	**-0.15**	**-0.04**	0.00	0.01	0.02	0.03	0.01	0.01	0.02	**-0.04**
Water Year Types[c]												
Wet (32%)	**-0.19**	**-0.22**	**-0.17**	0.01	0.02	0.00	**0.00**	0.01	0.01	0.00	0.01	**-0.05**
Above Normal (16%)	**-0.12**	**-0.09**	**-0.12**	**-0.06**	0.02	0.01	0.02	0.04	0.02	0.00	**0.00**	**-0.16**
Below Normal (13%)	**-0.19**	**-0.20**	**-0.19**	**-0.11**	**-0.08**	**-0.02**	0.03	0.05	0.02	0.00	**0.00**	0.03
Dry (24%)	**-0.17**	**-0.15**	**-0.18**	**-0.05**	0.01	0.04	0.03	0.03	0.00	0.04	0.05	**-0.02**
Critical (15%)	**-0.09**	**-0.07**	**-0.09**	**-0.05**	0.01	0.03	0.02	0.02	**-0.02**	**0.00**	0.01	**-0.02**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.26.5. Contra Costa Water District Old River Intake, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.63	0.69	0.72	0.64	0.46	0.24	0.13	0.12	0.13	0.24	0.38	0.51
20%	0.60	0.59	0.64	0.58	0.37	0.17	0.11	0.11	0.10	0.17	0.30	0.49
30%	0.57	0.55	0.62	0.53	0.26	0.14	0.10	0.10	0.09	0.15	0.28	0.46
40%	0.56	0.52	0.58	0.50	0.18	0.11	0.09	0.08	0.08	0.12	0.25	0.44
50%	0.54	0.49	0.53	0.42	0.14	0.10	0.08	0.08	0.08	0.08	0.21	0.42
60%	0.53	0.48	0.48	0.30	0.12	0.09	0.08	0.08	0.07	0.07	0.19	0.41
70%	0.50	0.46	0.43	0.16	0.11	0.08	0.08	0.07	0.07	0.07	0.16	0.40
80%	0.49	0.40	0.29	0.11	0.09	0.07	0.07	0.07	0.07	0.07	0.15	0.37
90%	0.44	0.29	0.10	0.09	0.08	0.07	0.06	0.07	0.06	0.07	0.14	0.33
Long Term												
Full Simulation Period[b]	0.52	0.49	0.49	0.37	0.21	0.13	0.10	0.09	0.10	0.13	0.23	0.42
Water Year Types[c]												
Wet (32%)	0.47	0.44	0.36	0.17	0.10	0.09	0.07	0.07	0.07	0.07	0.14	0.35
Above Normal (16%)	0.57	0.51	0.48	0.36	0.15	0.09	0.08	0.07	0.07	0.07	0.17	0.43
Below Normal (13%)	0.49	0.44	0.49	0.45	0.31	0.16	0.10	0.09	0.07	0.14	0.24	0.43
Dry (24%)	0.54	0.51	0.57	0.48	0.27	0.13	0.10	0.10	0.09	0.16	0.30	0.46
Critical (15%)	0.60	0.59	0.65	0.57	0.35	0.24	0.16	0.14	0.20	0.26	0.39	0.52

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.63	0.68	0.71	0.61	0.39	0.17	0.15	0.14	0.13	0.28	0.41	0.53
20%	0.60	0.60	0.65	0.57	0.32	0.14	0.13	0.11	0.09	0.18	0.34	0.49
30%	0.57	0.55	0.60	0.50	0.28	0.13	0.12	0.09	0.08	0.17	0.27	0.46
40%	0.56	0.51	0.57	0.46	0.19	0.12	0.11	0.09	0.08	0.14	0.26	0.45
50%	0.54	0.49	0.53	0.43	0.14	0.11	0.09	0.08	0.07	0.11	0.23	0.43
60%	0.52	0.48	0.49	0.26	0.13	0.10	0.08	0.07	0.07	0.08	0.19	0.41
70%	0.50	0.47	0.44	0.15	0.11	0.09	0.08	0.07	0.07	0.07	0.16	0.40
80%	0.48	0.42	0.30	0.13	0.10	0.08	0.08	0.07	0.06	0.07	0.15	0.36
90%	0.43	0.33	0.10	0.09	0.08	0.07	0.07	0.06	0.06	0.07	0.13	0.32
Long Term												
Full Simulation Period[b]	0.52	0.50	0.49	0.36	0.21	0.13	0.10	0.09	0.09	0.14	0.24	0.42
Water Year Types[c]												
Wet (32%)	0.46	0.45	0.36	0.19	0.11	0.09	0.07	0.06	0.06	0.07	0.14	0.33
Above Normal (16%)	0.59	0.53	0.48	0.37	0.16	0.09	0.08	0.07	0.07	0.07	0.17	0.43
Below Normal (13%)	0.49	0.43	0.49	0.43	0.25	0.13	0.11	0.09	0.08	0.16	0.25	0.47
Dry (24%)	0.53	0.52	0.57	0.47	0.26	0.15	0.12	0.10	0.08	0.19	0.32	0.45
Critical (15%)	0.59	0.59	0.61	0.50	0.34	0.23	0.17	0.15	0.19	0.27	0.39	0.52

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Bromide Concentration (mg/L)											
Probability of Exceedance[a]												
10%	0.00	-0.01	-0.02	-0.04	-0.07	-0.06	0.02	0.02	0.00	0.04	0.03	0.02
20%	0.01	0.01	0.01	-0.02	-0.04	-0.03	0.02	0.00	-0.01	0.02	0.04	0.00
30%	-0.01	0.00	-0.02	-0.03	0.02	-0.02	0.02	0.00	0.00	0.02	0.00	0.00
40%	0.00	-0.01	-0.01	-0.03	0.01	0.01	0.02	0.00	0.00	0.02	0.01	0.01
50%	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.02	0.01	0.01
60%	-0.01	0.00	0.01	-0.04	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
70%	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80%	0.00	0.02	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	0.00	0.04	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	-0.01	0.00
Long Term												
Full Simulation Period[b]	0.00	0.01	0.00	-0.01	-0.01	0.00	0.01	0.00	-0.01	0.01	0.01	0.00
Water Year Types[c]												
Wet (32%)	-0.01	0.01	0.00	0.02	0.01	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.01
Above Normal (16%)	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Below Normal (13%)	0.00	-0.01	0.00	-0.02	-0.06	-0.03	0.01	0.01	0.01	0.02	0.01	0.04
Dry (24%)	-0.01	0.01	0.00	-0.01	-0.01	0.02	0.02	0.00	-0.01	0.03	0.03	0.00
Critical (15%)	0.00	0.00	-0.04	-0.07	-0.01	-0.01	0.01	0.01	-0.01	0.00	0.01	0.00

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.26.6. Contra Costa Water District Old River Intake, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.63	0.69	0.72	0.64	0.46	0.24	0.13	0.12	0.13	0.24	0.38	0.51
20%	0.60	0.59	0.64	0.58	0.37	0.17	0.11	0.11	0.10	0.17	0.30	0.49
30%	0.57	0.55	0.62	0.53	0.26	0.14	0.10	0.10	0.09	0.15	0.28	0.46
40%	0.56	0.52	0.58	0.50	0.18	0.11	0.09	0.08	0.08	0.12	0.25	0.44
50%	0.54	0.49	0.53	0.42	0.14	0.10	0.08	0.08	0.08	0.08	0.21	0.42
60%	0.53	0.48	0.48	0.30	0.12	0.09	0.08	0.08	0.07	0.07	0.19	0.41
70%	0.50	0.46	0.43	0.16	0.11	0.08	0.08	0.07	0.07	0.07	0.16	0.40
80%	0.49	0.40	0.29	0.11	0.09	0.07	0.07	0.07	0.07	0.07	0.15	0.37
90%	0.44	0.29	0.10	0.09	0.08	0.07	0.06	0.07	0.06	0.07	0.14	0.33
Long Term												
Full Simulation Period[b]	0.52	0.49	0.49	0.37	0.21	0.13	0.10	0.09	0.10	0.13	0.23	0.42
Water Year Types[c]												
Wet (32%)	0.47	0.44	0.36	0.17	0.10	0.09	0.07	0.07	0.07	0.07	0.14	0.35
Above Normal (16%)	0.57	0.51	0.48	0.36	0.15	0.09	0.08	0.07	0.07	0.07	0.17	0.43
Below Normal (13%)	0.49	0.44	0.49	0.45	0.31	0.16	0.10	0.09	0.07	0.14	0.24	0.43
Dry (24%)	0.54	0.51	0.57	0.48	0.27	0.13	0.10	0.10	0.09	0.16	0.30	0.46
Critical (15%)	0.60	0.59	0.65	0.57	0.35	0.24	0.16	0.14	0.20	0.26	0.39	0.52

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.64	0.69	0.70	0.62	0.39	0.30	0.19	0.18	0.15	0.26	0.41	0.52
20%	0.59	0.57	0.59	0.53	0.32	0.15	0.17	0.18	0.12	0.20	0.37	0.49
30%	0.55	0.50	0.51	0.42	0.27	0.13	0.15	0.16	0.11	0.17	0.32	0.46
40%	0.52	0.44	0.41	0.35	0.22	0.12	0.13	0.14	0.10	0.15	0.25	0.43
50%	0.47	0.38	0.24	0.33	0.16	0.11	0.11	0.12	0.09	0.10	0.23	0.37
60%	0.17	0.16	0.19	0.28	0.14	0.10	0.09	0.11	0.09	0.08	0.19	0.35
70%	0.16	0.08	0.13	0.15	0.12	0.10	0.09	0.11	0.09	0.07	0.17	0.33
80%	0.15	0.07	0.09	0.12	0.10	0.09	0.07	0.09	0.08	0.07	0.16	0.29
90%	0.10	0.07	0.08	0.10	0.09	0.08	0.05	0.04	0.07	0.07	0.14	0.25
Long Term												
Full Simulation Period[b]	0.37	0.33	0.34	0.33	0.22	0.14	0.12	0.12	0.10	0.14	0.25	0.38
Water Year Types[c]												
Wet (32%)	0.28	0.23	0.20	0.17	0.12	0.09	0.07	0.07	0.08	0.07	0.15	0.30
Above Normal (16%)	0.47	0.42	0.35	0.30	0.17	0.10	0.10	0.11	0.09	0.07	0.17	0.27
Below Normal (13%)	0.29	0.24	0.29	0.34	0.23	0.13	0.12	0.14	0.11	0.14	0.24	0.46
Dry (24%)	0.37	0.35	0.39	0.44	0.28	0.17	0.15	0.16	0.11	0.21	0.36	0.46
Critical (15%)	0.51	0.52	0.56	0.52	0.36	0.27	0.19	0.18	0.15	0.26	0.40	0.51

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.00	**-0.03**	**-0.03**	**-0.07**	0.06	0.06	0.06	0.03	0.02	0.03	0.01
20%	**0.00**	**-0.02**	**-0.06**	**-0.05**	**-0.05**	**-0.02**	0.06	0.07	0.02	0.03	0.08	**0.00**
30%	**-0.02**	**-0.06**	**-0.11**	**-0.11**	0.01	**-0.01**	0.05	0.06	0.03	0.02	0.04	**-0.01**
40%	**-0.04**	**-0.07**	**-0.17**	**-0.14**	0.04	0.01	0.04	0.05	0.02	0.03	0.00	**-0.01**
50%	**-0.07**	**-0.11**	**-0.29**	**-0.09**	0.02	0.01	0.03	0.04	0.02	0.02	0.01	**-0.05**
60%	**-0.36**	**-0.33**	**-0.29**	**-0.01**	0.02	0.01	0.01	0.03	0.02	0.00	0.00	**-0.06**
70%	**-0.35**	**-0.38**	**-0.30**	**-0.01**	0.01	0.02	0.01	0.03	0.02	0.00	0.01	**-0.08**
80%	**-0.34**	**-0.33**	**-0.20**	0.01	0.02	0.01	0.00	0.02	0.02	0.00	0.01	**-0.08**
90%	**-0.34**	**-0.22**	**-0.02**	0.02	0.01	0.01	**-0.01**	**-0.02**	0.01	0.00	**0.00**	**-0.07**
Long Term												
Full Simulation Period[b]	**-0.16**	**-0.16**	**-0.15**	**-0.04**	0.00	0.01	0.02	0.03	0.01	0.01	0.02	**-0.04**
Water Year Types[c]												
Wet (32%)	**-0.19**	**-0.21**	**-0.16**	0.01	0.02	0.00	**0.00**	0.01	0.01	0.00	0.01	**-0.05**
Above Normal (16%)	**-0.10**	**-0.09**	**-0.13**	**-0.06**	0.02	0.01	0.02	0.03	0.02	0.00	**0.00**	**-0.16**
Below Normal (13%)	**-0.19**	**-0.20**	**-0.19**	**-0.11**	**-0.08**	**-0.02**	0.03	0.05	0.03	0.00	**0.00**	0.03
Dry (24%)	**-0.17**	**-0.15**	**-0.18**	**-0.05**	0.01	0.04	0.05	0.06	0.02	0.05	0.07	**0.00**
Critical (15%)	**-0.09**	**-0.07**	**-0.09**	**-0.05**	0.02	0.03	0.03	0.04	**-0.05**	**-0.01**	0.02	**-0.01**

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.27. Contra Costa Water District Victoria Canal Intake Bromide Concentration

Table 6E.B.27.1. Contra Costa Victoria Canal Intake, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.36	0.39	0.46	0.50	0.40	0.21	0.19	0.16	0.13	0.16	0.25	0.30
20%	0.33	0.33	0.39	0.44	0.33	0.19	0.17	0.15	0.12	0.11	0.22	0.28
30%	0.31	0.30	0.35	0.38	0.27	0.18	0.16	0.14	0.11	0.10	0.20	0.27
40%	0.30	0.29	0.31	0.33	0.20	0.16	0.15	0.14	0.11	0.09	0.16	0.25
50%	0.28	0.25	0.20	0.30	0.18	0.15	0.13	0.12	0.11	0.08	0.14	0.24
60%	0.12	0.11	0.13	0.21	0.17	0.14	0.10	0.11	0.11	0.08	0.09	0.23
70%	0.11	0.11	0.10	0.17	0.16	0.12	0.09	0.10	0.10	0.08	0.08	0.22
80%	0.11	0.10	0.09	0.15	0.13	0.10	0.07	0.09	0.10	0.07	0.07	0.19
90%	0.10	0.10	0.08	0.13	0.11	0.09	0.05	0.04	0.09	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.23	0.22	0.24	0.30	0.23	0.16	0.13	0.12	0.11	0.10	0.15	0.23
Water Year Types[c]												
Wet (32%)	0.19	0.17	0.16	0.18	0.14	0.10	0.07	0.08	0.09	0.09	0.08	0.20
Above Normal (16%)	0.27	0.27	0.26	0.29	0.21	0.14	0.11	0.11	0.11	0.08	0.08	0.18
Below Normal (13%)	0.19	0.18	0.20	0.30	0.24	0.16	0.14	0.14	0.11	0.08	0.14	0.25
Dry (24%)	0.22	0.23	0.27	0.36	0.26	0.19	0.16	0.14	0.11	0.10	0.22	0.26
Critical (15%)	0.30	0.32	0.38	0.44	0.37	0.27	0.20	0.16	0.15	0.18	0.26	0.31

Alternative 1

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.38	0.40	0.42	0.47	0.39	0.28	0.17	0.15	0.14	0.15	0.23	0.31
20%	0.34	0.33	0.38	0.43	0.35	0.18	0.15	0.14	0.12	0.10	0.19	0.28
30%	0.32	0.32	0.36	0.40	0.27	0.15	0.13	0.13	0.11	0.10	0.18	0.26
40%	0.32	0.31	0.35	0.37	0.17	0.14	0.12	0.11	0.10	0.09	0.16	0.24
50%	0.30	0.29	0.33	0.35	0.16	0.13	0.12	0.10	0.10	0.08	0.14	0.23
60%	0.29	0.28	0.32	0.19	0.14	0.12	0.11	0.10	0.09	0.08	0.09	0.23
70%	0.28	0.26	0.29	0.14	0.13	0.11	0.10	0.09	0.09	0.07	0.08	0.22
80%	0.27	0.24	0.20	0.13	0.11	0.10	0.09	0.09	0.09	0.07	0.08	0.21
90%	0.23	0.21	0.10	0.11	0.10	0.09	0.07	0.06	0.08	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.30	0.29	0.30	0.30	0.21	0.16	0.12	0.11	0.10	0.10	0.14	0.23
Water Year Types[c]												
Wet (32%)	0.27	0.25	0.24	0.17	0.11	0.10	0.08	0.07	0.09	0.09	0.08	0.19
Above Normal (16%)	0.33	0.30	0.29	0.29	0.17	0.12	0.11	0.10	0.09	0.07	0.09	0.22
Below Normal (13%)	0.27	0.25	0.28	0.33	0.28	0.19	0.13	0.12	0.09	0.07	0.15	0.24
Dry (24%)	0.31	0.30	0.34	0.36	0.26	0.17	0.13	0.13	0.11	0.10	0.19	0.26
Critical (15%)	0.35	0.37	0.41	0.43	0.33	0.26	0.19	0.15	0.15	0.19	0.26	0.32

Alternative 1 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.01	-0.04	-0.03	-0.01	0.07	-0.03	-0.01	0.00	-0.01	-0.02	0.01
20%	0.01	0.00	-0.01	-0.01	0.02	-0.01	-0.03	-0.01	0.00	0.00	-0.03	0.00
30%	0.01	0.02	0.02	0.02	0.00	-0.02	-0.03	-0.01	0.00	0.00	-0.02	-0.01
40%	0.02	0.02	0.03	0.04	-0.03	-0.02	-0.02	-0.03	-0.01	0.00	0.01	-0.01
50%	0.03	0.04	0.13	0.06	-0.03	-0.02	-0.02	-0.02	-0.01	0.00	0.00	0.00
60%	0.18	0.17	0.19	-0.02	-0.03	-0.02	0.01	-0.01	-0.01	0.00	0.00	0.00
70%	0.17	0.15	0.19	-0.03	-0.03	-0.01	0.01	-0.01	-0.01	-0.01	0.00	0.00
80%	0.16	0.14	0.10	-0.02	-0.02	0.00	0.01	0.00	-0.01	0.00	0.00	0.02
90%	0.13	0.12	0.01	-0.02	-0.01	0.00	0.01	0.02	-0.01	0.00	0.00	0.01
Long Term												
Full Simulation Period[b]	0.07	0.06	0.06	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	0.00
Water Year Types[c]												
Wet (32%)	0.08	0.08	0.08	-0.01	-0.02	0.00	0.01	0.00	-0.01	0.00	0.00	-0.02
Above Normal (16%)	0.06	0.03	0.03	0.01	-0.04	-0.02	0.00	-0.02	-0.01	0.00	0.01	0.05
Below Normal (13%)	0.08	0.07	0.08	0.03	0.04	0.03	-0.01	-0.02	-0.02	-0.01	0.01	-0.01
Dry (24%)	0.09	0.07	0.07	0.00	0.00	-0.02	-0.03	-0.01	0.00	-0.01	-0.03	0.00
Critical (15%)	0.05	0.05	0.02	-0.01	-0.04	-0.02	-0.01	-0.01	0.01	0.00	0.00	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.27.2. Contra Costa Victoria Canal Intake, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.36	0.39	0.46	0.50	0.40	0.21	0.19	0.16	0.13	0.16	0.25	0.30
20%	0.33	0.33	0.39	0.44	0.33	0.19	0.17	0.15	0.12	0.11	0.22	0.28
30%	0.31	0.30	0.35	0.38	0.27	0.18	0.16	0.14	0.11	0.10	0.20	0.27
40%	0.30	0.29	0.31	0.33	0.20	0.16	0.15	0.14	0.11	0.09	0.16	0.25
50%	0.28	0.25	0.20	0.30	0.18	0.15	0.13	0.12	0.11	0.08	0.14	0.24
60%	0.12	0.11	0.13	0.21	0.17	0.14	0.10	0.11	0.11	0.08	0.09	0.23
70%	0.11	0.11	0.10	0.17	0.16	0.12	0.09	0.10	0.10	0.08	0.08	0.22
80%	0.11	0.10	0.09	0.15	0.13	0.10	0.07	0.09	0.10	0.07	0.07	0.19
90%	0.10	0.10	0.08	0.13	0.11	0.09	0.05	0.04	0.09	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.23	0.22	0.24	0.30	0.23	0.16	0.13	0.12	0.11	0.10	0.15	0.23
Water Year Types[c]												
Wet (32%)	0.19	0.17	0.16	0.18	0.14	0.10	0.07	0.08	0.09	0.09	0.08	0.20
Above Normal (16%)	0.27	0.27	0.26	0.29	0.21	0.14	0.11	0.11	0.11	0.08	0.08	0.18
Below Normal (13%)	0.19	0.18	0.20	0.30	0.24	0.16	0.14	0.14	0.11	0.08	0.14	0.25
Dry (24%)	0.22	0.23	0.27	0.36	0.26	0.19	0.16	0.14	0.11	0.10	0.22	0.26
Critical (15%)	0.30	0.32	0.38	0.44	0.37	0.27	0.20	0.16	0.15	0.18	0.26	0.31

Alternative 3

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.37	0.40	0.42	0.48	0.40	0.20	0.18	0.15	0.11	0.16	0.26	0.29
20%	0.34	0.34	0.38	0.44	0.36	0.18	0.16	0.13	0.11	0.11	0.21	0.28
30%	0.33	0.32	0.37	0.42	0.21	0.17	0.15	0.12	0.10	0.10	0.19	0.26
40%	0.32	0.31	0.35	0.39	0.18	0.16	0.14	0.10	0.10	0.09	0.17	0.25
50%	0.31	0.29	0.33	0.37	0.17	0.14	0.12	0.10	0.09	0.08	0.14	0.24
60%	0.29	0.28	0.32	0.20	0.15	0.13	0.11	0.09	0.09	0.08	0.09	0.23
70%	0.28	0.26	0.29	0.16	0.14	0.12	0.10	0.09	0.08	0.08	0.08	0.22
80%	0.27	0.24	0.23	0.14	0.12	0.10	0.08	0.08	0.08	0.07	0.07	0.20
90%	0.23	0.22	0.10	0.13	0.10	0.09	0.07	0.06	0.07	0.06	0.07	0.16
Long Term												
Full Simulation Period[b]	0.30	0.29	0.31	0.31	0.21	0.16	0.13	0.10	0.10	0.10	0.15	0.24
Water Year Types[c]												
Wet (32%)	0.27	0.25	0.25	0.19	0.12	0.10	0.08	0.07	0.08	0.09	0.08	0.18
Above Normal (16%)	0.33	0.32	0.30	0.32	0.19	0.13	0.11	0.09	0.09	0.07	0.09	0.22
Below Normal (13%)	0.27	0.25	0.29	0.35	0.24	0.16	0.14	0.11	0.09	0.08	0.16	0.26
Dry (24%)	0.31	0.30	0.35	0.38	0.27	0.19	0.15	0.12	0.09	0.10	0.20	0.26
Critical (15%)	0.35	0.37	0.40	0.39	0.33	0.25	0.19	0.16	0.14	0.19	0.26	0.32

Alternative 3 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.01	0.00	-0.04	-0.02	0.00	-0.01	-0.01	-0.01	-0.02	0.00	0.00	-0.01
20%	0.01	0.00	-0.01	0.00	0.03	-0.01	-0.01	-0.02	-0.02	0.00	-0.01	0.00
30%	0.02	0.01	0.02	0.04	-0.07	-0.01	-0.01	-0.03	-0.01	0.00	-0.01	0.00
40%	0.02	0.02	0.04	0.06	-0.02	-0.01	-0.01	-0.04	-0.01	0.00	0.01	0.01
50%	0.03	0.04	0.13	0.07	-0.02	-0.01	-0.01	-0.02	-0.02	0.00	0.00	0.00
60%	0.17	0.16	0.19	-0.01	-0.02	-0.01	0.01	-0.02	-0.02	0.00	0.01	0.00
70%	0.17	0.15	0.19	-0.01	-0.02	0.00	0.01	-0.02	-0.02	0.00	0.00	0.00
80%	0.16	0.14	0.13	-0.01	-0.02	-0.01	0.01	0.00	-0.02	0.00	0.00	0.01
90%	0.13	0.12	0.02	0.00	-0.01	0.00	0.02	0.02	-0.01	0.00	0.00	-0.01
Long Term												
Full Simulation Period[b]	0.07	0.07	0.07	0.01	-0.01	-0.01	0.00	-0.01	-0.02	0.00	0.00	0.00
Water Year Types[c]												
Wet (32%)	0.08	0.09	0.09	0.01	-0.02	0.00	0.01	-0.01	-0.01	0.00	0.00	-0.02
Above Normal (16%)	0.06	0.05	0.04	0.04	-0.02	-0.01	0.00	-0.02	-0.02	0.00	0.00	0.05
Below Normal (13%)	0.08	0.07	0.09	0.05	0.00	-0.01	-0.01	-0.03	-0.02	0.00	0.01	0.01
Dry (24%)	0.08	0.07	0.08	0.02	0.01	0.00	-0.01	-0.02	-0.02	0.00	-0.02	0.00
Critical (15%)	0.05	0.05	0.01	-0.05	-0.04	-0.02	0.00	0.00	-0.01	0.00	0.00	0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.27.3. Contra Costa Victoria Canal Intake, Monthly Bromide Concentration

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.36	0.39	0.46	0.50	0.40	0.21	0.19	0.16	0.13	0.16	0.25	0.30
20%	0.33	0.33	0.39	0.44	0.33	0.19	0.17	0.15	0.12	0.11	0.22	0.28
30%	0.31	0.30	0.35	0.38	0.27	0.18	0.16	0.14	0.11	0.10	0.20	0.27
40%	0.30	0.29	0.31	0.33	0.20	0.16	0.15	0.14	0.11	0.09	0.16	0.25
50%	0.28	0.25	0.20	0.30	0.18	0.15	0.13	0.12	0.11	0.08	0.14	0.24
60%	0.12	0.11	0.13	0.21	0.17	0.14	0.10	0.11	0.11	0.08	0.09	0.23
70%	0.11	0.11	0.10	0.17	0.16	0.12	0.09	0.10	0.10	0.08	0.08	0.22
80%	0.11	0.10	0.09	0.15	0.13	0.10	0.07	0.09	0.10	0.07	0.07	0.19
90%	0.10	0.10	0.08	0.13	0.11	0.09	0.05	0.04	0.09	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.23	0.22	0.24	0.30	0.23	0.16	0.13	0.12	0.11	0.10	0.15	0.23
Water Year Types[c]												
Wet (32%)	0.19	0.17	0.16	0.18	0.14	0.10	0.07	0.08	0.09	0.09	0.08	0.20
Above Normal (16%)	0.27	0.27	0.26	0.29	0.21	0.14	0.11	0.11	0.11	0.08	0.08	0.18
Below Normal (13%)	0.19	0.18	0.20	0.30	0.24	0.16	0.14	0.14	0.11	0.08	0.14	0.25
Dry (24%)	0.22	0.23	0.27	0.36	0.26	0.19	0.16	0.14	0.11	0.10	0.22	0.26
Critical (15%)	0.30	0.32	0.38	0.44	0.37	0.27	0.20	0.16	0.15	0.18	0.26	0.31

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.37	0.40	0.46	0.50	0.40	0.21	0.20	0.18	0.16	0.16	0.27	0.30
20%	0.34	0.35	0.39	0.44	0.35	0.19	0.18	0.17	0.14	0.11	0.22	0.28
30%	0.32	0.30	0.35	0.38	0.30	0.17	0.17	0.15	0.13	0.10	0.20	0.27
40%	0.30	0.29	0.30	0.33	0.20	0.16	0.14	0.13	0.12	0.09	0.17	0.25
50%	0.28	0.25	0.21	0.30	0.19	0.15	0.13	0.12	0.11	0.09	0.14	0.24
60%	0.15	0.11	0.13	0.21	0.17	0.14	0.10	0.11	0.11	0.08	0.09	0.23
70%	0.11	0.11	0.10	0.17	0.16	0.12	0.09	0.10	0.11	0.08	0.08	0.22
80%	0.10	0.10	0.09	0.15	0.13	0.10	0.07	0.08	0.10	0.07	0.07	0.19
90%	0.10	0.10	0.08	0.13	0.11	0.09	0.05	0.04	0.09	0.07	0.07	0.17
Long Term												
Full Simulation Period[b]	0.23	0.22	0.24	0.30	0.23	0.16	0.13	0.12	0.12	0.10	0.15	0.24
Water Year Types[c]												
Wet (32%)	0.19	0.17	0.17	0.18	0.14	0.10	0.07	0.07	0.09	0.09	0.08	0.20
Above Normal (16%)	0.28	0.27	0.26	0.29	0.21	0.14	0.11	0.11	0.11	0.08	0.08	0.18
Below Normal (13%)	0.20	0.18	0.20	0.30	0.24	0.16	0.14	0.13	0.12	0.08	0.14	0.25
Dry (24%)	0.23	0.23	0.26	0.37	0.27	0.19	0.16	0.15	0.13	0.11	0.23	0.26
Critical (15%)	0.30	0.32	0.38	0.44	0.37	0.28	0.21	0.18	0.16	0.18	0.26	0.31

Alternative 5 minus No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.01	0.00
20%	0.01	0.01	0.00	0.00	0.02	0.00	0.01	0.02	0.02	0.00	0.01	0.00
30%	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.01	0.01	0.00	0.00	0.01
40%	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	-0.01	0.01	0.00	0.01	0.01
50%	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60%	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00
70%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Long Term												
Full Simulation Period[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Water Year Types[c]												
Wet (32%)	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Above Normal (16%)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00
Below Normal (13%)	0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.01	0.00	0.00	0.00
Dry (24%)	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.01
Critical (15%)	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.01	-0.01	0.00	0.00

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.27.4. Contra Costa Victoria Canal Intake, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.38	0.40	0.42	0.47	0.39	0.28	0.17	0.15	0.14	0.15	0.23	0.31
20%	0.34	0.33	0.38	0.43	0.35	0.18	0.15	0.14	0.12	0.10	0.19	0.28
30%	0.32	0.32	0.36	0.40	0.27	0.15	0.13	0.13	0.11	0.10	0.18	0.26
40%	0.32	0.31	0.35	0.37	0.17	0.14	0.12	0.11	0.10	0.09	0.16	0.24
50%	0.30	0.29	0.33	0.35	0.16	0.13	0.12	0.10	0.10	0.08	0.14	0.23
60%	0.29	0.28	0.32	0.19	0.14	0.12	0.11	0.10	0.09	0.08	0.09	0.23
70%	0.28	0.26	0.29	0.14	0.13	0.11	0.10	0.09	0.09	0.07	0.08	0.22
80%	0.27	0.24	0.20	0.13	0.11	0.10	0.09	0.09	0.09	0.07	0.08	0.21
90%	0.23	0.21	0.10	0.11	0.10	0.09	0.07	0.06	0.08	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.30	0.29	0.30	0.30	0.21	0.16	0.12	0.11	0.10	0.10	0.14	0.23
Water Year Types[c]												
Wet (32%)	0.27	0.25	0.24	0.17	0.11	0.10	0.08	0.07	0.09	0.09	0.08	0.19
Above Normal (16%)	0.33	0.30	0.29	0.29	0.17	0.12	0.11	0.10	0.09	0.07	0.09	0.22
Below Normal (13%)	0.27	0.25	0.28	0.33	0.28	0.19	0.13	0.12	0.09	0.07	0.15	0.24
Dry (24%)	0.31	0.30	0.34	0.36	0.26	0.17	0.13	0.13	0.11	0.10	0.19	0.26
Critical (15%)	0.35	0.37	0.41	0.43	0.33	0.26	0.19	0.15	0.15	0.19	0.26	0.32

No Action Alternative

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.36	0.39	0.46	0.50	0.40	0.21	0.19	0.16	0.13	0.16	0.25	0.30
20%	0.33	0.33	0.39	0.44	0.33	0.19	0.17	0.15	0.12	0.11	0.22	0.28
30%	0.31	0.30	0.35	0.38	0.27	0.18	0.16	0.14	0.11	0.10	0.20	0.27
40%	0.30	0.29	0.31	0.33	0.20	0.16	0.15	0.14	0.11	0.09	0.16	0.25
50%	0.28	0.25	0.20	0.30	0.18	0.15	0.13	0.12	0.11	0.08	0.14	0.24
60%	0.12	0.11	0.13	0.21	0.17	0.14	0.10	0.11	0.11	0.08	0.09	0.23
70%	0.11	0.11	0.10	0.17	0.16	0.12	0.09	0.10	0.10	0.08	0.08	0.22
80%	0.11	0.10	0.09	0.15	0.13	0.10	0.07	0.09	0.10	0.07	0.07	0.19
90%	0.10	0.10	0.08	0.13	0.11	0.09	0.05	0.04	0.09	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.23	0.22	0.24	0.30	0.23	0.16	0.13	0.12	0.11	0.10	0.15	0.23
Water Year Types[c]												
Wet (32%)	0.19	0.17	0.16	0.18	0.14	0.10	0.07	0.08	0.09	0.09	0.08	0.20
Above Normal (16%)	0.27	0.27	0.26	0.29	0.21	0.14	0.11	0.11	0.11	0.08	0.08	0.18
Below Normal (13%)	0.19	0.18	0.20	0.30	0.24	0.16	0.14	0.14	0.11	0.08	0.14	0.25
Dry (24%)	0.22	0.23	0.27	0.36	0.26	0.19	0.16	0.14	0.11	0.10	0.22	0.26
Critical (15%)	0.30	0.32	0.38	0.44	0.37	0.27	0.20	0.16	0.15	0.18	0.26	0.31

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.01	-0.01	0.04	0.03	0.01	-0.07	0.03	0.01	0.00	0.01	0.02	-0.01
20%	-0.01	0.00	0.01	0.01	-0.02	0.01	0.03	0.01	0.00	0.00	0.03	0.00
30%	-0.01	-0.02	-0.02	-0.02	0.00	0.02	0.03	0.01	0.00	0.00	0.02	0.01
40%	-0.02	-0.02	-0.03	-0.04	0.03	0.02	0.02	0.03	0.01	0.00	-0.01	0.01
50%	-0.03	-0.04	-0.13	-0.06	0.03	0.02	0.02	0.02	0.01	0.00	0.00	0.00
60%	-0.18	-0.17	-0.19	0.02	0.03	0.02	-0.01	0.01	0.01	0.00	0.00	0.00
70%	-0.17	-0.15	-0.19	0.03	0.03	0.01	-0.01	0.01	0.01	0.01	0.00	0.00
80%	-0.16	-0.14	-0.10	0.02	0.02	0.00	-0.01	0.00	0.01	0.00	0.00	-0.02
90%	-0.13	-0.12	-0.01	0.02	0.01	0.00	-0.01	-0.02	0.01	0.00	0.00	-0.01
Long Term												
Full Simulation Period[b]	-0.07	-0.06	-0.06	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00
Water Year Types[c]												
Wet (32%)	-0.08	-0.08	-0.08	0.01	0.02	0.00	-0.01	0.00	0.01	0.00	0.00	0.02
Above Normal (16%)	-0.06	-0.03	-0.03	-0.01	0.04	0.02	0.00	0.02	0.01	0.00	-0.01	-0.05
Below Normal (13%)	-0.08	-0.07	-0.08	-0.03	-0.04	-0.03	0.01	0.02	0.02	0.01	-0.01	0.01
Dry (24%)	-0.09	-0.07	-0.07	0.00	0.00	0.02	0.03	0.01	0.00	0.01	0.03	0.00
Critical (15%)	-0.05	-0.05	-0.02	0.01	0.04	0.02	0.01	0.01	-0.01	0.00	0.00	-0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.27.5. Contra Costa Victoria Canal Intake, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.38	0.40	0.42	0.47	0.39	0.28	0.17	0.15	0.14	0.15	0.23	0.31
20%	0.34	0.33	0.38	0.43	0.35	0.18	0.15	0.14	0.12	0.10	0.19	0.28
30%	0.32	0.32	0.36	0.40	0.27	0.15	0.13	0.13	0.11	0.10	0.18	0.26
40%	0.32	0.31	0.35	0.37	0.17	0.14	0.12	0.11	0.10	0.09	0.16	0.24
50%	0.30	0.29	0.33	0.35	0.16	0.13	0.12	0.10	0.10	0.08	0.14	0.23
60%	0.29	0.28	0.32	0.19	0.14	0.12	0.11	0.10	0.09	0.08	0.09	0.23
70%	0.28	0.26	0.29	0.14	0.13	0.11	0.10	0.09	0.09	0.07	0.08	0.22
80%	0.27	0.24	0.20	0.13	0.11	0.10	0.09	0.09	0.09	0.07	0.08	0.21
90%	0.23	0.21	0.10	0.11	0.10	0.09	0.07	0.06	0.08	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.30	0.29	0.30	0.30	0.21	0.16	0.12	0.11	0.10	0.10	0.14	0.23
Water Year Types[c]												
Wet (32%)	0.27	0.25	0.24	0.17	0.11	0.10	0.08	0.07	0.09	0.09	0.08	0.19
Above Normal (16%)	0.33	0.30	0.29	0.29	0.17	0.12	0.11	0.10	0.09	0.07	0.09	0.22
Below Normal (13%)	0.27	0.25	0.28	0.33	0.28	0.19	0.13	0.12	0.09	0.07	0.15	0.24
Dry (24%)	0.31	0.30	0.34	0.36	0.26	0.17	0.13	0.13	0.11	0.10	0.19	0.26
Critical (15%)	0.35	0.37	0.41	0.43	0.33	0.26	0.19	0.15	0.15	0.19	0.26	0.32

Alternative 3

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.37	0.40	0.42	0.48	0.40	0.20	0.18	0.15	0.11	0.16	0.26	0.29
20%	0.34	0.34	0.38	0.44	0.36	0.18	0.16	0.13	0.11	0.11	0.21	0.28
30%	0.33	0.32	0.37	0.42	0.21	0.17	0.15	0.12	0.10	0.10	0.19	0.26
40%	0.32	0.31	0.35	0.39	0.18	0.16	0.14	0.10	0.10	0.09	0.17	0.25
50%	0.31	0.29	0.33	0.37	0.17	0.14	0.12	0.10	0.09	0.08	0.14	0.24
60%	0.29	0.28	0.32	0.20	0.15	0.13	0.11	0.09	0.09	0.08	0.09	0.23
70%	0.28	0.26	0.29	0.16	0.14	0.12	0.10	0.09	0.08	0.08	0.08	0.22
80%	0.27	0.24	0.23	0.14	0.12	0.10	0.08	0.08	0.08	0.07	0.07	0.20
90%	0.23	0.22	0.10	0.13	0.10	0.09	0.07	0.06	0.07	0.06	0.07	0.16
Long Term												
Full Simulation Period[b]	0.30	0.29	0.31	0.31	0.21	0.16	0.13	0.10	0.10	0.10	0.15	0.24
Water Year Types[c]												
Wet (32%)	0.27	0.25	0.25	0.19	0.12	0.10	0.08	0.07	0.08	0.09	0.08	0.18
Above Normal (16%)	0.33	0.32	0.30	0.32	0.19	0.13	0.11	0.09	0.09	0.07	0.09	0.22
Below Normal (13%)	0.27	0.25	0.29	0.35	0.24	0.16	0.14	0.11	0.09	0.08	0.16	0.26
Dry (24%)	0.31	0.30	0.35	0.38	0.27	0.19	0.15	0.12	0.09	0.10	0.20	0.26
Critical (15%)	0.35	0.37	0.40	0.39	0.33	0.25	0.19	0.16	0.14	0.19	0.26	0.32

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.00	0.00	-0.01	0.00	0.01	-0.08	0.01	0.00	-0.03	0.02	0.02	-0.02
20%	0.00	0.01	0.00	0.01	0.01	0.00	0.02	-0.01	-0.01	0.01	0.02	0.00
30%	0.00	0.00	0.00	0.02	-0.06	0.02	0.02	-0.01	-0.01	0.00	0.01	0.01
40%	0.00	0.00	0.00	0.02	0.01	0.02	0.01	-0.01	-0.01	0.00	0.01	0.01
50%	0.00	0.00	0.00	0.02	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
60%	0.00	0.00	-0.01	0.01	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
70%	0.00	0.00	0.00	0.01	0.01	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
80%	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
90%	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	-0.02
Long Term												
Full Simulation Period[b]	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	-0.01	0.00	0.01	0.00
Water Year Types[c]												
Wet (32%)	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.00	-0.01	0.00	0.00	0.00
Above Normal (16%)	0.00	0.02	0.01	0.03	0.02	0.01	0.00	-0.01	-0.01	0.00	0.00	0.00
Below Normal (13%)	-0.01	0.00	0.01	0.02	-0.05	-0.04	0.01	0.00	0.00	0.01	0.00	0.02
Dry (24%)	0.00	0.00	0.01	0.02	0.01	0.02	0.02	-0.01	-0.01	0.01	0.02	0.00
Critical (15%)	0.00	0.00	-0.01	-0.04	0.00	0.00	0.00	0.01	-0.02	0.00	0.00	0.00

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table 6E.B.27.6. Contra Costa Victoria Canal Intake, Monthly Bromide Concentration

Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.38	0.40	0.42	0.47	0.39	0.28	0.17	0.15	0.14	0.15	0.23	0.31
20%	0.34	0.33	0.38	0.43	0.35	0.18	0.15	0.14	0.12	0.10	0.19	0.28
30%	0.32	0.32	0.36	0.40	0.27	0.15	0.13	0.13	0.11	0.10	0.18	0.26
40%	0.32	0.31	0.35	0.37	0.17	0.14	0.12	0.11	0.10	0.09	0.16	0.24
50%	0.30	0.29	0.33	0.35	0.16	0.13	0.12	0.10	0.10	0.08	0.14	0.23
60%	0.29	0.28	0.32	0.19	0.14	0.12	0.11	0.10	0.09	0.08	0.09	0.23
70%	0.28	0.26	0.29	0.14	0.13	0.11	0.10	0.09	0.09	0.07	0.08	0.22
80%	0.27	0.24	0.20	0.13	0.11	0.10	0.09	0.09	0.09	0.07	0.08	0.21
90%	0.23	0.21	0.10	0.11	0.10	0.09	0.07	0.06	0.08	0.07	0.07	0.18
Long Term												
Full Simulation Period[b]	0.30	0.29	0.30	0.30	0.21	0.16	0.12	0.11	0.10	0.10	0.14	0.23
Water Year Types[c]												
Wet (32%)	0.27	0.25	0.24	0.17	0.11	0.10	0.08	0.07	0.09	0.09	0.08	0.19
Above Normal (16%)	0.33	0.30	0.29	0.29	0.17	0.12	0.11	0.10	0.09	0.07	0.09	0.22
Below Normal (13%)	0.27	0.25	0.28	0.33	0.28	0.19	0.13	0.12	0.09	0.07	0.15	0.24
Dry (24%)	0.31	0.30	0.34	0.36	0.26	0.17	0.13	0.13	0.11	0.10	0.19	0.26
Critical (15%)	0.35	0.37	0.41	0.43	0.33	0.26	0.19	0.15	0.15	0.19	0.26	0.32

Alternative 5

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	0.37	0.40	0.46	0.50	0.40	0.21	0.20	0.18	0.16	0.16	0.27	0.30
20%	0.34	0.35	0.39	0.44	0.35	0.19	0.18	0.17	0.14	0.11	0.22	0.28
30%	0.32	0.30	0.35	0.38	0.30	0.17	0.17	0.15	0.13	0.10	0.20	0.27
40%	0.30	0.29	0.30	0.33	0.20	0.16	0.14	0.13	0.12	0.09	0.17	0.25
50%	0.28	0.25	0.21	0.30	0.19	0.15	0.13	0.12	0.11	0.09	0.14	0.24
60%	0.15	0.11	0.13	0.21	0.17	0.14	0.10	0.11	0.11	0.08	0.09	0.23
70%	0.11	0.11	0.10	0.17	0.16	0.12	0.09	0.10	0.11	0.08	0.08	0.22
80%	0.10	0.10	0.09	0.15	0.13	0.10	0.07	0.08	0.10	0.07	0.07	0.19
90%	0.10	0.10	0.08	0.13	0.11	0.09	0.05	0.04	0.09	0.07	0.07	0.17
Long Term												
Full Simulation Period[b]	0.23	0.22	0.24	0.30	0.23	0.16	0.13	0.12	0.12	0.10	0.15	0.24
Water Year Types[c]												
Wet (32%)	0.19	0.17	0.17	0.18	0.14	0.10	0.07	0.07	0.09	0.09	0.08	0.20
Above Normal (16%)	0.28	0.27	0.26	0.29	0.21	0.14	0.11	0.11	0.11	0.08	0.08	0.18
Below Normal (13%)	0.20	0.18	0.20	0.30	0.24	0.16	0.14	0.13	0.12	0.08	0.14	0.25
Dry (24%)	0.23	0.23	0.26	0.37	0.27	0.19	0.16	0.15	0.13	0.11	0.23	0.26
Critical (15%)	0.30	0.32	0.38	0.44	0.37	0.28	0.21	0.18	0.16	0.18	0.26	0.31

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Bromide Concentration (mg/L)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-0.01	0.00	0.04	0.03	0.01	-0.07	0.03	0.03	0.02	0.01	0.03	-0.01
20%	0.00	0.02	0.01	0.01	0.00	0.01	0.04	0.03	0.02	0.01	0.03	0.00
30%	-0.01	-0.02	-0.02	-0.02	0.03	0.02	0.04	0.02	0.02	0.00	0.03	0.01
40%	-0.01	-0.02	-0.05	-0.04	0.03	0.02	0.02	0.02	0.01	0.00	0.00	0.01
50%	-0.02	-0.04	-0.12	-0.06	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00
60%	-0.14	-0.17	-0.19	0.02	0.03	0.02	-0.01	0.01	0.02	0.00	0.00	0.01
70%	-0.17	-0.15	-0.19	0.03	0.03	0.01	-0.01	0.01	0.02	0.01	0.00	0.00
80%	-0.16	-0.14	-0.10	0.02	0.02	0.00	-0.01	0.00	0.01	0.00	0.00	-0.01
90%	-0.13	-0.12	-0.01	0.02	0.01	0.00	-0.01	-0.02	0.01	0.00	0.00	-0.01
Long Term												
Full Simulation Period[b]	-0.07	-0.06	-0.06	0.00	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.00
Water Year Types[c]												
Wet (32%)	-0.07	-0.08	-0.07	0.01	0.02	0.00	-0.01	0.00	0.01	0.00	0.00	0.02
Above Normal (16%)	-0.05	-0.03	-0.03	-0.01	0.04	0.02	0.00	0.01	0.01	0.00	0.00	-0.05
Below Normal (13%)	-0.07	-0.07	-0.08	-0.03	-0.04	-0.03	0.01	0.02	0.03	0.01	-0.01	0.02
Dry (24%)	-0.08	-0.07	-0.08	0.00	0.01	0.02	0.03	0.02	0.02	0.01	0.04	0.01
Critical (15%)	-0.05	-0.05	-0.02	0.00	0.04	0.02	0.02	0.03	0.00	-0.01	0.00	-0.01

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Appendix 6E Errata

Please add the following pages after page 6E-396 of the Appendix 6E file.

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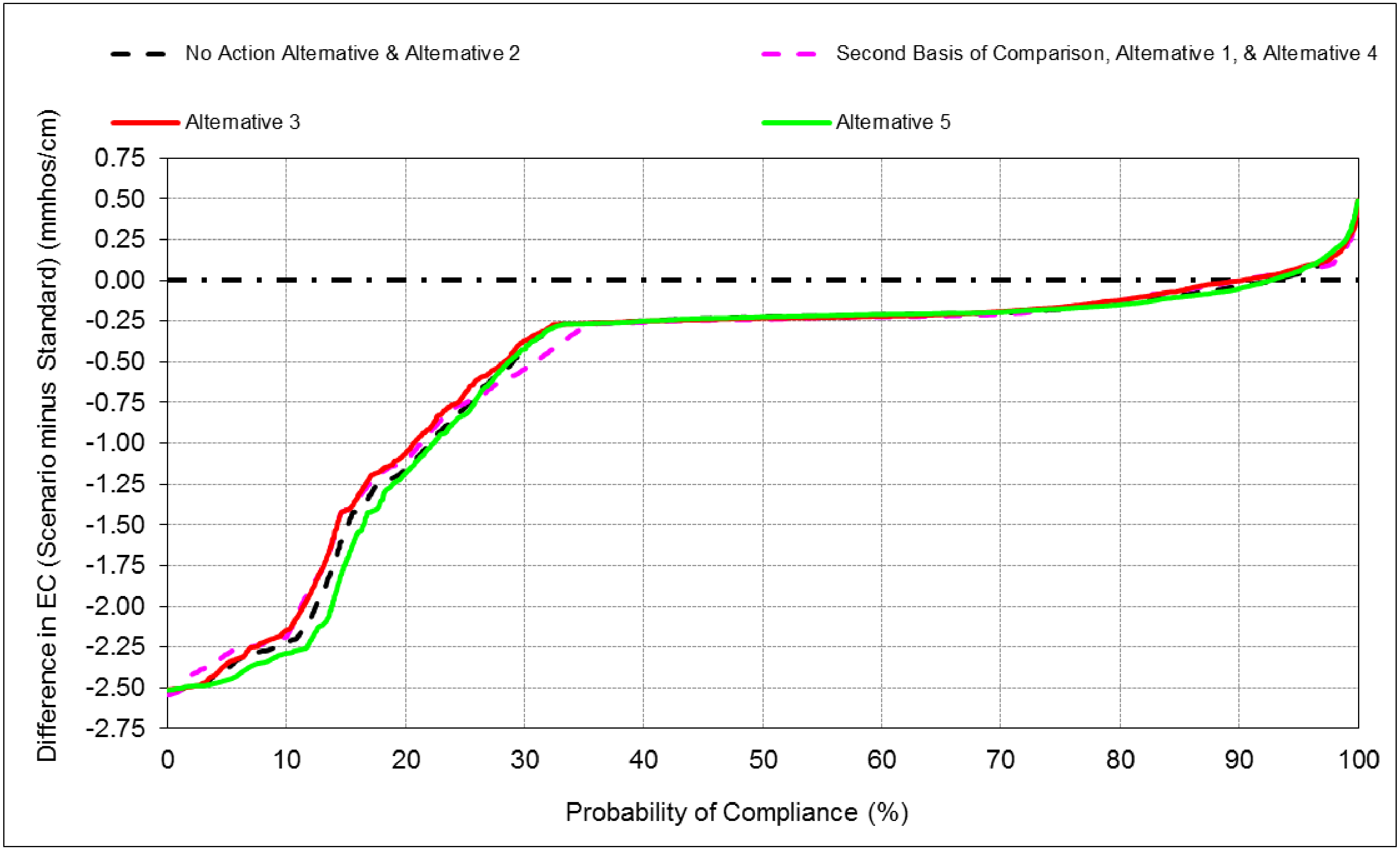
B.28. Sacramento River at Emmaton Compliance with D-1641 Agricultural Salinity Standard

Figure 6E.B.28. Sacramento River at Emmaton Compliance with D-1641 Agricultural Salinity Standard



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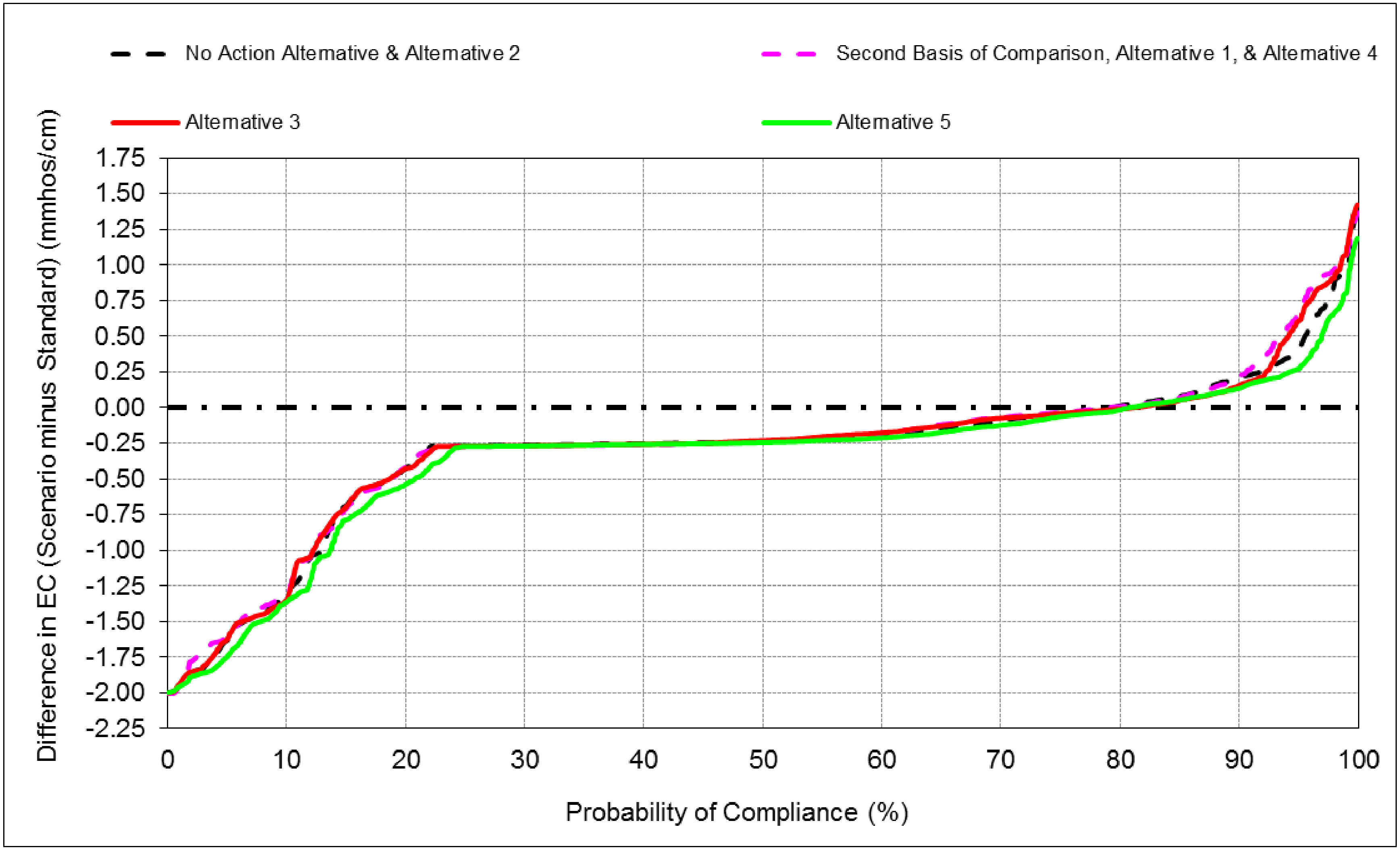
B.29. San Joaquin River at Jersey Point Compliance with D-1641 Agricultural Salinity Standard

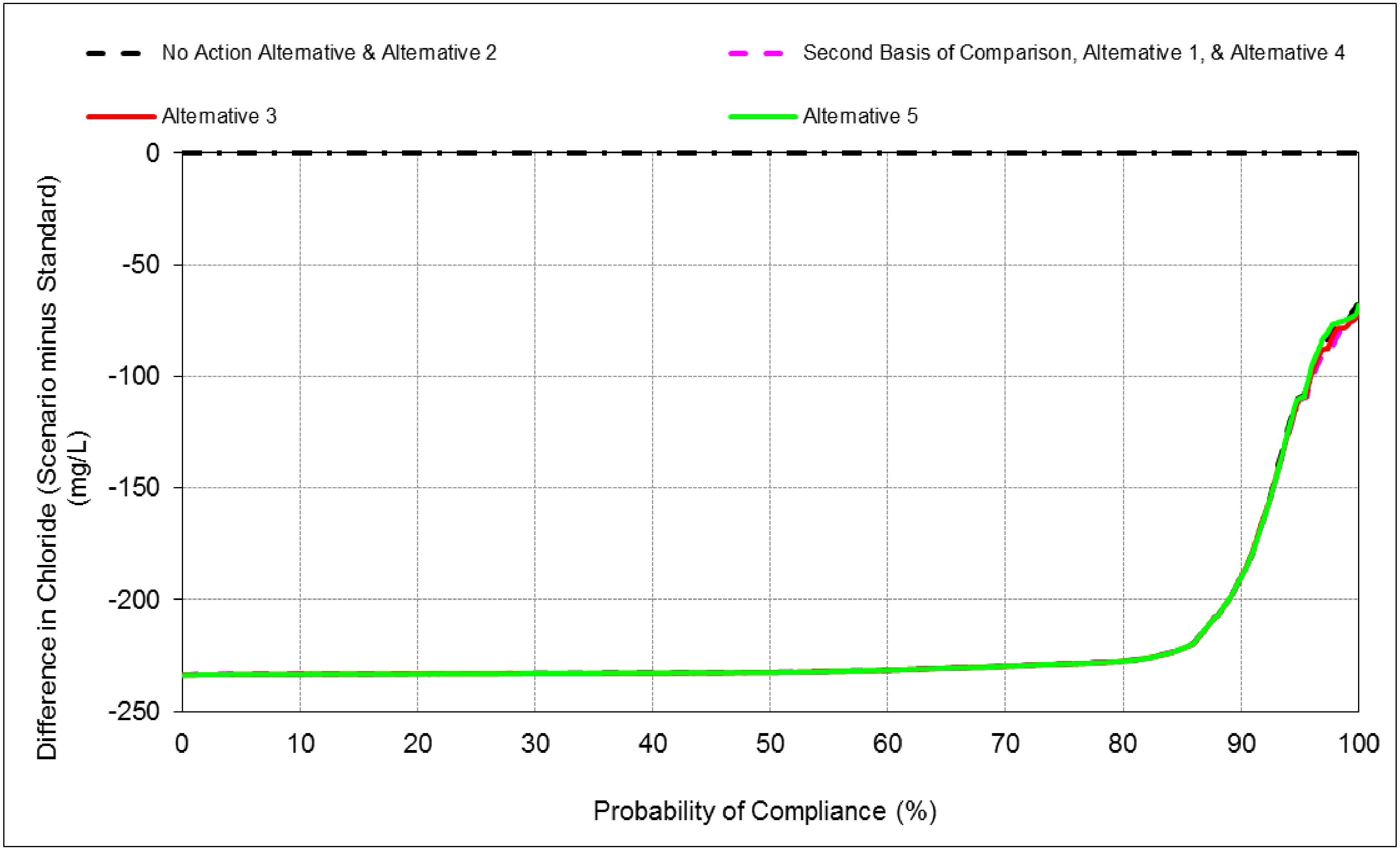
Figure 6E.B.29. San Joaquin River at Jersey Point Compliance with D-1641 Agricultural Water Quality Standard



Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are the 14-day average from April through August.

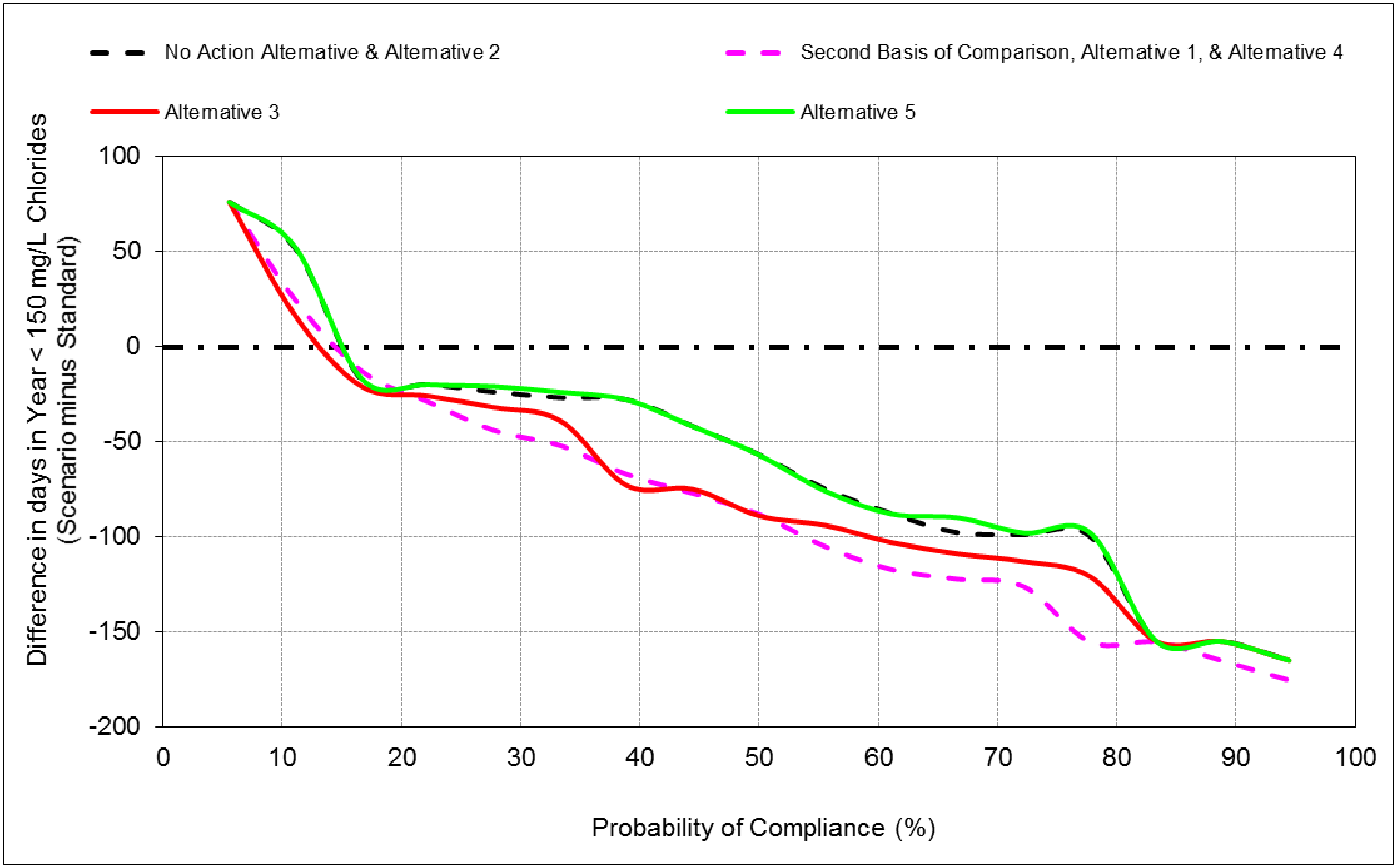
B.30. Contra Costa Canal at Pumping Plant #1 Compliance with D-1641 M&I Chloride Standard

Figure 6E.B.30.1. Contra Costa Canal at Pumping Plant #1 Compliance with D-1641 M&I Chloride Standard



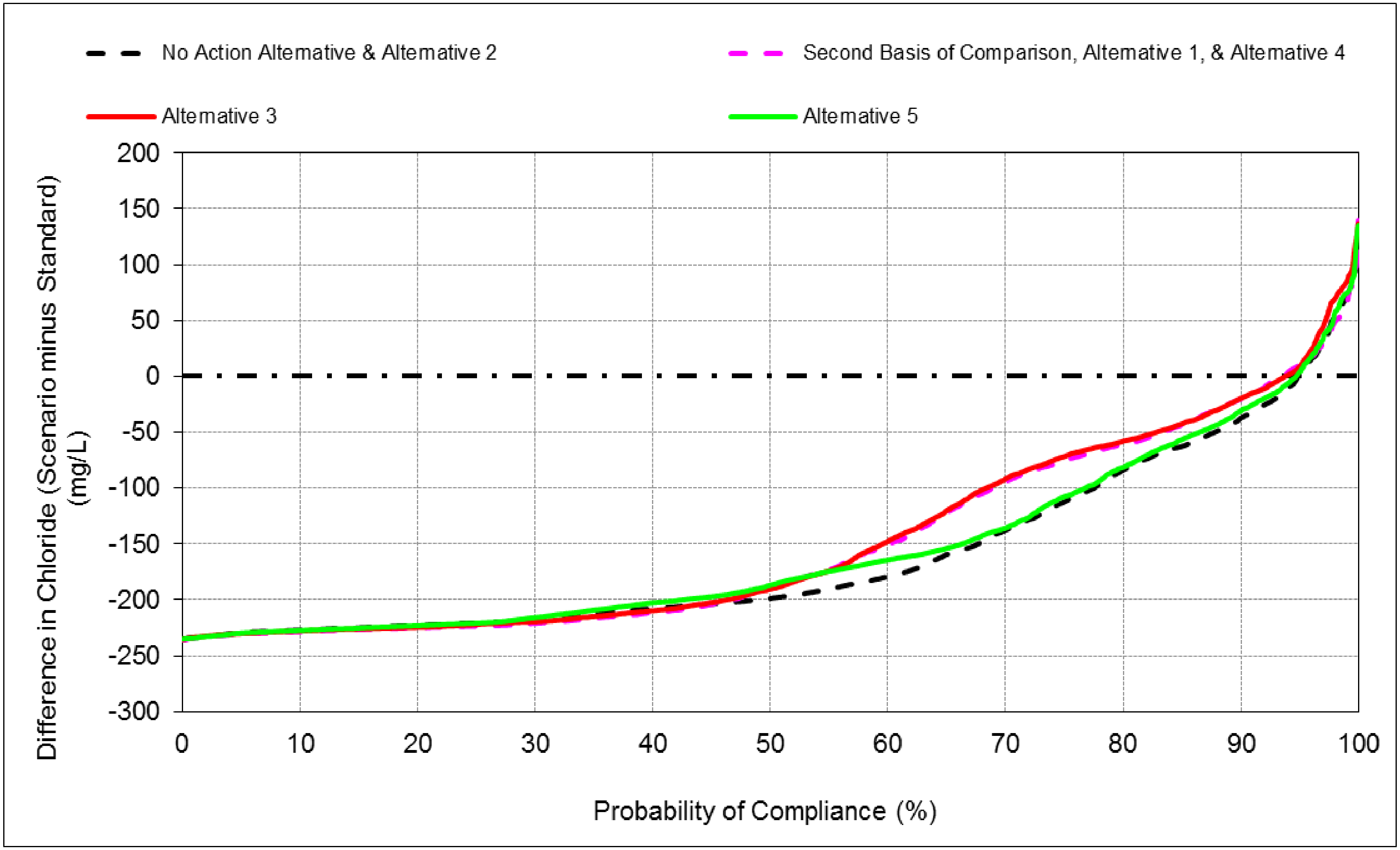
Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are daily average.

Figure 6E.B.30.2. Contra Costa Canal at Pumping Plant #1 Compliance with D-1641 M&I Water Quality Standard



B.31. San Joaquin River at Antioch Water Works Compliance with D-1641 M&I Chloride Standard

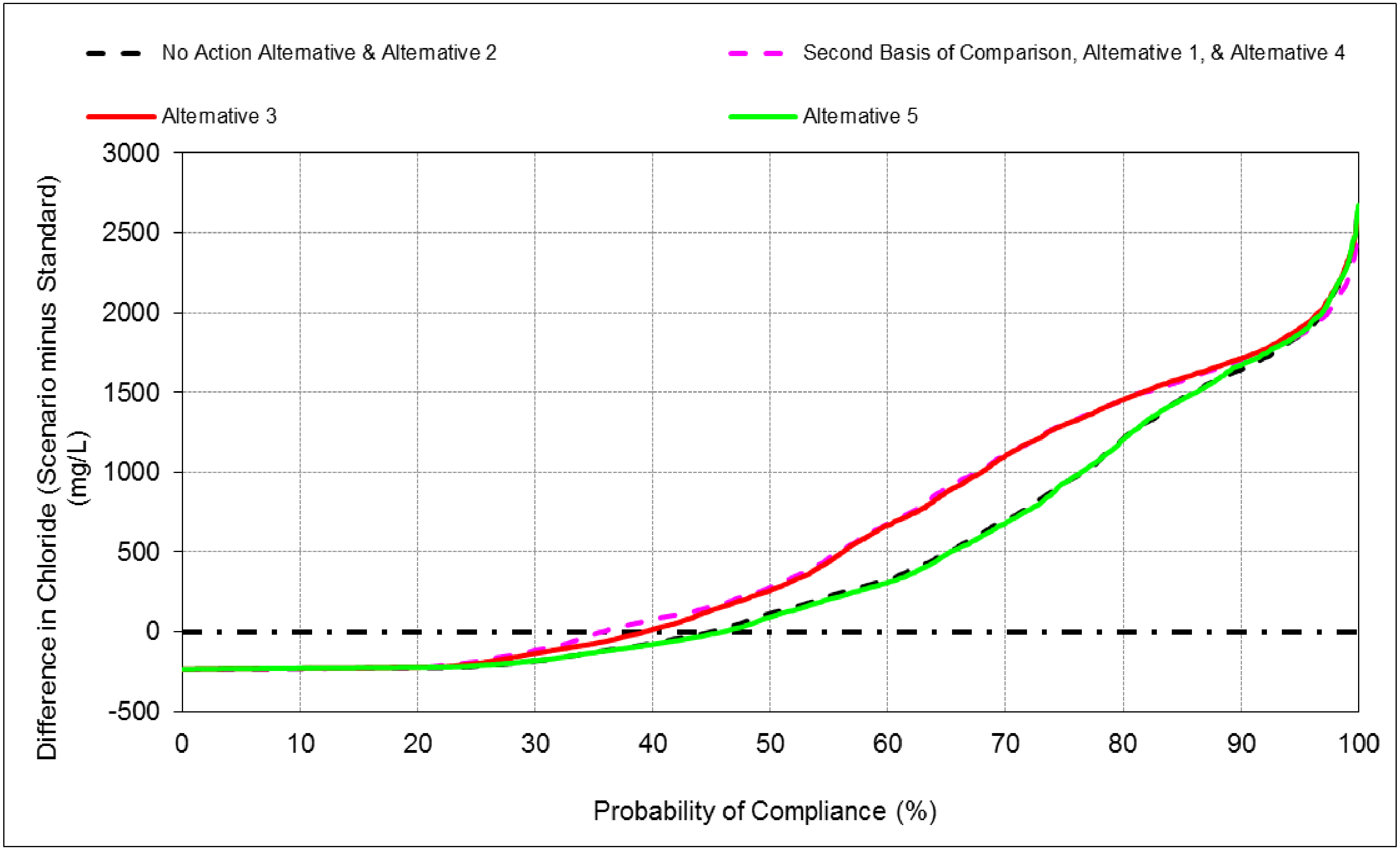
Figure 6E.B.31. San Joaquin River at Antioch Water Works Compliance with D-1641 M&I Water Quality Standard



Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are daily average.

B.32. West Canal at Mouth of Clifton Court Forebay Compliance with D-1641 M&I Chloride Standard

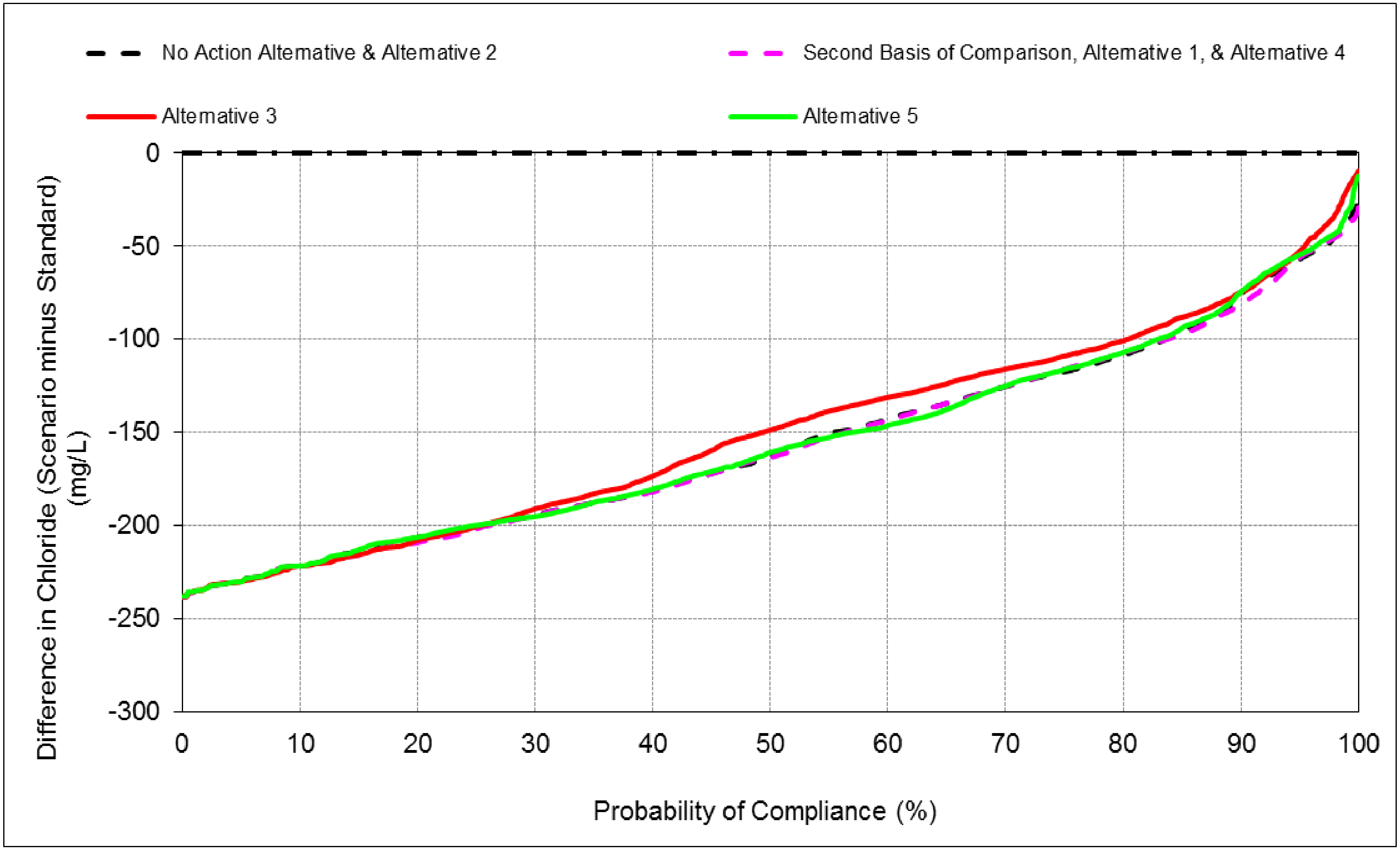
Figure 6E.B.32. West Canal at mouth of Clifton Court Forebay Compliance with D-1641 M&I Water Quality Standard



Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are daily average.

B.33. Delta-Mendota Canal at Tracy Pumping Plant Compliance Compliance with D-1641 M&I Chloride Standard

Figure 6E.B.33. Delta-Mendota Canal at Tracy Pumping Plant Compliance with D-1641 M&I Water Quality Standard

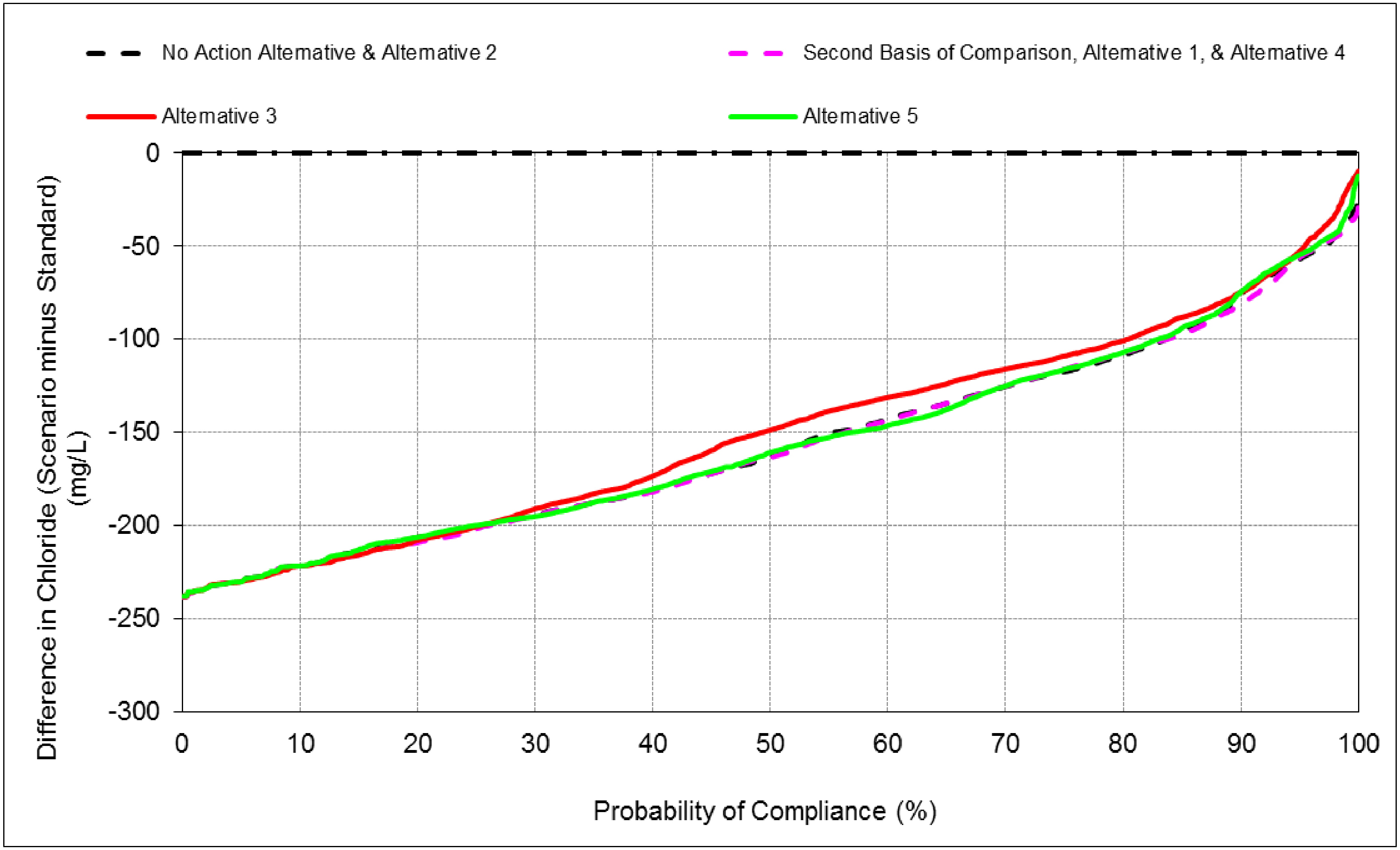


Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are daily average.

B.34. Barker Slough at North Bay Aqueduct Compliance

Compliance with D-1641 M&I Chloride Standard

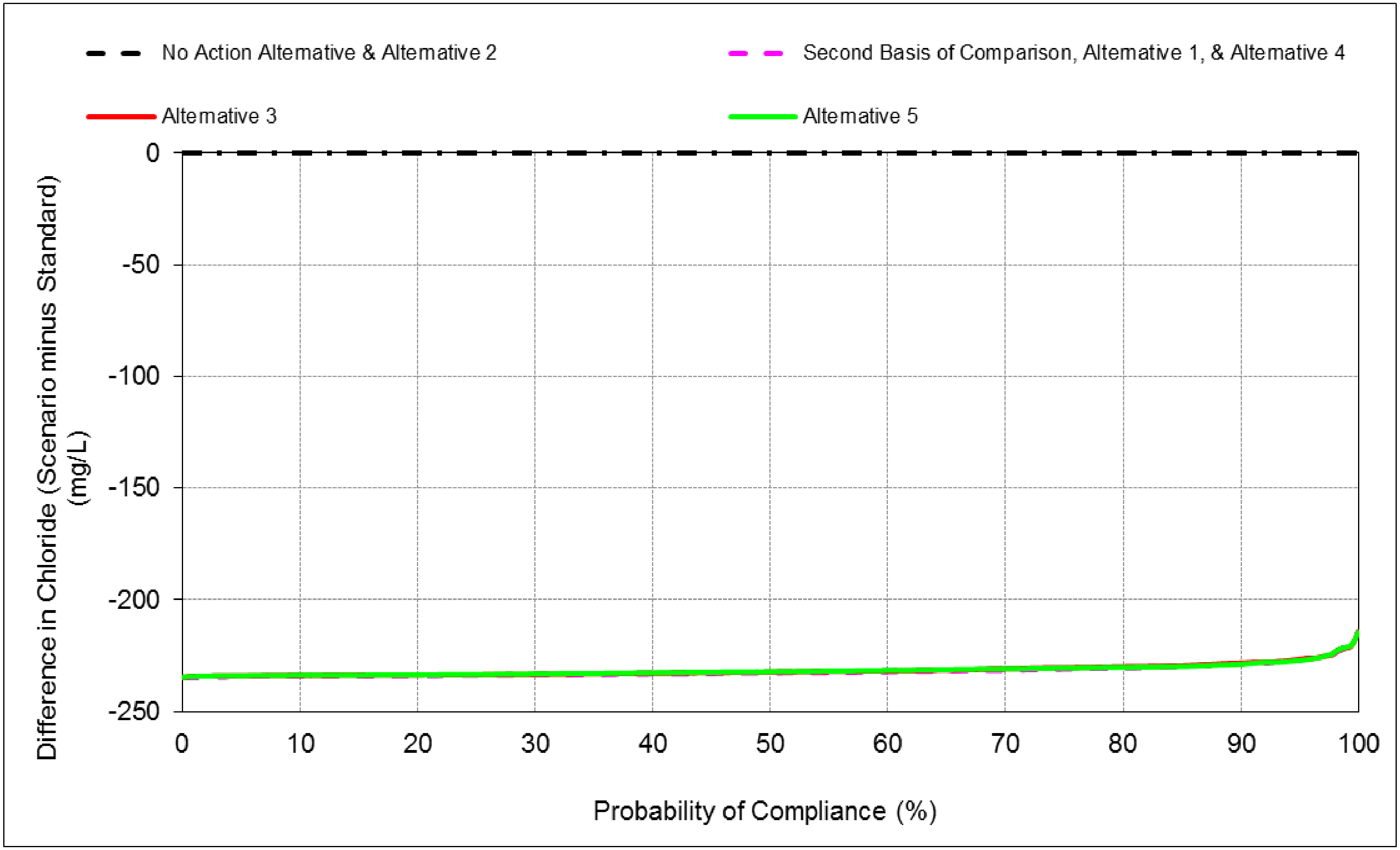
Figure 6E.B.34. Barker Slough at North Bay Aqueduct Compliance with D-1641 M&I Water Quality Standard



Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are daily average.

B.35. Cache Slough at City of Vallejo Intake Compliance with D-1641 M&I Chloride Standard

Figure 6E.B.35. Cache Slough at City of Vallejo Intake Compliance with D-1641 M&I Water Quality Standard



Notes: 1) Probability of compliance is defined as the probability the standard threshold will not be exceeded. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text. 5) Values are daily average.

Appendix 7A

Groundwater Model Documentation

This appendix provides information about the assumptions, modeling tools, and the methods used for the Coordinated Long-term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) impact analysis including information for the No Action Alternative simulation. The appendix also describes model output processing and interpretation methods used for the impacts analysis and descriptions. Additional information pertaining to the development of the analytical tools, incorporating climate change, and using input data from other models is also provided.

This appendix is organized into three main sections that are briefly described below:

- Section 7A.1: Groundwater Modeling Methodology
  - The groundwater impacts analysis uses the Central Valley Hydrologic Model (CVHM) to forecast effects of the alternatives on the long-term operations and the environment. This section provides information about the overall analytical framework and how some of the model input information obtained from other models was processed using analytical tools.
- Section 7A.2: CVHM Modeling Simulations and Assumptions
  - This section provides a brief description of the assumptions for CVHM simulations of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.
- Section 7A.3: CVHM Modeling Results
  - This section describes the model simulation outputs used in the analysis and interpretation of modeling results for the alternatives impacts assessment. A description of post-processing tools is provided along with the different types of output display to facilitate data interpretation.

7A.1 Groundwater Modeling Methodology

This section summarizes the groundwater modeling methodology used for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5. It describes the overall analytical framework and contains descriptions of the key analytical and numerical tools and approaches used in evaluating the alternatives. The project alternatives include several major components that will influence CVP and SWP operations and the hydrologic and hydrogeologic responses of the system.

In evaluating the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5, climate change assumptions centered on year 2025 (for assumed conditions at 2030) were used to develop modified climate input files. The modeling assumptions are provided in more detail in Section 7A.2.

The impacts on groundwater in the Central Valley and the CVP and SWP export service areas because of the project were analyzed using CVHM (USGS 2009). CVHM is a three-dimensional saturated groundwater flow model based on the widely used MODFLOW code (USGS 2000) and incorporates a number of modeling packages to simulate streamflow, crop demand, groundwater pumping, and subsidence.

7A.1.1 Overview of the Modeling Approach

To support the groundwater impact analysis of the alternatives, modeling of the physical groundwater system in the Central Valley has been undertaken to forecast changes to conditions affecting groundwater resources in areas that use CVP and SWP surface water deliveries.

CVHM is a calibrated historical model that includes a 42-year simulation period from water years 1962 through 2003. The model domain encompasses the entire Central Valley, including Sacramento Valley, San Joaquin Valley (including Tulare Basin), and the Sacramento-San Joaquin Delta. CVHM simulates primarily subsurface and limited surface hydrologic processes using a uniform grid-cell spacing of 1 mile.

CVHM was run over the 42-year hydrologic period, and boundary conditions were modified to reflect anticipated changes in surface water availability, including some potential effects of climate change. Surface water flows from operations models (descriptions of CalSim II methodology is included in Appendix 5A) were used to define selected surface water boundary conditions in CVHM. The linkage between CalSim II surface flows and CVHM inputs is further described below.

Future climate parameters centered on year 2025 were developed using the Variable Infiltration Capacity (VIC) model. Changes to the historical hydrology related to the future climate were applied in the CalSim II model and combined with the assumed operations for each alternative (Appendix 5A). The CalSim II model simulates the operation of the major CVP and SWP facilities in the Central Valley and generates river flows, exports, reservoir storage, deliveries, and other parameters for use with each alternative. River flows based on operational assumptions and reflected in the reservoir releases simulated in CalSim II are included in selected boundary conditions in the CVHM input files, along with the Delta exports to San Joaquin and Tulare service areas, and the surface water deliveries to CVP and SWP users in the Sacramento Valley. CVHM was used to forecast the changes in groundwater levels and groundwater pumping with implementation of the alternatives, and results are processed for input into the Statewide Agricultural Production (SWAP) model. The SWAP model then forecasts impacts on agricultural production based on pumping lifts and cost of groundwater pumping, as described in Chapter 12, Agricultural Resources. Figure 7A.1 shows the modeling tools applied in the groundwater impacts assessment and the relationship between these tools. Each model included in

Figure 7A.1 provides information to the subsequent "downstream" model in order to support the impacts analysis.

The results from this suite of computer models were used to assess potential groundwater effects from implementing each alternative considered in the EIS.

Modeling objectives included evaluating the following potential changes related to groundwater resources because of the various alternatives:

- Changes in groundwater elevations, which result from changes in groundwater use and could affect nearby municipal, agricultural, and domestic well yields
- Changes to groundwater quality based on a potential inducement of migration of poor-quality groundwater because of groundwater flow changes

7A.1.2 Key Components of the Groundwater Modeling Framework

7A.1.2.1 Model Function

CVHM was used to forecast groundwater level changes and other impacts to groundwater resulting from changes in assumed surface water deliveries from the CVP and SWP into the service areas located north and south of the Delta. More specifically, surface water operational changes from project implementation along with the effects of climate change were incorporated into CVHM as modified boundary inflows into the model domain and as semi-routed and nonrouted surface water deliveries to each CVHM water balance subregion (WBS). In addition, forecast climate variations were incorporated as modified precipitation and reference evapotranspiration (ET) rates in the model input files.

The overall construction and calibration of CVHM was left unchanged during this analysis. The only modifications to CVHM involved the prescribed surface water inflows and deliveries, which were modified based on simulations performed using CalSim II, as well as modified reference ET and precipitation input files to reflect potential climate change conditions centered on year 2025. CalSim II flows reflect operations in the Delta based on assumptions related to future operations of the project (see Chapter 5, Surface Water Resources and Water Supplies).

The active CVHM domain was subdivided into 21 WBSs, as originally defined by the California Department of Water Resources (DWR) (Figure 7A.2). During model simulations, applied water requirements for each WBS were computed based on crop type and available water from precipitation, shallow groundwater, and surface water (limited by surface water rights).

Selected major streams flowing through the Central Valley were explicitly represented in CVHM. Observed USGS gage flows were used as inflows into the model domain for natural, unregulated rivers and streams. Reservoir releases on regulated rivers were also used as boundary inflows into the model domain. The reservoir releases were modified for each alternative according to operational changes and are represented by modified time-series flow data obtained from the CalSim II simulations. Surface water deliveries to meet a portion of the applied water demands were diverted directly from the rivers, according to water rights constraints. Additional surface water was delivered through “nonrouted” methods in the model. Nonrouted surface water deliveries represent water transfers or surface water deliveries to a WBS not connected to a stream or major canal. This conveyance typically occurs through small canals or diversion ditches (USGS 2009). Some irrigation canals and aqueducts were not included in CVHM, such as the California Aqueduct and the Delta-Mendota Canal. Water delivered through these conveyances was simulated in CVHM as nonrouted deliveries, directly added to the destination WBS. The deliveries to WBSs south of the Delta from the CVP and SWP and associated conveyance losses were estimated from CalSim II simulations and included in CVHM. The surface water diversion flows for the CVP and SWP contractors and settlement contractors in the Sacramento Valley were also obtained from CalSim II simulations for each alternative.

7A.1.2.2 Computer Code Description

CVHM is a regional groundwater modeling application based on the MODFLOW-2000 (MF2K) computer code (USGS 2000) and incorporates a variety of additional modules that were specifically developed to interact with MF2K and increase the capabilities of the overall modeling package. The additional modules incorporated into the CVHM application are summarized in Table C1 of USGS Professional Paper 1766 (USGS 2009). The package that is responsible for simulating the majority of the agricultural water balance is the Farm Process (FMP) (USGS 2006). Within the FMP documentation, the WBSs are referred to as “farms”; WBS and farms are used interchangeably in this text. FMP computes the applied water demand for each farm based on crop types specified in each model cell and computes the availability of water from “natural” sources such as precipitation and shallow groundwater. After the available natural water is allocated, FMP computes the amount of water that needs to be delivered from other sources, such as surface water deliveries (routed and nonrouted) and groundwater pumping to meet the remaining applied water demand.

Another important module integrated into CVHM is the Stream Flow Routing (SFR1) package. This package simulates the routing of surface water through virtual channels within the model domain, accounts for surface water diversions and deliveries to individual WBSs, tracks the flow and associated stage in surface water reaches, and computes stream-aquifer exchange.

CVHM was chosen to simulate the impacts of the alternatives for three main reasons:

1. Readily available and peer-reviewed. CVHM was developed, calibrated, and tested by USGS and is based on a widely recognized computer code. It is publicly available, and extensive documentation has been published describing CVHM as well as all the modules and packages that make up the model.

2. Geographic extent. A large potentially impacted area to be evaluated as part of this project includes the Sacramento Valley and the San Joaquin Valley (including the Tulare Lake area). Surface water operational changes resulting

from project operations are defined at the margins of the Central Valley. The CVHM domain covers the entire Central Valley and allows for the efficient imposition of boundary conditions throughout the basin.

3. Model subareas and discretization. CVHM is divided into 21 WBSs that correspond to the historical water balance regions identified by DWR. Water balances are computed for each WBS by the model. This distribution of areas in the Central Valley is consistent with models used by other resource teams, provides for consistent model reporting to the other teams, and allows for efficient sharing of data with other models.

7A.1.2.3 General Numerical Model Description

CVHM simulates surface water flows, groundwater flows, and land subsidence in response to stresses from water use and climate variability throughout the entire Central Valley. It uses the MF2K (USGS 2000) groundwater flow model code combined with the FMP modular package to simulate groundwater and surface water flow, irrigated agriculture, and other key processes in the Central Valley on a monthly basis from April 1961 through September 2003. CVHM is discretized laterally over a 20,000-square-mile area and vertically into 10 layers ranging in thickness from 50 feet near the land surface to 400 feet at depth. Layers 4 and 5 represent the Corcoran Clay member where it exists in portions of the San Joaquin Valley. In the Sacramento Valley, the Corcoran Clay member is not present; therefore, the model layering effectively consists of eight layers.

The FMP allocates water deliveries, simulates crop-applied water demand processes, and computes mass balances for the 21 WBSs (or farms) in CVHM. The FMP was developed for MF2K to estimate applied irrigation water allocations from conjunctively used surface water and groundwater. It is designed to simulate the demand components representing crop irrigation requirements and on-farm inefficiency losses, and the supply components representing surface water deliveries and supplemental groundwater pumping. The FMP also simulates additional head-dependent inflows and outflows such as canal losses and gains, surface runoff, surface water return flows, evaporation, transpiration, and deep percolation of excess water. Unmetered pumping and surface water deliveries for the 21 WBSs are also included within the FMP (USGS 2006).

The original calibration of CVHM by USGS was accomplished using a combination of trial-and-error and automated methods. An autocalibration code called UCODE-2005 (USGS 2005) was used to help assess the ability of CVHM to estimate the effects of changing stresses on the hydrologic system. Simulated changes in water levels, streamflows, streamflow losses, and subsidence through time were compared by USGS to those measured in wells, at streamflow gages, and at extensometer sites. For model calibration, USGS screened groundwater levels and surface water stages to obtain a calibration target data set that is distributed spatially (geographically and vertically) throughout the Central Valley; distributed temporally throughout the simulation period (1961–2003); and available during both wet and dry climatic regimes. From the available wells records, a subset of 170 comparison wells was selected based on perforation depths, completeness of record, and locations throughout the Central Valley (USGS 2009). No changes were made to physical parameter values in CVHM for this project. A more detailed description of CVHM is in USGS Professional Paper 1766 (USGS 2009).

7A.2 CVHM Modeling Simulations and Assumptions

As described in Section 7A.1, groundwater modeling was performed for evaluating the alternatives considered in the EIS. This section describes the assumptions for the CVHM simulations of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

The following model simulations were performed as the basis of evaluating the impacts of the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1 – for CVHM simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for CVHM simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for CVHM simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

Assumptions for each of these alternatives were developed with the surface water modeling tools and are described in Appendix 5.

The general CVHM modeling assumptions described below pertain to all the baseline and alternative runs.

7A.2.1 Climate Change Assumptions

Climate variables of interest from a climate-change perspective within CVHM include precipitation and reference ET, which are among the required inputs for the FMP module to compute the applied water demand. These two variables are formatted as two-dimensional model array input files with one value assigned to each surficial model grid cell.

The original historical climate input data for CVHM were developed for the simulation period 1961-2003 from Parameter-Elevation Regressions on Independent Slopes Model (PRISM) data (Climate Source 2006). For precipitation, PRISM data were interpolated onto the model domain, and reference ET data were computed from PRISM temperature data. Reference ET data were computed using the Penman-Monteith estimate of potential ET and are used to evaluate the crop potential ET in combination with crop coefficients, and minimum and maximum temperatures for each stress period (USGS 2009).

For the alternative simulations, climate conditions centered on year 2025 were assumed. Therefore, to be consistent with the other water supply and economics models, the climate input data for CVHM were modified to represent potential climate conditions centered on year 2025. A more detailed description of how climate change was incorporated into the CVHM forecast simulations follows.

The CVHM historical monthly precipitation and reference ET values were modified to incorporate potential climate change based on the median climate change scenario for the early long-term period (centered on 2025) (DWR, Reclamation, USFWS, and NMFS 2013). The analysis uses five statistically representative climate change scenarios to characterize the central tendency and the range of the ensemble uncertainty, including projections representing drier, less warming; drier, more warming; wetter, more warming; and wetter, less warming conditions as compared with the median projection. Climate change scenarios were developed from an ensemble of 112 bias-corrected, spatially downscaled global climate model (GCM) simulations. These GCM simulations were from 16 climate models for Special Report on Emissions Scenarios (SRES) A2, A1B, and B1 (Maurer et al. 2007) from the Coupled Model Intercomparison Project Phase 3 that are part of the Intergovernmental Panel on Climate Change Fourth Assessment Report. The forecast changes over the 30-year climatological period centered on 2025 (i.e., 2011-2040 to represent 2030 timeline) were combined with a set of historically observed temperature and precipitation (Hamlet and Lettenmaier 2005) to generate climate sequences that maintain important multiyear variability. The approach uses a technique called “quantile mapping”, which maps the statistical properties of climate variables from one data subset with the time series of events from a different data subset.

Historical temperature and precipitation data gridded to a 1/8 degree (°) spatial resolution across California (Hamlet and Lettenmaier 2005) were obtained from the Surface Water Modeling Group at the University of Washington (http://www.hydro.washington.edu). These data are based on the National Weather Service cooperative network of weather observations stations, augmented by information from the higher quality Global Historical Climatology Network stations. The Hamlet and Lettenmaier (2005) dataset includes the period from January 1915 through December 2003.

The historical and modified temperature (maximum and minimum values) based on the median early long-term climate-change scenario (centered on 2025) were used in the VIC hydrological model (Liang et al. 1994; Reclamation 2011) to simulate reference ET using the Penman–Monteith method (Allen et al. 1998).

Based on the above assumptions and methods, two sets of monthly fractional changes (i.e., perturbation factors) were computed to adjust the CVHM historical precipitation and reference ET input model array files. The first set of monthly fractional changes was computed from the historical and modified precipitation at each 1/8° VIC grid cell (future precipitation divided by historical precipitation). Similarly, the second set of monthly fractional changes was computed from reference ET simulated using historical and modified climate inputs that were computed using the Penman–Monteith method (Allen et al. 1998) embedded in the VIC hydrological model (simulated future reference ET divided by simulated reference ET). The fractional changes were computed for the historical period April 1961 through September 2003 for consistency with the CVHM simulation period.

The monthly fractional changes at 1/8° VIC grid cell were then applied to each CVHM monthly precipitation and reference ET data set at the corresponding CVHM grid cells by spatially mapping the two sets of grids. A utility tool was developed for intersecting the CVHM grid cells with the 1/8° VIC grids to assign fractional changes from the 1/8° VIC grid cell to historical precipitation and reference ET at each surficial CVHM cell to produce modified precipitation and reference ET values for planning level CVHM simulations that incorporate potential future climate change centered on year 2025. Figure 7A.3 illustrates the relationship between the VIC model grid and the CVHM grid.

7A.2.2 Land Use Assumptions

In CVHM, "the land use attributes are defined in the model on a cell-by-cell basis and include urban and agricultural areas, water bodies, and natural vegetation. The land use that covered the largest fraction of each 1-mi² model cell was the representative land use specified for that cell" (USGS 2009). Further, the agricultural land use is divided into 12 DWR Class 1 crop categories, also referred to as "virtual crops". As described in USGS 2009, the process of identifying a representative land use type and crop category for each model cell is very complex over the 42-year hydrologic period with different climate variations. This type of data is not readily available publicly, and other land use coverages require extensive processing to convert it into a format suitable for CVHM simulations. Thus, generating future land use changes for each cell of the CVHM grid was not undertaken in the impacts analysis in this EIS. In addition, other related FMP input files (such as crop coefficients and irrigation efficiencies) change over time and need to be updated accordingly with the land use.

For the groundwater modeling, the land use distribution for water year 2003 was used for the entire forecast simulation period. This was the most recent land use data available in a format appropriate for the model simulations. The limitation of using the 2003 land use distribution is that some of the most recent changes to crop production in the Central Valley over the past decade are not included in the simulations. In addition, projections of land use changes because of economic effects and climate change are not considered in CVHM, nor are the potential crop changes in response to water supply availability from CVP and SWP operational changes from the alternatives (see Chapter 12, Agricultural

Resources, for a discussion of changes in crops because of water supply availability and costs). However, these assumptions are the same for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5; and are therefore adequate for the comparative analysis required in the EIS. There have been changes in crop patterns since 2003; however, those changes would be consistent in the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5.

7A.2.3 Stream Boundary Inflows Assumptions

CVHM includes 43 stream boundary inflows, which represent smaller natural streams as well as managed reservoir outflows. Of these, 13 inflows were linked to CalSim II reservoir releases. Natural stream inflows were kept unchanged from the original CVHM and therefore are linked to the historical climate data. It should be noted that CalSim II does not include the Tulare Lake area, and all stream inflows in that area were kept the same as those from the original CVHM.

For each alternative simulation, the surface water inflows at specific locations are updated in the SFR input file based on time series computed by CalSim II. Table 7A.1 lists the CVHM inflow locations at which updated CalSim II flows were applied based on simulation results from the corresponding CalSim II nodes. Figure 7A.4 provides a map with the stream boundary inflow locations in CVHM.

Table 7A.1 CVHM Modified Inflow Locations

CVHM Node ID	Description	CalSim II Equivalent Nodes
AMER_374	American River Downstream of Lake Natoma + South Folsom Canal	C9 + D9
MOKE_173	Mokelumne River below Comanche Reservoir	I504 + Original CVHM Diversions on Mokelumne River
CALV_161	Calaveras River (release from New Hogan Reservoir)	C92
STAN_146	Stanislaus River (below Goodwin + Oakdale Canal + SSJ Canal)	C520 + D520B + D520C
TUOL_135	Tuolumne River (Don Pedro Reservoir Release)	C81
SACR_205	Sacramento River (Keswick Reservoir Release)	C5
STON_263	Stony Creek (Black Butte Reservoir Release)	C42
FEAT_341	Feather River below Oroville + Palermo Canal	C6 + D6
YUBA_349	Yuba River below Englebright + Deer Creek inflow + French Dry Creek inflow	C230 + D230
MERC_116	Merced River (Lake McClure outflow)	C20
CHOW_080	Chowchilla River (Eastman Lake outflow)	C53
FRES_069	Fresno River (Hensley Lake outflow)	C52
SANJ_054	SJR at Friant Dam (Millerton Lake outflow)	C18

7A.2.4 Project Deliveries Assumptions

CVHM includes two different methods to deliver surface water diversions to a WBS: semi-routed deliveries and nonrouted deliveries. These deliveries occur through the interaction of the SFR and FMP modules and the WBS.

Semi-routed deliveries occur through the SFR package to account for water that is routed through stream networks. With the SFR package, CVHM conveys water from streams and canals as semi-routed deliveries to WBSs through the FMP based on model-computed applied water demand (USGS 2009).

The nonrouted delivery process allows the model to obtain surface water from a source that is not simulated with the stream network. For instance, not all canals are physically simulated within CVHM, but the water conveyed through those canals can still be delivered to the appropriate WBSs without actually simulating the conveyance features explicitly.

In the CVHM simulations, the nonrouted surface water supply components have first delivery and use priority, and semi-routed surface water deliveries have second priority. If the WBSs water delivery requirements computed by the crop consumptive use through FMP are not met using surface water, the FMP computes the amount of supplemental groundwater necessary to be pumped from "farm" (agricultural production) wells to satisfy the total WBS water demand (USGS 2009). The nonrouted and semi-routed surface water deliveries are simulated as monthly transient time series that set the upper bound of available surface water for the WBSs. The actual diversions and deliveries for each WBS are driven by agricultural water demand.

Within the CVHM configuration, nonrouted deliveries tend to be associated with the south-of-Delta exports to the San Joaquin Valley service areas, because the California Aqueduct and the Delta-Mendota Canal are not simulated in the model. Semi-routed deliveries occur in areas where diversions from streams and canals are simulated for both settlement contractors and riparian diverters. Because of the difference in water rights allocations and the different CVHM characteristics in the Sacramento Valley versus the San Joaquin Valley, the surface water allocations are simulated differently, as described below. Figure 7A.5 shows the surface water delivery types for each WBS as simulated in CVHM.

For the groundwater impacts simulations, the calibrated historical CVHM was set up to run in a "predictive mode" (for future planning simulations) with the diversion time series fixed at water year 2003 for all semi-routed diversions that represent riparian or other water rights users. This method provides the latest available (2003) diversion flows to agricultural water users for an average hydrology year with seasonal patterns. Project water deliveries were developed from CalSim II time series, as described below.

7A.2.4.1 Sacramento Valley

The Sacramento Valley is defined in CVHM as WBSs 1 through 8 (Figure 7A.2). In the Sacramento Valley, the diversion time series for the CVP and SWP settlement contractors and CVP contract agricultural diverters were linked to

CalSim II time series for consistent project delivery estimates for each alternative. Table 7A.2 shows the detailed linkage between CalSim II nodes and CVHM diversions nodes for the Sacramento Valley (also shown in Figure 7A.6).

Table 7A.2 CVHM Diversions linked to CalSim II Flows in the Sacramento Valley

CVHM WBS	CVHM Node ID	Type of Flow	Description – CVHM (CalSim II)	CalSim II Equivalent Node
1	BELL_0206	–	Bella Vista Conduit (ag only)	0.57*D104_PAG
1	SACR_A223	CVP Settlement Ag + CVP Ag Delivery	Diversions – Sacramento River between Keswick and Red Bluff (ag only)	D104_PAG - (BELL_0206) + (0.86*D104_PSC)
0*	SACR_B223	CVP M&I + CVP Settlement M&I Delivery	Diversions – Sacramento River between Keswick and Red Bluff (M&I only)	D104_PMI + 0.14*D104_PSC
2	CORN_0232	CVP Ag Delivery	Corning Canal	D171
2	TE10_0232	CVP Ag Delivery	Tehama Colusa Canal	D172
3	TE12_0323	CVP Ag Delivery	Tehama Colusa Canal	D174 + D178
3	GLEN_0261	CVP Settlement Ag Delivery	Glenn Colusa Canal	D143A + D145A
3	COL_0328	CVP Settlement	Colusa Basin Drain for Irrigation Supply (Colusa Drain MWC)	D180 + D182A + D18302
3	DS12_0282	CVP Settlement	Sacramento River Right Banks Exports (Princeton-Cordova-Glenn ID, Provident ID, Maxwell ID)	D122A
4	DS15_0331	CVP Settlement	HD from Sacramento River between Red Bluff and Knights Landing (Maxwell ID, Sycamore Family Trust, Roberts Ditch IC, RD 108, River Garden Farms, Meridian Farms WC, Pelger Mutual WC, RD 1004, Carter MWC, Sutter MWC, Tisdale Irrigation and Drainage Co)	D122B + D129A + D128

CVHM WBS	CVHM Node ID	Type of Flow	Description – CVHM (CalSim II)	CalSim II Equivalent Node
6	DS65_0381	CVP Settlement	Sacramento River Right Banks Diversions between Knights Landing and Sacramento	D163_PSC
5	DS69_0366	SWP Settlement Contractors in FRSA	DSA 69 HD from Feather River; aggregated deliveries for DSA 69 including from Thermalito Complex and Feather River diversions	D7A + D7B + D202 + D206A + D206B
5	YUBA_0351	–	HD from Yuba River - Diversions for "Big 3" diverters, primarily YCWA	D230
7	DS70-0381	CVP Settlement Ag Delivery	HD from Sac River between Knights Landing and Sacramento - all but City water	D162

[*] WBS 0 means that water is diverted from the stream but not delivered to any to any of the WBSs. This occurs for M&I diversions not used for crop irrigation.

The linkage was based on the definition and assumptions of CalSim II and CVHM deliveries, and on the spatial approximation of the stream diversion location in CVHM. Each time series is updated in the SFR input file for each alternative simulation.

In addition to the semi-routed deliveries, WBSs 5 and 7 receive water from nonrouted deliveries. However, most of these deliveries are either linked to riparian (nonproject) water rights or deliveries from outside the model domain. Therefore, WBS 5 and 7 nonrouted deliveries remained unchanged from the calibrated CVHM model.

7A.2.4.2 San Joaquin Valley

In CVHM, the San Joaquin Valley is defined as WBSs 10 through 21 and includes the Tulare Lake portion of the San Joaquin Valley (Figure 7A.2). In the San Joaquin Valley, the majority of agricultural surface water deliveries are provided through south-of Delta exports from the CVP and SWP contract allocations. CalSim II time series representing project water deliveries for the San Joaquin Valley WBSs were aggregated into one time series for each WBS using a spreadsheet-based preprocessing tool. These time-series data were then used for the FMP nonrouted deliveries input file. The semi-routed deliveries in the San Joaquin Valley are either of riparian nature or for other non-project use, and therefore were not changed from the historical CVHM. The only exception occurred in WBS 11, in the East San Joaquin area, where two CVP agricultural deliveries were linked to CalSim II time series (Figure 7A.6):

- Deliveries for Oakdale Irrigation District North and South San Joaquin Irrigation District, simulated in CVHM as the diversions at the South San Joaquin Canal near Knights Ferry (SSJK_0147 in Figure 7A.6), were linked to CalSim II node D520B
- Deliveries for Oakdale Irrigation District South, simulated in CVHM as the diversions at the Oakdale Canal near Knights Ferry (OAKK_0147 in Figure 7A.6), were linked to CalSim II node D520C

These two semi-routed diversions and deliveries were incorporated into the SFR input file along with all the other surface water diversion and boundary inflow modifications for each alternative.

7A.2.5 Model Application Methodology

For each simulation scenario (No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5), boundary inflows in CVHM, WBS surface water estimates, and farm delivery estimates were updated with the appropriate CalSim II model outputs, which account for assumed operational changes for each alternative. The original 42-year hydrology for water years 1962 through 2003 was updated with climate conditions centered on year 2025 for each predictive simulation. Thus, impact evaluations assume the dry to wet hydrology patterns as indicated from climate model simulations centered on year 2025. The simulated groundwater levels for each alternative were compared to the No Action Alternative and Second Basis of Comparison simulations. Model outputs were processed such that impacts to groundwater were shown on an average monthly basis by water year type, and the analysis was centered on potential impacts occurring during the month with the largest agricultural deliveries, which generally is July. The simulation period did not intend to provide groundwater levels at exact future dates, but rather provide a range of groundwater level changes that could occur from implementing each alternative, given assumed future fluctuations in hydrology.

7A.2.5.1 No Action Alternative and Second Basis of Comparison Models

The overall purpose of the No Action Alternative and Second Basis of Comparison models is to provide a set of baseline conditions for comparison with the forecasts of the alternative models to assess whether implementing the proposed alternatives are likely to result in substantial changes to groundwater resources.

Preparing the CVHM No Action Alternative model and the Second Basis of Comparison model was based on the modified CalSim II flow time series for the reservoir outflows and the deliveries to the WBSs in the export service areas. The following are additional assumptions inherent in the predictive version of CVHM:

- The urban groundwater pumping locations for 2003, the most recent available in CVHM, were assumed to remain for the duration of the 42-year predictive simulation period.
- The original CVHM 2003 surface water diversions were assumed for the duration of the predictive simulation for nonproject diversions.
- The land use distribution and associated cropping patterns available in the calibrated CVHM at approximately year 2000-2003 were kept constant throughout the predictive simulation.
- The climatic data were updated to represent a wet to dry precipitation pattern centered on year 2025.

7A.2.5.2 Other Alternatives Models

For each alternative model simulation, the same procedure as described for the No Action Alternative and Second Basis of Comparison models was used, with similar assumptions, to update flows from the CalSim II simulations. Detailed modeling processes and impacts analysis procedures are described in the next section.

7A.3 CVHM Modeling Results

A complex and detailed model such as CVHM requires developing and applying preprocessing and post-processing tools to create input files, run the model, and view and interpret results. The processing tools range from geographic information system (GIS) and spreadsheet-based tools to custom-coded programming utilities that use viewing programs such as Golden Software Surfer. The general preprocessing and input files development are described in Section 7A.2. The following subsections describe data analyses and results.

7A.3.1 Post-Processing and Results Analysis

Output data resulting from CVHM simulations for each alternative were processed to provide a graphical depiction of applicable information that support the analysis and description of potential impacts to groundwater resources. As discussed previously, the primary outputs from CVHM used in this analysis were simulated heads and agricultural groundwater pumping to meet applied water demands.

CVHM outputs simulated hydraulic heads (heads) and groundwater fluxes for each model grid cell in each model layer. Based on analysis of common screen elevations of agricultural pumping wells, Model Layer 6 of the original CVHM includes the majority of the groundwater extraction. Actual locations of agricultural wells are not represented in the model; they are represented as "virtual wells" in model cells representing areas with known groundwater pumping and having a corresponding agricultural land use. The simulated heads in each cell for Model Layer 6 only are interpolated using triangulation with linear interpolation to facilitate viewing results for the entire Central Valley for each alternative. Because July generally has the highest agricultural groundwater pumping during the CVHM timeframe, the results analysis focuses on this month for each alternative. A post-processing utility was developed to create monthly average heads for July for each water-year type. The difference in monthly average heads between each alternative and No Action Alternative and each alternative and Second Basis of Comparison was then computed, interpolated, and displayed on a Central Valley map for change visualization. The differences were computed by subtracting the simulated heads for No Action Alternative and Second Basis of Comparison from the simulated heads for the alternatives, respectively.

A resulting positive head difference indicates that heads in the alternative simulation are higher than those from the No Action Alternative or Second Basis of Comparison simulation to which the alternative simulation is being compared. Conversely, a resulting negative head difference indicates that heads in the alternative simulation are lower than those from the No Action Alternative or Second Basis of Comparison simulation to which the alternative simulation is being compared. Results are provided in Figures 7.15 through 7.60 and a narrative of the forecast head differences (i.e., project effect to groundwater levels) is provided in Chapter 7, Groundwater Resources and Groundwater Quality.

The results give an indication of the horizontal distribution of the potential impacts to groundwater levels in Model Layer 6 for an average month of July for each water year type. To assess the temporal variations in groundwater level fluctuations, head difference hydrographs at eight model cells were developed to show a range of typical groundwater level variations and changes between alternatives and No Action Alternative and Second Basis of Comparison at different locations in the Central Valley. The location of the simulated groundwater level time series were chosen based on general areas of USGS wells that were used for calibrating CVHM. The hydrograph plots are shown on a CVHM WBS map for the Sacramento Valley and San Joaquin Valley (Figures 7.20, 7.21, 7.29, 7.30, 7.38, 7.39, 7.45, 7.46, 7.52, 7.53, 7.59, and 7.60).

In addition to spatial and temporal representations of groundwater level changes associated with the alternatives, agricultural groundwater pumping differences are also depicted on a map of the WBSs. This graphical representation shows which areas of the Central Valley are impacted the most by changes in surface water deliveries for each alternative. The data for these results were processed from the FMP output files, which include the amount of water used from each available source by the farm, based on the computed applied water demand for each WBS (Figures 7.22, 7.23, 7.31, and 7.32).

7A.3.2 Output Data for Other Models

Simulated heads from CVHM were post-processed for use in evaluating agricultural economic impacts related to each alternative. An agricultural economic impact evaluation of each alternative was performed using the SWAP model. For more information on using this model and the results, refer to

Chapter 12, Agricultural Resources and Appendix 12A. The simulated heads output file was processed to average the July head data for Model Layer 6 for each SWAP region. In addition, processing of CVHM heads for the SWAP model further separates the average simulated head between irrigated portions and non-irrigated portions of each SWAP region.

As a result, each SWAP region includes one estimated average head change representing the agricultural pumping impacts. This average value was used to compute a pumping lift for SWAP input, to compute average electrical cost to pump groundwater for irrigation.

7A.3.3 Model Limitations and Applicability

Although it is impossible to predict future hydrology, land use, and water use with certainty, CVHM was used to forecast impacts to groundwater resources that could result from implementing the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 to aid in developing the EIS. CVHM was used in a comparative manner to estimate potential changes by implementing Alternatives 1 through 5 as compared to the No Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison. Mathematical models like CVHM can only approximate processes of physical systems. Models are inherently inexact because the mathematical description of the physical system is imperfect, and the understanding of interrelated physical processes is incomplete. However, CVHM is a powerful tool that, when used carefully, can provide useful insight into processes of the physical system. The following are some known limitations that should be considered when evaluating the forecast impacts.

- CVHM simulates groundwater conditions in the Central Valley with cells on 1-mile centers. Therefore, surface water and groundwater features that occur at a scale smaller than 1 mile cannot be simulated explicitly in CVHM. Likewise, CVHM simulates groundwater conditions using monthly stress periods. Thus, groundwater variations cannot be simulated explicitly in CVHM over timeframes shorter than 1 month.
- The “predictive” (future planning) version of CVHM used for the impacts analysis does not include land use changes after year 2003. Thus, land use changes that have occurred since 2003 and those that might occur in the future are not considered in the impacts analysis.
- The future planning version of CVHM incorporates potential climate-change effects centered on year 2025 (assumed conditions at year 2030). It is not possible to know whether these potential climate-change effects will actually occur in the future, as modeled.
- Operation of groundwater banks and groundwater transfer programs and how implementing the alternatives could affect them is not included in the future planning level CVHM simulations.
- The future planning version of CVHM does not include potential affects from planned or unplanned changes in groundwater regulations in California

(i.e., implementation of California Sustainable Groundwater Management Act).

- The subsidence package, as implemented in the version of CVHM used for the impacts analysis, does not consider the potential reduction in the rate of subsidence that would occur as the magnitude of compaction approaches the physical thickness of the affected fine-grained interbeds. Thus, subsidence forecasts from the predictive versions of CVHM were judged to be overly conservative. Therefore, a qualitative approach was used for estimating the potential for increased land subsidence in areas of the Central Valley that have historically experienced inelastic subsidence because of the compaction of fine-grained interbeds.

7A.4 References

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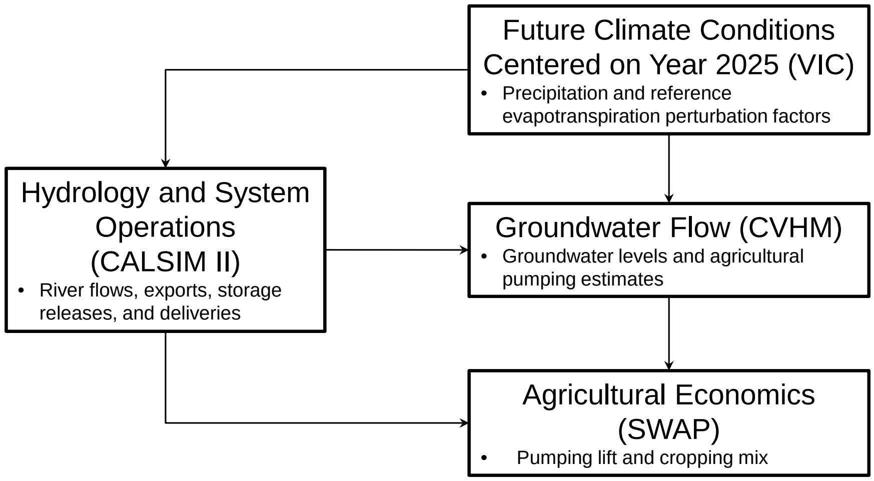

Figure 7A.1 Relationships among the Different Modeling Tools Used in the Groundwater Impacts Analysis Framework

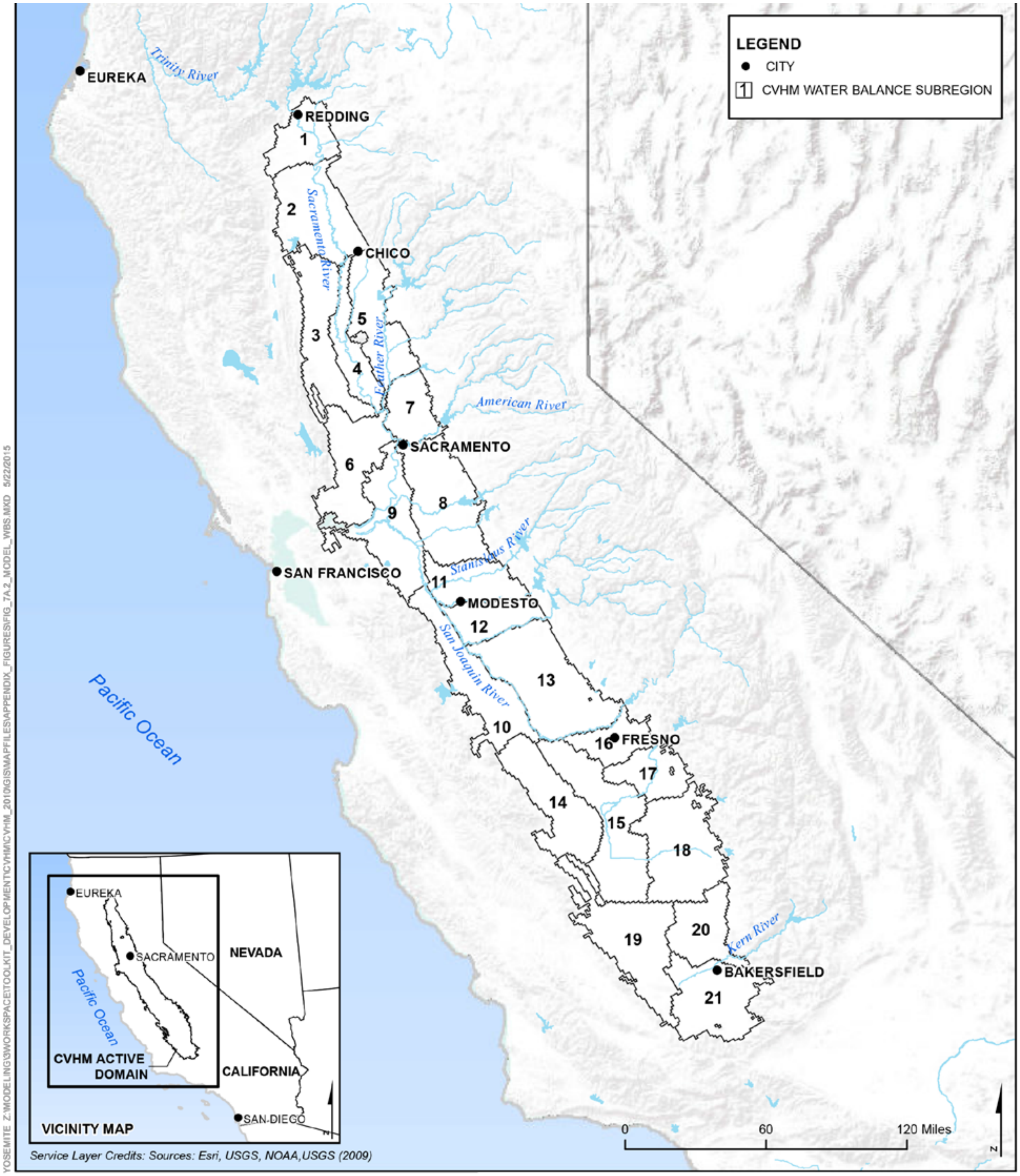

Figure 7A.2 Groundwater Model Domain and Water Balance Subregions in the Central Valley

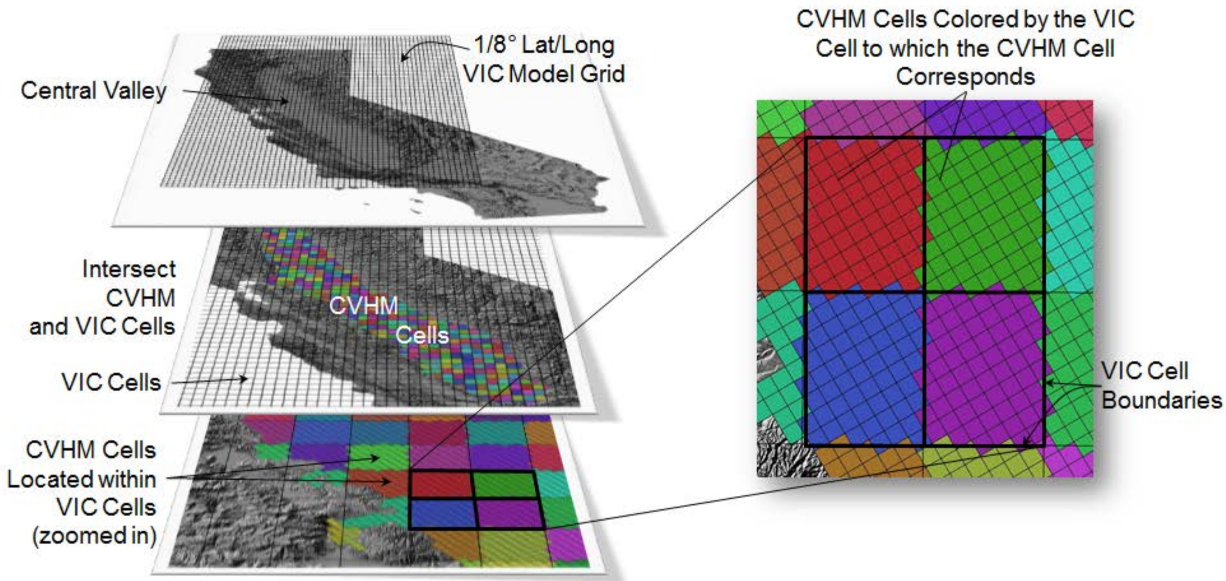

Figure 7A.3 Relationship between VIC and CVHM Grid Cells

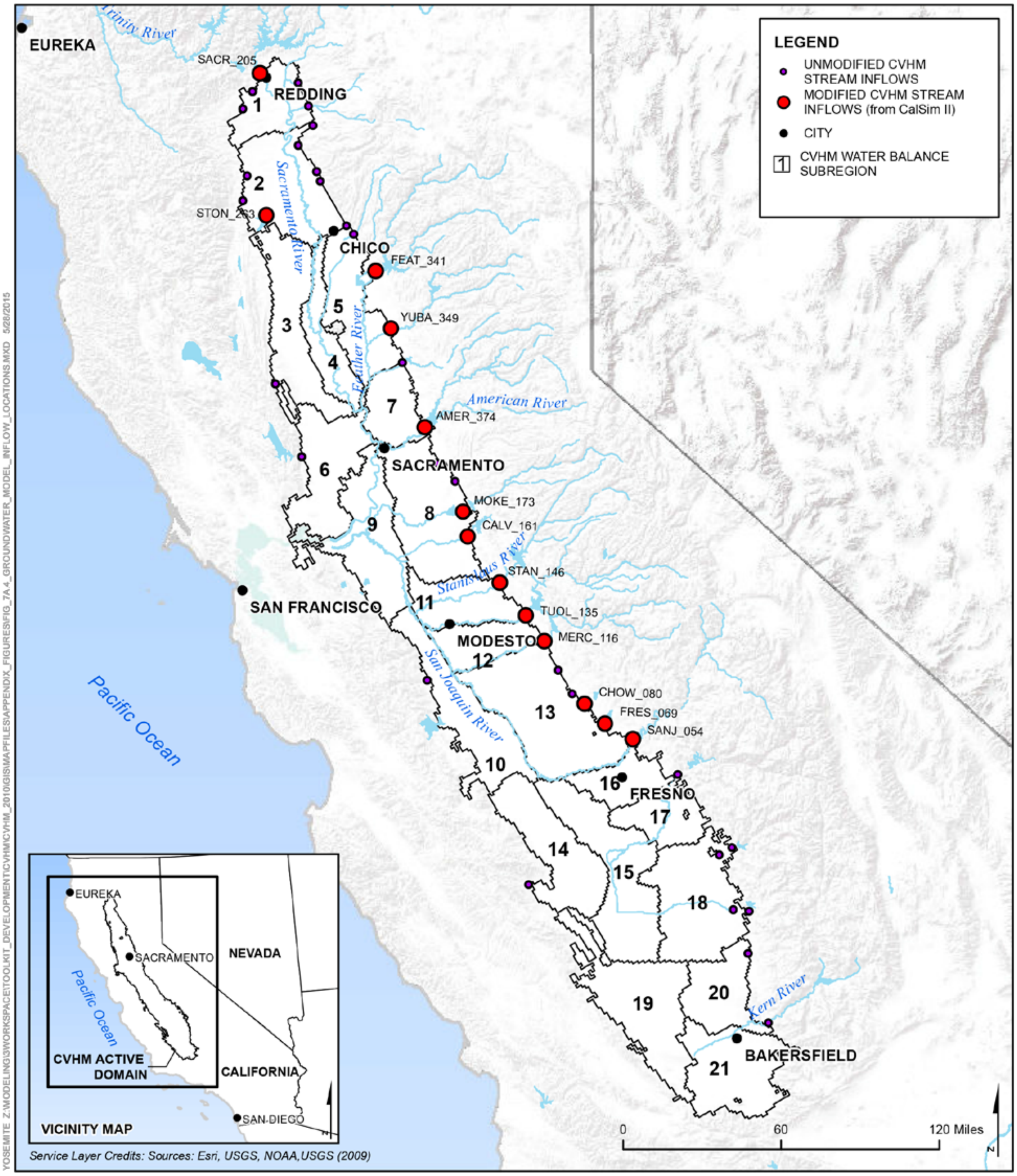

Figure 7A.4 Groundwater Model Stream Inflow Locations

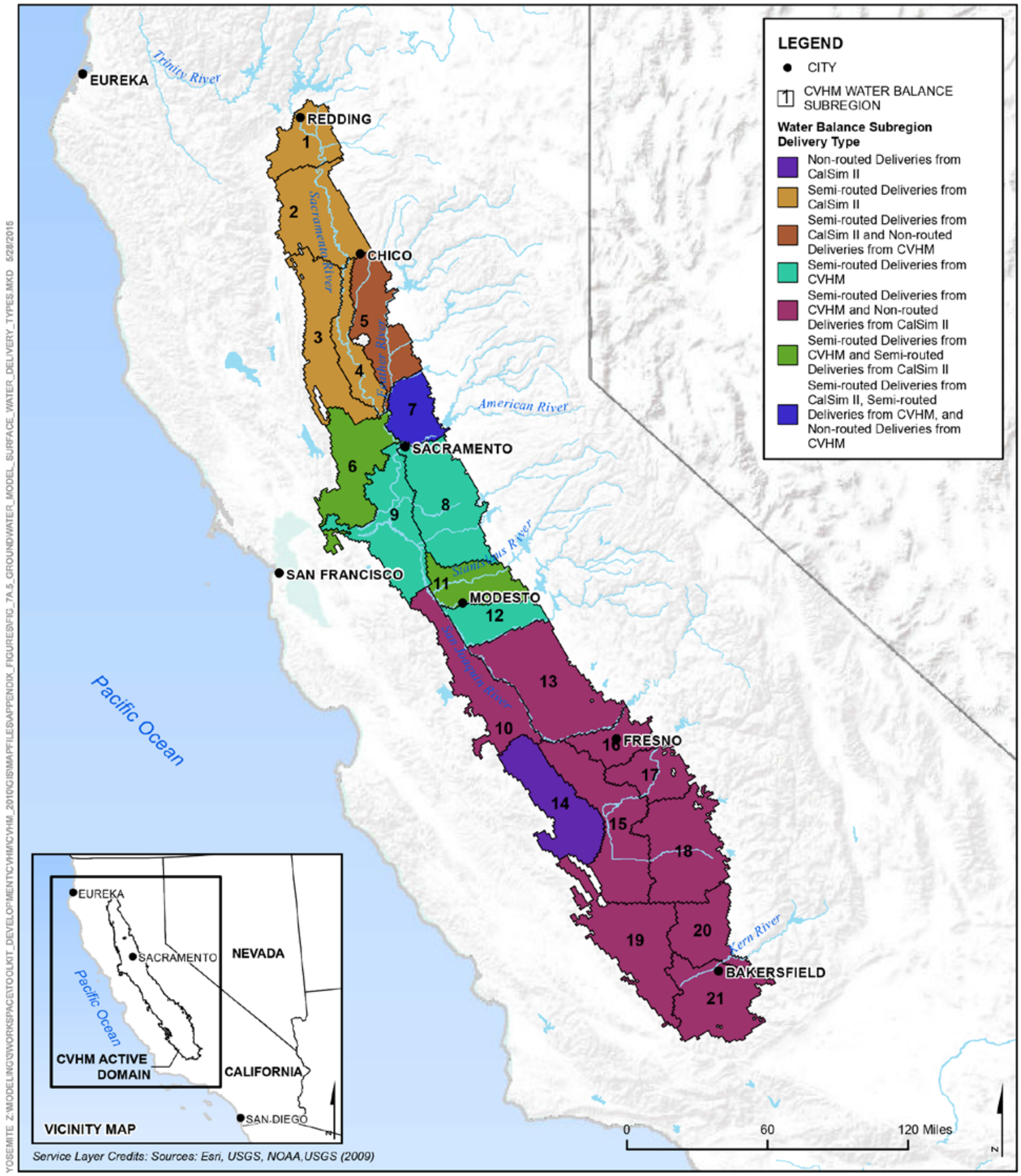

Figure 7A.5 Groundwater Model Surface Water Delivery Types by Water Balance Subregion

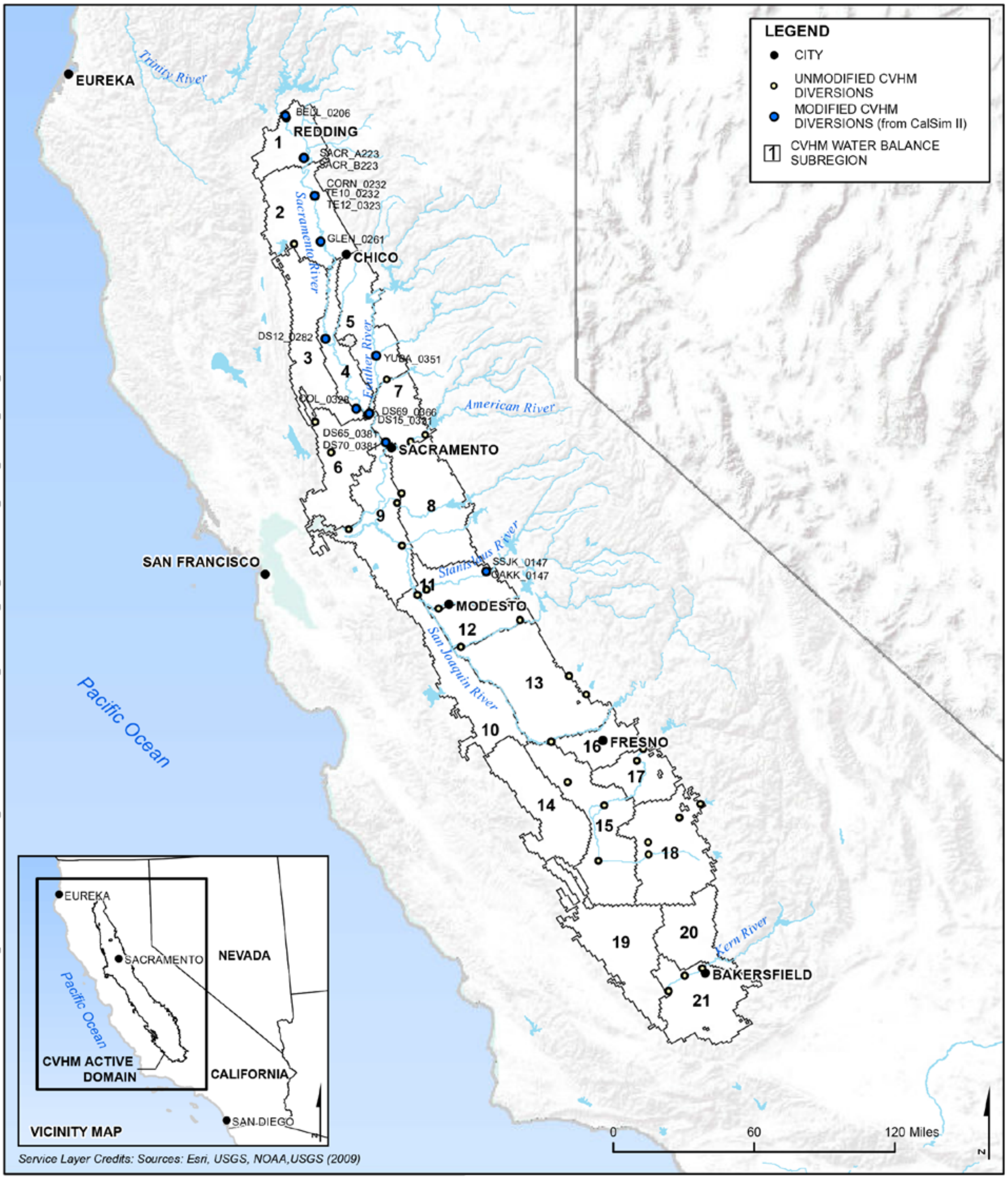

Figure 7A.6 Groundwater Model Surface Water Semi-routed Deliveries Locations

Appendix 8A

Power Model Documentation

Appendix 8A provides information about the assumptions, modeling tools, and methods used for the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) Environmental Consequences. The appendix also provides model result processing and interpretation methods used for the impacts analysis and descriptions. Additional information pertaining to the development of the analytical tools and the use of input data from other models, is also provided.

Appendix 8A is organized into two main sections that are briefly described below:

- Section 8A.1: Power Modeling Methodology and Assumptions
  - The power impacts analysis uses the LTGen and SWP Power spreadsheet models to assess and quantify effects of the alternatives on the long-term operations and the environment. This section provides information about the modeling approach, equations, and assumptions used by the two power models.
- Section 8A.2: Power Modeling Results
  - This section provides a detailed description of the model simulation output formats used in the analysis and interpretation of modeling results for the alternatives impacts assessment.

8A.1 Power Model Methodology and Assumptions

This section summarizes the power modeling methodology used for the EIS No Action Alternative, Second Basis of Comparison, and other alternatives. There are two spreadsheet tools that are used to estimate average annual peaking power capacity, energy generation, and energy use at CVP and SWP facilities:

- LTGen (LTGen_BenchmarkBO_04-01-2015): analyzes CVP facilities
- SWP_Power (SWP_Gen_J604_02-23-2015): analyzes SWP facilities

The sections below describe the equations that are used to estimate energy use, generation, peaking power capacity, and transmission losses.

8A.1.1 Energy Use at Pumping Facilities

Energy use at CVP and SWP pumping facilities are determined using empirical energy factors provided by the Western Area Power Authority (Western) for CVP facilities and by the Department of Water Resources (DWR) Operations Control Office (OCO) for SWP facilities. For these facilities, energy use is estimated using the following equation:

Energy Use (in Megawatt-hour [MWh]) =

*Energy_Factor * (Q in cubic feet/second)*

The tools also estimate whether user-defined off-peak energy use targets can be met. For example, if it is desired that 90 percent of required pumping energy use during a particular month occur during off-peak hours, the tools determine whether this is feasible given power and flow capacity limits.

8A.1.2 Energy Generation

Energy generation at CVP and SWP power facilities are determined using empirical energy factors provided by Western for CVP facilities and by the OCO for SWP facilities. For these facilities, energy generation is estimated using the following equation:

Energy Generation (MWh) =

*Energy_Factor * (Q in cubic feet/second)*

8A.1.3 Energy Generation

Energy generation is limited on a monthly basis by an average power capacity at each facility. At any one time, power capacity can be higher or lower, depending upon reservoir levels and scheduled water releases. Power production in general will be high during summer months when reservoir levels are higher and water is being released to meet delivery requirements, and power operations are optimized to provide the greatest benefit to taxpayers.

Average monthly power capacity for CVP facilities is estimated using empirical equations provided by Western. The approach used to estimate average monthly power capacity for SWP facilities assumes that peak capacity is a function of total head and average power plant flow. The average monthly power capacity is estimated using the following equation:

Power Capacity (in megawatt [MW]) =

(0.7457 kilowatt/horsepower)(62.4 pounds/cubic foot)*(1MW/1000 kilowatt)* (1 horsepower/(550 pounds per foot/second))*(1/η)*(Head in feet)*(Average Power Plant Flow Rate in cubic feet/second)*

8A.1.4 Transmission Losses

Transmission losses are estimated to estimate energy use and generation at load center, as a percentage of energy use or generation.

8A.1.5 Assumptions Tables

Tables 8A.1 and 8A.2 show assumptions that are used to estimate energy use and transmission losses at CVP and SWP pumping facilities. Tables 8A.3 and 8A.4 show assumptions that are used to estimate energy generation, power capacity, and transmission losses at CVP and SWP generation facilities.

8A.1.6 Flow and Storage Inputs

CalSim II results are used as flow and storage inputs for the power models for each alternative, using the entire October 1921 to September 2003 simulation period. Climate change and sea-level rise are inherently represented through CalSim II outputs. As mentioned in Appendix 5A, the CalSim II simulations do not consider future climate change adaptation that may manage the CVP and SWP system in a different manner than today to reduce climate impacts.

8A.2 Power Model Results

Power Model results were processed individually for each alternative simulation. Tables for total monthly generation capacity, energy generation, energy use, and net energy use for both the CVP and SWP are presented in this section in the following order:

- B.1. CVP Total Generating Capacity
- B.2. CVP Total Energy Generation
- B.3. CVP Total Energy Use
- B.4. CVP Net Energy Generation
- B.5. SWP Total Generating Capacity
- B.6. SWP Total Energy Generation
- B.7. SWP Total Energy Use
- B.8. SWP Net Energy Generation

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Table 8A.1. Central Valley Project Pumping Plant Characteristics

Jones Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	16	16	16	16	16	16	16	16	16	16	16	16
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%
On Peak Cap Adj Factor	1.05	1.05	1.05	1.50	1.20	2.20	1.60	2.30	1.50	1.05	1.05	1.05
Off Peak Cap Adj Factor	1.05	1.05	1.05	0.00	1.20	2.20	1.60	2.30	1.50	1.05	1.05	1.05

CVP Banks Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	297	297	297	297	297	297	297	297	297	297	297	297
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	53.7%	53.7%	53.7%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	53.7%	53.7%	53.7%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Contra Costa Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Transmission Loss (%)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.20	1.20	1.20	1.20	2.00	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.20	1.20	1.20	1.20	2.00	2.00

O'Neill Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

CVP San Luis Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	function	function	function	function	function	function	function	function	function	function	function	function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%
On Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

San Felipe Pumping Plant (Pacheco)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	12	12	12	12	12	12	12	12	12	12	12	12
Capacity/Unit (MW)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.20	1.20	1.20	1.20	1.20
Off Peak Cap Adj Factor	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.20	1.20	1.20	1.20	1.20

CVP Dos Amigos Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	56.6%	56.6%	56.6%	76.6%
On Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Off Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Folsom Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	5	5	5	5	5	5	5	5	5	5	5	5
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

Table 8A.1. Central Valley Project Pumping Plant Characteristics

Corning Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	190	190	190	190	190	190	190	190	190	190	190	190
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	3.00	4.00	4.00	4.00	4.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00
Off Peak Cap Adj Factor	3.00	4.00	4.00	4.00	4.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00

Red Bluff Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	12	12	12	12	12	12	0	0	0	0	0	12
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Off Peak Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

San Luis Other												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.50	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.50	2.00

DMC Other												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	3.00	3.00	3.00	3.00	2.50	2.00	2.00	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	3.00	3.00	3.00	3.00	2.50	2.00	2.00	1.50	1.50	1.50	1.50	1.50

Tehama Other												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	3.00	3.00	3.00	3.00	3.00	1.50	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	2.00	3.00	3.00	3.00	3.00	3.00	1.50	1.50	1.50	1.50	1.50	1.50

Miscellaneous Project Use												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
MW	7	5	6	6	9	11	4	5	15	23	33	9
Transmission Loss (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Percentage of Main Pumps	15.8%	9.2%	5.9%	8.0%	12.5%	13.1%	39.9%	81.1%	35.5%	43.2%	38.6%	17.9%
Percent Eng Off Peak (%)	59.1%	61.6%	67.3%	64.3%	62.0%	59.0%	52.2%	52.9%	49.1%	50.3%	49.8%	61.3%

DMC Intertie												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Off Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 8A.2. State Water Project Pumping Plant Characteristics

Banks Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	297	297	297	297	297	297	297	297	297	297	297	297
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	53.7%	53.7%	53.7%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	53.7%	53.7%	53.7%

SWP San Luis Pumping Plant (Gianelli Pumping Plant)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	function	function	function	function	function	function	function	function	function	function	function	function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%

Dos Amigos Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	56.6%	56.6%	56.6%	76.6%

Buena Vista Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	242	242	242	242	242	242	242	242	242	242	242	242
Plant Power Rating (MW)	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797
Transmission Loss (%)	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Teerink (Wheeler Ridge) Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	295	295	295	295	295	295	295	295	295	295	295	295
Plant Power Rating (MW)	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9
Transmission Loss (%)	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Chrisman (Wind Gap) Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	639	639	639	639	639	639	639	639	639	639	639	639
Plant Power Rating (MW)	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18
Transmission Loss (%)	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Edmonson Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236
Plant Power Rating (MW)	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84
Transmission Loss (%)	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Pearblossom Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	703	703	703	703	703	703	703	703	703	703	703	703
Plant Power Rating (MW)	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588
Transmission Loss (%)	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Oso Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	280	280	280	280	280	280	280	280	280	280	280	280
Plant Power Rating (MW)	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975
Transmission Loss (%)	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

South Bay Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	797	797	797	797	797	797	797	797	797	797	797	797
Plant Power Rating (MW)	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69
Transmission Loss (%)	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Del Valle Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	72	72	72	72	72	72	72	72	72	72	72	72
Plant Power Rating (MW)	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Transmission Loss (%)	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 8A.2. State Water Project Pumping Plant Characteristics

Las Perillas Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	77	77	77	77	77	77	77	77	77	77	77	77
Plant Power Rating (MW)	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021
Transmission Loss (%)	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Badger Hill Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	200	200	200	200	200	200	200	200	200	200	200	200
Plant Power Rating (MW)	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766
Transmission Loss (%)	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 8A.3. Central Valley Project Powerplant Characteristics

Trinity Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
`	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Lewiston Powerplant - Baseload Operation												
	Oct	Nov	Dec	Jan	0	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Carr Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Spring Creek Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Shasta Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	5	5	5	5	5	5	5	5	5	5	5	5
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Keswick Powerplant - Baseload Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	3	3	3	3	3	3	3	3	3	3	3	3
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Folsom Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	3	3	3	3	3	3	3	3	3	3	3	3
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Nimbus Powerplant - Baseload Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

New Melones Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

CVP San Luis Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Share of Total Cap (%)	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%

O'Neill Powerplant - Baseload Operation, flow computation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	3	3	3	3	3	3	3	3	3	3	3	3
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

Table 8A.4. State Water Project Powerplant Characteristics

Hyatt (Lake Oroville) Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Maximum Flow Capacity (cfs)	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950
Plant Power Rating (MW)	812	812	812	812	812	812	812	812	812	812	812	812
Plant Efficiency	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Thermalito Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Maximum Flow Capacity (cfs)	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400
Plant Power Rating (MW)	120	120	120	120	120	120	120	120	120	120	120	120
Plant Efficiency	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

SWP San Luis (Gianelli Powerplant)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Share of Total Cap (%)	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

AlamoPowerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	105	105	105	105	105	105	105	105	105	105	105	105
Maximum Flow Capacity (cfs)	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740
Plant Power Rating (MW)	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
Plant Efficiency	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%
Transmission Loss (%)	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%

Mojave Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	95	95	95	95	95	95	95	95	95	95	95	95
Maximum Flow Capacity (cfs)	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880
Plant Power Rating (MW)	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90
Plant Efficiency	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%
Transmission Loss (%)	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%

Devil's Canyon Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113
Maximum Flow Capacity (cfs)	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940
Plant Power Rating (MW)	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90
Plant Efficiency	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%
Transmission Loss (%)	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%

W. E. Warner Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	573	573	573	573	573	573	573	573	573	573	573	573
Maximum Flow Capacity (cfs)	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564
Plant Power Rating (MW)	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2
Plant Efficiency	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%
Transmission Loss (%)	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%

Castaic Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Maximum Flow Capacity (cfs)	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840
Plant Power Rating (MW)	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Plant Efficiency	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

B.1. CVP Total Generating Capacity

Table B-1-1. CVP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

Alternative 1

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

Alternative 1 minus No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	78	64	44	29	27	46	65	50	39	18	81	86
20%	92	66	57	33	33	52	64	50	20	-19	46	62
30%	87	74	66	47	39	57	65	26	24	-3	23	48
40%	66	92	76	56	54	67	64	34	20	6	27	21
50%	32	76	69	78	68	73	74	35	5	7	30	28
60%	32	73	88	68	61	79	62	49	20	6	6	16
70%	17	49	62	53	59	72	75	50	27	14	7	16
80%	25	23	55	60	53	72	75	37	51	38	55	33
90%	60	67	25	80	93	50	68	46	132	102	97	31
Long Term												
Full Simulation Period[b]	56	64	62	50	53	61	66	45	32	24	40	45
Water Year Types[c]												
Wet (32%)	58	60	50	33	32	50	60	40	20	0	48	73
Above Normal (16%)	56	72	70	48	42	63	67	36	20	-6	22	23
Below Normal (13%)	75	92	86	72	66	81	79	53	34	5	3	4
Dry (24%)	35	45	52	52	56	63	66	45	25	29	28	23
Critical (15%)	70	69	79	69	91	64	68	57	80	116	94	79

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-2. CVP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

Alternative 3

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,778	1,818	1,852	1,884	1,910	1,945	1,947	1,910	1,837	1,777	1,759	1,753
20%	1,749	1,789	1,828	1,860	1,894	1,930	1,930	1,883	1,766	1,692	1,687	1,696
30%	1,708	1,772	1,814	1,851	1,884	1,900	1,895	1,828	1,717	1,654	1,633	1,659
40%	1,663	1,741	1,781	1,838	1,866	1,882	1,849	1,777	1,670	1,601	1,604	1,600
50%	1,609	1,689	1,744	1,800	1,840	1,851	1,821	1,760	1,644	1,572	1,554	1,569
60%	1,579	1,639	1,695	1,748	1,797	1,814	1,781	1,711	1,603	1,542	1,511	1,510
70%	1,499	1,557	1,632	1,703	1,768	1,784	1,755	1,665	1,567	1,487	1,453	1,465
80%	1,394	1,457	1,570	1,624	1,708	1,738	1,707	1,620	1,506	1,408	1,378	1,372
90%	1,231	1,365	1,434	1,496	1,518	1,545	1,519	1,453	1,343	1,229	1,190	1,181
Long Term												
Full Simulation Period[b]	1,551	1,613	1,676	1,732	1,777	1,794	1,775	1,705	1,592	1,512	1,486	1,493
Water Year Types[c]												
Wet (32%)	1,690	1,756	1,806	1,856	1,894	1,929	1,928	1,885	1,791	1,730	1,713	1,716
Above Normal (16%)	1,527	1,640	1,746	1,802	1,852	1,875	1,862	1,786	1,679	1,615	1,591	1,589
Below Normal (13%)	1,629	1,676	1,751	1,790	1,829	1,832	1,788	1,718	1,607	1,529	1,504	1,501
Dry (24%)	1,504	1,551	1,612	1,686	1,748	1,768	1,745	1,660	1,555	1,479	1,459	1,475
Critical (15%)	1,283	1,319	1,355	1,411	1,444	1,422	1,386	1,288	1,113	967	909	930

Alternative 3 minus No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	90	76	43	30	27	50	70	62	51	28	89	106
20%	111	65	55	31	36	58	88	77	46	-3	64	81
30%	109	79	70	49	47	57	70	46	46	32	48	60
40%	84	106	70	62	54	70	56	41	36	18	60	47
50%	58	78	63	67	62	68	63	49	37	29	44	53
60%	49	83	73	48	47	62	56	59	39	38	30	37
70%	34	38	44	42	56	69	71	47	43	31	20	33
80%	39	29	49	40	42	63	69	42	66	55	46	30
90%	94	72	31	41	42	42	64	70	140	109	104	78
Long Term												
Full Simulation Period[b]	75	71	64	47	50	61	69	56	50	44	57	64
Water Year Types[c]												
Wet (32%)	69	60	45	32	34	52	68	54	37	13	68	88
Above Normal (16%)	61	60	70	40	38	62	69	45	45	25	45	48
Below Normal (13%)	99	97	82	70	65	75	60	54	49	39	26	18
Dry (24%)	63	61	57	49	58	59	66	53	46	45	42	42
Critical (15%)	103	98	92	64	70	67	87	83	88	136	101	104

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-3. CVP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

Alternative 5

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,693	1,746	1,805	1,849	1,882	1,891	1,879	1,849	1,777	1,748	1,671	1,650
20%	1,635	1,721	1,772	1,829	1,859	1,867	1,843	1,806	1,725	1,690	1,624	1,612
30%	1,599	1,680	1,744	1,797	1,836	1,839	1,816	1,766	1,655	1,616	1,576	1,579
40%	1,566	1,638	1,710	1,767	1,801	1,801	1,785	1,732	1,619	1,571	1,538	1,547
50%	1,538	1,596	1,668	1,726	1,775	1,774	1,737	1,700	1,598	1,555	1,504	1,510
60%	1,516	1,552	1,617	1,687	1,737	1,733	1,701	1,643	1,537	1,484	1,460	1,457
70%	1,458	1,512	1,571	1,650	1,694	1,699	1,673	1,596	1,506	1,415	1,413	1,413
80%	1,327	1,399	1,504	1,574	1,644	1,639	1,616	1,532	1,439	1,324	1,302	1,310
90%	1,044	1,242	1,372	1,427	1,440	1,483	1,450	1,351	1,173	1,061	1,046	1,029
Long Term												
Full Simulation Period[b]	1,460	1,532	1,603	1,672	1,716	1,717	1,692	1,633	1,525	1,450	1,410	1,410
Water Year Types[c]												
Wet (32%)	1,609	1,690	1,755	1,819	1,856	1,873	1,858	1,830	1,748	1,715	1,641	1,625
Above Normal (16%)	1,458	1,576	1,671	1,757	1,808	1,806	1,785	1,735	1,624	1,577	1,536	1,532
Below Normal (13%)	1,504	1,559	1,648	1,712	1,755	1,743	1,710	1,653	1,546	1,474	1,465	1,468
Dry (24%)	1,428	1,478	1,545	1,622	1,676	1,686	1,657	1,585	1,485	1,403	1,383	1,391
Critical (15%)	1,152	1,205	1,253	1,308	1,344	1,310	1,274	1,159	985	793	768	794

Alternative 5 minus No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	5	4	-5	-5	-1	-4	2	1	-8	0	0	3
20%	-4	-4	0	-1	1	-5	0	0	6	-5	1	-3
30%	-1	-14	1	-4	-1	-3	-9	-17	-16	-7	-9	-20
40%	-12	2	-1	-9	-10	-11	-8	-4	-15	-12	-6	-7
50%	-13	-15	-13	-6	-3	-8	-20	-11	-9	11	-7	-6
60%	-13	-4	-5	-13	-12	-19	-24	-9	-27	-20	-21	-15
70%	-7	-6	-17	-11	-19	-16	-11	-23	-17	-41	-20	-19
80%	-27	-29	-16	-10	-22	-36	-21	-46	-1	-29	-30	-31
90%	-93	-51	-31	-28	-36	-19	-5	-33	-29	-59	-39	-74
Long Term												
Full Simulation Period[b]	-16	-11	-10	-13	-11	-16	-13	-15	-17	-18	-19	-19
Water Year Types[c]												
Wet (32%)	-12	-5	-6	-6	-4	-4	-2	-1	-6	-2	-4	-3
Above Normal (16%)	-7	-4	-5	-5	-5	-7	-8	-6	-10	-13	-9	-9
Below Normal (13%)	-26	-21	-21	-8	-9	-14	-17	-12	-13	-16	-13	-15
Dry (24%)	-14	-12	-10	-14	-14	-23	-23	-22	-23	-30	-35	-42
Critical (15%)	-28	-17	-11	-40	-30	-46	-24	-46	-40	-39	-40	-31

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-4. CVP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,688	1,743	1,810	1,854	1,883	1,895	1,877	1,848	1,785	1,749	1,670	1,647
20%	1,638	1,724	1,772	1,829	1,858	1,872	1,842	1,806	1,719	1,695	1,623	1,615
30%	1,600	1,694	1,744	1,802	1,837	1,842	1,825	1,782	1,671	1,623	1,585	1,599
40%	1,579	1,635	1,710	1,776	1,811	1,812	1,793	1,736	1,634	1,583	1,545	1,553
50%	1,550	1,611	1,681	1,732	1,778	1,782	1,757	1,711	1,607	1,543	1,510	1,516
60%	1,529	1,556	1,622	1,700	1,749	1,752	1,725	1,652	1,564	1,504	1,481	1,473
70%	1,465	1,519	1,588	1,661	1,712	1,714	1,685	1,618	1,524	1,457	1,433	1,432
80%	1,354	1,428	1,521	1,584	1,666	1,675	1,637	1,578	1,440	1,353	1,332	1,342
90%	1,137	1,293	1,403	1,455	1,476	1,502	1,454	1,384	1,203	1,120	1,085	1,103
Long Term												
Full Simulation Period[b]	1,476	1,542	1,612	1,685	1,727	1,734	1,705	1,648	1,542	1,468	1,429	1,430
Water Year Types[c]												
Wet (32%)	1,621	1,696	1,761	1,824	1,860	1,877	1,859	1,831	1,753	1,717	1,645	1,628
Above Normal (16%)	1,465	1,580	1,676	1,762	1,814	1,814	1,793	1,741	1,633	1,590	1,545	1,541
Below Normal (13%)	1,530	1,580	1,669	1,719	1,764	1,757	1,728	1,665	1,559	1,491	1,478	1,483
Dry (24%)	1,441	1,491	1,556	1,637	1,690	1,709	1,680	1,607	1,508	1,434	1,418	1,433
Critical (15%)	1,180	1,221	1,264	1,348	1,374	1,355	1,299	1,205	1,025	832	808	825

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-78	-64	-44	-29	-27	-46	-65	-50	-39	-18	-81	-86
20%	-92	-66	-57	-33	-33	-52	-64	-50	-20	19	-46	-62
30%	-87	-74	-66	-47	-39	-57	-65	-26	-24	3	-23	-48
40%	-66	-92	-76	-56	-54	-67	-64	-34	-20	-6	-27	-21
50%	-32	-76	-69	-78	-68	-73	-74	-35	-5	-7	-30	-28
60%	-32	-73	-88	-68	-61	-79	-62	-49	-20	-6	-6	-16
70%	-17	-49	-62	-53	-59	-72	-75	-50	-27	-14	-7	-16
80%	-25	-23	-55	-60	-53	-72	-75	-37	-51	-38	-55	-33
90%	-60	-67	-25	-80	-93	-50	-68	-46	-132	-102	-97	-31
Long Term												
Full Simulation Period[b]	-56	-64	-62	-50	-53	-61	-66	-45	-32	-24	-40	-45
Water Year Types[c]												
Wet (32%)	-58	-60	-50	-33	-32	-50	-60	-40	-20	0	-48	-73
Above Normal (16%)	-56	-72	-70	-48	-42	-63	-67	-36	-20	6	-22	-23
Below Normal (13%)	-75	-92	-86	-72	-66	-81	-79	-53	-34	-5	-3	-4
Dry (24%)	-35	-45	-52	-52	-56	-63	-66	-45	-25	-29	-28	-23
Critical (15%)	-70	-69	-79	-69	-91	-64	-68	-57	-80	-116	-94	-79

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-5. CVP Total Capacity, Monthly Capacity

Second Basis of Comparison

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

Alternative 3

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,778	1,818	1,852	1,884	1,910	1,945	1,947	1,910	1,837	1,777	1,759	1,753
20%	1,749	1,789	1,828	1,860	1,894	1,930	1,930	1,883	1,766	1,692	1,687	1,696
30%	1,708	1,772	1,814	1,851	1,884	1,900	1,895	1,828	1,717	1,654	1,633	1,659
40%	1,663	1,741	1,781	1,838	1,866	1,882	1,849	1,777	1,670	1,601	1,604	1,600
50%	1,609	1,689	1,744	1,800	1,840	1,851	1,821	1,760	1,644	1,572	1,554	1,569
60%	1,579	1,639	1,695	1,748	1,797	1,814	1,781	1,711	1,603	1,542	1,511	1,510
70%	1,499	1,557	1,632	1,703	1,768	1,784	1,755	1,665	1,567	1,487	1,453	1,465
80%	1,394	1,457	1,570	1,624	1,708	1,738	1,707	1,620	1,506	1,408	1,378	1,372
90%	1,231	1,365	1,434	1,496	1,518	1,545	1,519	1,453	1,343	1,229	1,190	1,181
Long Term												
Full Simulation Period[b]	1,551	1,613	1,676	1,732	1,777	1,794	1,775	1,705	1,592	1,512	1,486	1,493
Water Year Types[c]												
Wet (32%)	1,690	1,756	1,806	1,856	1,894	1,929	1,928	1,885	1,791	1,730	1,713	1,716
Above Normal (16%)	1,527	1,640	1,746	1,802	1,852	1,875	1,862	1,786	1,679	1,615	1,591	1,589
Below Normal (13%)	1,629	1,676	1,751	1,790	1,829	1,832	1,788	1,718	1,607	1,529	1,504	1,501
Dry (24%)	1,504	1,551	1,612	1,686	1,748	1,768	1,745	1,660	1,555	1,479	1,459	1,475
Critical (15%)	1,283	1,319	1,355	1,411	1,444	1,422	1,386	1,288	1,113	967	909	930

Alternative 3 minus Second Basis of Comparison

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	12	12	-2	1	-1	5	5	11	12	10	8	20
20%	18	-2	-2	-2	3	7	24	27	27	16	18	19
30%	22	5	5	3	8	0	5	20	23	35	25	12
40%	18	14	-6	5	0	3	-7	7	16	11	33	26
50%	26	3	-6	-11	-6	-4	-11	14	31	22	14	25
60%	17	9	-15	-20	-14	-17	-7	10	19	32	24	21
70%	17	-11	-18	-10	-3	-3	-4	-4	17	17	13	17
80%	14	7	-6	-20	-11	-9	-6	5	15	17	-9	-3
90%	34	5	7	-40	-51	-8	-4	24	8	7	7	47
Long Term												
Full Simulation Period[b]	19	7	1	-3	-2	-1	3	12	18	20	17	19
Water Year Types[c]												
Wet (32%)	11	0	-5	-1	3	3	8	14	17	13	19	15
Above Normal (16%)	5	-11	-1	-7	-4	-2	1	8	25	31	23	24
Below Normal (13%)	23	5	-3	-2	-2	-6	-19	1	14	34	23	14
Dry (24%)	28	15	5	-3	3	-3	0	9	22	16	14	19
Critical (15%)	33	29	13	-5	-22	3	20	26	7	19	7	26

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-6. CVP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,767	1,807	1,854	1,883	1,910	1,941	1,942	1,899	1,825	1,767	1,751	1,733
20%	1,731	1,790	1,829	1,862	1,891	1,923	1,907	1,856	1,739	1,676	1,669	1,677
30%	1,687	1,768	1,809	1,849	1,876	1,899	1,890	1,808	1,695	1,620	1,608	1,647
40%	1,645	1,727	1,787	1,832	1,865	1,879	1,857	1,770	1,654	1,590	1,571	1,574
50%	1,583	1,686	1,750	1,811	1,846	1,855	1,832	1,745	1,612	1,550	1,541	1,544
60%	1,561	1,629	1,710	1,768	1,811	1,831	1,788	1,701	1,584	1,509	1,487	1,488
70%	1,482	1,568	1,650	1,714	1,771	1,786	1,760	1,669	1,550	1,471	1,439	1,448
80%	1,379	1,450	1,576	1,644	1,719	1,747	1,713	1,616	1,490	1,391	1,387	1,375
90%	1,197	1,360	1,427	1,535	1,569	1,552	1,523	1,429	1,335	1,222	1,183	1,134
Long Term												
Full Simulation Period[b]	1,532	1,606	1,675	1,735	1,780	1,795	1,772	1,693	1,574	1,492	1,469	1,474
Water Year Types[c]												
Wet (32%)	1,679	1,756	1,811	1,857	1,892	1,926	1,920	1,871	1,773	1,717	1,694	1,701
Above Normal (16%)	1,522	1,652	1,747	1,810	1,856	1,877	1,860	1,778	1,653	1,584	1,567	1,564
Below Normal (13%)	1,606	1,671	1,754	1,792	1,830	1,838	1,807	1,718	1,593	1,496	1,481	1,487
Dry (24%)	1,476	1,536	1,607	1,689	1,746	1,771	1,746	1,652	1,533	1,463	1,445	1,456
Critical (15%)	1,250	1,290	1,342	1,416	1,466	1,419	1,366	1,262	1,106	948	902	904

Alternative 5

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,693	1,746	1,805	1,849	1,882	1,891	1,879	1,849	1,777	1,748	1,671	1,650
20%	1,635	1,721	1,772	1,829	1,859	1,867	1,843	1,806	1,725	1,690	1,624	1,612
30%	1,599	1,680	1,744	1,797	1,836	1,839	1,816	1,766	1,655	1,616	1,576	1,579
40%	1,566	1,638	1,710	1,767	1,801	1,801	1,785	1,732	1,619	1,571	1,538	1,547
50%	1,538	1,596	1,668	1,726	1,775	1,774	1,737	1,700	1,598	1,555	1,504	1,510
60%	1,516	1,552	1,617	1,687	1,737	1,733	1,701	1,643	1,537	1,484	1,460	1,457
70%	1,458	1,512	1,571	1,650	1,694	1,699	1,673	1,596	1,506	1,415	1,413	1,413
80%	1,327	1,399	1,504	1,574	1,644	1,639	1,616	1,532	1,439	1,324	1,302	1,310
90%	1,044	1,242	1,372	1,427	1,440	1,483	1,450	1,351	1,173	1,061	1,046	1,029
Long Term												
Full Simulation Period[b]	1,460	1,532	1,603	1,672	1,716	1,717	1,692	1,633	1,525	1,450	1,410	1,410
Water Year Types[c]												
Wet (32%)	1,609	1,690	1,755	1,819	1,856	1,873	1,858	1,830	1,748	1,715	1,641	1,625
Above Normal (16%)	1,458	1,576	1,671	1,757	1,808	1,806	1,785	1,735	1,624	1,577	1,536	1,532
Below Normal (13%)	1,504	1,559	1,648	1,712	1,755	1,743	1,710	1,653	1,546	1,474	1,465	1,468
Dry (24%)	1,428	1,478	1,545	1,622	1,676	1,686	1,657	1,585	1,485	1,403	1,383	1,391
Critical (15%)	1,152	1,205	1,253	1,308	1,344	1,310	1,274	1,159	985	793	768	794

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-74	-61	-49	-34	-28	-50	-63	-49	-48	-18	-81	-84
20%	-96	-70	-57	-33	-32	-56	-64	-50	-14	14	-44	-65
30%	-88	-88	-65	-51	-40	-60	-75	-43	-40	-4	-32	-68
40%	-79	-89	-77	-65	-64	-78	-72	-39	-35	-19	-33	-27
50%	-45	-90	-82	-84	-72	-81	-95	-46	-15	5	-37	-34
60%	-45	-77	-93	-81	-73	-98	-87	-58	-47	-26	-27	-31
70%	-24	-55	-79	-64	-78	-88	-86	-73	-44	-55	-27	-35
80%	-52	-51	-72	-70	-75	-108	-97	-84	-51	-67	-85	-64
90%	-153	-118	-56	-108	-129	-69	-73	-79	-161	-161	-136	-106
Long Term												
Full Simulation Period[b]	-72	-74	-72	-63	-64	-78	-80	-60	-48	-42	-59	-64
Water Year Types[c]												
Wet (32%)	-70	-65	-56	-38	-36	-53	-62	-41	-26	-2	-53	-76
Above Normal (16%)	-64	-75	-76	-53	-47	-70	-75	-43	-30	-8	-31	-32
Below Normal (13%)	-101	-113	-107	-80	-75	-95	-96	-65	-47	-22	-16	-19
Dry (24%)	-48	-58	-62	-67	-70	-86	-89	-66	-48	-60	-62	-66
Critical (15%)	-97	-85	-89	-109	-121	-110	-92	-103	-121	-155	-133	-110

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.2. CVP Total Energy Generation

Table B-2-1. CVP Total Generation, Monthly Generation

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

Alternative 1

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

Alternative 1 minus No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	-118	18	2	14	6	-6	9	77	23	52	-189
20%	-33	-124	98	94	16	14	-5	22	78	28	38	-227
30%	-25	-77	2	58	-25	-6	-8	21	62	27	33	-135
40%	-24	-55	4	30	41	-11	-9	29	58	49	38	-99
50%	-34	-27	7	11	15	3	-5	29	49	39	29	-45
60%	-28	-3	2	-2	2	0	-13	28	58	24	25	-7
70%	-9	6	2	4	0	7	-7	30	51	29	26	8
80%	-14	-3	3	5	3	3	-1	22	46	20	15	9
90%	-7	7	7	1	5	0	1	27	40	-5	30	2
Long Term												
Full Simulation Period[b]	-17	-40	18	19	9	6	-9	21	55	24	28	-71
Water Year Types[c]												
Wet (32%)	-20	-49	50	24	8	-8	-19	5	67	14	31	-199
Above Normal (16%)	-23	-47	-15	43	26	28	-29	30	74	33	43	-80
Below Normal (13%)	-28	-37	12	45	14	26	5	41	73	45	47	16
Dry (24%)	-11	-49	4	-4	5	-2	-1	27	31	29	6	5
Critical (15%)	-4	-4	11	1	-4	5	11	15	31	11	24	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-2. CVP Total Generation, Monthly Generation

No Action Alternative

Statistic	Monthly Generation (GWh) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

Alternative 3

Statistic	Monthly Generation (GWh) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	306	662	691	701	710	489	598	648	775	610	459
20%	342	256	426	590	650	583	393	551	635	759	578	387
30%	314	227	242	427	458	367	360	507	590	741	557	358
40%	275	216	199	254	283	258	330	493	564	720	538	328
50%	245	204	181	203	220	223	314	469	548	678	525	302
60%	222	180	170	173	179	192	291	442	518	657	513	279
70%	202	164	149	156	142	171	271	421	511	624	482	257
80%	176	145	133	134	128	153	250	363	453	561	445	227
90%	158	124	113	122	109	136	222	300	381	474	387	191
Long Term												
Full Simulation Period[b]	262	215	279	333	336	335	338	462	542	658	512	314
Water Year Types[c]												
Wet (32%)	298	268	493	584	537	551	430	562	593	712	576	407
Above Normal (16%)	249	222	245	350	477	401	346	482	580	736	550	341
Below Normal (13%)	284	211	187	228	283	245	332	476	580	711	557	347
Dry (24%)	256	184	162	175	146	180	265	416	532	635	471	251
Critical (15%)	189	150	132	130	113	139	253	285	373	445	360	160

Alternative 3 minus No Action Alternative

Statistic	Monthly Generation (GWh) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	-107	21	2	31	14	-3	-19	30	19	25	-171
20%	-29	-124	88	100	29	14	-4	1	58	30	29	-210
30%	-14	-83	3	46	-13	4	3	-7	29	36	21	-111
40%	-18	-58	9	18	37	-8	-4	15	20	58	27	-85
50%	-25	-27	6	3	15	-7	-5	5	21	34	29	-40
60%	-17	-3	3	-6	6	-1	-10	-1	23	27	36	-6
70%	-8	2	3	4	0	0	-11	6	32	25	32	7
80%	-11	4	2	-3	-2	2	0	12	18	11	24	11
90%	-1	6	9	2	-1	-5	5	9	31	-1	27	7
Long Term												
Full Simulation Period[b]	-11	-40	19	17	14	7	-5	1	28	27	26	-62
Water Year Types[c]												
Wet (32%)	-19	-50	53	27	23	-6	-17	-18	24	29	34	-191
Above Normal (16%)	-18	-41	-14	30	24	33	-24	-1	36	29	23	-80
Below Normal (13%)	-25	-47	12	42	18	25	14	21	40	32	28	58
Dry (24%)	2	-47	8	-7	1	-2	2	10	21	28	14	5
Critical (15%)	6	1	9	-4	1	4	11	14	28	14	28	14

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-3. CVP Total Generation, Monthly Generation

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	404	410	647	689	671	694	491	627	618	752	574	628
20%	365	380	341	486	622	563	404	562	578	722	553	598
30%	328	316	236	381	459	362	368	513	557	705	534	468
40%	284	281	188	233	245	266	334	482	541	660	514	418
50%	269	226	173	201	205	229	327	460	525	648	498	351
60%	244	182	163	178	173	199	304	439	493	634	471	277
70%	220	161	145	153	139	170	281	412	472	601	451	248
80%	183	140	131	137	127	151	258	343	432	548	416	217
90%	155	113	102	120	108	136	233	308	350	463	365	184
Long Term												
Full Simulation Period[b]	273	254	258	317	321	328	348	463	509	628	485	378
Water Year Types[c]												
Wet (32%)	313	320	438	558	512	554	446	585	567	685	538	598
Above Normal (16%)	266	254	259	321	454	368	370	489	542	708	523	419
Below Normal (13%)	307	257	173	186	265	221	334	458	533	675	520	294
Dry (24%)	254	231	153	183	145	183	273	404	505	604	459	247
Critical (15%)	192	149	120	135	110	132	250	270	336	414	337	153

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	-5	-3	6	0	0	-2	-1	10	-1	-4	-11	-1
20%	-6	0	3	-4	0	-6	7	13	1	-6	4	1
30%	-1	6	-3	0	-13	-1	10	-1	-4	0	-2	-1
40%	-8	6	-2	-2	0	-1	0	5	-3	-2	3	4
50%	-1	-5	-2	0	0	0	9	-4	-2	3	2	9
60%	4	-1	-4	0	0	5	2	-3	-2	4	-5	-8
70%	11	-1	-1	1	-3	0	-2	-3	-7	2	1	-2
80%	-3	-1	0	0	-3	0	9	-7	-3	-3	-5	1
90%	-4	-5	-2	0	-2	-5	16	17	0	-12	6	0
Long Term												
Full Simulation Period[b]	-1	-1	-2	1	-1	-1	5	2	-5	-3	-2	2
Water Year Types[c]												
Wet (32%)	-4	2	-3	1	-1	-3	-1	5	-1	2	-4	1
Above Normal (16%)	-2	-8	-1	1	0	1	-1	5	-2	0	-5	-2
Below Normal (13%)	-3	-1	-2	-1	-1	1	15	3	-7	-4	-9	4
Dry (24%)	-1	-1	-1	0	0	0	9	-2	-6	-3	2	1
Critical (15%)	8	0	-3	1	-1	-3	8	-1	-9	-17	4	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-4. CVP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	409	413	641	689	671	696	492	616	619	756	585	630
20%	372	380	338	490	622	569	397	549	577	729	549	597
30%	329	310	240	381	471	363	358	514	561	705	536	469
40%	292	274	190	235	245	267	334	478	544	662	511	414
50%	270	231	175	201	205	229	318	464	527	644	496	342
60%	239	183	167	179	173	194	302	442	495	630	476	285
70%	210	162	146	152	141	171	282	415	479	598	451	250
80%	186	140	131	137	130	151	249	350	435	551	421	215
90%	159	118	105	120	110	141	217	291	350	474	359	184
Long Term												
Full Simulation Period[b]	273	255	260	317	322	329	343	461	514	631	487	376
Water Year Types[c]												
Wet (32%)	317	318	441	558	513	557	447	580	568	683	542	598
Above Normal (16%)	268	263	259	320	454	367	370	484	544	708	527	421
Below Normal (13%)	310	258	175	186	266	220	318	455	540	679	529	289
Dry (24%)	254	232	154	183	145	183	263	406	511	607	457	246
Critical (15%)	184	149	123	134	111	135	242	271	345	431	333	145

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-6	118	-18	-2	-14	-6	6	-9	-77	-23	-52	189
20%	33	124	-98	-94	-16	-14	5	-22	-78	-28	-38	227
30%	25	77	-2	-58	25	6	8	-21	-62	-27	-33	135
40%	24	55	-4	-30	-41	11	9	-29	-58	-49	-38	99
50%	34	27	-7	-11	-15	-3	5	-29	-49	-39	-29	45
60%	28	3	-2	2	-2	0	13	-28	-58	-24	-25	7
70%	9	-6	-2	-4	0	-7	7	-30	-51	-29	-26	-8
80%	14	3	-3	-5	-3	-3	1	-22	-46	-20	-15	-9
90%	7	-7	-7	-1	-5	0	-1	-27	-40	5	-30	-2
Long Term												
Full Simulation Period[b]	17	40	-18	-19	-9	-6	9	-21	-55	-24	-28	71
Water Year Types[c]												
Wet (32%)	20	49	-50	-24	-8	8	19	-5	-67	-14	-31	199
Above Normal (16%)	23	47	15	-43	-26	-28	29	-30	-74	-33	-43	80
Below Normal (13%)	28	37	-12	-45	-14	-26	-5	-41	-73	-45	-47	-16
Dry (24%)	11	49	-4	4	-5	2	1	-27	-31	-29	-6	-5
Critical (15%)	4	4	-11	-1	4	-5	-11	-15	-31	-11	-24	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-5. CVP Total Generation, Monthly Generation

Second Basis of Comparison

	Monthly Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

Alternative 3

	Monthly Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	306	662	691	701	710	489	598	648	775	610	459
20%	342	256	426	590	650	583	393	551	635	759	578	387
30%	314	227	242	427	458	367	360	507	590	741	557	358
40%	275	216	199	254	283	258	330	493	564	720	538	328
50%	245	204	181	203	220	223	314	469	548	678	525	302
60%	222	180	170	173	179	192	291	442	518	657	513	279
70%	202	164	149	156	142	171	271	421	511	624	482	257
80%	176	145	133	134	128	153	250	363	453	561	445	227
90%	158	124	113	122	109	136	222	300	381	474	387	191
Long Term												
Full Simulation Period[b]	262	215	279	333	336	335	338	462	542	658	512	314
Water Year Types[c]												
Wet (32%)	298	268	493	584	537	551	430	562	593	712	576	407
Above Normal (16%)	249	222	245	350	477	401	346	482	580	736	550	341
Below Normal (13%)	284	211	187	228	283	245	332	476	580	711	557	347
Dry (24%)	256	184	162	175	146	180	265	416	532	635	471	251
Critical (15%)	189	150	132	130	113	139	253	285	373	445	360	160

Alternative 3 minus Second Basis of Comparison

	Monthly Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1	11	3	-1	17	8	3	-28	-48	-4	-27	17
20%	4	0	-9	5	13	0	0	-21	-21	2	-10	17
30%	11	-6	0	-12	13	10	10	-28	-33	10	-12	24
40%	7	-3	6	-12	-4	3	6	-14	-38	9	-11	13
50%	9	-1	-2	-8	0	-9	0	-24	-28	-5	0	5
60%	10	1	1	-4	4	-1	3	-28	-35	3	12	1
70%	2	-3	1	0	1	-6	-4	-24	-19	-4	6	-1
80%	4	7	-1	-8	-5	-1	1	-9	-28	-9	9	2
90%	7	-1	1	0	-6	-5	4	-18	-8	4	-2	5
Long Term												
Full Simulation Period[b]	6	0	1	-3	5	1	3	-19	-27	2	-2	9
Water Year Types[c]												
Wet (32%)	1	-2	2	3	16	2	2	-24	-43	15	3	8
Above Normal (16%)	4	6	0	-12	-2	5	5	-31	-38	-4	-21	0
Below Normal (13%)	3	-10	-1	-3	3	-1	9	-20	-33	-12	-18	42
Dry (24%)	13	1	4	-3	-4	0	3	-17	-10	-2	8	0
Critical (15%)	9	5	-2	-4	6	-1	0	-1	-3	3	4	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-6. CVP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	415	295	659	692	684	702	486	626	696	779	637	441
20%	339	256	436	584	637	584	393	572	655	757	588	370
30%	303	233	242	439	446	357	350	535	623	732	569	334
40%	268	220	194	266	287	256	325	507	602	711	549	315
50%	236	204	182	211	220	232	313	493	577	683	525	297
60%	212	180	169	177	175	194	289	470	553	654	501	278
70%	201	168	148	156	141	177	276	445	530	627	477	258
80%	172	138	134	143	133	154	248	372	481	571	436	225
90%	152	125	112	121	115	141	217	318	390	470	389	186
Long Term												
Full Simulation Period[b]	256	215	278	336	331	334	334	481	569	655	514	305
Water Year Types[c]												
Wet (32%)	297	269	491	582	521	549	428	586	636	697	573	399
Above Normal (16%)	245	215	245	362	479	396	341	513	618	740	571	341
Below Normal (13%)	282	221	188	231	280	246	323	496	612	724	575	306
Dry (24%)	243	183	158	179	150	181	262	433	542	637	463	251
Critical (15%)	180	145	134	134	107	140	253	286	376	442	357	154

Alternative 5

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	404	410	647	689	671	694	491	627	618	752	574	628
20%	365	380	341	486	622	563	404	562	578	722	553	598
30%	328	316	236	381	459	362	368	513	557	705	534	468
40%	284	281	188	233	245	266	334	482	541	660	514	418
50%	269	226	173	201	205	229	327	460	525	648	498	351
60%	244	182	163	178	173	199	304	439	493	634	471	277
70%	220	161	145	153	139	170	281	412	472	601	451	248
80%	183	140	131	137	127	151	258	343	432	548	416	217
90%	155	113	102	120	108	136	233	308	350	463	365	184
Long Term												
Full Simulation Period[b]	273	254	258	317	321	328	348	463	509	628	485	378
Water Year Types[c]												
Wet (32%)	313	320	438	558	512	554	446	585	567	685	538	598
Above Normal (16%)	266	254	259	321	454	368	370	489	542	708	523	419
Below Normal (13%)	307	257	173	186	265	221	334	458	533	675	520	294
Dry (24%)	254	231	153	183	145	183	273	404	505	604	459	247
Critical (15%)	192	149	120	135	110	132	250	270	336	414	337	153

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-11	115	-11	-2	-14	-9	4	1	-78	-27	-63	187
20%	27	124	-95	-99	-15	-21	11	-10	-77	-35	-35	228
30%	24	83	-5	-58	13	5	18	-23	-67	-27	-35	134
40%	16	61	-6	-33	-41	10	9	-25	-61	-51	-36	103
50%	33	22	-9	-11	-15	-3	14	-32	-51	-35	-27	55
60%	32	3	-6	2	-2	5	15	-31	-60	-20	-30	-1
70%	20	-6	-3	-3	-2	-7	5	-33	-58	-26	-25	-10
80%	11	2	-3	-5	-6	-3	10	-29	-49	-23	-20	-8
90%	3	-12	-10	-1	-7	-5	16	-10	-40	-7	-24	-2
Long Term												
Full Simulation Period[b]	16	39	-20	-19	-10	-7	14	-19	-59	-28	-30	73
Water Year Types[c]												
Wet (32%)	16	51	-53	-23	-9	5	18	-1	-69	-12	-35	199
Above Normal (16%)	21	39	14	-41	-25	-28	28	-24	-76	-33	-48	78
Below Normal (13%)	25	36	-14	-45	-15	-25	11	-38	-80	-49	-56	-12
Dry (24%)	10	48	-4	5	-5	2	10	-29	-37	-33	-4	-4
Critical (15%)	12	5	-14	1	3	-8	-3	-16	-40	-28	-20	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.3. CVP Total Energy Use

Table B-3-1. CVP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

Alternative 1

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

Alternative 1 minus No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	26	-21	9	20	37	-5	23	21	-14	9	49	3
20%	26	-9	11	36	16	-11	38	19	2	17	32	3
30%	33	-1	16	47	28	-7	42	18	8	23	19	4
40%	20	6	21	49	40	-18	40	15	14	27	19	9
50%	3	19	23	50	41	-6	36	12	23	27	22	17
60%	0	16	21	52	30	2	28	12	20	26	15	13
70%	-5	15	12	55	12	1	20	8	20	14	7	13
80%	-12	15	15	42	8	6	11	3	9	16	3	10
90%	-21	8	13	10	-4	8	1	2	5	1	3	4
Long Term												
Full Simulation Period[b]	8	4	15	40	24	-2	24	11	7	18	20	11
Water Year Types[c]												
Wet (32%)	18	7	25	44	15	-28	27	10	-11	12	31	16
Above Normal (16%)	1	-3	13	54	38	-11	42	17	16	30	27	30
Below Normal (13%)	13	12	16	51	20	9	31	18	23	41	32	2
Dry (24%)	9	0	4	35	27	19	13	6	13	17	3	3
Critical (15%)	-12	5	17	19	27	20	10	3	8	-5	7	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-2. CVP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

Alternative 3

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	143	149	161	165	151	147	87	99	142	154	156	139
20%	124	140	157	131	142	139	82	89	122	146	134	112
30%	119	138	154	120	126	100	81	79	106	139	132	107
40%	108	128	143	117	105	78	79	72	100	128	128	106
50%	86	118	140	110	91	72	72	66	91	118	113	105
60%	70	107	131	104	75	64	64	53	80	103	99	95
70%	63	95	122	93	65	62	46	40	59	87	83	85
80%	52	82	102	84	54	51	35	30	41	71	62	63
90%	46	66	73	76	31	24	23	23	24	46	41	45
Long Term												
Full Simulation Period[b]	91	113	129	109	95	85	62	62	85	109	106	97
Water Year Types[c]												
Wet (32%)	101	130	144	128	135	108	83	87	125	139	140	113
Above Normal (16%)	83	113	122	93	96	125	77	74	105	115	121	111
Below Normal (13%)	94	130	144	111	85	78	56	58	86	123	117	126
Dry (24%)	97	104	126	108	75	65	49	44	54	98	75	74
Critical (15%)	64	78	97	85	53	31	30	25	27	43	55	58

Alternative 3 minus No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	31	-23	7	12	5	-2	27	31	14	1	23	33
20%	29	-10	8	0	9	0	39	43	20	7	12	7
30%	34	-1	13	2	11	-9	44	38	19	17	18	4
40%	32	-1	8	4	6	-20	45	33	22	14	19	10
50%	14	13	11	1	-3	-3	39	31	25	14	12	18
60%	3	14	8	-1	-10	-1	33	20	22	10	5	19
70%	1	14	8	-3	-7	1	17	10	14	3	4	17
80%	-5	18	6	2	7	5	10	4	8	2	3	5
90%	-9	8	-2	5	-1	1	2	2	3	4	5	1
Long Term												
Full Simulation Period[b]	14	2	9	1	4	-1	26	22	14	8	13	15
Water Year Types[c]												
Wet (32%)	20	5	14	4	10	-14	33	29	12	7	21	19
Above Normal (16%)	9	-7	-1	-4	6	20	41	34	20	16	13	24
Below Normal (13%)	15	9	12	4	1	2	26	25	25	17	11	34
Dry (24%)	21	0	6	0	-2	2	18	13	12	8	10	2
Critical (15%)	-1	4	8	0	1	0	9	3	4	-8	-1	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-3. CVP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

Alternative 5

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	106	174	154	153	146	153	59	68	128	155	132	106
20%	94	153	151	134	134	138	41	44	103	140	121	105
30%	85	140	142	120	116	109	35	40	86	122	113	102
40%	75	126	135	114	104	99	32	37	77	115	110	95
50%	72	106	128	110	94	75	30	33	65	105	102	90
60%	69	92	123	104	86	65	29	30	57	94	94	76
70%	63	74	115	95	71	61	24	22	46	88	80	70
80%	59	65	92	83	46	48	18	16	32	74	63	58
90%	54	56	68	71	32	22	13	12	24	50	49	47
Long Term												
Full Simulation Period[b]	76	110	121	109	92	86	33	36	71	103	95	82
Water Year Types[c]												
Wet (32%)	81	129	131	125	124	123	50	58	113	132	119	93
Above Normal (16%)	75	112	122	100	90	104	35	40	84	100	107	86
Below Normal (13%)	76	122	132	107	90	77	28	30	62	106	100	96
Dry (24%)	74	101	121	108	77	64	23	21	43	96	71	74
Critical (15%)	69	73	86	88	54	30	13	13	22	56	64	56

Alternative 5 minus No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-5	3	0	0	1	4	-1	-1	0	2	-1	0
20%	-1	3	2	2	1	-1	-1	-2	1	1	-1	0
30%	0	0	0	2	1	0	-2	-1	-1	1	-1	-1
40%	-1	-3	1	1	5	0	-2	-2	-1	1	1	-1
50%	0	1	0	0	0	0	-2	-3	0	1	1	2
60%	3	-2	0	-2	1	0	-2	-3	-1	1	0	0
70%	1	-7	1	0	-1	0	-5	-8	2	4	1	2
80%	1	0	-4	0	-1	2	-6	-10	-2	5	4	0
90%	0	-2	-6	0	1	0	-8	-10	3	8	13	2
Long Term												
Full Simulation Period[b]	0	-1	0	1	1	0	-3	-4	0	2	2	0
Water Year Types[c]												
Wet (32%)	-1	4	1	1	-1	0	0	0	0	0	0	-1
Above Normal (16%)	1	-8	-1	3	0	0	-1	-1	-1	0	-1	-1
Below Normal (13%)	-3	0	0	0	6	1	-2	-4	0	0	-6	4
Dry (24%)	-2	-3	1	-1	0	0	-8	-9	1	6	6	2
Critical (15%)	4	0	-3	3	2	0	-8	-9	0	5	8	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-4. CVP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	111	171	154	153	146	149	60	69	128	153	133	106
20%	95	150	149	131	133	138	43	46	103	139	122	105
30%	85	139	142	118	115	109	37	41	88	122	114	103
40%	76	129	134	113	99	98	35	39	78	114	109	96
50%	72	105	129	110	94	75	32	36	65	104	102	87
60%	67	93	123	105	85	65	31	33	58	93	94	76
70%	62	81	115	95	72	61	29	30	44	84	79	68
80%	57	65	96	83	47	46	25	26	34	69	59	58
90%	54	58	74	71	31	22	21	21	21	42	36	45
Long Term												
Full Simulation Period[b]	76	111	121	108	92	86	36	40	71	101	93	82
Water Year Types[c]												
Wet (32%)	81	125	130	124	125	122	50	58	113	132	119	94
Above Normal (16%)	74	120	123	97	91	104	36	40	85	99	108	87
Below Normal (13%)	79	122	132	107	84	76	30	33	61	106	106	92
Dry (24%)	76	103	120	108	77	64	30	30	42	90	65	72
Critical (15%)	65	73	89	85	52	31	21	22	22	51	56	57

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-26	21	-9	-20	-37	5	-23	-21	14	-9	-49	-3
20%	-26	9	-11	-36	-16	11	-38	-19	-2	-17	-32	-3
30%	-33	1	-16	-47	-28	7	-42	-18	-8	-23	-19	-4
40%	-20	-6	-21	-49	-40	18	-40	-15	-14	-27	-19	-9
50%	-3	-19	-23	-50	-41	6	-36	-12	-23	-27	-22	-17
60%	0	-16	-21	-52	-30	-2	-28	-12	-20	-26	-15	-13
70%	5	-15	-12	-55	-12	-1	-20	-8	-20	-14	-7	-13
80%	12	-15	-15	-42	-8	-6	-11	-3	-9	-16	-3	-10
90%	21	-8	-13	-10	4	-8	-1	-2	-5	-1	-3	-4
Long Term												
Full Simulation Period[b]	-8	-4	-15	-40	-24	2	-24	-11	-7	-18	-20	-11
Water Year Types[c]												
Wet (32%)	-18	-7	-25	-44	-15	28	-27	-10	11	-12	-31	-16
Above Normal (16%)	-1	3	-13	-54	-38	11	-42	-17	-16	-30	-27	-30
Below Normal (13%)	-13	-12	-16	-51	-20	-9	-31	-18	-23	-41	-32	-2
Dry (24%)	-9	0	-4	-35	-27	-19	-13	-6	-13	-17	-3	-3
Critical (15%)	12	-5	-17	-19	-27	-20	-10	-3	-8	5	-7	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-5. CVP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

Alternative 3

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	143	149	161	165	151	147	87	99	142	154	156	139
20%	124	140	157	131	142	139	82	89	122	146	134	112
30%	119	138	154	120	126	100	81	79	106	139	132	107
40%	108	128	143	117	105	78	79	72	100	128	128	106
50%	86	118	140	110	91	72	72	66	91	118	113	105
60%	70	107	131	104	75	64	64	53	80	103	99	95
70%	63	95	122	93	65	62	46	40	59	87	83	85
80%	52	82	102	84	54	51	35	30	41	71	62	63
90%	46	66	73	76	31	24	23	23	24	46	41	45
Long Term												
Full Simulation Period[b]	91	113	129	109	95	85	62	62	85	109	106	97
Water Year Types[c]												
Wet (32%)	101	130	144	128	135	108	83	87	125	139	140	113
Above Normal (16%)	83	113	122	93	96	125	77	74	105	115	121	111
Below Normal (13%)	94	130	144	111	85	78	56	58	86	123	117	126
Dry (24%)	97	104	126	108	75	65	49	44	54	98	75	74
Critical (15%)	64	78	97	85	53	31	30	25	27	43	55	58

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	6	-2	-2	-8	-32	3	4	10	28	-7	-26	30
20%	3	-1	-2	-36	-7	11	1	24	18	-10	-21	4
30%	2	0	-3	-44	-17	-1	2	20	10	-6	-1	1
40%	12	-6	-13	-45	-34	-2	4	18	9	-13	0	0
50%	11	-5	-13	-49	-44	3	3	19	3	-13	-10	0
60%	3	-2	-13	-54	-40	-3	5	9	2	-17	-10	6
70%	6	-1	-4	-58	-19	0	-3	2	-6	-11	-4	4
80%	6	2	-9	-40	-1	-1	-1	2	-2	-14	0	-5
90%	12	0	-14	-6	3	-6	1	0	-2	3	3	-4
Long Term												
Full Simulation Period[b]	6	-1	-7	-40	-20	1	2	11	7	-10	-7	4
Water Year Types[c]												
Wet (32%)	1	-1	-10	-40	-5	14	6	18	23	-6	-10	3
Above Normal (16%)	7	-4	-14	-58	-32	31	-2	17	5	-14	-13	-6
Below Normal (13%)	2	-4	-3	-47	-19	-7	-6	7	1	-23	-20	32
Dry (24%)	11	1	2	-35	-29	-18	5	7	-1	-9	7	-1
Critical (15%)	11	0	-9	-19	-26	-20	0	0	-3	-3	-7	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-6. CVP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	137	151	163	173	183	144	83	90	114	161	182	109
20%	121	141	160	167	149	127	81	65	105	156	154	108
30%	117	139	157	164	143	101	80	59	96	145	132	107
40%	96	134	156	162	139	80	75	54	91	140	128	106
50%	74	124	152	160	135	69	69	47	88	131	124	104
60%	67	109	144	158	116	67	59	45	78	119	109	90
70%	57	96	127	151	84	62	49	38	65	98	86	81
80%	46	80	111	124	55	52	36	29	43	85	63	68
90%	34	66	87	81	27	30	22	23	26	43	39	49
Long Term												
Full Simulation Period[b]	85	115	136	149	115	84	60	51	78	119	113	93
Water Year Types[c]												
Wet (32%)	100	132	154	168	139	94	77	69	102	145	150	110
Above Normal (16%)	76	116	136	151	128	94	78	58	100	129	135	117
Below Normal (13%)	92	134	148	158	104	85	61	52	85	146	137	94
Dry (24%)	86	103	124	143	104	83	44	36	55	107	68	75
Critical (15%)	53	78	106	105	79	50	30	26	30	46	63	56

Alternative 5

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	106	174	154	153	146	153	59	68	128	155	132	106
20%	94	153	151	134	134	138	41	44	103	140	121	105
30%	85	140	142	120	116	109	35	40	86	122	113	102
40%	75	126	135	114	104	99	32	37	77	115	110	95
50%	72	106	128	110	94	75	30	33	65	105	102	90
60%	69	92	123	104	86	65	29	30	57	94	94	76
70%	63	74	115	95	71	61	24	22	46	88	80	70
80%	59	65	92	83	46	48	18	16	32	74	63	58
90%	54	56	68	71	32	22	13	12	24	50	49	47
Long Term												
Full Simulation Period[b]	76	110	121	109	92	86	33	36	71	103	95	82
Water Year Types[c]												
Wet (32%)	81	129	131	125	124	123	50	58	113	132	119	93
Above Normal (16%)	75	112	122	100	90	104	35	40	84	100	107	86
Below Normal (13%)	76	122	132	107	90	77	28	30	62	106	100	96
Dry (24%)	74	101	121	108	77	64	23	21	43	96	71	74
Critical (15%)	69	73	86	88	54	30	13	13	22	56	64	56

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-31	24	-8	-21	-36	9	-24	-22	13	-7	-50	-3
20%	-27	12	-8	-34	-15	10	-40	-20	-1	-16	-33	-3
30%	-32	1	-15	-45	-27	8	-44	-19	-10	-22	-20	-4
40%	-20	-9	-21	-48	-35	18	-42	-17	-15	-26	-18	-11
50%	-2	-18	-24	-50	-41	6	-39	-15	-22	-26	-22	-15
60%	3	-18	-21	-54	-30	-2	-30	-15	-20	-25	-15	-13
70%	6	-22	-11	-55	-13	-2	-26	-16	-19	-10	-6	-11
80%	13	-16	-19	-42	-9	-4	-17	-13	-11	-11	0	-11
90%	20	-10	-18	-10	5	-8	-9	-11	-2	7	11	-2
Long Term												
Full Simulation Period[b]	-9	-5	-15	-40	-23	2	-28	-15	-6	-15	-18	-10
Water Year Types[c]												
Wet (32%)	-19	-3	-24	-43	-16	29	-27	-11	11	-13	-30	-17
Above Normal (16%)	0	-4	-14	-51	-38	11	-43	-18	-17	-29	-28	-31
Below Normal (13%)	-16	-12	-16	-51	-14	-8	-33	-22	-23	-41	-38	2
Dry (24%)	-11	-2	-2	-35	-27	-19	-21	-15	-12	-11	3	-1
Critical (15%)	16	-5	-20	-16	-25	-20	-17	-12	-8	10	1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.4. CVP Net Energy Generation

Table B-4-1. CVP Net Generation, Monthly Net Generation

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

Alternative 1

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

Alternative 1 minus No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-39	-95	2	1	0	-3	-45	2	58	-26	6	-237
20%	-44	-88	55	40	-5	38	-32	6	76	-2	17	-236
30%	-54	-92	-2	31	-61	26	-28	13	55	6	11	-139
40%	-43	-75	0	-11	45	19	-32	20	65	21	4	-126
50%	-38	-31	-6	-27	4	5	-30	20	50	11	0	-42
60%	-3	-22	-9	-40	-20	-1	-32	9	42	10	12	-9
70%	4	-12	-6	-32	-18	-1	-34	1	44	13	3	-4
80%	-13	-6	-6	-31	-34	-9	-32	15	30	13	8	5
90%	6	-8	-10	-32	-43	-7	-35	30	31	-2	19	-6
Long Term												
Full Simulation Period[b]	-25	-44	2	-21	-15	8	-33	10	48	7	8	-82
Water Year Types[c]												
Wet (32%)	-38	-55	25	-20	-7	20	-46	-5	78	1	0	-215
Above Normal (16%)	-24	-44	-28	-11	-12	39	-71	13	58	3	17	-110
Below Normal (13%)	-41	-49	-3	-6	-6	17	-27	22	49	4	15	14
Dry (24%)	-20	-48	0	-39	-21	-21	-14	21	18	12	3	2
Critical (15%)	8	-9	-6	-18	-31	-15	2	12	23	16	17	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-2. CVP Net Generation, Monthly Net Generation

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

Alternative 3

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	291	182	530	558	606	583	437	534	563	674	481	336
20%	235	125	266	480	511	511	316	479	531	638	465	266
30%	193	104	114	332	334	287	298	459	508	622	441	246
40%	173	91	74	160	183	189	268	439	473	596	424	216
50%	158	77	52	112	122	150	251	392	448	544	409	205
60%	147	66	39	72	84	122	229	374	433	528	387	195
70%	133	60	25	51	71	106	216	348	411	506	374	181
80%	113	52	12	36	56	92	200	316	387	469	362	155
90%	88	31	-6	18	41	71	174	260	340	397	326	104
Long Term												
Full Simulation Period[b]	172	102	150	224	241	250	275	400	457	549	406	217
Water Year Types[c]												
Wet (32%)	197	137	349	456	402	443	347	475	467	572	436	294
Above Normal (16%)	166	109	123	257	381	276	269	408	475	621	429	230
Below Normal (13%)	190	81	42	117	198	167	276	418	493	588	440	221
Dry (24%)	160	81	36	67	71	115	217	372	478	537	396	177
Critical (15%)	125	73	35	45	60	108	223	260	346	402	305	101

Alternative 3 minus No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-33	-74	7	1	39	19	-13	-25	21	10	7	-192
20%	-48	-95	48	108	20	67	-39	-34	31	14	19	-226
30%	-56	-91	-2	76	-23	25	-27	-9	31	26	14	-120
40%	-43	-71	2	13	20	21	-36	-2	21	37	7	-128
50%	-42	-34	2	7	12	0	-34	-32	11	7	4	-41
60%	-8	-30	-4	1	-11	-11	-41	-30	7	20	6	-3
70%	-2	-11	-5	1	1	-4	-32	-35	1	26	8	-2
80%	-6	-4	-6	-1	1	-3	-26	-11	9	19	14	5
90%	3	-9	-5	-6	5	-1	-23	-3	8	-3	24	0
Long Term												
Full Simulation Period[b]	-25	-43	10	16	10	7	-32	-20	14	19	13	-77
Water Year Types[c]												
Wet (32%)	-39	-56	38	23	13	8	-50	-47	12	22	13	-210
Above Normal (16%)	-27	-34	-13	35	18	13	-65	-35	16	13	10	-104
Below Normal (13%)	-40	-56	-1	38	17	23	-12	-4	15	15	17	23
Dry (24%)	-19	-48	2	-7	4	-4	-16	-3	9	20	4	3
Critical (15%)	7	-4	1	-3	1	4	1	11	24	22	28	13

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-3. CVP Net Generation, Monthly Net Generation

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

Alternative 5

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	323	255	511	557	567	559	451	559	528	654	468	527
20%	285	219	219	356	495	444	360	514	496	620	442	495
30%	233	186	113	253	363	270	330	469	475	589	426	365
40%	217	160	72	146	159	168	310	447	450	551	415	343
50%	194	116	48	104	107	148	294	426	437	531	402	243
60%	158	99	39	72	92	131	274	409	424	509	377	199
70%	134	71	28	52	67	105	254	389	404	485	366	177
80%	110	57	18	38	52	84	237	323	368	425	346	146
90%	84	31	-2	25	35	72	210	288	322	396	304	107
Long Term												
Full Simulation Period[b]	197	144	137	208	229	242	315	427	438	524	390	296
Water Year Types[c]												
Wet (32%)	233	191	307	433	388	431	397	527	454	553	419	506
Above Normal (16%)	190	142	136	221	364	264	335	449	458	608	416	333
Below Normal (13%)	230	135	42	79	175	144	305	428	471	569	420	198
Dry (24%)	179	130	32	75	67	119	250	383	461	508	388	173
Critical (15%)	123	76	34	47	56	102	237	257	314	358	273	97

Alternative 5 minus No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1	-1	-12	1	0	-5	1	-1	-14	-9	-6	-1
20%	2	-1	1	-16	4	1	5	1	-5	-4	-4	4
30%	-16	-9	-2	-4	6	8	5	1	-1	-8	-1	-1
40%	1	-2	-1	-1	-3	-1	5	6	-2	-7	-3	-1
50%	-7	4	-2	-1	-3	-2	9	2	-1	-5	-3	-3
60%	3	2	-3	1	-3	-2	4	5	-2	1	-4	1
70%	0	0	-2	1	-4	-4	6	6	-6	5	0	-6
80%	-9	1	0	1	-2	-11	12	-5	-9	-25	-1	-4
90%	-1	-9	-1	1	0	-1	12	26	-10	-4	2	3
Long Term												
Full Simulation Period[b]	0	0	-2	0	-1	-1	9	6	-5	-5	-4	1
Water Year Types[c]												
Wet (32%)	-3	-2	-4	0	0	-3	-1	5	-1	2	-4	2
Above Normal (16%)	-3	-1	0	-2	1	1	0	6	-1	0	-3	-2
Below Normal (13%)	0	-2	-1	-1	-6	0	17	6	-7	-4	-3	0
Dry (24%)	1	2	-2	1	0	0	17	7	-8	-9	-4	-1
Critical (15%)	5	0	0	-1	-3	-2	15	8	-8	-22	-3	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-4. CVP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	324	257	523	556	567	564	449	560	543	664	474	528
20%	283	220	218	372	491	444	355	513	500	624	446	491
30%	249	195	116	257	358	262	325	468	476	596	427	366
40%	216	162	72	147	163	169	304	441	452	558	418	344
50%	200	112	49	104	110	150	285	424	438	537	405	246
60%	154	96	42	71	94	133	270	404	426	508	381	198
70%	134	71	30	50	71	109	248	383	410	480	366	183
80%	119	56	18	37	54	95	225	327	377	450	347	150
90%	86	40	-1	24	36	72	198	262	332	400	302	104
Long Term												
Full Simulation Period[b]	197	145	139	209	230	243	307	420	443	530	393	295
Water Year Types[c]												
Wet (32%)	236	193	311	433	389	435	397	522	455	551	423	504
Above Normal (16%)	193	143	136	223	363	263	334	443	459	608	419	334
Below Normal (13%)	231	137	43	79	181	144	288	422	478	573	423	198
Dry (24%)	178	128	34	74	67	119	233	376	469	518	391	174
Critical (15%)	118	76	34	48	59	104	221	249	323	380	276	89

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	39	95	-2	-1	0	3	45	-2	-58	26	-6	237
20%	44	88	-55	-40	5	-38	32	-6	-76	2	-17	236
30%	54	92	2	-31	61	-26	28	-13	-55	-6	-11	139
40%	43	75	0	11	-45	-19	32	-20	-65	-21	-4	126
50%	38	31	6	27	-4	-5	30	-20	-50	-11	0	42
60%	3	22	9	40	20	1	32	-9	-42	-10	-12	9
70%	-4	12	6	32	18	1	34	-1	-44	-13	-3	4
80%	13	6	6	31	34	9	32	-15	-30	-13	-8	-5
90%	-6	8	10	32	43	7	35	-30	-31	2	-19	6
Long Term												
Full Simulation Period[b]	25	44	-2	21	15	-8	33	-10	-48	-7	-8	82
Water Year Types[c]												
Wet (32%)	38	55	-25	20	7	-20	46	5	-78	-1	0	215
Above Normal (16%)	24	44	28	11	12	-39	71	-13	-58	-3	-17	110
Below Normal (13%)	41	49	3	6	6	-17	27	-22	-49	-4	-15	-14
Dry (24%)	20	48	0	39	21	21	14	-21	-18	-12	-3	-2
Critical (15%)	-8	9	6	18	31	15	-2	-12	-23	-16	-17	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-5. CVP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Net Generation (GWh)											
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Net Generation (GWh)											
Probability of Exceedance[a]												
10%	291	182	530	558	606	583	437	534	563	674	481	336
20%	235	125	266	480	511	511	316	479	531	638	465	266
30%	193	104	114	332	334	287	298	459	508	622	441	246
40%	173	91	74	160	183	189	268	439	473	596	424	216
50%	158	77	52	112	122	150	251	392	448	544	409	205
60%	147	66	39	72	84	122	229	374	433	528	387	195
70%	133	60	25	51	71	106	216	348	411	506	374	181
80%	113	52	12	36	56	92	200	316	387	469	362	155
90%	88	31	-6	18	41	71	174	260	340	397	326	104
Long Term												
Full Simulation Period[b]	172	102	150	224	241	250	275	400	457	549	406	217
Water Year Types[c]												
Wet (32%)	197	137	349	456	402	443	347	475	467	572	436	294
Above Normal (16%)	166	109	123	257	381	276	269	408	475	621	429	230
Below Normal (13%)	190	81	42	117	198	167	276	418	493	588	440	221
Dry (24%)	160	81	36	67	71	115	217	372	478	537	396	177
Critical (15%)	125	73	35	45	60	108	223	260	346	402	305	101

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Net Generation (GWh)											
Probability of Exceedance[a]												
10%	6	21	6	0	39	22	32	-27	-37	36	1	45
20%	-4	-7	-6	68	26	29	-7	-40	-45	16	2	10
30%	-2	2	0	45	38	-2	1	-22	-23	20	3	19
40%	-1	4	2	24	-25	1	-5	-22	-44	16	3	-1
50%	-4	-3	8	34	8	-5	-5	-52	-39	-4	5	1
60%	-5	-9	6	42	10	-10	-9	-39	-36	10	-6	6
70%	-5	1	1	33	19	-3	2	-36	-44	13	5	3
80%	6	2	-1	30	35	6	6	-26	-21	6	6	0
90%	-4	-1	5	26	48	6	12	-32	-23	-1	6	6
Long Term												
Full Simulation Period[b]	0	2	8	37	25	0	1	-30	-34	12	5	4
Water Year Types[c]												
Wet (32%)	0	0	13	43	20	-12	-4	-42	-66	21	13	5
Above Normal (16%)	-3	10	14	46	30	-26	6	-48	-43	10	-7	6
Below Normal (13%)	1	-6	3	44	22	5	15	-26	-34	11	2	9
Dry (24%)	2	1	2	32	25	17	-2	-24	-9	7	1	1
Critical (15%)	-1	6	7	15	32	19	0	-1	0	6	11	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-6. CVP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	285	162	524	558	567	562	404	561	600	638	480	291
20%	239	132	272	412	486	482	324	519	577	622	463	256
30%	195	103	114	288	296	288	297	481	531	602	438	227
40%	173	87	72	135	208	188	273	461	517	579	422	217
50%	162	81	43	78	114	155	255	444	488	547	405	205
60%	152	75	33	30	74	132	238	413	469	518	393	189
70%	138	58	24	18	53	108	214	384	454	493	369	179
80%	106	50	12	6	20	86	194	343	407	463	356	155
90%	92	32	-10	-8	-7	65	162	292	363	398	321	98
Long Term												
Full Simulation Period[b]	172	100	142	187	215	251	274	431	491	537	401	213
Water Year Types[c]												
Wet (32%)	197	138	336	414	382	455	351	517	533	552	423	289
Above Normal (16%)	169	99	109	211	351	302	263	456	517	611	436	224
Below Normal (13%)	189	87	40	73	176	161	262	444	527	577	438	212
Dry (24%)	158	80	34	35	46	98	219	397	487	530	395	176
Critical (15%)	126	67	28	30	28	90	223	261	346	395	294	98

Alternative 5

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	323	255	511	557	567	559	451	559	528	654	468	527
20%	285	219	219	356	495	444	360	514	496	620	442	495
30%	233	186	113	253	363	270	330	469	475	589	426	365
40%	217	160	72	146	159	168	310	447	450	551	415	343
50%	194	116	48	104	107	148	294	426	437	531	402	243
60%	158	99	39	72	92	131	274	409	424	509	377	199
70%	134	71	28	52	67	105	254	389	404	485	366	177
80%	110	57	18	38	52	84	237	323	368	425	346	146
90%	84	31	-2	25	35	72	210	288	322	396	304	107
Long Term												
Full Simulation Period[b]	197	144	137	208	229	242	315	427	438	524	390	296
Water Year Types[c]												
Wet (32%)	233	191	307	433	388	431	397	527	454	553	419	506
Above Normal (16%)	190	142	136	221	364	264	335	449	458	608	416	333
Below Normal (13%)	230	135	42	79	175	144	305	428	471	569	420	198
Dry (24%)	179	130	32	75	67	119	250	383	461	508	388	173
Critical (15%)	123	76	34	47	56	102	237	257	314	358	273	97

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	38	94	-13	0	-1	-3	47	-2	-72	16	-12	236
20%	46	87	-54	-56	9	-38	37	-5	-81	-2	-21	240
30%	38	83	-1	-35	67	-18	33	-12	-56	-14	-12	137
40%	43	72	-1	11	-48	-20	37	-14	-67	-28	-7	125
50%	32	35	4	26	-6	-7	39	-18	-51	-16	-2	39
60%	6	24	6	42	18	-1	36	-4	-44	-9	-16	10
70%	-4	12	3	33	14	-3	41	5	-51	-8	-3	-2
80%	3	7	6	32	32	-2	44	-20	-39	-38	-10	-9
90%	-8	-1	8	33	43	7	48	-4	-41	-2	-17	8
Long Term												
Full Simulation Period[b]	25	44	-4	21	13	-9	41	-4	-53	-12	-12	83
Water Year Types[c]												
Wet (32%)	35	54	-29	20	7	-23	46	10	-79	1	-4	217
Above Normal (16%)	21	43	27	9	13	-38	72	-7	-59	-3	-20	108
Below Normal (13%)	41	48	2	6	-1	-17	44	-16	-57	-8	-18	-14
Dry (24%)	22	50	-2	40	22	21	31	-14	-26	-22	-7	-2
Critical (15%)	-3	10	6	17	28	12	14	-4	-32	-38	-20	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.5. SWP Total Generating Capacity

Table B-5-1. SWP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,222	1,091	1,204	1,178	1,332	1,441	1,351	1,367	1,325	1,331	1,293	1,306
20%	1,074	1,027	1,036	1,033	1,201	1,281	1,297	1,310	1,235	1,282	1,275	1,226
30%	1,037	966	990	940	1,097	1,238	1,263	1,278	1,205	1,270	1,244	1,176
40%	983	879	914	861	989	1,143	1,242	1,236	1,184	1,262	1,212	1,115
50%	887	657	871	797	927	999	1,153	1,178	1,163	1,244	1,174	1,064
60%	642	595	627	664	860	932	1,100	1,101	1,146	1,182	1,072	951
70%	499	425	477	521	747	847	930	1,018	1,090	1,065	908	678
80%	374	351	357	294	651	759	840	964	989	927	591	501
90%	247	223	289	210	399	682	727	803	779	541	393	324
Long Term												
Full Simulation Period[b]	764	700	754	734	907	1,016	1,082	1,119	1,089	1,089	995	911
Water Year Types[c]												
Wet (32%)	920	894	1,000	1,060	1,226	1,313	1,315	1,320	1,245	1,294	1,274	1,252
Above Normal (16%)	708	682	792	827	1,030	1,170	1,217	1,218	1,196	1,270	1,226	1,142
Below Normal (13%)	883	791	814	710	924	998	1,105	1,135	1,146	1,171	1,060	905
Dry (24%)	696	573	575	509	706	829	962	1,047	1,056	985	812	694
Critical (15%)	493	430	423	321	406	534	612	681	636	545	384	286

Alternative 1

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,302	1,326	1,345	1,457	1,480	1,513	1,420	1,432	1,380	1,380	1,341	1,305
20%	1,225	1,200	1,244	1,340	1,469	1,484	1,393	1,408	1,355	1,362	1,289	1,276
30%	1,166	1,148	1,151	1,248	1,420	1,468	1,373	1,386	1,340	1,345	1,243	1,226
40%	1,093	1,085	1,098	1,111	1,293	1,444	1,323	1,357	1,304	1,311	1,218	1,153
50%	1,035	957	998	1,025	1,209	1,373	1,312	1,327	1,294	1,284	1,186	1,097
60%	881	603	768	819	1,116	1,263	1,251	1,293	1,270	1,214	1,113	1,048
70%	621	510	547	512	911	1,044	1,127	1,165	1,186	1,139	1,057	976
80%	496	398	466	355	667	851	912	1,026	1,090	1,068	977	689
90%	299	302	338	233	432	720	809	928	954	624	458	410
Long Term												
Full Simulation Period[b]	878	832	878	891	1,086	1,202	1,181	1,224	1,200	1,164	1,071	1,001
Water Year Types[c]												
Wet (32%)	1,055	1,041	1,136	1,264	1,426	1,488	1,383	1,394	1,334	1,345	1,291	1,280
Above Normal (16%)	793	761	907	1,015	1,283	1,436	1,364	1,380	1,338	1,336	1,235	1,170
Below Normal (13%)	990	954	945	934	1,150	1,263	1,252	1,316	1,294	1,244	1,105	1,000
Dry (24%)	786	721	713	621	859	1,006	1,074	1,140	1,167	1,124	1,004	888
Critical (15%)	640	529	504	357	457	602	659	740	727	579	497	402

Alternative 1 minus No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	80	235	140	279	148	72	69	65	55	50	48	-1
20%	151	173	209	307	268	202	96	98	120	80	14	50
30%	130	182	161	308	323	230	110	108	135	74	-1	50
40%	110	206	184	251	304	301	81	121	120	49	6	38
50%	148	299	127	229	282	374	158	148	130	40	12	33
60%	239	8	141	155	256	331	151	192	124	31	41	98
70%	122	85	70	-9	164	197	198	147	96	74	149	298
80%	121	48	109	60	16	92	72	61	101	141	386	187
90%	52	79	48	23	33	38	82	125	175	83	64	86
Long Term												
Full Simulation Period[b]	114	131	124	157	179	186	99	105	111	75	76	90
Water Year Types[c]												
Wet (32%)	134	147	136	204	200	175	68	74	89	52	17	28
Above Normal (16%)	86	79	115	188	253	267	147	161	143	65	9	28
Below Normal (13%)	106	163	131	225	226	265	147	181	147	72	45	95
Dry (24%)	90	148	137	112	153	177	112	93	111	139	192	194
Critical (15%)	147	99	81	36	51	68	47	59	92	34	114	116

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-2. SWP Total Capacity, Monthly Capacity

No Action Alternative

Statistic	Monthly Capacity (MW) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,222	1,091	1,204	1,178	1,332	1,441	1,351	1,367	1,325	1,331	1,293	1,306
20%	1,074	1,027	1,036	1,033	1,201	1,281	1,297	1,310	1,235	1,282	1,275	1,226
30%	1,037	966	990	940	1,097	1,238	1,263	1,278	1,205	1,270	1,244	1,176
40%	983	879	914	861	989	1,143	1,242	1,236	1,184	1,262	1,212	1,115
50%	887	657	871	797	927	999	1,153	1,178	1,163	1,244	1,174	1,064
60%	642	595	627	664	860	932	1,100	1,101	1,146	1,182	1,072	951
70%	499	425	477	521	747	847	930	1,018	1,090	1,065	908	678
80%	374	351	357	294	651	759	840	964	989	927	591	501
90%	247	223	289	210	399	682	727	803	779	541	393	324
Long Term												
Full Simulation Period[b]	764	700	754	734	907	1,016	1,082	1,119	1,089	1,089	995	911
Water Year Types[c]												
Wet (32%)	920	894	1,000	1,060	1,226	1,313	1,315	1,320	1,245	1,294	1,274	1,252
Above Normal (16%)	708	682	792	827	1,030	1,170	1,217	1,218	1,196	1,270	1,226	1,142
Below Normal (13%)	883	791	814	710	924	998	1,105	1,135	1,146	1,171	1,060	905
Dry (24%)	696	573	575	509	706	829	962	1,047	1,056	985	812	694
Critical (15%)	493	430	423	321	406	534	612	681	636	545	384	286

Alternative 3

Statistic	Monthly Capacity (MW) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,319	1,361	1,353	1,424	1,478	1,483	1,401	1,435	1,387	1,388	1,348	1,320
20%	1,221	1,188	1,208	1,246	1,420	1,463	1,366	1,395	1,343	1,370	1,309	1,250
30%	1,150	1,128	1,125	1,098	1,297	1,407	1,340	1,365	1,330	1,345	1,242	1,204
40%	1,052	1,057	1,062	1,042	1,180	1,307	1,315	1,342	1,293	1,299	1,214	1,130
50%	988	821	1,003	966	1,096	1,266	1,293	1,301	1,256	1,272	1,162	1,083
60%	827	631	767	767	960	1,075	1,254	1,259	1,211	1,218	1,105	1,016
70%	555	514	545	579	806	919	1,078	1,131	1,163	1,118	1,028	914
80%	427	375	431	309	681	823	929	995	1,033	992	907	609
90%	244	241	345	264	412	676	727	813	793	550	422	352
Long Term												
Full Simulation Period[b]	850	810	859	846	1,022	1,127	1,158	1,201	1,168	1,143	1,041	955
Water Year Types[c]												
Wet (32%)	1,023	1,020	1,119	1,200	1,365	1,444	1,373	1,397	1,341	1,360	1,297	1,267
Above Normal (16%)	764	775	900	909	1,145	1,327	1,312	1,336	1,294	1,318	1,236	1,156
Below Normal (13%)	985	953	950	886	1,094	1,196	1,248	1,294	1,240	1,236	1,110	1,007
Dry (24%)	770	674	660	608	799	885	1,043	1,110	1,129	1,063	921	789
Critical (15%)	579	488	500	372	456	562	636	698	658	529	412	287

Alternative 3 minus No Action Alternative

Statistic	Monthly Capacity (MW) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	97	270	148	246	146	42	50	67	62	57	55	13
20%	147	161	173	213	219	182	69	85	108	88	34	24
30%	114	162	135	157	200	169	77	87	125	75	-2	28
40%	69	178	148	181	191	164	74	106	109	37	2	14
50%	101	164	133	169	169	267	139	123	93	28	-12	19
60%	185	37	140	103	100	143	154	159	65	36	34	65
70%	56	89	68	57	60	71	148	113	73	53	120	236
80%	52	24	73	14	31	64	88	31	44	65	317	108
90%	-4	19	55	54	13	-7	0	10	15	10	28	28
Long Term												
Full Simulation Period[b]	86	110	105	113	115	111	76	82	80	54	46	44
Water Year Types[c]												
Wet (32%)	102	127	119	140	139	132	58	77	96	66	23	15
Above Normal (16%)	56	94	108	81	115	157	95	118	99	48	10	14
Below Normal (13%)	102	162	136	177	170	198	143	159	94	65	50	101
Dry (24%)	75	101	85	99	93	56	81	63	73	79	109	95
Critical (15%)	86	58	77	51	49	29	24	17	23	-17	28	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-3. SWP Total Capacity, Monthly Capacity

No Action Alternative

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,222	1,091	1,204	1,178	1,332	1,441	1,351	1,367	1,325	1,331	1,293	1,306
20%	1,074	1,027	1,036	1,033	1,201	1,281	1,297	1,310	1,235	1,282	1,275	1,226
30%	1,037	966	990	940	1,097	1,238	1,263	1,278	1,205	1,270	1,244	1,176
40%	983	879	914	861	989	1,143	1,242	1,236	1,184	1,262	1,212	1,115
50%	887	657	871	797	927	999	1,153	1,178	1,163	1,244	1,174	1,064
60%	642	595	627	664	860	932	1,100	1,101	1,146	1,182	1,072	951
70%	499	425	477	521	747	847	930	1,018	1,090	1,065	908	678
80%	374	351	357	294	651	759	840	964	989	927	591	501
90%	247	223	289	210	399	682	727	803	779	541	393	324
Long Term												
Full Simulation Period[b]	764	700	754	734	907	1,016	1,082	1,119	1,089	1,089	995	911
Water Year Types[c]												
Wet (32%)	920	894	1,000	1,060	1,226	1,313	1,315	1,320	1,245	1,294	1,274	1,252
Above Normal (16%)	708	682	792	827	1,030	1,170	1,217	1,218	1,196	1,270	1,226	1,142
Below Normal (13%)	883	791	814	710	924	998	1,105	1,135	1,146	1,171	1,060	905
Dry (24%)	696	573	575	509	706	829	962	1,047	1,056	985	812	694
Critical (15%)	493	430	423	321	406	534	612	681	636	545	384	286

Alternative 5

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,193	1,103	1,143	1,240	1,347	1,439	1,337	1,354	1,274	1,303	1,291	1,289
20%	1,082	1,023	1,032	1,039	1,215	1,303	1,285	1,298	1,235	1,285	1,271	1,225
30%	1,039	966	977	949	1,104	1,239	1,253	1,275	1,203	1,268	1,242	1,183
40%	991	880	932	860	990	1,106	1,237	1,239	1,181	1,262	1,215	1,117
50%	922	706	875	805	939	1,020	1,152	1,180	1,167	1,245	1,175	1,071
60%	639	594	677	656	836	937	1,106	1,081	1,139	1,174	1,068	958
70%	492	431	475	534	750	851	982	1,014	1,083	1,055	938	707
80%	370	349	357	293	645	760	830	963	984	919	591	492
90%	227	222	326	200	364	658	722	788	776	526	393	294
Long Term												
Full Simulation Period[b]	761	704	754	740	909	1,016	1,079	1,111	1,085	1,088	993	907
Water Year Types[c]												
Wet (32%)	909	888	999	1,081	1,229	1,310	1,303	1,316	1,241	1,294	1,273	1,249
Above Normal (16%)	692	666	783	816	1,028	1,170	1,211	1,214	1,194	1,272	1,227	1,139
Below Normal (13%)	882	821	798	717	932	1,005	1,108	1,121	1,143	1,180	1,074	912
Dry (24%)	699	589	585	514	708	829	966	1,031	1,046	982	808	697
Critical (15%)	504	434	432	317	401	533	615	684	636	535	369	257

Alternative 5 minus No Action Alternative

	Monthly Capacity (MW)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-29	12	-61	62	15	-2	-14	-13	-51	-27	-2	-17
20%	8	-4	-3	7	13	22	-12	-13	0	3	-5	-1
30%	3	0	-12	9	7	1	-9	-3	-2	-3	-2	7
40%	9	1	18	0	1	-37	-5	3	-2	0	3	1
50%	35	48	4	8	12	21	-1	1	4	1	1	7
60%	-3	0	50	-8	-24	5	6	-19	-7	-9	-3	7
70%	-7	6	-2	12	3	4	52	-4	-7	-10	30	29
80%	-4	-2	0	-2	-5	1	-10	-1	-4	-8	0	-9
90%	-21	0	37	-10	-35	-25	-5	-15	-3	-15	0	-30
Long Term												
Full Simulation Period[b]	-4	4	0	6	1	0	-3	-7	-4	0	-1	-4
Water Year Types[c]												
Wet (32%)	-11	-5	0	21	3	-3	-13	-4	-4	0	-1	-3
Above Normal (16%)	-16	-16	-9	-12	-2	1	-6	-5	-1	2	1	-4
Below Normal (13%)	-1	30	-17	7	8	8	3	-14	-4	9	14	7
Dry (24%)	4	15	9	5	2	0	4	-16	-10	-2	-3	3
Critical (15%)	11	4	9	-4	-5	-1	3	3	0	-10	-15	-28

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-4. SWP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,302	1,326	1,345	1,457	1,480	1,513	1,420	1,432	1,380	1,380	1,341	1,305
20%	1,225	1,200	1,244	1,340	1,469	1,484	1,393	1,408	1,355	1,362	1,289	1,276
30%	1,166	1,148	1,151	1,248	1,420	1,468	1,373	1,386	1,340	1,345	1,243	1,226
40%	1,093	1,085	1,098	1,111	1,293	1,444	1,323	1,357	1,304	1,311	1,218	1,153
50%	1,035	957	998	1,025	1,209	1,373	1,312	1,327	1,294	1,284	1,186	1,097
60%	881	603	768	819	1,116	1,263	1,251	1,293	1,270	1,214	1,113	1,048
70%	621	510	547	512	911	1,044	1,127	1,165	1,186	1,139	1,057	976
80%	496	398	466	355	667	851	912	1,026	1,090	1,068	977	689
90%	299	302	338	233	432	720	809	928	954	624	458	410
Long Term												
Full Simulation Period[b]	878	832	878	891	1,086	1,202	1,181	1,224	1,200	1,164	1,071	1,001
Water Year Types[c]												
Wet (32%)	1,055	1,041	1,136	1,264	1,426	1,488	1,383	1,394	1,334	1,345	1,291	1,280
Above Normal (16%)	793	761	907	1,015	1,283	1,436	1,364	1,380	1,338	1,336	1,235	1,170
Below Normal (13%)	990	954	945	934	1,150	1,263	1,252	1,316	1,294	1,244	1,105	1,000
Dry (24%)	786	721	713	621	859	1,006	1,074	1,140	1,167	1,124	1,004	888
Critical (15%)	640	529	504	357	457	602	659	740	727	579	497	402

No Action Alternative

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,222	1,091	1,204	1,178	1,332	1,441	1,351	1,367	1,325	1,331	1,293	1,306
20%	1,074	1,027	1,036	1,033	1,201	1,281	1,297	1,310	1,235	1,282	1,275	1,226
30%	1,037	966	990	940	1,097	1,238	1,263	1,278	1,205	1,270	1,244	1,176
40%	983	879	914	861	989	1,143	1,242	1,236	1,184	1,262	1,212	1,115
50%	887	657	871	797	927	999	1,153	1,178	1,163	1,244	1,174	1,064
60%	642	595	627	664	860	932	1,100	1,101	1,146	1,182	1,072	951
70%	499	425	477	521	747	847	930	1,018	1,090	1,065	908	678
80%	374	351	357	294	651	759	840	964	989	927	591	501
90%	247	223	289	210	399	682	727	803	779	541	393	324
Long Term												
Full Simulation Period[b]	764	700	754	734	907	1,016	1,082	1,119	1,089	1,089	995	911
Water Year Types[c]												
Wet (32%)	920	894	1,000	1,060	1,226	1,313	1,315	1,320	1,245	1,294	1,274	1,252
Above Normal (16%)	708	682	792	827	1,030	1,170	1,217	1,218	1,196	1,270	1,226	1,142
Below Normal (13%)	883	791	814	710	924	998	1,105	1,135	1,146	1,171	1,060	905
Dry (24%)	696	573	575	509	706	829	962	1,047	1,056	985	812	694
Critical (15%)	493	430	423	321	406	534	612	681	636	545	384	286

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-80	-235	-140	-279	-148	-72	-69	-65	-55	-50	-48	1
20%	-151	-173	-209	-307	-268	-202	-96	-98	-120	-80	-14	-50
30%	-130	-182	-161	-308	-323	-230	-110	-108	-135	-74	1	-50
40%	-110	-206	-184	-251	-304	-301	-81	-121	-120	-49	-6	-38
50%	-148	-299	-127	-229	-282	-374	-158	-148	-130	-40	-12	-33
60%	-239	-8	-141	-155	-256	-331	-151	-192	-124	-31	-41	-98
70%	-122	-85	-70	9	-164	-197	-198	-147	-96	-74	-149	-298
80%	-121	-48	-109	-60	-16	-92	-72	-61	-101	-141	-386	-187
90%	-52	-79	-48	-23	-33	-38	-82	-125	-175	-83	-64	-86
Long Term												
Full Simulation Period[b]	-114	-131	-124	-157	-179	-186	-99	-105	-111	-75	-76	-90
Water Year Types[c]												
Wet (32%)	-134	-147	-136	-204	-200	-175	-68	-74	-89	-52	-17	-28
Above Normal (16%)	-86	-79	-115	-188	-253	-267	-147	-161	-143	-65	-9	-28
Below Normal (13%)	-106	-163	-131	-225	-226	-265	-147	-181	-147	-72	-45	-95
Dry (24%)	-90	-148	-137	-112	-153	-177	-112	-93	-111	-139	-192	-194
Critical (15%)	-147	-99	-81	-36	-51	-68	-47	-59	-92	-34	-114	-116

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-5. SWP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,302	1,326	1,345	1,457	1,480	1,513	1,420	1,432	1,380	1,380	1,341	1,305
20%	1,225	1,200	1,244	1,340	1,469	1,484	1,393	1,408	1,355	1,362	1,289	1,276
30%	1,166	1,148	1,151	1,248	1,420	1,468	1,373	1,386	1,340	1,345	1,243	1,226
40%	1,093	1,085	1,098	1,111	1,293	1,444	1,323	1,357	1,304	1,311	1,218	1,153
50%	1,035	957	998	1,025	1,209	1,373	1,312	1,327	1,294	1,284	1,186	1,097
60%	881	603	768	819	1,116	1,263	1,251	1,293	1,270	1,214	1,113	1,048
70%	621	510	547	512	911	1,044	1,127	1,165	1,186	1,139	1,057	976
80%	496	398	466	355	667	851	912	1,026	1,090	1,068	977	689
90%	299	302	338	233	432	720	809	928	954	624	458	410
Long Term												
Full Simulation Period[b]	878	832	878	891	1,086	1,202	1,181	1,224	1,200	1,164	1,071	1,001
Water Year Types[c]												
Wet (32%)	1,055	1,041	1,136	1,264	1,426	1,488	1,383	1,394	1,334	1,345	1,291	1,280
Above Normal (16%)	793	761	907	1,015	1,283	1,436	1,364	1,380	1,338	1,336	1,235	1,170
Below Normal (13%)	990	954	945	934	1,150	1,263	1,252	1,316	1,294	1,244	1,105	1,000
Dry (24%)	786	721	713	621	859	1,006	1,074	1,140	1,167	1,124	1,004	888
Critical (15%)	640	529	504	357	457	602	659	740	727	579	497	402

Alternative 3

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,319	1,361	1,353	1,424	1,478	1,483	1,401	1,435	1,387	1,388	1,348	1,320
20%	1,221	1,188	1,208	1,246	1,420	1,463	1,366	1,395	1,343	1,370	1,309	1,250
30%	1,150	1,128	1,125	1,098	1,297	1,407	1,340	1,365	1,330	1,345	1,242	1,204
40%	1,052	1,057	1,062	1,042	1,180	1,307	1,315	1,342	1,293	1,299	1,214	1,130
50%	988	821	1,003	966	1,096	1,266	1,293	1,301	1,256	1,272	1,162	1,083
60%	827	631	767	767	960	1,075	1,254	1,259	1,211	1,218	1,105	1,016
70%	555	514	545	579	806	919	1,078	1,131	1,163	1,118	1,028	914
80%	427	375	431	309	681	823	929	995	1,033	992	907	609
90%	244	241	345	264	412	676	727	813	793	550	422	352
Long Term												
Full Simulation Period[b]	850	810	859	846	1,022	1,127	1,158	1,201	1,168	1,143	1,041	955
Water Year Types[c]												
Wet (32%)	1,023	1,020	1,119	1,200	1,365	1,444	1,373	1,397	1,341	1,360	1,297	1,267
Above Normal (16%)	764	775	900	909	1,145	1,327	1,312	1,336	1,294	1,318	1,236	1,156
Below Normal (13%)	985	953	950	886	1,094	1,196	1,248	1,294	1,240	1,236	1,110	1,007
Dry (24%)	770	674	660	608	799	885	1,043	1,110	1,129	1,063	921	789
Critical (15%)	579	488	500	372	456	562	636	698	658	529	412	287

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Capacity (MW)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	17	35	8	-33	-2	-30	-19	2	7	8	8	15
20%	-4	-12	-36	-94	-49	-20	-27	-13	-12	8	20	-26
30%	-16	-20	-26	-150	-123	-61	-33	-21	-10	0	-1	-22
40%	-41	-28	-36	-70	-113	-137	-7	-15	-11	-12	-4	-23
50%	-46	-136	5	-60	-113	-107	-19	-25	-38	-12	-24	-14
60%	-53	28	-2	-52	-156	-187	3	-34	-59	4	-8	-33
70%	-66	4	-2	67	-104	-126	-49	-34	-23	-21	-29	-62
80%	-69	-23	-35	-46	15	-28	16	-31	-57	-76	-70	-80
90%	-56	-60	7	32	-20	-45	-82	-115	-160	-73	-36	-58
Long Term												
Full Simulation Period[b]	-28	-21	-19	-44	-64	-75	-23	-22	-31	-21	-30	-46
Water Year Types[c]												
Wet (32%)	-32	-20	-17	-64	-61	-43	-10	3	7	15	6	-13
Above Normal (16%)	-30	15	-7	-106	-138	-109	-52	-43	-44	-17	1	-14
Below Normal (13%)	-4	0	5	-48	-56	-67	-4	-22	-53	-7	5	6
Dry (24%)	-16	-47	-53	-12	-60	-121	-30	-30	-38	-61	-83	-98
Critical (15%)	-61	-41	-4	15	-1	-39	-23	-42	-69	-50	-86	-115

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-6. SWP Total Capacity, Monthly Capacity

Second Basis of Comparison

Statistic	Monthly Capacity (MW) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,302	1,326	1,345	1,457	1,480	1,513	1,420	1,432	1,380	1,380	1,341	1,305
20%	1,225	1,200	1,244	1,340	1,469	1,484	1,393	1,408	1,355	1,362	1,289	1,276
30%	1,166	1,148	1,151	1,248	1,420	1,468	1,373	1,386	1,340	1,345	1,243	1,226
40%	1,093	1,085	1,098	1,111	1,293	1,444	1,323	1,357	1,304	1,311	1,218	1,153
50%	1,035	957	998	1,025	1,209	1,373	1,312	1,327	1,294	1,284	1,186	1,097
60%	881	603	768	819	1,116	1,263	1,251	1,293	1,270	1,214	1,113	1,048
70%	621	510	547	512	911	1,044	1,127	1,165	1,186	1,139	1,057	976
80%	496	398	466	355	667	851	912	1,026	1,090	1,068	977	689
90%	299	302	338	233	432	720	809	928	954	624	458	410
Long Term												
Full Simulation Period[b]	878	832	878	891	1,086	1,202	1,181	1,224	1,200	1,164	1,071	1,001
Water Year Types[c]												
Wet (32%)	1,055	1,041	1,136	1,264	1,426	1,488	1,383	1,394	1,334	1,345	1,291	1,280
Above Normal (16%)	793	761	907	1,015	1,283	1,436	1,364	1,380	1,338	1,336	1,235	1,170
Below Normal (13%)	990	954	945	934	1,150	1,263	1,252	1,316	1,294	1,244	1,105	1,000
Dry (24%)	786	721	713	621	859	1,006	1,074	1,140	1,167	1,124	1,004	888
Critical (15%)	640	529	504	357	457	602	659	740	727	579	497	402

Alternative 5

Statistic	Monthly Capacity (MW) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,193	1,103	1,143	1,240	1,347	1,439	1,337	1,354	1,274	1,303	1,291	1,289
20%	1,082	1,023	1,032	1,039	1,215	1,303	1,285	1,298	1,235	1,285	1,271	1,225
30%	1,039	966	977	949	1,104	1,239	1,253	1,275	1,203	1,268	1,242	1,183
40%	991	880	932	860	990	1,106	1,237	1,239	1,181	1,262	1,215	1,117
50%	922	706	875	805	939	1,020	1,152	1,180	1,167	1,245	1,175	1,071
60%	639	594	677	656	836	937	1,106	1,081	1,139	1,174	1,068	958
70%	492	431	475	534	750	851	982	1,014	1,083	1,055	938	707
80%	370	349	357	293	645	760	830	963	984	919	591	492
90%	227	222	326	200	364	658	722	788	776	526	393	294
Long Term												
Full Simulation Period[b]	761	704	754	740	909	1,016	1,079	1,111	1,085	1,088	993	907
Water Year Types[c]												
Wet (32%)	909	888	999	1,081	1,229	1,310	1,303	1,316	1,241	1,294	1,273	1,249
Above Normal (16%)	692	666	783	816	1,028	1,170	1,211	1,214	1,194	1,272	1,227	1,139
Below Normal (13%)	882	821	798	717	932	1,005	1,108	1,121	1,143	1,180	1,074	912
Dry (24%)	699	589	585	514	708	829	966	1,031	1,046	982	808	697
Critical (15%)	504	434	432	317	401	533	615	684	636	535	369	257

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Capacity (MW) Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-109	-223	-201	-217	-134	-74	-84	-78	-105	-77	-49	-15
20%	-143	-177	-212	-301	-254	-181	-108	-111	-120	-77	-19	-51
30%	-127	-182	-174	-299	-316	-229	-119	-111	-138	-77	-1	-43
40%	-101	-205	-165	-251	-304	-338	-85	-118	-122	-49	-3	-36
50%	-113	-251	-123	-221	-270	-354	-159	-147	-126	-38	-11	-26
60%	-241	-9	-91	-164	-280	-325	-145	-212	-131	-40	-44	-91
70%	-129	-79	-72	22	-161	-194	-146	-151	-103	-83	-119	-269
80%	-125	-50	-108	-62	-21	-91	-82	-63	-106	-149	-386	-197
90%	-72	-79	-11	-33	-68	-63	-87	-139	-178	-98	-64	-116
Long Term												
Full Simulation Period[b]	-118	-127	-125	-151	-177	-186	-102	-112	-115	-76	-78	-94
Water Year Types[c]												
Wet (32%)	-146	-152	-137	-183	-197	-178	-81	-78	-92	-51	-18	-31
Above Normal (16%)	-102	-95	-124	-199	-255	-266	-153	-166	-144	-63	-8	-31
Below Normal (13%)	-107	-133	-148	-217	-218	-258	-144	-195	-151	-63	-31	-88
Dry (24%)	-87	-132	-128	-107	-151	-177	-107	-109	-121	-142	-195	-191
Critical (15%)	-136	-95	-73	-40	-56	-69	-44	-56	-91	-44	-128	-144

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.6. SWP Total Energy Generation

Table B-6-1. SWP Total Generation, Monthly Generation

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	501	396	434	660	675	759	602	704	535	712	619	662
20%	429	355	376	261	551	569	419	532	483	691	605	621
30%	408	328	300	190	238	425	361	443	470	677	581	593
40%	388	311	282	171	169	299	337	411	439	662	553	534
50%	340	285	270	139	131	161	315	380	413	645	518	486
60%	302	255	246	94	110	114	247	329	398	579	481	374
70%	228	199	200	59	72	88	185	272	382	497	374	304
80%	197	158	156	44	55	63	126	247	344	407	295	256
90%	124	85	87	36	45	47	99	207	277	231	195	170
Long Term												
Full Simulation Period[b]	321	272	275	208	245	298	313	408	414	556	458	438
Water Year Types[c]												
Wet (32%)	378	342	347	414	506	592	521	622	487	647	551	630
Above Normal (16%)	290	261	276	172	217	370	331	410	443	697	606	556
Below Normal (13%)	383	295	294	141	138	156	260	343	417	633	516	388
Dry (24%)	294	223	226	96	92	81	183	300	402	483	366	313
Critical (15%)	220	191	182	52	60	72	108	184	243	256	199	145

Alternative 1

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	483	422	475	810	779	852	601	673	636	740	638	505
20%	467	401	396	393	640	698	442	603	591	719	590	481
30%	450	379	355	319	468	596	379	542	557	680	554	470
40%	433	356	338	237	298	492	351	453	533	643	510	434
50%	401	338	303	208	239	330	325	410	496	591	488	402
60%	372	315	285	191	201	281	298	363	458	538	452	387
70%	307	227	261	95	168	165	235	324	421	477	428	362
80%	262	193	197	51	95	125	137	267	384	432	401	328
90%	157	155	151	39	39	51	117	223	356	368	299	244
Long Term												
Full Simulation Period[b]	360	311	325	285	336	409	335	441	489	565	479	395
Water Year Types[c]												
Wet (32%)	405	371	422	542	611	716	517	608	524	638	524	442
Above Normal (16%)	323	265	309	250	370	572	384	486	566	712	588	479
Below Normal (13%)	408	340	305	227	272	291	313	460	558	629	509	418
Dry (24%)	346	291	284	127	147	164	210	327	466	498	456	377
Critical (15%)	281	235	222	80	79	85	117	207	304	300	275	210

Alternative 1 minus No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-18	26	40	150	104	93	-1	-31	101	27	18	-158
20%	38	46	20	132	89	130	23	72	108	28	-15	-140
30%	43	51	55	129	230	171	18	99	87	3	-27	-123
40%	45	46	55	66	129	194	14	42	94	-19	-43	-100
50%	61	53	33	69	108	169	10	30	83	-55	-30	-84
60%	71	60	38	97	91	167	50	34	60	-41	-29	13
70%	79	28	62	36	96	77	49	52	39	-20	54	58
80%	65	35	41	6	40	63	11	20	40	25	106	72
90%	33	70	64	4	-6	4	18	16	78	137	104	74
Long Term												
Full Simulation Period[b]	39	39	50	76	92	112	22	33	75	9	21	-43
Water Year Types[c]												
Wet (32%)	27	29	74	129	105	124	-4	-14	37	-9	-27	-189
Above Normal (16%)	33	4	33	78	152	201	53	76	123	15	-18	-77
Below Normal (13%)	25	45	11	86	134	135	53	116	141	-4	-7	30
Dry (24%)	52	69	58	31	55	83	27	27	64	15	90	63
Critical (15%)	61	44	40	28	19	13	8	23	60	44	76	66

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-2. SWP Total Generation, Monthly Generation

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	501	396	434	660	675	759	602	704	535	712	619	662
20%	429	355	376	261	551	569	419	532	483	691	605	621
30%	408	328	300	190	238	425	361	443	470	677	581	593
40%	388	311	282	171	169	299	337	411	439	662	553	534
50%	340	285	270	139	131	161	315	380	413	645	518	486
60%	302	255	246	94	110	114	247	329	398	579	481	374
70%	228	199	200	59	72	88	185	272	382	497	374	304
80%	197	158	156	44	55	63	126	247	344	407	295	256
90%	124	85	87	36	45	47	99	207	277	231	195	170
Long Term												
Full Simulation Period[b]	321	272	275	208	245	298	313	408	414	556	458	438
Water Year Types[c]												
Wet (32%)	378	342	347	414	506	592	521	622	487	647	551	630
Above Normal (16%)	290	261	276	172	217	370	331	410	443	697	606	556
Below Normal (13%)	383	295	294	141	138	156	260	343	417	633	516	388
Dry (24%)	294	223	226	96	92	81	183	300	402	483	366	313
Critical (15%)	220	191	182	52	60	72	108	184	243	256	199	145

Alternative 3

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	484	425	486	779	741	795	601	682	597	727	623	493
20%	461	400	385	335	617	641	425	578	567	714	592	474
30%	434	382	356	238	357	550	395	499	534	698	570	448
40%	401	354	317	207	268	435	343	454	513	678	539	408
50%	384	333	295	189	187	293	328	419	496	656	509	391
60%	346	301	280	166	156	196	313	382	475	615	470	375
70%	275	261	257	79	120	114	242	346	448	520	416	344
80%	209	187	189	44	69	88	131	247	381	424	363	286
90%	129	91	131	35	46	49	111	216	295	264	217	176
Long Term												
Full Simulation Period[b]	339	305	313	258	303	367	333	437	476	571	468	368
Water Year Types[c]												
Wet (32%)	398	375	421	507	583	682	514	616	543	659	534	428
Above Normal (16%)	305	284	310	191	284	497	363	463	532	717	596	467
Below Normal (13%)	397	336	306	198	244	263	330	451	503	664	552	383
Dry (24%)	312	266	246	121	119	99	212	332	460	505	411	348
Critical (15%)	244	213	203	76	79	85	114	184	271	251	205	148

Alternative 3 minus No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-17	29	52	119	66	36	-1	-21	62	15	4	-169
20%	32	45	9	74	65	72	5	46	84	22	-13	-148
30%	26	54	56	48	120	126	34	56	64	21	-11	-145
40%	13	44	34	36	99	136	7	42	74	16	-14	-126
50%	43	47	25	51	56	131	13	39	83	11	-9	-95
60%	44	46	34	72	46	82	66	53	77	36	-11	1
70%	47	62	57	20	47	27	56	74	66	23	42	40
80%	12	29	33	-1	14	25	5	1	37	17	67	30
90%	5	6	44	-1	1	2	12	9	17	33	21	6
Long Term												
Full Simulation Period[b]	18	34	38	50	58	69	20	29	62	16	10	-70
Water Year Types[c]												
Wet (32%)	19	33	73	93	76	89	-7	-6	57	12	-17	-203
Above Normal (16%)	15	23	35	20	67	127	32	53	90	20	-10	-89
Below Normal (13%)	15	41	12	57	106	106	70	108	86	31	36	-5
Dry (24%)	18	43	20	25	27	18	29	31	58	22	45	35
Critical (15%)	24	22	21	24	19	12	5	0	28	-5	6	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-3. SWP Total Generation, Monthly Generation

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	501	396	434	660	675	759	602	704	535	712	619	662
20%	429	355	376	261	551	569	419	532	483	691	605	621
30%	408	328	300	190	238	425	361	443	470	677	581	593
40%	388	311	282	171	169	299	337	411	439	662	553	534
50%	340	285	270	139	131	161	315	380	413	645	518	486
60%	302	255	246	94	110	114	247	329	398	579	481	374
70%	228	199	200	59	72	88	185	272	382	497	374	304
80%	197	158	156	44	55	63	126	247	344	407	295	256
90%	124	85	87	36	45	47	99	207	277	231	195	170
Long Term												
Full Simulation Period[b]	321	272	275	208	245	298	313	408	414	556	458	438
Water Year Types[c]												
Wet (32%)	378	342	347	414	506	592	521	622	487	647	551	630
Above Normal (16%)	290	261	276	172	217	370	331	410	443	697	606	556
Below Normal (13%)	383	295	294	141	138	156	260	343	417	633	516	388
Dry (24%)	294	223	226	96	92	81	183	300	402	483	366	313
Critical (15%)	220	191	182	52	60	72	108	184	243	256	199	145

Alternative 5

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	475	413	406	652	685	727	587	692	517	714	622	651
20%	435	357	365	284	538	573	414	532	484	699	607	622
30%	410	329	300	190	221	448	362	434	464	681	589	590
40%	391	314	278	177	184	301	333	406	435	663	561	535
50%	331	291	267	130	153	168	311	380	412	651	535	491
60%	303	252	254	87	93	116	256	308	400	589	468	391
70%	222	205	218	58	72	89	192	266	376	486	380	302
80%	190	171	163	44	54	62	132	244	353	411	307	254
90%	120	90	96	36	44	47	103	202	259	234	197	159
Long Term												
Full Simulation Period[b]	317	275	274	211	244	297	312	401	409	557	462	436
Water Year Types[c]												
Wet (32%)	372	339	344	426	507	590	510	618	479	645	554	624
Above Normal (16%)	280	264	276	162	215	368	326	404	440	698	607	557
Below Normal (13%)	369	316	281	142	141	160	265	328	412	639	534	393
Dry (24%)	298	227	227	96	93	81	194	288	398	490	370	313
Critical (15%)	219	192	189	51	54	73	108	183	239	249	196	140

Alternative 5 minus No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-26	17	-28	-8	11	-32	-15	-11	-18	2	3	-12
20%	6	1	-11	23	-13	4	-5	0	0	8	2	1
30%	2	1	0	0	-17	23	1	-9	-6	4	8	-4
40%	3	4	-4	6	14	2	-4	-5	-5	1	8	1
50%	-9	5	-3	-9	22	6	-4	0	-2	5	18	5
60%	1	-3	7	-7	-17	2	9	-21	2	10	-13	17
70%	-6	6	18	-1	-1	1	6	-6	-5	-11	6	-3
80%	-7	13	7	0	-1	-1	6	-3	9	4	11	-2
90%	-4	6	9	0	-2	0	3	-5	-18	4	1	-11
Long Term												
Full Simulation Period[b]	-4	4	-2	3	0	-1	-1	-8	-5	1	4	-2
Water Year Types[c]												
Wet (32%)	-6	-2	-3	13	1	-2	-11	-5	-8	-1	3	-7
Above Normal (16%)	-9	3	0	-9	-2	-3	-5	-6	-2	1	1	1
Below Normal (13%)	-14	21	-13	1	2	3	5	-16	-5	6	18	5
Dry (24%)	4	5	1	1	1	0	10	-12	-4	7	3	0
Critical (15%)	0	1	8	-1	-6	1	-1	-1	-5	-7	-3	-5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-4. SWP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	483	422	475	810	779	852	601	673	636	740	638	505
20%	467	401	396	393	640	698	442	603	591	719	590	481
30%	450	379	355	319	468	596	379	542	557	680	554	470
40%	433	356	338	237	298	492	351	453	533	643	510	434
50%	401	338	303	208	239	330	325	410	496	591	488	402
60%	372	315	285	191	201	281	298	363	458	538	452	387
70%	307	227	261	95	168	165	235	324	421	477	428	362
80%	262	193	197	51	95	125	137	267	384	432	401	328
90%	157	155	151	39	39	51	117	223	356	368	299	244
Long Term												
Full Simulation Period[b]	360	311	325	285	336	409	335	441	489	565	479	395
Water Year Types[c]												
Wet (32%)	405	371	422	542	611	716	517	608	524	638	524	442
Above Normal (16%)	323	265	309	250	370	572	384	486	566	712	588	479
Below Normal (13%)	408	340	305	227	272	291	313	460	558	629	509	418
Dry (24%)	346	291	284	127	147	164	210	327	466	498	456	377
Critical (15%)	281	235	222	80	79	85	117	207	304	300	275	210

No Action Alternative

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	501	396	434	660	675	759	602	704	535	712	619	662
20%	429	355	376	261	551	569	419	532	483	691	605	621
30%	408	328	300	190	238	425	361	443	470	677	581	593
40%	388	311	282	171	169	299	337	411	439	662	553	534
50%	340	285	270	139	131	161	315	380	413	645	518	486
60%	302	255	246	94	110	114	247	329	398	579	481	374
70%	228	199	200	59	72	88	185	272	382	497	374	304
80%	197	158	156	44	55	63	126	247	344	407	295	256
90%	124	85	87	36	45	47	99	207	277	231	195	170
Long Term												
Full Simulation Period[b]	321	272	275	208	245	298	313	408	414	556	458	438
Water Year Types[c]												
Wet (32%)	378	342	347	414	506	592	521	622	487	647	551	630
Above Normal (16%)	290	261	276	172	217	370	331	410	443	697	606	556
Below Normal (13%)	383	295	294	141	138	156	260	343	417	633	516	388
Dry (24%)	294	223	226	96	92	81	183	300	402	483	366	313
Critical (15%)	220	191	182	52	60	72	108	184	243	256	199	145

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	18	-26	-40	-150	-104	-93	1	31	-101	-27	-18	158
20%	-38	-46	-20	-132	-89	-130	-23	-72	-108	-28	15	140
30%	-43	-51	-55	-129	-230	-171	-18	-99	-87	-3	27	123
40%	-45	-46	-55	-66	-129	-194	-14	-42	-94	19	43	100
50%	-61	-53	-33	-69	-108	-169	-10	-30	-83	55	30	84
60%	-71	-60	-38	-97	-91	-167	-50	-34	-60	41	29	-13
70%	-79	-28	-62	-36	-96	-77	-49	-52	-39	20	-54	-58
80%	-65	-35	-41	-6	-40	-63	-11	-20	-40	-25	-106	-72
90%	-33	-70	-64	-4	6	-4	-18	-16	-78	-137	-104	-74
Long Term												
Full Simulation Period[b]	-39	-39	-50	-76	-92	-112	-22	-33	-75	-9	-21	43
Water Year Types[c]												
Wet (32%)	-27	-29	-74	-129	-105	-124	4	14	-37	9	27	189
Above Normal (16%)	-33	-4	-33	-78	-152	-201	-53	-76	-123	-15	18	77
Below Normal (13%)	-25	-45	-11	-86	-134	-135	-53	-116	-141	4	7	-30
Dry (24%)	-52	-69	-58	-31	-55	-83	-27	-27	-64	-15	-90	-63
Critical (15%)	-61	-44	-40	-28	-19	-13	-8	-23	-60	-44	-76	-66

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-5. SWP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	483	422	475	810	779	852	601	673	636	740	638	505
20%	467	401	396	393	640	698	442	603	591	719	590	481
30%	450	379	355	319	468	596	379	542	557	680	554	470
40%	433	356	338	237	298	492	351	453	533	643	510	434
50%	401	338	303	208	239	330	325	410	496	591	488	402
60%	372	315	285	191	201	281	298	363	458	538	452	387
70%	307	227	261	95	168	165	235	324	421	477	428	362
80%	262	193	197	51	95	125	137	267	384	432	401	328
90%	157	155	151	39	39	51	117	223	356	368	299	244
Long Term												
Full Simulation Period[b]	360	311	325	285	336	409	335	441	489	565	479	395
Water Year Types[c]												
Wet (32%)	405	371	422	542	611	716	517	608	524	638	524	442
Above Normal (16%)	323	265	309	250	370	572	384	486	566	712	588	479
Below Normal (13%)	408	340	305	227	272	291	313	460	558	629	509	418
Dry (24%)	346	291	284	127	147	164	210	327	466	498	456	377
Critical (15%)	281	235	222	80	79	85	117	207	304	300	275	210

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	484	425	486	779	741	795	601	682	597	727	623	493
20%	461	400	385	335	617	641	425	578	567	714	592	474
30%	434	382	356	238	357	550	395	499	534	698	570	448
40%	401	354	317	207	268	435	343	454	513	678	539	408
50%	384	333	295	189	187	293	328	419	496	656	509	391
60%	346	301	280	166	156	196	313	382	475	615	470	375
70%	275	261	257	79	120	114	242	346	448	520	416	344
80%	209	187	189	44	69	88	131	247	381	424	363	286
90%	129	91	131	35	46	49	111	216	295	264	217	176
Long Term												
Full Simulation Period[b]	339	305	313	258	303	367	333	437	476	571	468	368
Water Year Types[c]												
Wet (32%)	398	375	421	507	583	682	514	616	543	659	534	428
Above Normal (16%)	305	284	310	191	284	497	363	463	532	717	596	467
Below Normal (13%)	397	336	306	198	244	263	330	451	503	664	552	383
Dry (24%)	312	266	246	121	119	99	212	332	460	505	411	348
Critical (15%)	244	213	203	76	79	85	114	184	271	251	205	148

Alternative 3 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly Generation (GWh)											
Probability of Exceedance[a]												
10%	2	3	12	-31	-38	-57	0	10	-40	-13	-15	-12
20%	-6	-2	-11	-59	-24	-58	-18	-25	-24	-6	2	-7
30%	-16	3	0	-82	-110	-46	16	-43	-22	19	16	-22
40%	-32	-2	-21	-29	-30	-58	-7	1	-20	35	28	-26
50%	-18	-6	-8	-18	-52	-37	3	8	0	66	21	-12
60%	-26	-14	-4	-25	-45	-85	16	19	16	77	18	-12
70%	-32	35	-4	-16	-49	-50	7	22	27	43	-13	-18
80%	-52	-7	-8	-7	-26	-38	-6	-20	-2	-8	-39	-42
90%	-28	-64	-20	-4	7	-2	-6	-7	-61	-104	-83	-68
Long Term												
Full Simulation Period[b]	-20	-5	-12	-26	-33	-43	-2	-4	-12	7	-11	-27
Water Year Types[c]												
Wet (32%)	-7	4	-1	-35	-28	-35	-3	8	20	21	10	-14
Above Normal (16%)	-18	19	2	-59	-85	-75	-21	-23	-33	5	8	-12
Below Normal (13%)	-11	-4	1	-29	-28	-29	17	-8	-54	35	43	-35
Dry (24%)	-34	-26	-38	-5	-29	-66	2	5	-6	7	-45	-29
Critical (15%)	-37	-21	-20	-4	0	-1	-3	-23	-32	-49	-70	-63

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-6. SWP Total Generation, Monthly Generation

Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	483	422	475	810	779	852	601	673	636	740	638	505
20%	467	401	396	393	640	698	442	603	591	719	590	481
30%	450	379	355	319	468	596	379	542	557	680	554	470
40%	433	356	338	237	298	492	351	453	533	643	510	434
50%	401	338	303	208	239	330	325	410	496	591	488	402
60%	372	315	285	191	201	281	298	363	458	538	452	387
70%	307	227	261	95	168	165	235	324	421	477	428	362
80%	262	193	197	51	95	125	137	267	384	432	401	328
90%	157	155	151	39	39	51	117	223	356	368	299	244
Long Term												
Full Simulation Period[b]	360	311	325	285	336	409	335	441	489	565	479	395
Water Year Types[c]												
Wet (32%)	405	371	422	542	611	716	517	608	524	638	524	442
Above Normal (16%)	323	265	309	250	370	572	384	486	566	712	588	479
Below Normal (13%)	408	340	305	227	272	291	313	460	558	629	509	418
Dry (24%)	346	291	284	127	147	164	210	327	466	498	456	377
Critical (15%)	281	235	222	80	79	85	117	207	304	300	275	210

Alternative 5

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	475	413	406	652	685	727	587	692	517	714	622	651
20%	435	357	365	284	538	573	414	532	484	699	607	622
30%	410	329	300	190	221	448	362	434	464	681	589	590
40%	391	314	278	177	184	301	333	406	435	663	561	535
50%	331	291	267	130	153	168	311	380	412	651	535	491
60%	303	252	254	87	93	116	256	308	400	589	468	391
70%	222	205	218	58	72	89	192	266	376	486	380	302
80%	190	171	163	44	54	62	132	244	353	411	307	254
90%	120	90	96	36	44	47	103	202	259	234	197	159
Long Term												
Full Simulation Period[b]	317	275	274	211	244	297	312	401	409	557	462	436
Water Year Types[c]												
Wet (32%)	372	339	344	426	507	590	510	618	479	645	554	624
Above Normal (16%)	280	264	276	162	215	368	326	404	440	698	607	557
Below Normal (13%)	369	316	281	142	141	160	265	328	412	639	534	393
Dry (24%)	298	227	227	96	93	81	194	288	398	490	370	313
Critical (15%)	219	192	189	51	54	73	108	183	239	249	196	140

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-8	-9	-68	-158	-94	-125	-14	19	-120	-25	-16	146
20%	-32	-45	-31	-110	-102	-126	-28	-71	-108	-20	17	141
30%	-40	-50	-55	-129	-247	-148	-17	-108	-92	1	35	119
40%	-42	-42	-59	-60	-114	-191	-18	-47	-99	20	51	101
50%	-70	-48	-35	-78	-86	-162	-14	-30	-85	60	47	88
60%	-69	-63	-31	-104	-108	-166	-41	-55	-58	51	16	4
70%	-85	-22	-44	-37	-97	-76	-43	-58	-45	9	-49	-60
80%	-72	-22	-33	-6	-41	-63	-5	-23	-30	-21	-95	-74
90%	-37	-65	-55	-3	5	-4	-14	-21	-97	-133	-102	-85
Long Term												
Full Simulation Period[b]	-43	-35	-52	-74	-92	-112	-23	-41	-80	-8	-17	41
Water Year Types[c]												
Wet (32%)	-33	-31	-77	-116	-104	-126	-7	10	-45	8	30	182
Above Normal (16%)	-42	-1	-33	-87	-154	-204	-58	-82	-125	-14	19	78
Below Normal (13%)	-39	-24	-24	-85	-132	-132	-48	-132	-146	11	26	-25
Dry (24%)	-48	-64	-57	-30	-55	-83	-16	-39	-68	-8	-86	-63
Critical (15%)	-62	-43	-33	-29	-25	-12	-9	-24	-65	-51	-79	-70

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.7. SWP Total Energy Use

Table B-7-1. SWP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,039	953	1,062	785	833	1,001	844	1,019	986	1,124	1,133	1,126
20%	968	879	934	516	639	831	746	883	856	1,062	1,112	1,099
30%	917	836	869	453	501	741	699	814	798	1,017	1,078	1,067
40%	871	769	806	365	405	499	636	769	763	991	1,054	1,003
50%	812	716	759	312	321	304	516	681	736	965	1,038	971
60%	744	587	680	165	290	232	413	495	697	926	991	943
70%	595	497	550	139	166	199	223	416	579	803	804	780
80%	497	443	413	128	129	160	151	403	549	681	641	669
90%	298	270	309	102	82	123	107	285	384	400	402	379
Long Term												
Full Simulation Period[b]	738	657	705	359	397	474	486	644	701	874	900	868
Water Year Types[c]												
Wet (32%)	858	796	802	552	638	810	737	877	866	1,036	1,081	1,048
Above Normal (16%)	693	660	718	366	432	568	595	735	776	993	1,073	1,031
Below Normal (13%)	835	715	806	333	364	398	465	607	704	962	993	943
Dry (24%)	676	556	628	239	224	223	320	507	619	785	765	775
Critical (15%)	541	471	515	156	155	133	121	300	394	463	461	384

Alternative 1

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,148	1,119	1,145	1,102	1,006	1,103	990	1,106	1,055	1,146	1,146	1,140
20%	1,133	1,091	1,078	1,036	976	1,101	956	1,082	1,008	1,131	1,130	1,135
30%	1,101	1,061	1,052	885	954	1,091	908	1,048	981	1,122	1,120	1,124
40%	1,030	999	971	696	921	1,041	848	977	926	1,049	1,029	1,064
50%	983	947	906	628	757	1,012	786	908	863	988	1,011	1,030
60%	890	867	868	474	619	833	715	838	794	945	976	985
70%	740	636	759	320	498	623	418	530	672	861	950	948
80%	599	536	632	279	318	318	239	423	582	765	875	845
90%	488	486	491	181	233	195	147	396	565	704	742	712
Long Term												
Full Simulation Period[b]	871	840	864	625	678	781	652	801	820	951	975	966
Water Year Types[c]												
Wet (32%)	987	969	966	901	936	1,078	902	1,006	946	1,064	1,075	1,079
Above Normal (16%)	793	746	867	710	824	1,045	910	1,039	973	1,094	1,102	1,103
Below Normal (13%)	981	941	914	698	681	824	700	888	893	1,032	1,034	1,035
Dry (24%)	827	807	815	400	489	540	437	590	702	875	932	934
Critical (15%)	679	627	676	248	271	216	145	371	510	600	640	564

Alternative 1 minus No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	108	167	83	317	173	102	146	87	70	22	13	14
20%	165	211	144	520	337	270	210	199	152	69	18	36
30%	183	225	183	432	453	350	209	234	183	105	41	57
40%	158	229	165	331	516	542	212	208	163	57	-25	60
50%	170	231	147	316	436	708	270	227	127	23	-27	59
60%	147	280	188	309	330	601	302	343	97	19	-15	42
70%	145	138	209	181	331	424	194	114	92	58	146	168
80%	102	93	219	151	189	158	88	20	33	84	234	176
90%	190	215	183	79	150	72	40	111	181	304	340	332
Long Term												
Full Simulation Period[b]	134	183	159	267	281	307	166	157	119	76	75	99
Water Year Types[c]												
Wet (32%)	130	172	164	348	298	268	165	129	79	28	-5	31
Above Normal (16%)	100	86	149	344	393	477	315	304	197	102	29	71
Below Normal (13%)	145	226	108	365	317	426	234	282	188	69	41	92
Dry (24%)	151	251	187	161	265	317	117	83	83	90	166	159
Critical (15%)	139	157	160	92	116	83	24	70	116	137	179	180

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-2. SWP Total Energy Use, Monthly Energy Use

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,039	953	1,062	785	833	1,001	844	1,019	986	1,124	1,133	1,126
20%	968	879	934	516	639	831	746	883	856	1,062	1,112	1,099
30%	917	836	869	453	501	741	699	814	798	1,017	1,078	1,067
40%	871	769	806	365	405	499	636	769	763	991	1,054	1,003
50%	812	716	759	312	321	304	516	681	736	965	1,038	971
60%	744	587	680	165	290	232	413	495	697	926	991	943
70%	595	497	550	139	166	199	223	416	579	803	804	780
80%	497	443	413	128	129	160	151	403	549	681	641	669
90%	298	270	309	102	82	123	107	285	384	400	402	379
Long Term												
Full Simulation Period[b]	738	657	705	359	397	474	486	644	701	874	900	868
Water Year Types[c]												
Wet (32%)	858	796	802	552	638	810	737	877	866	1,036	1,081	1,048
Above Normal (16%)	693	660	718	366	432	568	595	735	776	993	1,073	1,031
Below Normal (13%)	835	715	806	333	364	398	465	607	704	962	993	943
Dry (24%)	676	556	628	239	224	223	320	507	619	785	765	775
Critical (15%)	541	471	515	156	155	133	121	300	394	463	461	384

Alternative 3

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,138	1,105	1,067	983	981	1,101	942	1,098	1,018	1,137	1,130	1,135
20%	1,091	1,087	1,029	857	895	1,093	910	1,047	970	1,124	1,118	1,126
30%	1,052	1,047	986	585	804	995	873	999	920	1,101	1,089	1,096
40%	1,026	1,006	956	513	633	871	845	952	891	1,063	1,066	1,065
50%	974	932	887	470	513	780	774	882	834	1,018	1,049	1,030
60%	883	856	830	416	438	520	727	831	796	981	1,018	983
70%	700	700	694	170	338	276	423	542	705	926	992	925
80%	523	518	581	134	160	199	196	423	590	741	760	764
90%	282	333	376	111	108	142	136	323	438	426	454	425
Long Term												
Full Simulation Period[b]	831	817	798	482	541	653	643	780	785	926	940	919
Water Year Types[c]												
Wet (32%)	975	971	902	754	855	1,037	896	1,014	948	1,084	1,091	1,087
Above Normal (16%)	756	797	844	444	603	863	838	966	894	1,063	1,086	1,074
Below Normal (13%)	961	921	891	499	529	719	730	879	837	1,026	1,056	993
Dry (24%)	764	733	706	308	299	281	444	587	696	859	865	877
Critical (15%)	592	551	593	212	207	156	135	300	415	456	475	393

Alternative 3 minus No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	99	152	5	197	148	100	98	79	32	14	-3	10
20%	123	208	95	341	257	262	164	165	114	62	6	27
30%	135	211	117	133	303	254	175	186	121	84	10	29
40%	154	236	150	148	228	372	209	184	128	71	12	62
50%	162	216	128	159	192	476	258	201	98	53	10	59
60%	139	268	149	251	148	288	314	336	100	55	27	41
70%	105	202	144	30	172	77	200	126	126	123	189	145
80%	26	75	168	5	31	39	45	20	41	60	119	95
90%	-16	62	67	9	26	19	28	38	53	26	52	45
Long Term												
Full Simulation Period[b]	93	159	94	124	144	179	157	136	84	52	40	52
Water Year Types[c]												
Wet (32%)	117	175	101	201	217	227	159	137	81	48	11	39
Above Normal (16%)	63	136	127	78	172	295	243	232	119	70	13	42
Below Normal (13%)	126	206	85	166	165	322	265	273	133	63	63	49
Dry (24%)	88	177	78	70	75	58	124	79	77	74	100	101
Critical (15%)	51	80	77	56	52	23	14	-1	21	-8	14	10

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-3. SWP Total Energy Use, Monthly Energy Use

No Action Alternative

	Monthly Energy Use (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,039	953	1,062	785	833	1,001	844	1,019	986	1,124	1,133	1,126
20%	968	879	934	516	639	831	746	883	856	1,062	1,112	1,099
30%	917	836	869	453	501	741	699	814	798	1,017	1,078	1,067
40%	871	769	806	365	405	499	636	769	763	991	1,054	1,003
50%	812	716	759	312	321	304	516	681	736	965	1,038	971
60%	744	587	680	165	290	232	413	495	697	926	991	943
70%	595	497	550	139	166	199	223	416	579	803	804	780
80%	497	443	413	128	129	160	151	403	549	681	641	669
90%	298	270	309	102	82	123	107	285	384	400	402	379
Long Term												
Full Simulation Period[b]	738	657	705	359	397	474	486	644	701	874	900	868
Water Year Types[c]												
Wet (32%)	858	796	802	552	638	810	737	877	866	1,036	1,081	1,048
Above Normal (16%)	693	660	718	366	432	568	595	735	776	993	1,073	1,031
Below Normal (13%)	835	715	806	333	364	398	465	607	704	962	993	943
Dry (24%)	676	556	628	239	224	223	320	507	619	785	765	775
Critical (15%)	541	471	515	156	155	133	121	300	394	463	461	384

Alternative 5

	Monthly Energy Use (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	995	932	982	856	881	1,018	786	943	905	1,082	1,137	1,112
20%	950	869	887	518	621	830	726	846	833	1,043	1,101	1,081
30%	910	847	840	461	541	702	681	809	789	1,024	1,075	1,049
40%	875	787	795	390	425	519	626	769	765	990	1,052	1,005
50%	828	723	768	279	341	316	484	638	731	974	1,036	980
60%	750	654	708	168	218	237	423	518	704	926	1,000	915
70%	590	518	542	140	172	197	270	399	579	839	809	782
80%	449	457	433	130	133	155	118	380	545	700	637	655
90%	317	265	315	102	80	123	91	261	351	405	381	395
Long Term												
Full Simulation Period[b]	726	668	696	366	396	473	468	622	690	869	900	861
Water Year Types[c]												
Wet (32%)	845	802	792	588	638	799	703	857	847	1,023	1,074	1,035
Above Normal (16%)	665	651	714	342	436	572	579	719	772	994	1,074	1,033
Below Normal (13%)	796	770	767	334	372	407	456	572	697	970	1,017	952
Dry (24%)	683	568	621	240	225	224	313	482	612	788	769	772
Critical (15%)	543	472	529	152	136	132	105	285	385	445	446	365

Alternative 5 minus No Action Alternative

	Monthly Energy Use (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-44	-21	-80	71	48	17	-58	-76	-81	-42	4	-14
20%	-18	-11	-47	1	-17	-1	-20	-37	-23	-19	-11	-18
30%	-7	11	-30	9	40	-39	-17	-5	-9	7	-4	-18
40%	4	17	-11	25	20	19	-10	1	2	-2	-2	2
50%	15	6	9	-33	20	12	-32	-43	-5	9	-3	9
60%	6	66	28	3	-72	4	10	23	7	0	9	-28
70%	-5	21	-8	0	5	-2	47	-17	0	35	6	2
80%	-48	15	20	1	5	-5	-33	-23	-4	19	-4	-13
90%	19	-5	6	0	-2	0	-16	-24	-33	5	-21	15
Long Term												
Full Simulation Period[b]	-12	11	-9	8	-1	-1	-19	-22	-11	-5	0	-6
Water Year Types[c]												
Wet (32%)	-13	6	-9	36	0	-10	-34	-20	-20	-13	-7	-13
Above Normal (16%)	-27	-9	-4	-24	4	3	-16	-16	-4	1	1	1
Below Normal (13%)	-39	55	-39	1	8	9	-9	-34	-7	8	25	8
Dry (24%)	7	12	-7	2	1	1	-7	-25	-7	3	3	-3
Critical (15%)	2	1	13	-3	-19	0	-16	-15	-9	-19	-15	-19

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-4. SWP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,148	1,119	1,145	1,102	1,006	1,103	990	1,106	1,055	1,146	1,146	1,140
20%	1,133	1,091	1,078	1,036	976	1,101	956	1,082	1,008	1,131	1,130	1,135
30%	1,101	1,061	1,052	885	954	1,091	908	1,048	981	1,122	1,120	1,124
40%	1,030	999	971	696	921	1,041	848	977	926	1,049	1,029	1,064
50%	983	947	906	628	757	1,012	786	908	863	988	1,011	1,030
60%	890	867	868	474	619	833	715	838	794	945	976	985
70%	740	636	759	320	498	623	418	530	672	861	950	948
80%	599	536	632	279	318	318	239	423	582	765	875	845
90%	488	486	491	181	233	195	147	396	565	704	742	712
Long Term												
Full Simulation Period[b]	871	840	864	625	678	781	652	801	820	951	975	966
Water Year Types[c]												
Wet (32%)	987	969	966	901	936	1,078	902	1,006	946	1,064	1,075	1,079
Above Normal (16%)	793	746	867	710	824	1,045	910	1,039	973	1,094	1,102	1,103
Below Normal (13%)	981	941	914	698	681	824	700	888	893	1,032	1,034	1,035
Dry (24%)	827	807	815	400	489	540	437	590	702	875	932	934
Critical (15%)	679	627	676	248	271	216	145	371	510	600	640	564

No Action Alternative

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,039	953	1,062	785	833	1,001	844	1,019	986	1,124	1,133	1,126
20%	968	879	934	516	639	831	746	883	856	1,062	1,112	1,099
30%	917	836	869	453	501	741	699	814	798	1,017	1,078	1,067
40%	871	769	806	365	405	499	636	769	763	991	1,054	1,003
50%	812	716	759	312	321	304	516	681	736	965	1,038	971
60%	744	587	680	165	290	232	413	495	697	926	991	943
70%	595	497	550	139	166	199	223	416	579	803	804	780
80%	497	443	413	128	129	160	151	403	549	681	641	669
90%	298	270	309	102	82	123	107	285	384	400	402	379
Long Term												
Full Simulation Period[b]	738	657	705	359	397	474	486	644	701	874	900	868
Water Year Types[c]												
Wet (32%)	858	796	802	552	638	810	737	877	866	1,036	1,081	1,048
Above Normal (16%)	693	660	718	366	432	568	595	735	776	993	1,073	1,031
Below Normal (13%)	835	715	806	333	364	398	465	607	704	962	993	943
Dry (24%)	676	556	628	239	224	223	320	507	619	785	765	775
Critical (15%)	541	471	515	156	155	133	121	300	394	463	461	384

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-108	-167	-83	-317	-173	-102	-146	-87	-70	-22	-13	-14
20%	-165	-211	-144	-520	-337	-270	-210	-199	-152	-69	-18	-36
30%	-183	-225	-183	-432	-453	-350	-209	-234	-183	-105	-41	-57
40%	-158	-229	-165	-331	-516	-542	-212	-208	-163	-57	25	-60
50%	-170	-231	-147	-316	-436	-708	-270	-227	-127	-23	27	-59
60%	-147	-280	-188	-309	-330	-601	-302	-343	-97	-19	15	-42
70%	-145	-138	-209	-181	-331	-424	-194	-114	-92	-58	-146	-168
80%	-102	-93	-219	-151	-189	-158	-88	-20	-33	-84	-234	-176
90%	-190	-215	-183	-79	-150	-72	-40	-111	-181	-304	-340	-332
Long Term												
Full Simulation Period[b]	-134	-183	-159	-267	-281	-307	-166	-157	-119	-76	-75	-99
Water Year Types[c]												
Wet (32%)	-130	-172	-164	-348	-298	-268	-165	-129	-79	-28	5	-31
Above Normal (16%)	-100	-86	-149	-344	-393	-477	-315	-304	-197	-102	-29	-71
Below Normal (13%)	-145	-226	-108	-365	-317	-426	-234	-282	-188	-69	-41	-92
Dry (24%)	-151	-251	-187	-161	-265	-317	-117	-83	-83	-90	-166	-159
Critical (15%)	-139	-157	-160	-92	-116	-83	-24	-70	-116	-137	-179	-180

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-5. SWP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,148	1,119	1,145	1,102	1,006	1,103	990	1,106	1,055	1,146	1,146	1,140
20%	1,133	1,091	1,078	1,036	976	1,101	956	1,082	1,008	1,131	1,130	1,135
30%	1,101	1,061	1,052	885	954	1,091	908	1,048	981	1,122	1,120	1,124
40%	1,030	999	971	696	921	1,041	848	977	926	1,049	1,029	1,064
50%	983	947	906	628	757	1,012	786	908	863	988	1,011	1,030
60%	890	867	868	474	619	833	715	838	794	945	976	985
70%	740	636	759	320	498	623	418	530	672	861	950	948
80%	599	536	632	279	318	318	239	423	582	765	875	845
90%	488	486	491	181	233	195	147	396	565	704	742	712
Long Term												
Full Simulation Period[b]	871	840	864	625	678	781	652	801	820	951	975	966
Water Year Types[c]												
Wet (32%)	987	969	966	901	936	1,078	902	1,006	946	1,064	1,075	1,079
Above Normal (16%)	793	746	867	710	824	1,045	910	1,039	973	1,094	1,102	1,103
Below Normal (13%)	981	941	914	698	681	824	700	888	893	1,032	1,034	1,035
Dry (24%)	827	807	815	400	489	540	437	590	702	875	932	934
Critical (15%)	679	627	676	248	271	216	145	371	510	600	640	564

Alternative 3

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,138	1,105	1,067	983	981	1,101	942	1,098	1,018	1,137	1,130	1,135
20%	1,091	1,087	1,029	857	895	1,093	910	1,047	970	1,124	1,118	1,126
30%	1,052	1,047	986	585	804	995	873	999	920	1,101	1,089	1,096
40%	1,026	1,006	956	513	633	871	845	952	891	1,063	1,066	1,065
50%	974	932	887	470	513	780	774	882	834	1,018	1,049	1,030
60%	883	856	830	416	438	520	727	831	796	981	1,018	983
70%	700	700	694	170	338	276	423	542	705	926	992	925
80%	523	518	581	134	160	199	196	423	590	741	760	764
90%	282	333	376	111	108	142	136	323	438	426	454	425
Long Term												
Full Simulation Period[b]	831	817	798	482	541	653	643	780	785	926	940	919
Water Year Types[c]												
Wet (32%)	975	971	902	754	855	1,037	896	1,014	948	1,084	1,091	1,087
Above Normal (16%)	756	797	844	444	603	863	838	966	894	1,063	1,086	1,074
Below Normal (13%)	961	921	891	499	529	719	730	879	837	1,026	1,056	993
Dry (24%)	764	733	706	308	299	281	444	587	696	859	865	877
Critical (15%)	592	551	593	212	207	156	135	300	415	456	475	393

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Energy Use (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-10	-14	-78	-120	-26	-2	-48	-9	-38	-9	-16	-4
20%	-42	-4	-50	-179	-80	-8	-46	-35	-38	-7	-12	-9
30%	-48	-14	-67	-299	-150	-95	-35	-48	-61	-21	-31	-28
40%	-4	7	-15	-183	-288	-170	-3	-25	-35	14	37	2
50%	-8	-15	-20	-157	-244	-233	-11	-26	-29	30	37	0
60%	-7	-11	-38	-58	-182	-313	12	-7	3	35	42	-2
70%	-40	64	-65	-151	-159	-347	5	12	33	65	43	-23
80%	-77	-18	-51	-145	-157	-119	-43	0	8	-24	-115	-81
90%	-206	-153	-115	-70	-124	-53	-11	-73	-127	-277	-289	-287
Long Term												
Full Simulation Period[b]	-41	-23	-66	-143	-137	-128	-9	-21	-35	-24	-35	-47
Water Year Types[c]												
Wet (32%)	-12	3	-64	-147	-81	-41	-7	8	2	21	16	7
Above Normal (16%)	-37	51	-23	-266	-221	-182	-72	-72	-79	-31	-16	-29
Below Normal (13%)	-20	-20	-23	-199	-152	-104	30	-9	-56	-6	22	-43
Dry (24%)	-63	-74	-109	-91	-190	-259	7	-4	-6	-16	-66	-57
Critical (15%)	-88	-77	-83	-36	-64	-60	-10	-71	-95	-145	-165	-171

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-6. SWP Total Energy Use, Monthly Energy Use

Second Basis of Comparison

	Monthly Energy Use (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	1,148	1,119	1,145	1,102	1,006	1,103	990	1,106	1,055	1,146	1,146	1,140
20%	1,133	1,091	1,078	1,036	976	1,101	956	1,082	1,008	1,131	1,130	1,135
30%	1,101	1,061	1,052	885	954	1,091	908	1,048	981	1,122	1,120	1,124
40%	1,030	999	971	696	921	1,041	848	977	926	1,049	1,029	1,064
50%	983	947	906	628	757	1,012	786	908	863	988	1,011	1,030
60%	890	867	868	474	619	833	715	838	794	945	976	985
70%	740	636	759	320	498	623	418	530	672	861	950	948
80%	599	536	632	279	318	318	239	423	582	765	875	845
90%	488	486	491	181	233	195	147	396	565	704	742	712
Long Term												
Full Simulation Period[b]	871	840	864	625	678	781	652	801	820	951	975	966
Water Year Types[c]												
Wet (32%)	987	969	966	901	936	1,078	902	1,006	946	1,064	1,075	1,079
Above Normal (16%)	793	746	867	710	824	1,045	910	1,039	973	1,094	1,102	1,103
Below Normal (13%)	981	941	914	698	681	824	700	888	893	1,032	1,034	1,035
Dry (24%)	827	807	815	400	489	540	437	590	702	875	932	934
Critical (15%)	679	627	676	248	271	216	145	371	510	600	640	564

Alternative 5

	Monthly Energy Use (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	995	932	982	856	881	1,018	786	943	905	1,082	1,137	1,112
20%	950	869	887	518	621	830	726	846	833	1,043	1,101	1,081
30%	910	847	840	461	541	702	681	809	789	1,024	1,075	1,049
40%	875	787	795	390	425	519	626	769	765	990	1,052	1,005
50%	828	723	768	279	341	316	484	638	731	974	1,036	980
60%	750	654	708	168	218	237	423	518	704	926	1,000	915
70%	590	518	542	140	172	197	270	399	579	839	809	782
80%	449	457	433	130	133	155	118	380	545	700	637	655
90%	317	265	315	102	80	123	91	261	351	405	381	395
Long Term												
Full Simulation Period[b]	726	668	696	366	396	473	468	622	690	869	900	861
Water Year Types[c]												
Wet (32%)	845	802	792	588	638	799	703	857	847	1,023	1,074	1,035
Above Normal (16%)	665	651	714	342	436	572	579	719	772	994	1,074	1,033
Below Normal (13%)	796	770	767	334	372	407	456	572	697	970	1,017	952
Dry (24%)	683	568	621	240	225	224	313	482	612	788	769	772
Critical (15%)	543	472	529	152	136	132	105	285	385	445	446	365

Alternative 5 minus Second Basis of Comparison

	Monthly Energy Use (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-153	-187	-163	-246	-126	-85	-204	-164	-151	-64	-9	-28
20%	-182	-222	-191	-519	-355	-270	-230	-237	-175	-88	-29	-54
30%	-190	-214	-213	-424	-413	-389	-227	-239	-192	-98	-45	-75
40%	-155	-212	-175	-306	-496	-523	-222	-208	-160	-59	22	-58
50%	-155	-224	-139	-349	-416	-696	-302	-269	-131	-14	25	-49
60%	-140	-213	-160	-306	-402	-597	-292	-320	-90	-19	24	-70
70%	-150	-117	-217	-181	-326	-426	-147	-131	-92	-22	-140	-165
80%	-150	-79	-200	-149	-184	-163	-121	-44	-37	-65	-238	-190
90%	-171	-220	-177	-79	-152	-72	-55	-135	-214	-298	-362	-317
Long Term												
Full Simulation Period[b]	-145	-172	-168	-259	-282	-308	-184	-179	-130	-81	-75	-105
Water Year Types[c]												
Wet (32%)	-143	-167	-174	-312	-298	-278	-199	-149	-99	-41	-2	-44
Above Normal (16%)	-127	-95	-153	-368	-388	-473	-331	-320	-201	-100	-27	-70
Below Normal (13%)	-185	-172	-146	-364	-309	-416	-244	-316	-195	-62	-16	-84
Dry (24%)	-144	-239	-194	-159	-264	-315	-124	-108	-90	-87	-163	-162
Critical (15%)	-137	-155	-147	-95	-135	-84	-40	-86	-125	-155	-194	-199

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

B.8. SWP Net Energy Generation

Table B-8-1. SWP Net Generation, Monthly Net Generation

No Action Alternative

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-174	-168	-177	-9	6	-11	8	-82	-120	-197	-242	-253
20%	-291	-247	-254	-55	-36	-53	-34	-109	-183	-235	-325	-333
30%	-352	-294	-338	-67	-68	-82	-58	-145	-217	-252	-402	-392
40%	-400	-345	-422	-88	-103	-104	-86	-166	-254	-281	-435	-413
50%	-450	-382	-463	-115	-134	-131	-133	-193	-284	-297	-474	-437
60%	-476	-451	-498	-187	-180	-157	-222	-254	-311	-321	-494	-454
70%	-506	-497	-535	-221	-221	-193	-293	-333	-343	-360	-514	-496
80%	-540	-541	-592	-260	-292	-353	-341	-394	-377	-405	-539	-523
90%	-591	-561	-620	-312	-367	-452	-387	-420	-448	-456	-577	-618
Long Term												
Full Simulation Period[b]	-417	-386	-430	-150	-152	-176	-173	-235	-287	-318	-442	-430
Water Year Types[c]												
Wet (32%)	-479	-454	-454	-138	-132	-217	-216	-255	-380	-389	-530	-417
Above Normal (16%)	-403	-400	-442	-194	-214	-198	-264	-325	-333	-296	-467	-476
Below Normal (13%)	-453	-420	-512	-191	-225	-241	-205	-263	-287	-330	-477	-555
Dry (24%)	-381	-333	-402	-143	-132	-142	-137	-207	-217	-302	-399	-462
Critical (15%)	-321	-280	-333	-104	-95	-60	-13	-117	-151	-207	-263	-239

Alternative 1

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-326	-290	-313	-118	-84	-102	-35	-139	-185	-301	-403	-450
20%	-347	-349	-388	-161	-139	-162	-79	-167	-220	-315	-447	-496
30%	-414	-427	-450	-230	-244	-224	-142	-201	-238	-341	-484	-529
40%	-498	-521	-513	-252	-284	-311	-259	-304	-267	-367	-500	-569
50%	-571	-587	-579	-274	-336	-392	-339	-374	-315	-382	-509	-603
60%	-602	-632	-616	-354	-376	-445	-409	-415	-361	-399	-516	-615
70%	-630	-663	-640	-443	-452	-510	-486	-471	-399	-414	-533	-635
80%	-664	-686	-685	-503	-525	-550	-537	-529	-433	-430	-554	-661
90%	-680	-711	-738	-695	-603	-655	-572	-572	-526	-458	-584	-690
Long Term												
Full Simulation Period[b]	-512	-530	-539	-341	-341	-372	-317	-360	-331	-386	-496	-572
Water Year Types[c]												
Wet (32%)	-582	-598	-544	-358	-325	-362	-385	-398	-422	-426	-551	-638
Above Normal (16%)	-470	-481	-558	-460	-455	-473	-526	-553	-407	-382	-514	-624
Below Normal (13%)	-573	-601	-609	-470	-409	-532	-387	-429	-335	-403	-525	-617
Dry (24%)	-481	-516	-531	-273	-341	-375	-227	-263	-236	-378	-476	-557
Critical (15%)	-398	-393	-453	-168	-192	-131	-28	-164	-207	-300	-366	-354

Alternative 1 minus No Action Alternative

	Monthly Net Generation (GWh)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-151	-122	-136	-109	-90	-90	-42	-57	-64	-104	-160	-197
20%	-56	-102	-134	-106	-103	-110	-46	-58	-36	-80	-122	-163
30%	-63	-134	-112	-163	-176	-141	-84	-57	-21	-89	-82	-137
40%	-97	-176	-91	-165	-181	-207	-173	-138	-13	-86	-65	-156
50%	-121	-205	-116	-159	-202	-261	-206	-181	-31	-85	-35	-166
60%	-127	-181	-118	-167	-196	-288	-187	-161	-49	-78	-22	-161
70%	-124	-166	-105	-222	-231	-317	-193	-138	-56	-54	-18	-139
80%	-124	-145	-93	-243	-233	-197	-196	-135	-56	-25	-15	-137
90%	-89	-151	-118	-383	-236	-203	-185	-152	-78	-2	-7	-71
Long Term												
Full Simulation Period[b]	-95	-144	-109	-190	-189	-195	-144	-124	-44	-67	-54	-142
Water Year Types[c]												
Wet (32%)	-103	-143	-90	-220	-193	-144	-169	-143	-42	-37	-21	-220
Above Normal (16%)	-67	-82	-116	-265	-240	-275	-261	-228	-74	-87	-47	-149
Below Normal (13%)	-120	-181	-97	-279	-183	-291	-182	-165	-48	-74	-48	-62
Dry (24%)	-99	-183	-130	-130	-210	-233	-90	-56	-19	-76	-77	-95
Critical (15%)	-77	-113	-120	-64	-97	-70	-16	-48	-56	-93	-103	-115

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-2. SWP Net Generation, Monthly Net Generation

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-174	-168	-177	-9	6	-11	8	-82	-120	-197	-242	-253
20%	-291	-247	-254	-55	-36	-53	-34	-109	-183	-235	-325	-333
30%	-352	-294	-338	-67	-68	-82	-58	-145	-217	-252	-402	-392
40%	-400	-345	-422	-88	-103	-104	-86	-166	-254	-281	-435	-413
50%	-450	-382	-463	-115	-134	-131	-133	-193	-284	-297	-474	-437
60%	-476	-451	-498	-187	-180	-157	-222	-254	-311	-321	-494	-454
70%	-506	-497	-535	-221	-221	-193	-293	-333	-343	-360	-514	-496
80%	-540	-541	-592	-260	-292	-353	-341	-394	-377	-405	-539	-523
90%	-591	-561	-620	-312	-367	-452	-387	-420	-448	-456	-577	-618
Long Term												
Full Simulation Period[b]	-417	-386	-430	-150	-152	-176	-173	-235	-287	-318	-442	-430
Water Year Types[c]												
Wet (32%)	-479	-454	-454	-138	-132	-217	-216	-255	-380	-389	-530	-417
Above Normal (16%)	-403	-400	-442	-194	-214	-198	-264	-325	-333	-296	-467	-476
Below Normal (13%)	-453	-420	-512	-191	-225	-241	-205	-263	-287	-330	-477	-555
Dry (24%)	-381	-333	-402	-143	-132	-142	-137	-207	-217	-302	-399	-462
Critical (15%)	-321	-280	-333	-104	-95	-60	-13	-117	-151	-207	-263	-239

Alternative 3

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-171	-220	-216	-62	-33	-52	-26	-98	-147	-201	-261	-257
20%	-302	-317	-305	-74	-72	-84	-65	-142	-203	-265	-385	-465
30%	-425	-427	-414	-100	-116	-142	-129	-186	-229	-308	-458	-532
40%	-524	-540	-480	-132	-174	-176	-262	-286	-282	-333	-487	-582
50%	-566	-574	-539	-211	-230	-256	-353	-372	-307	-362	-504	-605
60%	-589	-627	-590	-246	-273	-354	-419	-423	-327	-387	-515	-628
70%	-628	-655	-620	-285	-323	-411	-463	-453	-357	-404	-544	-646
80%	-661	-680	-643	-316	-391	-481	-509	-501	-422	-431	-561	-666
90%	-675	-703	-678	-475	-492	-540	-555	-578	-506	-453	-583	-702
Long Term												
Full Simulation Period[b]	-491	-512	-485	-224	-238	-287	-310	-342	-309	-355	-472	-552
Water Year Types[c]												
Wet (32%)	-577	-596	-482	-246	-272	-355	-382	-398	-405	-426	-557	-659
Above Normal (16%)	-451	-512	-534	-253	-319	-366	-474	-503	-362	-346	-490	-607
Below Normal (13%)	-564	-585	-585	-301	-285	-457	-400	-428	-334	-362	-504	-609
Dry (24%)	-452	-467	-460	-187	-180	-182	-232	-255	-236	-354	-454	-529
Critical (15%)	-348	-337	-390	-136	-128	-71	-22	-116	-144	-205	-271	-246

Alternative 3 minus No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	3	-52	-39	-52	-39	-41	-34	-16	-27	-3	-18	-4
20%	-11	-70	-51	-18	-37	-31	-31	-33	-20	-31	-60	-132
30%	-73	-133	-76	-33	-48	-60	-71	-41	-12	-57	-56	-140
40%	-124	-195	-58	-45	-71	-72	-176	-120	-29	-52	-52	-169
50%	-115	-191	-76	-96	-95	-125	-220	-179	-23	-65	-30	-167
60%	-113	-176	-92	-59	-93	-196	-197	-169	-15	-66	-22	-175
70%	-122	-158	-85	-63	-102	-218	-170	-120	-14	-44	-30	-150
80%	-120	-139	-51	-56	-99	-128	-168	-108	-45	-27	-23	-142
90%	-83	-142	-57	-164	-126	-88	-168	-158	-58	3	-6	-84
Long Term												
Full Simulation Period[b]	-75	-126	-56	-74	-86	-111	-136	-107	-22	-36	-31	-122
Water Year Types[c]												
Wet (32%)	-98	-142	-27	-108	-140	-138	-165	-143	-25	-37	-27	-241
Above Normal (16%)	-48	-113	-92	-58	-105	-168	-210	-179	-29	-50	-22	-131
Below Normal (13%)	-111	-165	-73	-110	-60	-216	-195	-165	-47	-32	-27	-54
Dry (24%)	-71	-134	-58	-44	-49	-40	-95	-48	-19	-52	-56	-67
Critical (15%)	-27	-57	-56	-32	-33	-11	-9	1	7	2	-8	-7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-3. SWP Net Generation, Monthly Net Generation

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-174	-168	-177	-9	6	-11	8	-82	-120	-197	-242	-253
20%	-291	-247	-254	-55	-36	-53	-34	-109	-183	-235	-325	-333
30%	-352	-294	-338	-67	-68	-82	-58	-145	-217	-252	-402	-392
40%	-400	-345	-422	-88	-103	-104	-86	-166	-254	-281	-435	-413
50%	-450	-382	-463	-115	-134	-131	-133	-193	-284	-297	-474	-437
60%	-476	-451	-498	-187	-180	-157	-222	-254	-311	-321	-494	-454
70%	-506	-497	-535	-221	-221	-193	-293	-333	-343	-360	-514	-496
80%	-540	-541	-592	-260	-292	-353	-341	-394	-377	-405	-539	-523
90%	-591	-561	-620	-312	-367	-452	-387	-420	-448	-456	-577	-618
Long Term												
Full Simulation Period[b]	-417	-386	-430	-150	-152	-176	-173	-235	-287	-318	-442	-430
Water Year Types[c]												
Wet (32%)	-479	-454	-454	-138	-132	-217	-216	-255	-380	-389	-530	-417
Above Normal (16%)	-403	-400	-442	-194	-214	-198	-264	-325	-333	-296	-467	-476
Below Normal (13%)	-453	-420	-512	-191	-225	-241	-205	-263	-287	-330	-477	-555
Dry (24%)	-381	-333	-402	-143	-132	-142	-137	-207	-217	-302	-399	-462
Critical (15%)	-321	-280	-333	-104	-95	-60	-13	-117	-151	-207	-263	-239

Alternative 5

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-181	-165	-196	-39	6	-25	23	-69	-136	-190	-220	-247
20%	-264	-265	-252	-62	-32	-58	-4	-105	-186	-230	-326	-339
30%	-356	-315	-322	-72	-66	-85	-39	-129	-209	-247	-413	-379
40%	-406	-351	-411	-89	-103	-101	-60	-150	-256	-280	-447	-401
50%	-442	-407	-464	-113	-120	-122	-124	-178	-289	-299	-472	-424
60%	-469	-454	-507	-178	-162	-156	-193	-234	-305	-321	-490	-459
70%	-496	-502	-529	-214	-238	-189	-277	-306	-330	-363	-515	-492
80%	-534	-532	-573	-263	-301	-349	-330	-374	-368	-393	-525	-554
90%	-583	-552	-611	-303	-364	-449	-371	-419	-431	-425	-554	-599
Long Term												
Full Simulation Period[b]	-409	-393	-423	-155	-152	-176	-156	-221	-281	-312	-438	-426
Water Year Types[c]												
Wet (32%)	-472	-462	-448	-162	-131	-210	-194	-239	-368	-377	-520	-411
Above Normal (16%)	-385	-387	-438	-179	-221	-204	-253	-315	-331	-296	-468	-476
Below Normal (13%)	-427	-453	-487	-192	-231	-247	-191	-245	-286	-331	-483	-558
Dry (24%)	-384	-341	-395	-144	-132	-143	-119	-194	-213	-298	-399	-459
Critical (15%)	-324	-281	-339	-102	-81	-59	3	-102	-147	-196	-250	-226

Alternative 5 minus No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-7	3	-19	-30	0	-13	15	12	-16	8	23	7
20%	26	-18	2	-7	4	-5	29	5	-3	4	-1	-5
30%	-4	-21	16	-4	2	-3	18	15	8	4	-11	13
40%	-6	-7	11	-1	0	2	26	15	-3	1	-12	12
50%	9	-25	-2	2	15	9	8	15	-5	-1	2	13
60%	7	-3	-8	9	19	1	29	20	6	0	4	-5
70%	10	-5	6	7	-17	3	16	27	13	-3	0	4
80%	6	8	19	-3	-9	4	11	20	9	12	14	-31
90%	8	9	9	9	2	3	15	1	17	31	24	20
Long Term												
Full Simulation Period[b]	7	-7	7	-5	0	1	17	14	6	6	4	4
Water Year Types[c]												
Wet (32%)	7	-8	6	-24	1	8	23	15	12	12	10	6
Above Normal (16%)	18	12	4	15	-6	-6	11	10	2	0	-1	0
Below Normal (13%)	25	-33	26	0	-5	-6	14	19	2	-1	-6	-3
Dry (24%)	-3	-7	7	-1	-1	-1	18	13	4	4	0	3
Critical (15%)	-3	-1	-6	2	14	1	16	15	4	11	12	14

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-4. SWP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-326	-290	-313	-118	-84	-102	-35	-139	-185	-301	-403	-450
20%	-347	-349	-388	-161	-139	-162	-79	-167	-220	-315	-447	-496
30%	-414	-427	-450	-230	-244	-224	-142	-201	-238	-341	-484	-529
40%	-498	-521	-513	-252	-284	-311	-259	-304	-267	-367	-500	-569
50%	-571	-587	-579	-274	-336	-392	-339	-374	-315	-382	-509	-603
60%	-602	-632	-616	-354	-376	-445	-409	-415	-361	-399	-516	-615
70%	-630	-663	-640	-443	-452	-510	-486	-471	-399	-414	-533	-635
80%	-664	-686	-685	-503	-525	-550	-537	-529	-433	-430	-554	-661
90%	-680	-711	-738	-695	-603	-655	-572	-572	-526	-458	-584	-690
Long Term												
Full Simulation Period[b]	-512	-530	-539	-341	-341	-372	-317	-360	-331	-386	-496	-572
Water Year Types[c]												
Wet (32%)	-582	-598	-544	-358	-325	-362	-385	-398	-422	-426	-551	-638
Above Normal (16%)	-470	-481	-558	-460	-455	-473	-526	-553	-407	-382	-514	-624
Below Normal (13%)	-573	-601	-609	-470	-409	-532	-387	-429	-335	-403	-525	-617
Dry (24%)	-481	-516	-531	-273	-341	-375	-227	-263	-236	-378	-476	-557
Critical (15%)	-398	-393	-453	-168	-192	-131	-28	-164	-207	-300	-366	-354

No Action Alternative

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-174	-168	-177	-9	6	-11	8	-82	-120	-197	-242	-253
20%	-291	-247	-254	-55	-36	-53	-34	-109	-183	-235	-325	-333
30%	-352	-294	-338	-67	-68	-82	-58	-145	-217	-252	-402	-392
40%	-400	-345	-422	-88	-103	-104	-86	-166	-254	-281	-435	-413
50%	-450	-382	-463	-115	-134	-131	-133	-193	-284	-297	-474	-437
60%	-476	-451	-498	-187	-180	-157	-222	-254	-311	-321	-494	-454
70%	-506	-497	-535	-221	-221	-193	-293	-333	-343	-360	-514	-496
80%	-540	-541	-592	-260	-292	-353	-341	-394	-377	-405	-539	-523
90%	-591	-561	-620	-312	-367	-452	-387	-420	-448	-456	-577	-618
Long Term												
Full Simulation Period[b]	-417	-386	-430	-150	-152	-176	-173	-235	-287	-318	-442	-430
Water Year Types[c]												
Wet (32%)	-479	-454	-454	-138	-132	-217	-216	-255	-380	-389	-530	-417
Above Normal (16%)	-403	-400	-442	-194	-214	-198	-264	-325	-333	-296	-467	-476
Below Normal (13%)	-453	-420	-512	-191	-225	-241	-205	-263	-287	-330	-477	-555
Dry (24%)	-381	-333	-402	-143	-132	-142	-137	-207	-217	-302	-399	-462
Critical (15%)	-321	-280	-333	-104	-95	-60	-13	-117	-151	-207	-263	-239

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	151	122	136	109	90	90	42	57	64	104	160	197
20%	56	102	134	106	103	110	46	58	36	80	122	163
30%	63	134	112	163	176	141	84	57	21	89	82	137
40%	97	176	91	165	181	207	173	138	13	86	65	156
50%	121	205	116	159	202	261	206	181	31	85	35	166
60%	127	181	118	167	196	288	187	161	49	78	22	161
70%	124	166	105	222	231	317	193	138	56	54	18	139
80%	124	145	93	243	233	197	196	135	56	25	15	137
90%	89	151	118	383	236	203	185	152	78	2	7	71
Long Term												
Full Simulation Period[b]	95	144	109	190	189	195	144	124	44	67	54	142
Water Year Types[c]												
Wet (32%)	103	143	90	220	193	144	169	143	42	37	21	220
Above Normal (16%)	67	82	116	265	240	275	261	228	74	87	47	149
Below Normal (13%)	120	181	97	279	183	291	182	165	48	74	48	62
Dry (24%)	99	183	130	130	210	233	90	56	19	76	77	95
Critical (15%)	77	113	120	64	97	70	16	48	56	93	103	115

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-5. SWP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-326	-290	-313	-118	-84	-102	-35	-139	-185	-301	-403	-450
20%	-347	-349	-388	-161	-139	-162	-79	-167	-220	-315	-447	-496
30%	-414	-427	-450	-230	-244	-224	-142	-201	-238	-341	-484	-529
40%	-498	-521	-513	-252	-284	-311	-259	-304	-267	-367	-500	-569
50%	-571	-587	-579	-274	-336	-392	-339	-374	-315	-382	-509	-603
60%	-602	-632	-616	-354	-376	-445	-409	-415	-361	-399	-516	-615
70%	-630	-663	-640	-443	-452	-510	-486	-471	-399	-414	-533	-635
80%	-664	-686	-685	-503	-525	-550	-537	-529	-433	-430	-554	-661
90%	-680	-711	-738	-695	-603	-655	-572	-572	-526	-458	-584	-690
Long Term												
Full Simulation Period[b]	-512	-530	-539	-341	-341	-372	-317	-360	-331	-386	-496	-572
Water Year Types[c]												
Wet (32%)	-582	-598	-544	-358	-325	-362	-385	-398	-422	-426	-551	-638
Above Normal (16%)	-470	-481	-558	-460	-455	-473	-526	-553	-407	-382	-514	-624
Below Normal (13%)	-573	-601	-609	-470	-409	-532	-387	-429	-335	-403	-525	-617
Dry (24%)	-481	-516	-531	-273	-341	-375	-227	-263	-236	-378	-476	-557
Critical (15%)	-398	-393	-453	-168	-192	-131	-28	-164	-207	-300	-366	-354

Alternative 3

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-171	-220	-216	-62	-33	-52	-26	-98	-147	-201	-261	-257
20%	-302	-317	-305	-74	-72	-84	-65	-142	-203	-265	-385	-465
30%	-425	-427	-414	-100	-116	-142	-129	-186	-229	-308	-458	-532
40%	-524	-540	-480	-132	-174	-176	-262	-286	-282	-333	-487	-582
50%	-566	-574	-539	-211	-230	-256	-353	-372	-307	-362	-504	-605
60%	-589	-627	-590	-246	-273	-354	-419	-423	-327	-387	-515	-628
70%	-628	-655	-620	-285	-323	-411	-463	-453	-357	-404	-544	-646
80%	-661	-680	-643	-316	-391	-481	-509	-501	-422	-431	-561	-666
90%	-675	-703	-678	-475	-492	-540	-555	-578	-506	-453	-583	-702
Long Term												
Full Simulation Period[b]	-491	-512	-485	-224	-238	-287	-310	-342	-309	-355	-472	-552
Water Year Types[c]												
Wet (32%)	-577	-596	-482	-246	-272	-355	-382	-398	-405	-426	-557	-659
Above Normal (16%)	-451	-512	-534	-253	-319	-366	-474	-503	-362	-346	-490	-607
Below Normal (13%)	-564	-585	-585	-301	-285	-457	-400	-428	-334	-362	-504	-609
Dry (24%)	-452	-467	-460	-187	-180	-182	-232	-255	-236	-354	-454	-529
Critical (15%)	-348	-337	-390	-136	-128	-71	-22	-116	-144	-205	-271	-246

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	154	70	97	57	51	50	9	41	37	100	142	193
20%	45	32	83	88	67	78	14	25	16	50	62	31
30%	-10	0	36	130	127	81	13	16	9	33	26	-3
40%	-26	-20	33	120	110	135	-3	18	-16	34	13	-13
50%	6	13	40	63	107	136	-14	2	8	20	5	-2
60%	14	5	26	108	103	91	-10	-8	34	12	0	-13
70%	2	8	20	159	128	99	23	18	42	10	-11	-11
80%	4	6	42	187	134	69	28	27	11	-1	-7	-5
90%	6	9	61	219	110	115	17	-6	20	5	2	-12
Long Term												
Full Simulation Period[b]	20	18	54	117	103	85	7	17	22	31	24	20
Water Year Types[c]												
Wet (32%)	5	2	63	112	53	6	4	0	17	0	-6	-21
Above Normal (16%)	19	-31	24	207	136	107	51	49	45	36	24	17
Below Normal (13%)	9	16	24	170	123	75	-13	1	1	41	21	8
Dry (24%)	29	49	71	86	161	193	-5	8	0	23	21	29
Critical (15%)	51	56	63	32	64	59	7	49	63	95	95	108

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-6. SWP Net Generation, Monthly Net Generation

Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-326	-290	-313	-118	-84	-102	-35	-139	-185	-301	-403	-450
20%	-347	-349	-388	-161	-139	-162	-79	-167	-220	-315	-447	-496
30%	-414	-427	-450	-230	-244	-224	-142	-201	-238	-341	-484	-529
40%	-498	-521	-513	-252	-284	-311	-259	-304	-267	-367	-500	-569
50%	-571	-587	-579	-274	-336	-392	-339	-374	-315	-382	-509	-603
60%	-602	-632	-616	-354	-376	-445	-409	-415	-361	-399	-516	-615
70%	-630	-663	-640	-443	-452	-510	-486	-471	-399	-414	-533	-635
80%	-664	-686	-685	-503	-525	-550	-537	-529	-433	-430	-554	-661
90%	-680	-711	-738	-695	-603	-655	-572	-572	-526	-458	-584	-690
Long Term												
Full Simulation Period[b]	-512	-530	-539	-341	-341	-372	-317	-360	-331	-386	-496	-572
Water Year Types[c]												
Wet (32%)	-582	-598	-544	-358	-325	-362	-385	-398	-422	-426	-551	-638
Above Normal (16%)	-470	-481	-558	-460	-455	-473	-526	-553	-407	-382	-514	-624
Below Normal (13%)	-573	-601	-609	-470	-409	-532	-387	-429	-335	-403	-525	-617
Dry (24%)	-481	-516	-531	-273	-341	-375	-227	-263	-236	-378	-476	-557
Critical (15%)	-398	-393	-453	-168	-192	-131	-28	-164	-207	-300	-366	-354

Alternative 5

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-181	-165	-196	-39	6	-25	23	-69	-136	-190	-220	-247
20%	-264	-265	-252	-62	-32	-58	-4	-105	-186	-230	-326	-339
30%	-356	-315	-322	-72	-66	-85	-39	-129	-209	-247	-413	-379
40%	-406	-351	-411	-89	-103	-101	-60	-150	-256	-280	-447	-401
50%	-442	-407	-464	-113	-120	-122	-124	-178	-289	-299	-472	-424
60%	-469	-454	-507	-178	-162	-156	-193	-234	-305	-321	-490	-459
70%	-496	-502	-529	-214	-238	-189	-277	-306	-330	-363	-515	-492
80%	-534	-532	-573	-263	-301	-349	-330	-374	-368	-393	-525	-554
90%	-583	-552	-611	-303	-364	-449	-371	-419	-431	-425	-554	-599
Long Term												
Full Simulation Period[b]	-409	-393	-423	-155	-152	-176	-156	-221	-281	-312	-438	-426
Water Year Types[c]												
Wet (32%)	-472	-462	-448	-162	-131	-210	-194	-239	-368	-377	-520	-411
Above Normal (16%)	-385	-387	-438	-179	-221	-204	-253	-315	-331	-296	-468	-476
Below Normal (13%)	-427	-453	-487	-192	-231	-247	-191	-245	-286	-331	-483	-558
Dry (24%)	-384	-341	-395	-144	-132	-143	-119	-194	-213	-298	-399	-459
Critical (15%)	-324	-281	-339	-102	-81	-59	3	-102	-147	-196	-250	-226

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly Net Generation (GWh)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	144	125	117	79	90	77	57	70	48	111	183	204
20%	82	84	136	99	107	105	75	62	33	85	122	158
30%	59	112	128	158	178	138	103	72	29	94	71	150
40%	92	169	101	164	181	209	199	153	10	86	53	168
50%	130	180	115	161	217	270	214	196	26	83	37	178
60%	134	178	109	176	214	289	216	181	56	78	26	156
70%	133	161	111	229	214	320	209	165	69	51	18	143
80%	130	154	112	240	223	200	207	155	65	37	29	106
90%	97	159	127	392	238	206	200	153	95	33	31	91
Long Term												
Full Simulation Period[b]	102	137	116	185	190	196	161	139	50	74	58	146
Water Year Types[c]												
Wet (32%)	110	136	96	196	194	152	192	159	54	49	31	226
Above Normal (16%)	85	94	120	280	234	269	272	238	76	87	46	148
Below Normal (13%)	145	148	122	279	178	285	196	184	49	72	42	59
Dry (24%)	96	175	137	129	209	232	108	69	23	79	77	99
Critical (15%)	75	112	114	66	110	71	32	62	60	104	115	128

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Appendix 9A

Special-Status Aquatic Species

Table 9A.1 presents a list special-status aquatic species that occur within the study area and could be affected by changes under Alternatives 1 through 5 as compared to the No Action Alternative and Second Basis of Comparison.

Special status aquatic species that occur or may occur within areas potentially affected by actions that could occur under Alternatives 1 through 5 related to the Central Valley Project and State Water Project operations or ecosystem restoration activities. Impact potential is based on the likelihood of operational changes or restoration actions to impact suitable habitat occurring in defined area of analysis.

The area of analysis for operational changes includes open water areas of reservoirs, rivers, and creeks; adjacent riparian vegetation; wetlands supported by these waterbodies; and potential restoration areas in Yolo Bypass and Suisun Marsh. Aquatic species are presented in alphabetical order based on scientific name.

Table 9A.1 Special-Status Aquatic Species

Species or Population	Federal Status	State Status	Occurrence within Area of Analysis
River Lamprey	None	None	Feather River, American River, Sacramento River, Delta and Suisun Marsh, Stanislaus River, San Joaquin River
Pacific Lamprey	None	None	Trinity River, Klamath River, Clear Creek , Feather River, Sacramento River, American River, Delta, Stanislaus River, San Joaquin River
Green Sturgeon Southern DPS	Threatened	Species of Special Concern	Trinity River, Klamath River, Feather River , Sacramento River, Delta and Suisun Marsh
White Sturgeon	None	None	Trinity River, Klamath River, Feather River, Sacramento River, American River, San Joaquin River, Delta and Suisun Marsh
Eulachon Southern DPS	Threatened	None	Klamath River
Coho Salmon Southern Oregon/ Northern California Coast ESU	Threatened	Threatened	Trinity River, Klamath River

Species or Population	Federal Status	State Status	Occurrence within Area of Analysis
Spring-run Chinook Salmon Upper Klamath-Trinity River ESU	Candidate	Species of Special Concern	Trinity River, Klamath River
Fall-/Late-Fall-run Chinook Salmon Central Valley ESU	None	Species of Special Concern	Clear Creek, Feather River, Sacramento River, American River, Stanislaus River, San Joaquin River, Delta and Suisun Marsh
Winter-run Chinook Salmon Sacramento River ESU	Endangered	Endangered	Sacramento River, Delta and Suisun Marsh
Spring-run Chinook Salmon Central Valley ESU	Threatened	Threatened	Clear Creek, Sacramento River, Feather River, American River, Delta and Suisun Marsh
Steelhead (winter- and summer-run) Klamath Mountains Province DPS	None	Species of Special Concern	Trinity River, Klamath River
Steelhead Central Valley DPS	Threatened	None	Clear Creek, Feather River, Sacramento River, American River, Stanislaus River, San Joaquin River, Delta and Suisun Marsh
Steelhead Central California Coast DPS	Threatened	None	San Francisco Bay region
Delta Smelt	Threatened	Endangered	Delta and Suisun Marsh
Longfin Smelt Bay Delta DPS	Candidate	Threatened	Delta and Suisun Marsh
Sacramento Splittail	None	Species of Special Concern	Feather River, American River, Sacramento River, Delta and Suisun Marsh, San Joaquin River
Hardhead	None	Species of Special Concern	Clear Creek, Feather River, Sacramento River, American River, Delta, Stanislaus River, San Joaquin River
Sacramento-San Joaquin Roach	None	Species of Special Concern	Clear Creek, Feather River, American River, Sacramento River, Delta, Stanislaus River, San Joaquin River

Species or Population	Federal Status	State Status	Occurrence within Area of Analysis
Striped Bass	None	None	Feather River, American River, Sacramento River, Delta and Suisun Marsh, Stanislaus River, San Joaquin River
American Shad	None	None	Trinity River, Feather River, American River, Sacramento River, Delta and Suisun Marsh, Stanislaus River, San Joaquin River
Black Bass (largemouth, smallmouth, spotted)	None	None	Trinity River, Feather River, American River, Sacramento River, Delta and Suisun Marsh, Stanislaus River, San Joaquin River
Killer Whale Southern Resident DPS	Endangered	None	Pacific Coast

Notes:
DPS = distinct population segment
ESU = evolutionarily significant unit

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Appendix 9B

Aquatic Species Life History Accounts

This appendix provides additional information on the life history characteristics of the target aquatic species assessed in the Remanded Biological Opinions on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS). This information is intended to provide a more holistic understanding of how these species use the water bodies influenced by operation of the CVP and SWP and to help clarify relationships that provide the logical foundation for conclusions regarding the potential environmental consequences associated with changes in operation.

This appendix addresses the following species:

- River Lamprey
- Pacific Lamprey
- Green Sturgeon
- White Sturgeon
- Chinook Salmon
  - Winter-run Chinook Salmon
  - Central Valley Spring-run Chinook Salmon
  - Central Valley Fall-run and Late Fall-run Chinook Salmon
  - Upper Klamath and Trinity Rivers Spring-run Chinook Salmon
- Central Valley Steelhead
- Klamath Mountains Province Steelhead
- Sacramento Splittail
- Longfin Smelt
- American Shad
- Eulachon
- Striped Bass
- Southern Resident Killer Whale

9B.1 River Lamprey (*Lampetra ayresii*)

9B.1.1 Legal Status

Federal: None
State: Species of Special Concern

River Lamprey was petitioned for listing by a number of conservation groups in 2003, along with three other lamprey species (Klamath-Siskiyou Wildlands Center et al. 2003). The petition was declined by the U.S. Fish and Wildlife Service (USFWS) in 2004 because of insufficient evidence that listing was warranted.

9B.1.2 Distribution

River Lamprey are found in large coastal streams from just north of Juneau, Alaska, to the San Francisco Bay (Vladykov and Follett 1958, Wydoski and Whitney 1979). The Sacramento and San Joaquin basins are at the southern edge of their range (Moyle et al. 2009). Little is known regarding their abundance and distribution within California; they seem to be primarily associated with the lower portions of certain large river systems, and most records for the state are from the lower Sacramento-San Joaquin system, especially the Stanislaus and Tuolumne rivers (Moyle et al. 1989, Moyle 2002). In the Sacramento River, they have been documented upstream to at least Red Bluff Diversion Dam (RBDD) (Hanni et al. 2006, Moyle et al. 2009). River Lamprey have also been collected in the Feather River, American River, Mill and Cache creeks (Vladykov and Follett 1958, Hanni et al. 2006, Moyle et al. 2009). River Lamprey have not been documented during rotary screw trapping efforts in Clear, Battle, and Deer creeks, or in the Yuba River (Hanni et al. 2006). Other streams where they have been found in California outside of the Central Valley include the Napa and Russian rivers, and Alameda, Sonoma, and Salmon creeks (DWR et al. 2013).

9B.1.3 Life History and Habitat Requirements

River Lamprey are a small parasitic anadromous species. Most studies of their biology have been conducted in British Columbia; relatively little is known regarding their life history and habitat requirements in California (Moyle 2002).

Adult River Lamprey migrate from the ocean into spawning areas in the fall. Adults of both sexes construct nests in gravel at the upstream end of riffles (Wydoski and Whitney 1979, Beamish and Youson 1987, Moyle 2002). Eggs are deposited and fertilized in these depressions, after which the adults typically die, similar to other species of lampreys. In the Sacramento-San Joaquin basin of California, most spawning is believed to occur in April and May (Vladykov and Follett 1958; Scott and Crossman 1973) at temperatures of about 55 to 56 degrees Fahrenheit (°F) (Wang 1986). Two females in Cache Creek were reported to have 11,400 and 37,300 eggs each (Vladykov and Follett 1958).

After hatching, young ammocoetes (the larval stage of lamprey) drift downstream to settle in the silt-sand substrates of backwaters, eddies, and pools, where they remain burrowed for approximately 3 to 5 years (Moyle 2002). At this stage, they are filter feeders, with a diet consisting of algae (primarily diatoms) and other organic detritus and microorganisms (Wydoski and Whitney 1979). Good water quality and temperatures not exceeding 77°F are believed to be necessary for their survival (Moyle 2002). Their metamorphosis into adults begins in July when they reach about 12 centimeters (cm) (4.7 in) (Beamish 1980), and is not complete for about 9 to 10 months until around April the following spring, when the esophagus opens and adults are able to osmoregulate (Beamish and Youson 1987, Moyle 2002). This is a more extended period of metamorphosis than observed in other lamprey species. During this time, they are believed to live in deep waters of the river channel. Just prior to the completion of metamorphosis, the juvenile lampreys (macropthalmia) congregate immediately upstream of salt water and enter the estuary or ocean from May to July (Beamish and Youson 1987).

Adults spend 3 to 4 months in salt water, remaining close to shore and growing to lengths of about 25 to 31 cm. In the estuary or ocean, River Lamprey are obligate parasites, typically killing their host in the process of feeding. They most commonly parasitize fishes 10 to 30 cm long, feeding near the surface on smelt, herring, and mid-size salmonids (Beamish 1980, Roos et al. 1973, Beamish and Neville 1995). In Canada, they have been documented to be an important source of mortality on salmon (Beamish and Neville 1995). In the fall, adults migrate back upstream into spawning areas and cease to feed. Fidelity to the streams in which they were spawned remains unknown.

The species is expected to use Delta habitats primarily as a migration corridor (DWR et al. 2013), and have been collected in Suisun Bay, Montezuma Slough, and Delta sloughs during California Department of Fish and Wildlife (DFW) plankton sampling efforts. CVP and SWP salvage data indicate that they are found in the salvage primarily from December through March (DWR et al. 2013). Juveniles are weak swimmers, frequently becoming entrained in water diversions or turbine intakes of hydroelectric projects or becoming impinged on screens meant to bypass juvenile salmonids or other fish (USFWS 2007).

Very little is known regarding the distribution, habitat use, and life history of this species in the action area. Numerous adults (less than 200 millimeters [mm]), presumably of spawning age, have been captured in rotary screw traps at RBDD from March through June (Hanni et al. 2006). Individuals smaller than most adults (greater than 200 mm), likely outmigrating macropthalmia, have been captured at RBDD and Feather River rotary screw traps from late September through early June (Hanni et al. 2006). Factors limiting River Lamprey populations in the Sacramento River are likely similar to those limiting salmonids (Moyle et al. 2009). Quantitative data on populations are extremely limited, but loss and degradation of historical habitats suggest populations have likely declined (Moyle et al. 2009).

9B.1.4 References

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9B.2 Pacific Lamprey (*Entosphenus tridentatus*)

9B.2.1 Legal Status

Federal: None
State: None

The Pacific Lamprey was petitioned for listing by 12 conservation groups in 2003, along with three other lamprey species (Klamath-Siskiyou Wildlands Center et al. 2003). The petition was declined by USFWS in 2004 because of insufficient evidence that listing was warranted (USFWS 2004).

9B.2.2 Distribution

The Pacific Lamprey is a widely distributed anadromous species found in river systems along the northern margin of the Pacific Ocean from central Baja California north along the west coast of North America to the Bering Sea in Alaska (Ruiz-Campos and Gonzales-Guzman 1996, Lin et al. 2008). Historically, Pacific Lamprey were generally distributed wherever salmon and steelhead occurred and sometimes upstream of waterfalls that are impassable to anadromous salmonids. In California, they were historically found along the entire coast and far inland (Moyle et al. 2009). However, recent data and anecdotal accounts indicate that distribution of the Pacific Lamprey has been reduced in many river systems, including the Sacramento-San Joaquin (Moyle et al. 2009). Although widely distributed in the Sacramento-San Joaquin basin, the species is absent from as much as 80 percent of its historical spawning habitats, primarily due to migratory barriers (Moyle et al. 2009).

9B.2.3 Life History and Habitat Requirements

9B.2.3.1 Adult Migration

Pacific Lamprey are anadromous, rearing in freshwater before outmigrating to the ocean, where they grow to full size prior to returning to their natal streams to spawn. Pacific Lamprey are thought to remain in the ocean for approximately 18 to 40 months before returning to freshwater as sexually immature adults, typically from late winter until early summer (Kan 1975, Beamish 1980). After entering freshwater from the ocean, adult Pacific Lamprey typically spend approximately 1 year in freshwater prior to spawning (Robinson and Bayer 2005, Clemens et al. 2009, Stillwater Sciences 2010, Lampman 2011). The adult freshwater residence period can be divided into three distinct stages: (1) Initial migration from the ocean to holding areas, (2) pre-spawning holding, and (3) secondary migration to spawn (Robinson and Bayer 2005; Clemens et al. 2010, 2012).

The initial migration from the ocean to upstream holding areas occurs from approximately January until early August (Stillwater Sciences 2010, McCovey 2011, Clemens et al. 2012). In the Eel River and the nearby Klamath River, where ample information exists, entry into freshwater from the ocean generally begins in January and ends by June (Petersen-Lewis 2009, McCovey 2010, Stillwater Sciences 2010). Most individuals cease upstream migration by mid-July, although some individuals continue moving into August (McCovey 2010). Data from mid-water trawls in Suisun Bay and the lower Sacramento and San Joaquin rivers indicate that adults likely migrate into the Sacramento-San Joaquin Basin from late winter through early summer (Hanni and Blalock-Herod 2006).

The pre-spawning holding stage begins when individuals cease upstream movement in the summer, and continues until fish began their secondary migration to spawn, generally in late winter or early spring (Robinson and Bayer 2005, McCovey 2010). During this holding period, most fish remain stationary throughout the summer and fall, but some individuals undergo additional upstream movements in the winter following high flow events (Robinson and Bayer 2005, McCovey 2010). In the Sacramento River, adults, likely either in the holding or spawning stage, have been detected at Glenn-Colusa Irrigation District (GCID) from December through July and nearly year-round at RBDD (Hanni and Blalock-Herod 2006). It is expected that adult Pacific Lamprey with varying levels of sexual maturity are present in the Sacramento-San Joaquin Basin throughout the year.

After the pre-spawning holding period, individuals undergo a secondary migration from holding areas to spawning areas. This migration generally begins in late winter and continues through July, by which time most individuals have spawned and died (Robinson and Bayer 2005, Stillwater Sciences 2010, Lampman 2011). During this secondary migration, movement to spawning areas can be both upstream and downstream (Robinson and Bayer 2005, Lampman 2011).

Unlike Pacific salmon and steelhead (and like the Great Lakes Sea Lamprey; Bergstedt and Seelye 1995), Pacific Lamprey do not necessarily home to natal spawning streams (Moyle et al. 2009). Instead, migratory lampreys may select spawning locations based on the presence of a pheromone-like substance secreted by ammocoetes (Bjerselius et al. 2000, Vrieze and Sorensen 2001, Yun et al. 2011). Results of recent genetics research supports lack of homing by the Pacific Lamprey. A study of Pacific Lamprey population structure found few genetic differences among individuals sampled at widely dispersed sites across their range, indicating substantial genetic exchange among populations from different streams (Goodman et al. 2006).

9B.2.3.2 Spawning

Spawning typically takes place from March through July depending on water temperature and local conditions such as seasonal flow regimes (Kan 1975, Brumo et al. 2009, Gunckel et al. 2009). Evidence from the Santa Clara River in southern California suggests that individuals in the southern portion of the species' range can spawn as early as January, with peak spawning from February to April (Chase 2001), whereas inland and northern populations initiate spawning considerably later in the spring (Kan 1975, Beamish 1980, Brumo et al. 2009). Hannon and Deason (2007) have documented Pacific Lamprey spawning in the American River between early January and late May, with peak spawning typically occurring in early April. Spawning occurs in both the mainstem of medium-sized rivers and smaller tributaries (Luzier et al. 2006, Brumo et al. 2009, Gunckel et al. 2009), and generally takes place in pool and run tailouts and low gradient riffles. Both males and females build redds that are approximately 40-by-40 cm in area and are constructed in gravel and cobble substrate (Brumo 2006, Gunckel et al. 2009). Spawning substrate size typically ranges from approximately 25 to 90 mm (1.0 to 3.5 inches), with a median of 48 mm (1.9 inches) (Gunckel et al. 2009). Water velocity above redds ranges from 0.2 to 1.0 meters per second (m/s) (median 0.6 m/s), and depth varies from approximately 0.2 to 1.1 m (0.7 to 3.6 feet [ft]) (Gunckel et al. 2009). Depending on their size, females lay between 30,000 and 240,000 eggs (Kan 1975), which are approximately 1.4 mm (0.06 inch) in diameter (Meeuwig et al. 2004). In comparison, Chinook Salmon generally lay approximately 4,000 to 12,000 eggs (Jasper and Evensen 2006). During spawning, eggs are released in clutches of about 500 every 2 to 5 minutes (Pletcher 1963). Upon fertilization, eggs adhere to sandy substrate in the gravel redd (Pletcher 1963).

Depending on water temperature, hatching occurs in approximately 2 to 3 weeks, and yolk-sac larvae known as prolarvae remain in redd gravels for approximately 2 to 3 more weeks before emerging at night as 8-to-9-mm larvae, and drift downstream to rear in depositional areas (Meeuwig et al. 2005, Brumo 2006). Pacific Lamprey typically die soon after spawning (Kan 1975; Brumo 2006), although there is some anecdotal evidence that this is not always the case (Moyle 2002; Michael 1980; Michael 1984).

9B.2.3.3 Juvenile Rearing and Outmigration

After larvae emerge from redds drifting downstream, the eyeless, toothless larvae known as ammocoetes settle out of the water column and burrow into fine silt and sand substrate in low-velocity, depositional areas such as pools, alcoves, and side channels (Moore and Mallatt 1980, Torgensen and Close 2004, Stone and Barndt 2005). Ammocoete presence has also been shown to be associated with presence of woody debris (Roni 2003, Graham and Brun 2006). Rearing Pacific Lamprey ammocoetes appear to prefer rearing temperatures below 68°F (20 degrees Celsius [°C]) (BioAnalysts, Inc. 2000); and temperatures above 82.4°F (28°C) result in mortality of ammocoetes (van de Wetering and Ewing 1999). Depending on factors influencing their growth rates, they remain in this habitat from 4 to 10 years, filter-feeding on algae and detrital matter prior to metamorphosing into an adult form (Pletcher 1963, Moore and Mallatt 1980, Beamish and Levings 1991, van de Wetering 1998). During the ammocoete stage, individuals may periodically move and relocate in response to changing water levels, channel adjustments, or substrate movements (ULEP 1998). These factors generally result in a gradual downstream movement that may lead to higher densities in downstream reaches (Richards 1980). During metamorphosis, individuals develop eyes, a suctoral disc, sharp teeth, and more-defined fins (McGree et al. 2008). After metamorphosis, smolt-like individuals known as macropthalmia migrate to the ocean—typically in conjunction with high-flow events between fall and spring (van de Wetering 1998). Data from rotary screw trapping at sites in the Sacramento-San Joaquin Basin indicate that emigration of Pacific Lamprey macropthalmia peaks from early winter through early summer; however, some outmigration has been observed year-round in the mainstem Sacramento River at both RBDD and GCID (Hanni and Blalock-Herod 2006). When abundant, outmigrating Pacific Lamprey may act to buffer predation on juvenile and smolt salmon because they are easier to capture than salmonids (Close et al. 2002).

9B.2.3.4 Ocean Residence

In the ocean, adult Pacific Lamprey feed parasitically on a variety of marine and anadromous fishes such as salmon, flatfish, rockfish, and pollock. Pacific Lamprey are preyed upon by sharks, sea lions, and other marine animals (Richards and Beamish 1981, Beamish and Levings 1991, Close et al. 2002), and have been captured in depths from 300 to 2,600 ft and as far as 62 miles off the coast (USFWS 2007).

9B.2.4 Population Trends

In recent years, state, federal, and tribal agencies have expressed concern at the apparent decline of lamprey populations in the Northwestern United States (Close et al. 2002; Moser and Close 2003; CRBLTW 2005). Widespread anecdotal accounts of decreased Pacific Lamprey spawning and carcasses have been supported by a substantial reduction in counts of migrating individuals at dams since the late 1960s (Moser and Close 2003, Klamath-Siskiyou Wildlands Center et al. 2003). Very few data on Pacific Lamprey populations are available to assess status in the Sacramento-San Joaquin Basin; however, loss of access to historical habitat throughout California indicates that populations are greatly suppressed compared with historical levels (Moyle et al. 2009).

Factors limiting Pacific Lamprey populations are numerous and interrelated (Moser and Close 2003, Moyle et al. 2009). Although very little data or published studies are available for Pacific Lamprey in the region, parallels in their life cycle with salmon and steelhead suggest that these species are adversely affected by many of the same factors. Lack of access to historical spawning habitats because of dams, entrainment by water diversions, agricultural practices, urban development, harvesting, mining, transportation, estuary modification, prey abundance, and nonnative invasive species have all been cited as important anthropogenic factors limiting the viability of Pacific Lamprey populations in California (Moyle et al. 2009). In the Delta, the impacts of agricultural practices, development, estuary modification, and predation by nonnative species are expected to be particularly pronounced.

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9B.3 Green Sturgeon (*Acipenser medirostris*)

9B.3.1 Legal Status

Federal: Threatened, Designated Critical Habitat
State: Species of Special Concern

The National Marine Fisheries Service (NMFS) has divided North American Green Sturgeon into two Distinct Population Segments (DPSs) using the Eel River in California as the line of demarcation (Adams et al. 2002). The Southern DPS of North American Green Sturgeon includes all coastal and Central Valley populations south of the Eel River, including the Sacramento River basin

(NMFS 2006). Although the Southern DPS is considered a separate population from the Northern DPS based on genetic data and spawning locations, their ranges outside the spawning season overlap (DFG 2002, Israel et al. 2004, Moser and Lindley 2007).

After a status review was completed in 2002 (Adams et al. 2002), NMFS determined that the Southern DPS did not warrant listing as threatened or endangered but should be identified as a Species of Concern. This determination was challenged in April 2003, and NMFS was asked to consider new information on the species. NMFS updated its status review in February 2005 and determined that the Southern DPS should be listed as threatened under the Federal Endangered Species Act (ESA) (NMFS 2005a). NMFS published a final rule (NMFS 2006) in April 2006 that listed the Southern DPS as threatened; the rule took effect on June 6, 2006.

NMFS made a final critical habitat designation for the Southern DPS in October 2009 (74 *Federal Register* [FR] 52300). Designated critical habitat in California includes the Sacramento, lower Feather, and lower Yuba rivers; the Delta; and Suisun, San Pablo, and San Francisco bays (NMFS 2014). NMFS published a final 4(d) rule to apply ESA take prohibitions to the Southern DPS in July 2010 (75 FR 30714). In California, Green Sturgeon is a Class 1 Species of Special Concern (qualifying as threatened under the California Endangered Species Act).

9B.3.2 Distribution

North American Green Sturgeon are the most wide-ranging sturgeon species, with ocean migrations ranging between northern Mexico and southern Alaska (Adams et al. 2002). Ocean abundance and densities of Green Sturgeon increase north of the Golden Gate because both the Southern DPS and Northern DPS generally migrate northward along the coast when at sea (NMFS 2005b), as confirmed by radio telemetry studies conducted on Sacramento River Green Sturgeon (DFG 2002). Subadult and adult Green Sturgeon migrate thousands of miles along the western coast of the United States, often venturing into coastal estuaries like Willapa Bay and Grays Harbor in Washington, where they concentrate during summer (Adams et al. 2002). Two adults tagged in Willapa Bay have been detected by radio telemetry stations in the Sacramento River (Heublein et al. 2009), indicating that Green Sturgeon from the Sacramento River migrate as far north as Washington before returning to the Sacramento River to spawn. Concentrations of Green Sturgeon have also been detected near Vancouver Island in Canada (NMFS 2005b).

Though Green Sturgeon migrate thousands of miles through rivers, estuaries, and ocean, they do not readily establish new spawning populations; they are known from only three river systems: the Sacramento, Rogue, and Klamath. However, data suggest there may be spawning populations in both the Eel River and the Umpqua River in Oregon (NMFS 2005b), which could indicate previously undetected relict populations or the seeds of new subpopulations. The population that spawns in the Sacramento River constitutes the only known spawning population in the Southern DPS. Populations may have formerly spawned in the

San Joaquin and South Fork Trinity rivers, but have since been extirpated (Israel and Klimley 2008).

Green Sturgeon juveniles, subadults, and adults are widely distributed in the Sacramento-San Joaquin Delta and estuary areas including San Pablo Bay (Beamesderfer et al. 2004). The Sacramento-San Joaquin Delta serves as a migratory corridor, feeding area, and juvenile rearing area for North American Green Sturgeon in the Southern DPS.

9B.3.2.1 Current Distribution in Sacramento River

Within the Sacramento River, data only support an approximation of spawning locations. Larval Green Sturgeon have been captured routinely, but in small numbers in the RBDD rotary screw traps (River Mile [RM] 243.5) and the GCID fish facility (RM 206), suggesting that spawning generally occurs upstream of Hamilton City (RM 199), though spawning may occur as far downstream as Chico Landing (RM 194) (Heublein et al. 2009). Adult Green Sturgeon have been observed congregating below RBDD during late spring and early summer when the gates are down (Beamesderfer et al. 2004), suggesting that these may be ripe adults trying to migrate upstream to spawn. Spawning may occur in reaches upstream of RBDD (DFG 2002), but the upstream extent of spawning is unknown. In 1999, USFWS placed egg mats in the Sacramento River from Anderson Cottonwood Irrigation District (ACID) Dam (RM 298.4) to 10 miles downstream of RBDD to identify Green Sturgeon spawning sites; however, only two eggs were captured, both at mats downstream of RBDD, so the study did not clarify the location of specific spawning sites or the upstream extent of spawning (Beamesderfer et al. 2004). A radio telemetry study detected two adult Green Sturgeon migrating past a remote monitoring station above RBDD, suggesting possible spawning migration upstream (Heublein et al. 2009).

9B.3.2.2 Historical Distribution in Sacramento River

The location and character of spawning sites in the Rogue and Klamath rivers suggest that Green Sturgeon spawned in the Sacramento River above Keswick Dam (RM 302), including in the Pit, McCloud, and Little Sacramento rivers (Nakamoto et al. 1995, NMFS 2005b). The timing of upstream migration (February through July) corresponds with winter base and high flows and spring snowmelt. Adult Green Sturgeon likely entered the Sacramento River during winter, holding in pools in the middle and upper Sacramento River until high-flow events triggered upstream migration; high flows would have allowed adults to navigate through areas that might otherwise act as passage barriers at lower flows, providing them with access to steeper reaches with higher-velocity flows and coarser substrates for broadcast spawning. Such areas may have resulted in higher egg survival—crevices between substrate particles would provide the Green Sturgeon’s relatively non-adhesive eggs to settle in areas less accessible to egg predators.

The location and characteristics of preferred Green Sturgeon spawning habitats in the Rogue and Klamath rivers suggest that most of the historical spawning habitat in the Sacramento River likely occurred upstream of Keswick Dam (RM 302), with dam construction in the 1940s creating a permanent barrier that eliminated access to the majority of spawning habitat. Upstream passage may have been impeded even earlier by the seasonal operation of the ACID Dam, which began in 1916. Later-arriving adults would have even less access to spawning habitat because of the operation of RBDD, which blocked upstream passage when the gates were lowered in mid-May. Beginning in the late 1800s, those adults that successfully spawned upstream might have had their larvae entrained by water diversions such as the GCID diversion near Hamilton City.

9B.3.3 Life History and Habitat Requirements

Sturgeon live 40 to 50 years, delay maturation to large sizes (125 cm total length), and spawn multiple times over their lifespan. This life history strategy has been successful through normal environmental variation in the large river habitats where spawning occurs. Their long lifespan, repeat spawning in multiple years, and high fecundity allow them to persist through periodic droughts and environmental catastrophes. The high fecundity associated with large size allows them to produce large numbers of offspring when suitable spawning conditions occur and compensate for years of poor reproductive and juvenile rearing conditions. Adult Green Sturgeon do not spawn every year, and only a fraction of the population enters fresh water where they might be at risk of a catastrophic event (Beamesderfer et al. 2007). Though there are general descriptions of preferred habitat conditions for Green Sturgeon, much of this information is derived from Rogue River and Klamath River data, and little is known about specific spawning, rearing, or holding locations in the Sacramento River.

9B.3.3.1 Adult Migration

Though Green Sturgeon spend most of their life in marine and estuarine environments, they periodically migrate into freshwater streams to spawn, spending up to 6 months in fresh water during their spawning migration. Upstream migration generally begins in February and may last until late July (Adams et al. 2002). In the Rogue River, telemetry studies have shown that adult Green Sturgeon hold in low-velocity, deep-water habitats prior to migrating upstream to spawn (Erickson et al. 2002). The adults move around in the pools and may stray short distances, but the scope of their movement is limited. In the Sacramento River, adult Green Sturgeon begin their upstream spawning migrations into the San Francisco Bay in March and reach Knights Landing on the Sacramento River during April (Heublein et al. 2006).

9B.3.3.2 Spawning

Spawning occurs between March and July, peaking between mid-April and mid-June (Emmett et al. 1991). Based on the distribution of sturgeon eggs, larvae, and juveniles in the Sacramento River, DFG (2002) indicated that Green Sturgeon spawn in late spring and early summer above Hamilton City, possibly up to Keswick Dam (Brown 2007). Israel and Klimley (2008) state that Green Sturgeon spawn in the mainstem from the confluence of Battle Creek (river kilometer 438) to the area upstream of Molinos, but may also spawn below RBDD closer to GCID in some years. Adults spawn within about a week, and females appear to spawn regardless of habitat conditions (Beamesderfer et al. 2007).

Green Sturgeon prefer areas of fast, deep, turbulent water in mainstem channels for spawning (Moyle 2002). They spawn in a variety of substrates, from clean sand to bedrock, but prefer bed surfaces composed of coarse cobble (Moyle 2002). In the Rogue River, suspected spawning sites (inferred from the movement of radio-tagged Green Sturgeon) have beds composed of cobbles and boulders, with water depths greater than 10 to 15 feet (3 to 4.6 meters) and turbulent water over slope breaks in the channel (Wildlife Conservation Society 2005). The interstitial spaces between large particles may provide eggs with cover from predation (Moyle 2002). Eggs and larvae require cool water temperatures and high dissolved oxygen concentrations while digesting their yolk sac (Van Eenennaam et al. 2005).

Female Green Sturgeon produce 59,000 to 242,000 eggs, about 4.34 mm in diameter (Van Eenennaam et al. 2001, 2006). Green Sturgeon eggs have the largest mean diameter of any sturgeon species (Cech et al. 2000), but they lay fewer eggs. The larger eggs may allow embryos to grow larger before hatching and emerging from cover, increasing their survival relative to other sturgeon species. Fecundity peaks at around age 24 years (Beamesderfer et al. 2007).

9B.3.3.3 Juvenile Rearing

Hatchling Green Sturgeon embryos seek nearby cover and remain under rocks (Deng et al. 2002). After about 6 to 9 days, the hatchings develop into larvae and initiate exogenous foraging on the benthos (Deng et al. 2002, Kynard et al. 2005). After a day or so, larvae disperse downstream for 1 to 2 weeks. Movements and foraging activity during this period are nocturnal (Cech et al. 2000, Kynard et al. 2005). Larval Green Sturgeon are regularly captured during this dispersal stage at about 2 weeks old (24- to 34-mm fork length) in rotary screw traps at RBDD (DFG 2002, USFWS 2002) and 3 weeks old when captured farther downstream at the GCID fish facility (Van Eenennaam et al. 2001). Following emergence in early summer, larval Green Sturgeon migrating downstream with snowmelt flows between May and July, growing quickly and becoming more tolerant of increasing water temperatures and salinities. The upper thermal limit for optimal development and hatching is between 17 to 18°C; temperatures higher than this may affect development and hatching success, and complete mortality occurs at temperatures above 23°C (Van Eenennaam et al. 2005).

Young Green Sturgeon appear to rear for the first 1 to 2 months in the Sacramento River between Keswick Dam and Hamilton City (DFG 2002). Larvae and post-larvae are present in the lower Sacramento River and North Delta between May and October, primarily in June and July (DFG 2002). Little is known of distribution and movements of young-of-the-year and riverine juveniles, but observations suggest they may be distributed primarily in the mainstem Sacramento River downstream of Anderson and in the brackish portions of the north and interior Delta (Israel and Klimley 2008). Juvenile Green Sturgeon have been captured in the Delta during all months of the year (Borthwick et al. 1999, DFG 2002). Catches of 1- and 2-year-old Southern DPS Green Sturgeon on the shoals in the lower San Joaquin River, at the CVP/SWP fish salvage facilities, and in Suisun and San Pablo bays indicate that some fish rear in the estuary for at least 2 years (DFG 2002). Larger juvenile and subadult Green Sturgeon occur throughout the estuary, possibly temporarily, after spending time in the ocean (DFG 2002, Kelly et al. 2007).

The rearing habitat preferences of Green Sturgeon larvae and juveniles in the Sacramento River are not well understood. Laboratory research has identified water temperature thresholds for larval Green Sturgeon. Water temperatures above 68°F (20°C) were found to be lethal to Green Sturgeon embryos by Cech et al. (2000), and temperatures above 63 to 64°F (17 to 18°C) were found to be stressful by Van Eenennaam et al. (2005). Cech et al. (2000) found that optimal growth of larvae occurred at 59°F (15°C), with growth slowing at temperatures below 52°F (11°C) and above 62°F (19°C).

Several studies suggest that juvenile Green Sturgeon rear in fresh water for 1 to 4 years, acclimating gradually to brackish environments before migrating to the ocean (Beamesderfer and Webb 2002, Nakamoto et al. 1995). Larval Green Sturgeon are captured at RBDD and the GCID fish facility between May and August, with peak capture at RBDD in June and July and at the GCID fish facility in July (Adams et al. 2002). Green Sturgeon larvae trapped at RBDD average 1.1 inches (2.9 cm) in length, while larvae trapped at the GCID fish facility average 1.4 inches (3.6 cm) (Adams et al. 2002), suggesting that larvae move downstream soon after hatching; however, it is not clear how long larval and juvenile Green Sturgeon remain in the middle Sacramento River. Larval Green Sturgeon grow quickly, reaching 2.9 inches (74 mm) by the time they become juveniles at around 45 days posthatching (Deng 2000). Klamath River studies indicate that juvenile Green Sturgeon can grow to 12 inches (30 cm) in their first year and 24 inches (60 cm) within 2 to 3 years (Nakamoto et al. 1995). The small size of salvaged juvenile Green Sturgeon at the CVP and SWP fish facilities indicates that they move downstream to rear in the Bay-Delta estuary (Adams et al. 2002), though it is unclear how long they remain before migrating to the ocean.

While in the riverine environment, juveniles occupy low-light habitat and are active at night (Kynard et al. 2005). Older juveniles may be adapted to move through habitats with variable gradients of salinity, temperature, and dissolved oxygen (Kelly et al. 2007, Moser and Lindley 2007). Their diet during their Sacramento River residence is unknown, but likely consists of drifting and benthic aquatic macroinvertebrates (Israel and Klimley 2008).

Stomach contents from adult and juvenile Green Sturgeon captured in the Sacramento-San Joaquin Delta included shrimp, mollusks, amphipods, and small fish (Radtke 1966, Houston 1988, Moyle et al. 1992). Stomachs of Green Sturgeon caught in Suisun Bay contained *Corophium* sp. (amphipod), *Cragon franciscorum* (bay shrimp), *Neomysis awatchensis* (Opossum shrimp: synonymous with *Neomysis mercedis*), and annelid worms (Ganssle 1966). Stomachs of Green Sturgeon caught in San Pablo Bay contained *C. franciscorum*, *Macoma* sp. (clam), *Photis californica* (amphipod), *Corophium* sp., *Synidotea laticauda* (isopod), and unidentified crab and fish (Ganssle 1966). Stomachs of Green Sturgeon caught in the Delta contained *Corophium* sp. and *N. awatchensis* (Radtke 1966). As a result of recent changes in the species composition of macroinvertebrates inhabiting the Bay-Delta estuary due to nonnative species introductions, the current diet of Green Sturgeon is likely to differ from that reported in the 1960s.

In the Rogue River, adults hold in deep pools after spawning until late fall or early winter, when they emigrate to downstream estuaries or the ocean, perhaps cued by winter freshets that cause water temperatures to drop (Erickson et al. 2002). Erickson et al. (2002) noted that adult downstream migration appeared correlated with water temperatures below 50°F (10°C).

9B.3.3.4 Ocean Residence

Green Sturgeon from the Southern DPS pass through the San Francisco Bay to the ocean where they commingle with other sturgeon populations (DFG 2002). Subadult and adult sturgeon tagged in San Pablo Bay oversummer in bays and estuaries along the coast of California, Oregon, and Washington, between Monterey Bay and Willapa Bay, before moving farther north in the fall to overwinter north of Vancouver Island. Individual Southern DPS Green Sturgeon tagged by DFW in the San Francisco estuary have been recaptured off Santa Cruz, California; in Winchester Bay on the southern Oregon coast; at the mouth of the Columbia River; and in Grays Harbor, Washington (USFWS 1993, Moyle 2002). Most Southern DPS Green Sturgeon tagged in the San Francisco estuary have been returned from outside that estuary (Moyle 2002).

Subadult and adult Green Sturgeon generally migrate north along the coast once they reach the ocean, concentrating in coastal estuaries like Willapa Bay, Grays Harbor, and the Columbia River estuary during summer (Adams et al. 2002). The strategy underlying summer visits to coastal estuaries is unclear because sampling indicates they have relatively empty stomachs, suggesting they may not be entering the estuaries to feed (Beamesderfer 2000). Females reach sexual maturity after about 17 years and males after about 15 years (Adams et al. 2002). Spawning was believed to occur every 3 to 5 years (Tracy 1990), but may occur as frequently as every 2 years (NMFS 2005a).

9B.3.4 Population Trends

Empirical estimates of Green Sturgeon abundance are not available for any west coast population including the Sacramento River population. Interpretations of available time series of abundance index data for Green Sturgeon are confounded by small sample sizes, intermittent reporting, fishery-dependent data, lack of directed sampling, subsamples representing only a portion of the population, and potential confusion with White Sturgeon (Adams et al. 2002). Musick et al. (2000) noted that the North American Green Sturgeon population has declined by 88 percent throughout much of its range. The current population status of Southern DPS Green Sturgeon is unknown (Beamesderfer et al. 2007, Adams et al. 2007). Based on captures of Green Sturgeon during surveys for White

Sturgeon in San Francisco Bay (USFWS 1995), the population is believed to range from several hundred to a few thousand adults.

Population estimates of Green Sturgeon in the Sacramento River have been derived from data collected by monitoring programs that generally focus on other species because few monitoring programs specifically address Green Sturgeon in the Sacramento River. Green Sturgeon larvae are captured annually in the RBDD rotary screw traps, the GCID fish screen, and the CVP/SWP fish salvage facilities in the South Delta. DFW conducts annual trammel net surveys in San Pablo Bay to track the White Sturgeon population, and Green Sturgeon often form part of the incidental catch. Eggs, larvae, and post-larval Green Sturgeon are now commonly reported in sampling directed at Green Sturgeon and other species (Beamesderfer et al. 2004, Brown 2007). Young-of-the-year Green Sturgeon have been observed annually since the late 1980s in fish sampling efforts at RBDD and the Glenn-Colusa Canal (Beamesderfer et al. 2004). Green Sturgeon in the Sacramento River are believed to have declined over the last 2 decades, with fewer than 50 spawning adults observed annually in the best spawning habitat along the middle section of the Sacramento River (Israel and Klimley 2008).

Similar to other anadromous fish, Green Sturgeon in the Sacramento River likely exhibit seasonal behavioral patterns in response to changes in flows, water temperature, or other environmental cues affected by flows, but it is not clear if anthropogenically induced changes in the flow regime have contributed to the apparent decline in Green Sturgeon spawners. Researchers have hypothesized that high spring flows, or the turbidity associated with them, may act as an upstream migration cue. The annual catch of larval sturgeon at the RBDD and GCID fish screens suggests that spawning occurs in the Sacramento River in most years, regardless of water year type; however, it is unclear how many adults return to spawn each year and whether there is a relationship between flows and the number of adult spawners in any given year. The relationship between flow and water temperature in the Sacramento River may influence Green Sturgeon through controlling the amount of suitable rearing habitat available for larvae and juveniles (Adams et al. 2002).

The most consistent sample data for Sacramento Green Sturgeon are for subadults captured in San Pablo Bay during periodic White Sturgeon assessments since 1948. The California Department of Fish and Game (now DFW) measured and identified 15,901 sturgeon of both species between 1954 and 1991 (USFWS 1996). Catches of subadult and adult North American Green Sturgeon by the Interagency Ecological Program between 1996 and 2004 ranged from 1 to 212 Green Sturgeon per year, with the highest catch in 2001. Various attempts have been made to infer Green Sturgeon abundance based on White Sturgeon mark-recapture estimates and relative numbers of White and Green Sturgeon in the catch (USFWS 1996, Moyle 2002). However, low catches of Green Sturgeon preclude estimates or indices of Green Sturgeon abundance from these data (Schaffter and Kohlhorst 1999, Gingras 2005). It is unclear if the high annual variability in length distributions in these samples reflects variable recruitment and abundance or is an artifact of small sample sizes, pooling of sample years, or variable distribution patterns between freshwater and ocean portions of the population.

Anecdotal information is also available on young-of-the-year Green Sturgeon from juvenile fish monitoring efforts at RBDD and the GCID pumping facility on the upper Sacramento River. Fish traps at these facilities captured between 0 and 2,068 juvenile Green Sturgeon per year (Adams et al. 2002), which suggests that at least some Green Sturgeon reproduction occurred during the 1990s.

Approximately 3,000 juvenile Green Sturgeon have been observed in rotary screw traps operated for juvenile salmon at RBDD from 1994 to 2000. Annual catches have declined from 1995 through 2000 although the relationship of these catches to actual abundance is unknown. Recent data indicate that little production occurred in 2007 and 2008 (13 and 3 larvae, respectively, were captured in the rotary screw traps at RBDD) (Poytress et al. 2009). Larger production occurred in 2009, 2010, and 2011 (45, 122, and 643 larvae, respectively, were captured using a benthic D-net), and no larvae were captured in 2012 (Poytress et al. 2010, 2011, 2012, 2013).

More than 2,000 juvenile Green Sturgeon have been collected in fyke and rotary screw traps operated at the GCID diversion from 1986 to 2003. Operation of the screw trap at the GCID site began in 1991 and has continued year-round with the exception of 1998. Juvenile Green Sturgeon at the GCID site were consistently larger in average size, but the number captured varied widely with no apparent patterns in abundance between the two sites. Abundance of juveniles peaked during June and July with a slightly earlier peak at RBDD (Adams et al. 2002).

Variable numbers of juvenile Green Sturgeon are observed each year from two south Delta water diversion facilities (DFG 2002). When water is exported through the CVP/SWP export facilities, fish become entrained into the diversion. Since 1957, Reclamation has salvaged fish at the CVP Tracy Fish Collection Facility. DFW's Fish Facilities Unit, in cooperation with DWR, began salvaging fish at the SWP Skinner Delta Fish Protective Facility in 1968. The salvaged fish are trucked daily and released at several sites in the western Delta. Salvage of fish at both facilities is conducted 24 hours a day, 7 days a week, at regular intervals. Salvaged fish are subsampled for species composition and numbers. Numbers of Green Sturgeon observed at these fish facilities have declined since the 1980s, which contributed to NMFS' decision to list the Southern DPS as a threatened species. From the SWP Skinner Fish Facility, Green Sturgeon counts averaged 87 individuals per year between 1981 and 2000 and 20 individuals per year from 2001 through 2007. From the CVP Tracy Fish Collection Facility, Green Sturgeon counts averaged 246 individuals per year between 1981 and 2000 and 53 individuals per year from 2001 through 2007 (Reclamation 2008). Patterns were similar between total numbers per year and numbers adjusted for water export volumes, which increased during the 1970s and 1980s. Annual counts of Green Sturgeon from the SWP and CVP fish facilities are not significantly correlated (Beamesderfer 2005).

USFWS (1996) reported substantial uncertainty in the interpretation of salvage data for Green Sturgeon because of poor quality control on both counts and species identification, expansions from small sample sizes, variability in sturgeon dispersal patterns and collection vulnerability in response to complex changes in Delta flow dynamics, and changes in configuration and operations over time. Estimated sturgeon salvage numbers are expanded from subsamples, and actual numbers of Green Sturgeon observed are substantially smaller. Historical expansions were based on variable expansion rates (subsample duration) ranging from 15 seconds per 2 hours when fish numbers were high to 100 percent counting during periods when fish numbers were low. Under current conditions, NMFS (2004) requires sampling of fish salvage at both the SWP and CVP facilities at intervals of no less than 10 minutes every 2 hours. Green Sturgeon salvage estimates reported for years before 1993 may be in error because of uncertainty whether smaller sturgeon were correctly identified (USFWS 1996, DFG 2002). Reclamation and DWR recommended that only more recent (from 1993 and later) CVP and SWP salvage data be used to analyze the effects of water project operations on Green Sturgeon and other anadromous fishes.

9B.3.5 References

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9B.4 White Sturgeon (*Acipenser transmontanus*)

9B.4.1 Legal Status

Federal: None
State: None

9B.4.2 Distribution

White Sturgeon have a marine distribution spanning from the Gulf of Alaska south to Mexico, but a spawning distribution ranging only from the Sacramento River northward. Currently, self-sustaining spawning populations are only known to occur in the Sacramento, Fraser, and Columbia rivers.

In California, the largest numbers are in the San Francisco Bay estuary, with spawning occurring mainly in the Sacramento and Feather rivers. White Sturgeon historically ranged into upper portions of the Sacramento system including the Pit River, and a substantial number were trapped in and above Lake Shasta when Shasta Dam was closed in 1944 and successfully reproduced until the early 1960s (State Water Contractors 2004). They may have occurred historically in the San Joaquin River based on habitat similarities with these other watersheds.

Adult sturgeon were caught in the sport fishery industry in the San Joaquin River between Mossdale and the confluence with the Merced River in late winter and early spring, suggesting this was a spawning run (Kohlhorst 1976). Kohlhorst et al. (1991) estimated that approximately 10 percent of the Sacramento River system spawning population migrated up the San Joaquin River. Spawning may occur in the San Joaquin River when flows and water quality permit; however, no evidence of spawning is present (Kohlhorst1976, Kohlhorst et al. 1991).

Landlocked populations are located above major dams in the Columbia River basin, and residual non-reproducing fish above the Shasta Dam and Friant Dam have been occasionally found.

Adult White Sturgeon are occasionally noted in the San Joaquin River during DFW fall midwater trawls, DFW summer townet surveys, and University of California Davis Suisun Marsh fisheries monitoring. White Sturgeon spawning has recently been confirmed in the lower San Joaquin River (Jackson and Van Eenennaam 2013), and the U.S. Geological Survey (USGS) is currently mapping and characterizing White Sturgeon spawning habitat in the lower portion of the river (USGS 2015).

9B.4.3 Life History and Habitat Requirements

White Sturgeon are long-lived, late maturing, and have a high fecundity (Israel et al. 2015) Because White Sturgeon require a long time to mature, large year classes are typically associated with years of high outflow (Kohlhorst et al. 1991, Schaffter and Kohlhorst 1999), and population size can fluctuate to extremes (Schaffter and Kohlhorst 1999).

Reports of maximum size and age of White Sturgeon are as great as 6 meters fork length (FL) (820 kilograms) and greater than 100 years, although they generally do not exceed 2 meters FL or 27 years of age. Males mature in 10 to 12 years (75 to 105 centimeters FL) and females in 12 to 16 years (95 to 135 centimeters FL). Maturation depends largely on temperature and photoperiod.

9B.4.3.1 Adult Migrations and Spawning

White Sturgeon migrate upstream in late winter. Upstream migration is usually initiated by a large pulse flow (Schaffter 1997), and not all adults will spawn each year. Because of this, successful year classes tend to occur at irregular intervals, and therefore numbers of adult fish within a population can fluctuate significantly. Although males may spawn each year, females usually spawn once every 2 to 4 years. White Sturgeon have high fecundities, and typical females may have as many as 200,000 eggs. Spawning occurs over deep gravel riffles or in deep pools with swift currents and rock bottoms between late February and early June when temperatures are between 8°C and 19°C. Eggs become adhesive subsequent to fertilization, and adhere to the substrate until they hatch 4 to 12 days later, depending on temperature. Once the eggs have been deposited, the adults move back downstream to the estuary. Larvae hatch in 1 to 2 weeks, depending on temperature. Once the yolk sac is absorbed (approximately 1 week after hatching), the larvae can begin to actively forage along the benthos.

In the Sacramento River, most White Sturgeon spawn downstream of the Glenn-Colusa Irrigation Dam.

9B.4.3.2 Juvenile Rearing

White Sturgeon are benthic feeders, and adults may move into food-rich areas to forage. Juveniles consume mainly crustaceans, especially amphipods and opossum shrimp. Adult diets include invertebrates (mainly clams, crabs, and shrimp), as well as fish, especially herring, anchovy, Striped Bass, and smelt. White Sturgeon are opportunistic predators and may feed on many introduced species.

Juvenile sturgeon are often found in upper reaches of estuaries in comparison to adults, which suggests that there is a correlation between size and salinity tolerance.

9B.4.3.3 Estuary and Ocean Residence

White Sturgeon primarily live in brackish portions of estuaries where they tend to concentrate in deep sections having soft substrate. They move according to salinity changes, and may swim into intertidal zones to feed at high tide.

Recent stomach content analysis of White Sturgeon from the San Francisco Bay estuary indicates that the invasive overbite clam, *Corbula amurensis*, may now be a major component of the White Sturgeon diet (Zeug et al. 2014), and unopened clams were often observed throughout the alimentary canal (Kogut 2008). Kogut's study found that at least 91 percent of clams that passed through sturgeon digestive tracts were alive. This suggests sturgeon are potential vehicles for transport of adult overbite clams and also raise concern about the effect of this invasive clam on sturgeon nutrition and contaminant exposure.

In the ocean, White Sturgeon have been known to migrate long distances, but spend most of their life in brackish portions of large river estuaries.

9B.4.4 Population Trends

There is a relatively strong relationship between Delta outflow and year class strength during the period when white sturgeon are spawning and young white sturgeon are migrating downstream (March-July). There is a threshold at about 50,000 cfs such that year classes are generally strong when flows are above the threshold (Gingras et al. 2014). NMFS (2005) also noted a relationships between flow and apparent White Sturgeon spawning success. A sturgeon population study conducted by the California Department of Fish and Wildlife has been ongoing intermittently since 1967. In 2014, catch per 100 net-fathom hour of white sturgeon within the current slot limit (102-152 cm FL) was 0.46 ± 0.05 (SE); in 2013, catch per 100 net-fathom hour of white sturgeon within the current slot limit was 0.4 ± 0.1 (SE). Both of these values are well below the historical average of 2.8 (DuBois et al. 2014). Large numbers of young white sturgeon have only been produced twice in the last 15 years, in 1998 and 2006 (Gingras et al. 2014). The 2010-2014 White Sturgeon length frequency distributions show: (1) strong cohorts (from mid-to-late 1990s) within the legally-harvestable size range have substantially diminished; and (2) the progression of a strong cohort (from 2006) toward harvestable size (DuBois et al. 2014). Given the trends in catch-per-unit-effort (CPUE) and harvest, the amount of harvest, and harvest rates, it's quite clear that harvest is the main reason CPUE and abundance have declined so steeply (Gingras et al. 2014).

Periodic high flows in the 1990s produced small increases in White Sturgeon salvage catches, but salvage numbers were much lower than prior to 1985. USFWS (1996) in the *Sacramento/San Joaquin Delta Native Fishes Recovery Plan* also reported that juvenile sturgeon are probably more vulnerable to entrainment at the SWP and CVP at low to intermediate flows during those years when river and Delta inflow are normal or below normal.

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9B.5 Chinook Salmon (*Oncorhynchus tshawytscha*)

9B.5.1 Introduction

The Sacramento-San Joaquin Delta functions as a migration corridor and potential rearing area for adult and juvenile Chinook Salmon in the Sacramento and San Joaquin River basins. The Sacramento River basin supports four runs of Chinook Salmon: winter-run, spring-run, fall-run, and late fall-run. The San Joaquin River basin currently supports fall-run (and possibly late fall-run) Chinook Salmon in its lower tributaries: the Merced, Tuolumne, and Stanislaus rivers. The winter-run consists of a single population spawning in the Sacramento River mainstem below Keswick Dam. The other runs consist of populations that spawn in multiple tributaries. Three ESUs of Chinook Salmon are represented in the combined basins: Sacramento River winter-run (federally listed as endangered), Sacramento River spring-run (federally listed as threatened), and Central Valley fall-run and late fall-run (species of concern). Each of these runs exhibits a variety of different life-history strategies.

9B.5.2 Chinook Salmon Habitat Requirements

The Sacramento River basin is the largest watershed in California (about 27,000 mi^2) and empties into the largest estuary on the west coast of the United States. This diverse basin is unique in that it supports four runs of Chinook Salmon, including the winter-run, which only occurs in the Sacramento River basin. Because the four runs exhibit a variety of different life-history strategies, anthropogenic activities in the basin have affected each of the runs differently. The habitat requirements and the life-history strategies of the four runs are discussed below.

9B.5.2.1 Upstream Migration and Holding

Adult Chinook Salmon require water deeper than 0.8 ft (24 cm) and water velocities less than 8 ft/s (2.4 m/s) for successful upstream migration (Thompson 1972). Adult Chinook Salmon appear to be less capable of negotiating fish ladders, culverts, and waterfalls during upstream migration than Coho Salmon or steelhead (Nicholas and Hankin 1989), due in part to slower swimming speeds and inferior jumping ability compared to steelhead (Reiser and Peacock 1985, Bell 1986). The maximum jumping height for Chinook Salmon has been calculated to be approximately 7.9 ft (2.4 m) (Bjornn and Reiser 1991).

Both winter-run and spring-run Chinook Salmon return to the Sacramento River when reproductively immature, typically holding for a few months in deep pools near spawning areas until spawning. Adult winter-run and spring-run Chinook Salmon require large, deep pools with flowing water for summer holding, tending to hold in pools with depths greater than 4.9 ft (greater than 1.5 m) that contain cover from undercut banks, overhanging vegetation, boulders, or woody debris (Lindsay et al. 1986), and have water velocities ranging from 0.5 to 1.2 ft/s (15 to 37 cm/s) (Marcotte 1984). Water temperatures for adult Chinook holding are reportedly best when less than 60.8°F (less than 16°C), and lethal when greater than 80.6°F (greater than 27°C) (Moyle et al. 1995). Spring-run Chinook Salmon in the Sacramento River system typically hold in pools below 69.8 to 77°F (21 to 25°C).

In general, adult Chinook Salmon appear capable of migrating upstream under a wide range of temperatures. Bell (1986) reported that salmon and steelhead migrate upstream in water temperatures that range from 3 to 20ºC (37 to 68°F). Bell (1986) reports that temperatures ranging from 3 to 13ºC (37 to 55°F) are suitable for upstream migration of spring-run Chinook Salmon, and 10 to 19ºC (50 to 66°F) is suitable for upstream migration of fall-run Chinook Salmon. In a review of available literature, Marine (1992) reported a water temperature range of 6 to 14ºC (43 to 57°F) as optimal for pre-spawning broodstock survival, maturation, and spawning for adult Chinook Salmon.

9B.5.2.2 Spawning

Most Chinook Salmon spawn in larger rivers or tributaries, although spawning has been observed in streams as small as 7 to 10 ft (2 to 3 m) wide (Vronskiy 1972). Chinook Salmon typically spawn in low- to moderate-gradient reaches of streams, but can navigate shorter reaches with steeper gradients to access suitable spawning areas. Armantrout (ULEP 1998) concluded that Chinook Salmon seldom inhabit streams with gradients greater than 3 percent after examining extensive inventory data from Oregon. The upper extent of Chinook Salmon distribution in the Umpqua River basin in Oregon appears to occur where gradients are less than 3 percent (ULEP 1998).

Upon arrival at the spawning grounds, adult females dig shallow depressions or pits (redds) in suitably sized gravels (discussed in further detail below), deposit eggs in the bottom during the act of spawning, and cover them with additional gravel. Over a period of one to several days, the female gradually enlarges the redd by digging additional pits in an upstream direction (Burner 1951). Redd areas vary considerably depending on female size, substrate size, and water velocities, and can range from 5.4 (Neilson and Banford 1983) to 482 ft^2 (0.5 to 44.8 m^2) (Chapman et al. 1986).

Chinook Salmon tend to seek spawning sites with high rates of intergravel flow. Upwelling, which is associated with a concave bed profile, may be an important feature selected by spawning Chinook Salmon (Vaux 1968).

Chinook Salmon are capable of spawning within a wide range of water depths and velocities, provided that intergravel flow is adequate for delivering sufficient oxygen to eggs and alevins (Healey 1991). Depths most often recorded for Chinook Salmon redds range from 4 to 80 inches (10 to 200 cm) (Burner 1951, Chambers et al. 1955, Vronskiy 1972), and velocities range from 0.5 to 3.3 ft/s (15 to 100 cm/s) (Burner 1951, Chambers et al. 1955, Thompson 1972, Vronskiy 1972, Smith 1973), although values may vary between races and stream basins.

Fall-run Chinook Salmon, for instance, are able to spawn in deeper water with higher velocities such as the mainstem Sacramento River because of their larger size (Hallock et al. 1957).

Substrate particle size composition has been shown to have a significant influence on intragravel flow dynamics (Platts et al. 1979). Chinook Salmon may therefore have evolved to select redd sites with specific particle size criteria that will ensure adequate delivery of dissolved oxygen to their incubating eggs and developing alevins. In addition, salmon are limited by the size of substrate that they can physically move during the redd building process. Substrates selected likely reflect a balance between water depth and velocity, substrate composition and angularity, and fish size. As depth, velocity, and fish size increase, Chinook Salmon are able to displace larger substrate particles. D50 values (the median diameter of substrate particles found within a redd) for spring-run Chinook have been found to range from 10.8 to 78.0 mm (0.43 to 3.12 inches) (Platts et al. 1979; Chambers et al. 1954, 1955).

In 1997, USFWS researchers collected data on substrate particle size, velocity, and depth at hundreds of Chinook Salmon redds in the Sacramento River between Keswick Dam and Battle Creek to develop habitat suitability criteria for use in models that can aid in determining instream flows beneficial for anadromous salmonids. Redds in both shallow and deep areas were sampled. Table 9B.1 summarizes habitat suitability criteria data collected in this study for three of the four runs (too few spring-run redds were found from which to collect data). Much more detail on the methods used and results can be found in USFWS (2003).

Table 9B.1 Range of Suitable Habitat Values for Chinook Salmon Spawning in the Sacramento River (USFWS 2003)

Run	Range of Suitable Values Velocity ft/s	Range of Suitable Values Velocity m/s	Range of Suitable Values Depth ft	Range of Suitable Values Depth m	Range of Suitable Values Substrate in	Range of Suitable Values Substrate cm
Fall	0.93 to 2.66	0.28 to 0.81	1–14	0.3–4	1–3 to 3–5	3–8 to 8–13
Late fall	0.90 to 2.82	0.27 to 0.86	1–14	0.3–4	1–3 to 4–5	3–8 to 10–13
Winter	1.54 to 4.10	0.47 to 1.25	3–16	0.9–5	1–3 to 3–5	3–8 to 8–13

9B.5.2.3 Egg Incubation and Alevin Development

Once redd construction is completed, a key determinant of survival from egg incubation through fry emergence is the amount of fine sediment in the gravel (McCuddin 1977; Reiser and White 1988). High concentrations of fine sediment in (or on) a streambed can reduce permeability and intergravel flow within the redd. This can result in reduced delivery rate of oxygen and increasingly elevated metabolic waste levels around incubating eggs, larvae, and sac-fry as they develop within egg pockets (Kondolf 2000), which can in turn lead to high mortality. Several studies have correlated reduced dissolved oxygen levels with mortality, impaired or abnormal development, delayed hatching and emergence, and reduced fry size at emergence in anadromous salmonids (Wickett 1954, Alderdice et al. 1958, Coble 1961, Silver et al. 1963, McNeil 1964a, Cooper 1965, Shumway et al. 1964, Koski 1981). Silver et al. (1963) found that low dissolved oxygen concentrations are related to mortality and reduced size in Chinook Salmon and steelhead embryos. Fine sediments in the gravel interstices can also physically impede fry emergence, trapping (or entombing) them within the redd (Phillips et al. 1975, Hausle and Coble 1976).

The effects of high fine sediment concentrations may be counteracted to a certain extent by the redd construction process itself. As adult salmon build redds, they displace fine material downstream and coarsen the substrate locally (Kondolf et al. 1993, Peterson and Foote 2000, Moore et al. 2004). However, the effects of sediment reduction during redd construction may be rapidly reversed by infiltration of fine sediment into the redds during the incubation period (Kondolf et al. 1993).

Suitable water temperatures are required for proper embryo development and emergence. Incubating Chinook Salmon eggs can withstand constant temperatures between 35.1 (Combs and Burrows 1957) and 62.1°F (1.7 and 16.7°C) (USFWS 1999); however, substantial mortality may occur at the extremes. Myrick and Cech (2004) conclude that temperatures between 43 and 54°F (6 and 12°C) are best for ensuring egg and alevin survival. Sublethal stress and/or mortality of incubating eggs resulting from elevated temperatures would be expected to begin at temperatures of about 58°F (14.4°C) for constant exposures (Combs and Burrows 1957, Combs 1965, Healey 1979).

Some have suggested that the eggs and fry of winter-run Chinook Salmon may be slightly more tolerant of warm water temperatures than those of fall-run Chinook Salmon. One study by USFWS (1999) showed fall-run Chinook Salmon egg mortality increasing at lower temperatures (53.6°F [12°C]) than winter-run (56.0°F [13.3°C]). Greater tolerance to temperature was also observed in the post-hatching period, as was also found by Healey (1979). According to Myrick and Cech (2001), however, temperature tolerances of winter-run eggs and fry generally agree with those found for populations in more northern regions, and there does not appear to be much variation, if any, with regard to egg thermal tolerances between runs of Chinook Salmon (Healey 1979, Myrick and Cech 2001).

9B.5.2.4 Fry Rearing

Following emergence, fry occupy low-velocity, shallow areas near stream margins, including backwater eddies and areas associated with bank cover such as large woody debris (Lister and Genoe 1970, Everest and Chapman 1972, McCain 1992). As the fry grow, they tend to move into deeper and faster water further from banks (Hillman et al. 1987, Everest and Chapman 1972, Lister and Genoe 1970). Everest and Chapman (1972) suggests that habitat with water velocities less than 0.5 ft/s (15 cm/s) and depths less than 24 inches (60 cm) are suitable for newly emerged fry.

Although fry typically drift downstream following emergence (Healey 1991), movement upstream or into cooler tributaries following emergence has also been observed in some systems (Lindsay et al. 1986, Taylor and Larkin 1986). On the Sacramento River, juvenile Chinook Salmon are more commonly found in association with natural banks and shaded riparian cover than banks stabilized with riprap (DFG 1983; Michny and Hampton 1984; Michny and Deibel 1986; Michny 1987, 1988, 1989; Fris and DeHaven 1993). DeHaven (1989) found this association to be weaker at lower water temperatures than at temperatures over 70°F (21°C).

9B.5.2.5 Juvenile Rearing

Little is known regarding habitat selection of juvenile Chinook Salmon in the Sacramento River system specifically. Habitat preferences of Chinook Salmon may vary depending on channel confinement, substrate and bank characteristics, abundance of small and large wood, presence of other salmonids (particularly Coho Salmon), and whether the Chinook display an ocean- or stream-type life history. Juvenile habitat use may also change seasonally, diurnally, or as a function of growth, with larger juveniles tending to occupy habitats with higher water velocities.

Several researchers have shown relationships between velocity and juvenile Chinook Salmon habitat use, with juveniles generally occupying areas with water velocities less than 15 to 30 cm/s (Thompson 1972, Hillman et al. 1987, Steward and Bjornn 1987, Murphy et al. 1989, Beechie et al. 2005), as well as a preference for areas with cover provided by brush, large wood, or undercut banks (Hillman et al. 1987, Johnson et al. 1992, Beechie et al. 2005). Lister and Genoe (1970) found that juvenile Chinook Salmon preferred "slow water adjacent to faster water (40 cm/s)," and Shirvell (1994) suggested that preferred habitat locations vary by activity. For feeding, they are likely to select positions with optimal velocity conditions, whereas for predator avoidance, optimal light conditions are more likely to be important (Shirvell 1994). At night, juvenile Chinook Salmon appear to move to quiet water or pools and settle to the bottom, returning the next day to the riffle and glide habitats they had occupied the previous day (Edmundson et al. 1968, Chelan County Public Utility District 1989).

Although some researchers have found juvenile Chinook Salmon to reside primarily in pools, they may also use glides and runs as well as riffles. Chinook Salmon may prefer deeper pools with low water velocities during spring and summer as well as during winter (Lister and Genoe 1970, Everest and Chapman 1972, Swales et al. 1986, Hillman et al. 1987). In the Elk River in Oregon, Burnett and Reeves (2001) found most juvenile ocean-type Chinook Salmon (in sympatry with Coho Salmon and steelhead) in valley segments with deeper pools, larger volume pools, and pools with greater densities of large wood. In Elk River tributaries, the juveniles were observed almost exclusively in pools. Roper et al. (1994) also found age-0+ Chinook to be strongly associated with pools in the South Umpqua River basin in Oregon. In the Sacramento and American rivers, CDFG (1997) found juvenile Chinook Salmon densities to be highest in runs, closely followed by pools, with fish also occupying riffles and glides.

9B.5.2.6 Summer Rearing

Juvenile growth rates are an important influence on survival because juvenile salmon are gape-limited predators that are themselves subject to gape-limited predation by larger fish. Thus, faster growth both increases the range of food items available to them and decreases their vulnerability to predation (Myrick and Cech 2004). Temperatures have a significant effect on juvenile Chinook Salmon growth rates. On maximum daily rations, growth rate increases with temperature to a certain point and then declines with further increases. Reduced rations can also result in reduced growth rates; therefore, declines in juvenile salmonid growth rates are a function of both temperature and food availability. Laboratory studies indicate that juvenile Chinook Salmon growth rates are highest at rearing temperatures from 65 to 70°F (18.3 to 21.1°C) in the presence of unlimited food (Clarke and Shelbourn 1985, Banks et al. 1971, Brett et al. 1982, Rich 1987), but decrease at higher temperatures. Myrick and Cech (2004) note that two studies have been published on the relationship between temperature and growth of Central Valley Chinook Salmon—one by Marine and Cech (2004) on Sacramento River fall-run Chinook Salmon, and one by Myrick and Cech (2002) on American River fall-run Chinook Salmon. Provided that food is not limited, these studies showed that optimum temperatures for growth were between 63 and 68°F (17 and 20°C). Under natural conditions, it is unlikely that Chinook Salmon will feed at 100 percent rations, and disease, competition, and predation are also factors that may affect survival. To determine temperatures that might be optimal for growth of juvenile Chinook under natural conditions, Brett et al. (1982) used a value of 60 percent rations, based on field studies that suggested fish in the wild fed at roughly 60 percent of their physiological maximum. When used in a model developed for sockeye salmon, Brett determined that juvenile Chinook Salmon would reach their optimal growth at a temperature of about 59°F (15°C) (Brett et al. 1982). Nicholas and Hankin (1989) suggest that the duration of freshwater rearing is tied to water temperatures, with juveniles remaining longer in rivers with cool water temperatures.

Temperatures of greater than 74°F (23.3°C) are considered potentially lethal to juvenile Chinook Salmon (State Water Contractors 1990). Myrick and Cech (2004) summarized available information on juvenile Chinook Salmon temperature tolerances. Incipient upper lethal temperature (IULT) studies, which may be the most biologically relevant for studying juvenile temperature tolerances, are lacking for Central Valley Chinook Salmon. Sacramento River fall-run Chinook Salmon were reared at temperatures between 70 and 75°F (21 and 24°C) by Marine and Cech (2004) without significant mortality; however, Rich (1987) observed significant mortality after only 8 days of rearing at 75°F (24°C) (Myrick and Cech 2004). Myrick and Cech (2004) suggests that, until IULT studies are conducted on Central Valley Chinook Salmon, managers use Brett's (1952) and Brett et al.'s (1982) data on more northern Chinook Salmon, which determined that the IULT is in the range of 24 to 25°C (75 to 77°F). More detail on temperature tolerances of various Chinook life stages can be found in Myrick and Cech (2001, 2004).

Chronic exposure to high temperatures may result in greater vulnerability to predation. Marine (1997) found that Sacramento River fall-run Chinook Salmon reared at the highest temperatures (21 to 24°C [70 to 75°F]) were preyed upon by Striped Bass more often than those reared at low or moderate temperatures. Consumption rates of piscivorous fish such as Sacramento pikeminnow, Striped Bass, and largemouth bass increase with temperature, which may compound the effects of high temperature on juvenile and smolt predation mortality.

9B.5.2.7 Winter Rearing

Juvenile Chinook Salmon rearing in tributaries may disperse downstream into mainstem reaches in the fall and take up residence in deep pools with LWD, in interstitial habitat provided by boulder and rubble substrates, or along river margins (Swales et al. 1986, Healey 1991, Levings and Lauzier 1991). During high flow events, juveniles have been observed to move to deeper areas in pools, and they may also move laterally in search of slow water (Shirvell 1994, Steward and Bjornn 1987). Hillman et al. (1987) found that individuals remaining in tributaries to overwinter chose areas with cover and low water velocities, such as areas along well-vegetated, undercut banks. There is very little information available on Chinook Salmon use of floodplains and off-channel habitats such as sloughs and oxbows compared to Coho Salmon. However, studies in the Sacramento and Cosumnes rivers have shown that shallow, seasonally inundated floodplains can provide suitable rearing habitat for Chinook Salmon.

In winter, juvenile Chinook Salmon may make use of the interstitial spaces between coarse substrates as cover (Bjornn 1971, Hillman et al. 1987). Hillman et al. (1987) found that the addition of cobble substrate to heavily sedimented glides in the fall substantially increased winter rearing densities, with juvenile Chinook Salmon using the interstitial spaces between the cobbles as cover. Fine sediment can act to reduce the value of gravel and cobble substrate as winter cover by filling interstitial spaces between substrate particles. This may cause juveniles to avoid these embedded areas and move elsewhere in search of suitable winter cover (Stuehrenberg 1975, Hillman et al. 1987).

Over much of the Chinook Salmon’s range, winter temperatures are too cold to allow for much growth in the winter. The low-temperature threshold for positive growth in juvenile Chinook Salmon is believed to be about 40.1°F (4.5°C), with 39.4°F (4.1°C) being the lower limit for zero net growth in a juvenile Chinook Salmon population (Armour 1990). In the Sacramento River, water temperatures rarely fall below 43°F (6°C), however, allowing for growth throughout the winter.

Within the action area, where juvenile Chinook Salmon are rearing in mainstem channels downstream of reservoirs, water temperatures rarely fall below 43°F (6°C), allowing for growth throughout the winter months. Under these conditions, habitat shifts are less related to seasonal temperature changes and more strongly affected by growth (i.e., as individuals grow, they can take advantage of habitats with stronger flow and are better able to escape predation).

In the Sacramento/San Joaquin system, some juvenile Chinook Salmon rear on seasonally inundated floodplains in the winter. Sommer et al. (2001) found higher growth and survival rates of juveniles that reared on the Yolo Bypass floodplain than in the mainstem Sacramento River, and Moyle (2000) observed similar results on the Cosumnes River floodplain. On the Yolo Bypass, bioenergetic modeling suggested that increased prey availability on the floodplain was sufficient to offset increased metabolic demands from higher water temperatures (9°F [5°C] higher than mainstem). The Yolo Bypass has a relatively smooth topography with few pits and depressions, which possibly enhances its value as floodplain rearing habitat by reducing stranding mortality as floodwaters recede and juvenile salmon return to the main stem (Sommer et al. 2001).

9B.5.2.8 Smoltification and Outmigration

Juveniles of all four runs of Chinook Salmon in the Central Valley must pass through the Sacramento-San Joaquin Delta and San Francisco Bay Estuary on their way to the ocean, and many rear there for varying periods prior to ocean entry. Williams (2012) found evidence that many naturally produced fall-run Chinook Salmon that survived to return as adults had left freshwater at lengths greater than 55 mm, while juvenile Chinook Salmon from other Central Valley runs were older and larger upon entering the estuary and likely passed through it more quickly (Williams 2012).

In many systems within the species' distribution, juvenile Chinook Salmon spend up to several months in estuaries feeding and growing before entering the ocean (Healey 1991); in productive estuaries, this strategy can result in ocean entry at a larger size with a higher chance of survival, presumably by reducing predation at this critical juncture. Although wetlands and floodplains may have been extensive enough in the Delta under historical conditions (Atwater et al. 1979) to support high juvenile production in an environment where there were fewer predators, Delta marsh habitats and native fish communities have undergone such extreme changes from historical conditions (Kimmerer et al. 2008) that few locations in the eastern and central Delta currently provide suitable habitat for rearing Chinook Salmon. For example, substantial numbers of fry may be found in the Delta from January through March, but relatively few were found in the remaining months of the year during sampling from 1977 to 1997 (Brandes and McLain 2001). The annual abundance of fry (defined as less than 2.8 inches [70 mm] fork length) in the Delta during this period appears related to flow, with the highest numbers observed in wet years (Brandes and McLain 2001).

Although growth rates of juvenile Chinook Salmon may be high at temperatures approaching 66°F (19°C), cooler temperatures may be required for Chinook Salmon to successfully complete the physiological transformation from parr to smolt. Smoltification in juvenile Sacramento River fall-run Chinook Salmon was studied by Marine (1997), who found that juveniles reared under a high temperature regime of 70 to 75°F (21 to 24°C) exhibited altered and impaired smoltification patterns relative to those reared at low 55 to 61°F (13 to 16°C) and moderate 63 to 68°F (17 to 20°C) temperatures. Some alteration and impairment of smoltification was also seen in the juveniles reared at moderate temperatures.

9B.5.3 Winter-Run Chinook Salmon

9B.5.3.1 Legal Status

Federal: Endangered, Designated Critical Habitat
State: Endangered

Although Chinook Salmon range from California's Central Valley to Alaska and the Kamchatka Peninsula in Asia, winter-run Chinook Salmon are only found in the Sacramento River. Chinook Salmon of this race are unique because they spawn during the summer months when air temperatures usually approach their yearly maximum. As a consequence, winter-run Chinook Salmon require stream reaches with cold water sources that will protect embryos and juveniles from the warm ambient conditions in the summer. Historically, high-elevation reaches of tributaries to the upper Sacramento River (e.g., McCloud River) provided the cold water reaches that supported summer spawning by winter-run Chinook Salmon. Currently, hypolimnetic releases from Shasta Lake provide the cold water temperatures that allow winter-run Chinook Salmon to persist downstream of the dam, despite the complete loss of historical spawning habitat, access to which was cut off upon completion of Shasta Dam (1963).

The California-Nevada chapter of the American Fisheries Society petitioned NMFS to list the run as a threatened species in 1985 (AFS 1985) and, following a dangerously low year-class in 1989, NMFS issued an emergency listing for Sacramento River winter-run Chinook Salmon as a threatened species (NMFS 1989); the California Fish and Game Commission listed the winter run as endangered in the same year. After several years of low escapements in the early 1990s, the status of winter-run was changed from threatened to endangered by NMFS in 1994, which was reaffirmed in 2005 and 2011 (NMFS 1994, 2005, 2011).

The ESU includes fish that are propagated as part of a conservation hatchery program managed by the USFWS at Livingston Stone National Fish Hatchery (LSNFH). Since 2000, the proportion of the ESU spawning in the Sacramento River that are of hatchery origin has generally ranged from 5 to 10 percent of the total population, but reached a high of 20 percent in 2005 (NMFS 2011). USFWS's goal is to manage the LSNFH program such that hatchery origin fish are less than 20 percent of total in-river escapement. Hatchery fish were estimated to be 12 percent of the total in-river spawners in 2010, based on carcass surveys (DFG 2010). Over the last 10 years, hatchery returns have averaged 8 percent of total escapement (NMFS 2011).

Critical habitat was designated as the Sacramento River from Keswick Dam at river mile (RM) 302 to Chipps Island (RM 0) at the westward margin of the Delta; all waters from Chipps Island westward to the Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and the Carquinez Strait; all waters of San Pablo Bay westward of the Carquinez Bridge; and all waters of San Francisco Bay (north of the San Francisco-Oakland Bay Bridge) to the Golden Gate Bridge (NMFS 1993).

9B.5.3.1.1 Distribution

Winter-run Chinook Salmon are found only in the Sacramento River basin. The distribution of winter-run Chinook Salmon spawning has shifted over time in response to changes in upstream passage caused by water supply development and operations. Prior to construction of Shasta Dam in the 1940s, winter-run Chinook Salmon spawned in the upper Sacramento River system (in the Little Sacramento, McCloud, and possibly Pit and Fall rivers) and in nearby Battle Creek (Yoshiyama et al. 1998). Since the construction of Shasta Dam, winter-run Chinook Salmon have been limited to the mainstem Sacramento River below Keswick Dam (RM 302), although a few adults occasionally stray into tributaries (e.g., Battle and Mill creeks) to spawn (Harvey-Arrison 2001). The distribution of spawning likely shifted again in 1966, when the construction and operation of RBDD (RM 243.5) impeded access to upstream reaches, forcing more winter-run adults to spawn downstream of the diversion dam. A radio-tag survey of winter-run adults between 1979 and 1981 indicated that adults were delayed at RBDD between 1 and 40 days, with an average delay of 18 days (Hallock and Fisher 1985). The dam also forced winter-run adults to spawn downstream of Red Bluff, where summer water temperatures were frequently too high to support successful egg incubation and emergence. Beginning in 1986, the Bureau of Reclamation (Reclamation) began raising RBDD gates during the winter to facilitate upstream passage of winter-run Chinook (Reclamation 2004), which precipitated an upstream shift in the distribution of winter-run spawning. In 2012, the RBDD gates were opened to allow year-round passage.

Until 2001, most winter-run spawning occurred downstream of ACID Dam (RM 298.4); however, an improvement of this dam’s fish passage facilities in 2001 allowed another upstream shift in the distribution of spawning (DFG 2002a, 2004).

9B.5.3.1.2 Life History and Habitat Requirements

General habitat requirements for Chinook Salmon are described above; the following describes life history strategies and habitat requirements unique to the winter-run or of primary importance to its life history. The winter-run Chinook Salmon’s life history is unique to the Sacramento River because it provides the thermal conditions that allow for the success of this strategy. Because winter-run Chinook Salmon spawn in late spring and early summer, they require access to stream reaches with summer water temperatures cool enough to allow egg incubation. The spawning reaches and reaches downstream have sufficiently warm water temperatures to support growth throughout the winter, allowing juveniles to grow large enough to smolt and outmigrate before water temperatures become too high the following spring and summer. This life-history strategy reduces competition for spawning habitat with other runs. However, it also makes the run reliant on year-round coldwater sources, which limits the potential for expanding the range of the run in the Sacramento River basin.

Table 9B.2 illustrates life history timing for winter-run Chinook Salmon in the Sacramento River basin. Winter-run Chinook Salmon display a life history that is intermediate between ocean-type and stream-type. They spend between 5 and 10 months rearing in fresh water before migrating to sea, which is longer than for typical ocean-type Chinook Salmon, but shorter than for other stream-type Chinook Salmon (Healey 1991).

Table 9B.2 Life History Timing of Winter-run Chinook Salmon in the Sacramento River Basin

Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Adult entry into San Francisco Bay[a]												
Migration past RBDD[b]												
Spawning[c]												
Incubation[c]												
Fry emergence[c]												
Rearing (age 0+)												
Presence at CVP/SWP salvage facilities[c]												
Outmigration toward and through the Delta[c]												

Notes:
a. Van Woert 1958; Hallock et al. 1957
b. Hallock and Fisher 1985
c. NMFS 2012 (unpubl. data)

Period of Low Activity
Period of Moderate Activity
Period of Peak Activity

9B.5.3.1.3 Adult Upstream Migration and Spawning

Adult winter-run Chinook Salmon enter San Francisco Bay from November through June (Van Woert 1958, Hallock et al. 1957). Migration past RBDD begins in mid-December and can continue into early August, but the majority of winter-run adults migrate past RBDD between January and May, with a peak in mid-March (Hallock and Fisher 1985). In recent years, upstream passage of winter-run adults at RBDD was addressed by raising the gates between September 15 and May 15, which encompasses the vast majority of the upstream migration period for winter-run Chinook Salmon. As of 2012, the gates at RBDD are open year-round to allow for upstream passage.

Like spring-run Chinook Salmon, winter-run Chinook Salmon enter spawning streams while still reproductively immature. Adults hold for a few months in deep pools near spawning areas, which provides time for gonadal development. Spawning occurs from mid-April to mid-August, peaking in May and June, in the Sacramento River reach between Keswick Dam and RBDD (Reclamation 1991). With the changes in RBDD gate operations, volitional spawning below RBDD is negligible in most years. Since fish passage improvements were completed at the ACID Dam in 2001, winter-run Chinook Salmon spawning has shifted upstream. The majority of winter-run Chinook Salmon in recent years (i.e., more than 50 percent since 2007) spawn in the area from Keswick Dam to the ACID Dam (approximately 5 miles) (NMFS 2009).

9B.5.3.1.4 Juvenile Rearing and Outmigration

Winter-run fry emerge from the spawning gravels from mid-June through mid-October (NMFS 1997). Because spawning is concentrated upstream in the reaches below Keswick Dam, the entire Sacramento River can serve as a nursery area for juveniles as they migrate downstream. Emigrating juvenile Sacramento River winter-run Chinook Salmon pass the RBDD beginning as early as mid-July, typically peaking in September, and can continue through March in dry years (Reclamation 1991, NMFS 1997). Many juveniles apparently rear in the Sacramento River below RBDD for several months before they reach the Delta (Williams 2006). From 1995 to 1999, all Sacramento River winter-run Chinook Salmon outmigrating as fry passed the RBDD by October, and all outmigrating presmolts and smolts passed the RBDD by March (Martin et al. 2001).

Juvenile Sacramento River winter-run Chinook Salmon occur in the Delta primarily from November through early May based on data collected from trawls in the Sacramento River at West Sacramento, although the overall timing may extend from September to early May (NMFS 2012). The timing of migration varies somewhat because of changes in river flows, dam operations, seasonal water temperatures, and hydrologic conditions (water year type). Winter-run Chinook Salmon juveniles remain in the Delta until they are between 5 and 10 months of age, after reaching a fork length of approximately 118 mm. Distinct emigration pulses from the Delta appear to coincide with periods of high precipitation and increased turbidity (Del Rosario et al. 2013).

The entire population of the Sacramento River winter-run Chinook Salmon passes through the Delta as migrating adults and emigrating juveniles. Because winter-run Chinook Salmon use only the Sacramento River system for spawning, adults are likely to migrate upstream primarily along the western edge of the Delta through the Sacramento River corridor. Juveniles likely use a wider area within the Delta for migration and rearing than adults; juvenile winter-run salmon have been collected at various locations in the Delta, including the SWP and CVP south Delta export facilities. Studies using acoustically tagged juvenile and adult Chinook Salmon are ongoing to further investigate the migration routes, migration rates, reach-specific mortality rates, and the effects of hydrologic conditions (including the effects of SWP/CVP export operations) on salmon migration through the Delta. Tagging studies have indicated that juvenile salmon entering the interior Delta via the Delta Cross Channel and Georgiana Slough survive at a lower rate than fish migrating within the Sacramento River (Newman and Brandes 2010; Perry et al. 2010, 2012). Juvenile winter-run Chinook Salmon likely inhabit Suisun Marsh for rearing and may inhabit the Yolo Bypass when flooded, although use of these two areas is not well understood.

9B.5.3.1.5 Population Trends

There is little historical data available to characterize winter-run Chinook Salmon escapements prior to the construction of Shasta Dam; indeed, the agencies did not recognize winter-run Chinook Salmon as a distinct run until the 1940s (Needham et al. 1943). In the late 1930s, the pending construction of Shasta Dam prompted the agencies to commission a study of potential salmon salvage options. As part of this investigation, researchers placed a counting weir at ACID Dam between 1937 and 1939 to estimate the size of the salmon run in the Sacramento River (Hatton 1940). The counting weir enabled scientists to estimate the run size of the fall-run Chinook Salmon populations; however, the removal of flashboards from the ACID Dam during winter prevented observations of winter-run Chinook Salmon during their period of upstream migration (December–May).

There were no direct observations of winter-run Chinook Salmon spawning in the mainstem Sacramento River between 1943 and 1946—the first years when the construction of Shasta Dam blocked upstream passage. Nevertheless, incidental observations of winter-run salmon during trap-and-haul operations for spring-run salmon, coupled with poor environmental conditions in the Sacramento River and Deer Creek, led Slater to conclude that “the winter-run populations were small” in the years when Shasta Dam was being constructed (1963).

Slater (1963) hypothesized that the winter-run salmon population began to rebound in 1947, and that “this initial recovery seems to have been both substantial and rapid” from the “low point of 1943–1946.” He cites an angling survey conducted by Smith (1950), which evaluated the 1947–1948 and 1949–1950 sport fishery in the upper Sacramento River. “Increased catches of winter-run Chinook Salmon in January and February 1949” (Slater 1963) led Smith (1950) to conclude that a “sizable” winter-run population existed. Similarly, Slater cited an increase in the number of winter-run salmon that were harvested by Coleman National Fish Hatchery between 1949 and 1956 (as part of the fall-run salmon propagation program) (Azevedo and Parkhurst 1958) as evidence that winter-run salmon escapements increased in the late 1940s and early 1950s. Although these qualitative assessments do not permit a detailed tracking of winter-run salmon abundance, they do suggest a positive trend in the population in the years after Shasta Dam was completed.

This positive trend seems to have continued through the 1950s, because Hallock estimated that 11,000 winter-run adults were harvested from the Sacramento River by anglers in the winter of the 1961–1962 fishing season (Slater 1963). Hallock’s estimate of the percentage of winter-run Chinook Salmon caught in the in-river recreational harvest suggests that total winter-run escapements in the winter of 1961–1962 numbered in the tens of thousands. In June 1963, Slater personally observed winter-run Chinook Salmon spawning in the vicinity of Redding in numbers that approached the fall-run population that spawned in the same sites (Slater 1963). For context, the four years before Slater's observation of winter-run spawning in 1963 (1959–1962) had fall-run salmon escapement estimates ranging from 115,500 to 250,000 salmon. Although Slater observed spawning in only a small portion of the habitat available to both winter-run and fall-run salmon in the Sacramento River, his observation suggests that the winter-run salmon population had increased substantially from the few hundred fish captured during the trap-and-haul salvage operation in 1943 and 1945. His observation also suggests that the winter-run salmon population had recovered from a probable year-class failure in 1943 and a partial year-class failure in 1944.

Beginning in 1967, agency biologists began estimating annual winter-run escapements by monitoring adults migrating through the fish passage facilities of RBDD. Although the dam facilitated a more accurate account of the winter-run population, gate operations interfered with upstream passage. Gate operations were modified beginning in winter 1986 to facilitate the upstream passage of winter-run Chinook Salmon. However, raising the dam gates rendered winter-run escapement estimates less reliable, because migrating salmon could bypass the dam's fish counting facilities.

The RBDD counts permitted agency biologists to track the decline in winter-run Chinook abundance beginning in the 1970s. The drought of 1976–1977 caused a precipitous decline in abundance between 1978 and 1979, when escapements fell below 2,500 fish. Population abundance remained very low through the mid-1990s, with adult abundance in some years less than 500 fish (DFW 2014).

Beginning in the mid-1990s and continuing through 2006, adult escapement showed a trend of increasing abundance, approaching 20,000 fish in 2005 and 2006. However, recent population estimates of winter-run Chinook Salmon spawning upstream of the RBDD have declined since the 2006 peak. The escapement estimate for 2007 through 2014 has ranged from a low of 738 adults in 2011 to a high of 5,959 adults in 2013. The escapement estimate of 738 adults in 2011 was the lowest total escapement estimate since the all-time low escapement estimate of 144 adults in 1994. Poor ocean productivity (Lindley et al. 2009), drought conditions from 2007 to 2009, and low in-river survival (National Marine Fisheries Service 2011) are suspected to have contributed to the recent decline in escapement of adult winter-run Chinook Salmon. Table 9B.3 shows winter-run Chinook Salmon natural and hatchery escapement subsequent to 2004.

1 **Table 9B.3 Recent Winter-run Chinook Salmon Natural and Hatchery Escapement**

Year	Sacramento River above RBDD	Sacramento River below RBDD	Subtotal	CNFH Transfers	LSNFH Transfers	Battle Creek	Total
Dec 1990-Aug 1991	177	0	177	33	–	–	211
Dec 1991-Aug 1992	1,159	44	1,203	34	–	–	–
Dec 1992-Aug 1993	369	9	378	–	–	–	–
Dec 1993-Aug 1994	144	0	144	42	–	–	–
Dec 1994-Aug 1995	1,159	7	1,166	43	–	88	–
Dec 1995-Aug 1996	1,012	0	1,012	–	–	325	–
Dec 1996-Aug 1997	836	0	836	–	–	44	–
Dec 1997-Aug 1998	2,831	62	2,893	–	99	–	–
Dec 1998-Aug 1999	3,264	0	3,264	–	24	–	–
Dec 1999-Aug 2000	1,261	0	1,261	–	89	2	–
Dec 2000-Aug 2001	8,085	35	8,120	–	104	–	–
Dec 2001-Aug 2002	7,325	12	7,337	–	104	–	–
Dec 2002-Aug 2003	8,105	28	8,133	–	85	–	–
Dec 2003-Aug 2004	7,784	0	7,784	–	85	–	–
Dec 2004-Aug 2005	15,730	0	15,730	36	109	0	15,875
Dec 2005-Aug 2006	17,157	48	17,205	5	93	6	17,304
Dec 2006-Aug 2007	2,487	0	2,487	1	54	0	2,542
Dec 2007-Aug 2008	2,725	0	2,725	0	105	0	2,830

Year	Sacramento River above RBDD	Sacramento River below RBDD	Subtotal	CNFH Transfers	LSNFH Transfers	Battle Creek	Total
Dec 2008-Aug 2009	4,537	0	4,537	0	121	0	4,658
Dec 2009-Aug 2010	1,533	0	1,533	0	63	0	1,596
Dec 2010-Aug 2011	738	0	738	2	86	1	827
Dec 2011-Aug 2012	2,578	0	2,578	0	93	–	2,671
Dec 2012-Aug 2013	5,920	0	5,920	0	164	–	6,084
Dec 2013-Aug 2014	2,627	0	2,627	0	388	–	3,015

Source: DFW 2014

Note:
CNFH = Coleman National Fish Hatchery

Winter-run Chinook Salmon escapement to the Sacramento River in 2011 was 827 fish, which is the smallest number since 1994 and only 10 percent of the 40-year-average of approximately 8,000 fish (Azat 2012). Unusual ocean conditions appear to have been affecting the ESU in the past 5 years, along with other Central Valley Chinook Salmon stocks (NMFS 2011). Climate change and future variations in ocean conditions, along with the many factors affecting survival during freshwater life stages, may pose a serious risk to the ESU (NMFS 2011).

9B.5.4 Central Valley Spring-Run Chinook Salmon

9B.5.4.1 Legal Status

Federal: Threatened, Designated Critical Habitat
State: Threatened

Spring-run Chinook Salmon were probably the most abundant salmonid in the Central Valley under historical conditions (Mills and Fisher 1994); however, large dams eliminated access to vast amounts of historical habitat, and the spring run has exhibited the severest declines of any of the four Chinook Salmon runs in the Sacramento River basin (Fisher 1994).

The Central Valley spring-run Chinook Salmon ESU was federally listed as threatened in 1999, and the listing was reaffirmed in 2005 when critical habitat was also designated (NMFS 1999a, 2005). Spring-run Chinook Salmon was listed as a threatened species under the California Endangered Species Act (CESA) in February 1999. The ESU includes all naturally spawned populations of spring-run Chinook Salmon in the Sacramento River and its tributaries in California, including the Feather River. Feather River Hatchery spring-run Chinook Salmon are also included in the ESU. This ESU largely consists of three self-sustaining wild populations (i.e., Mill, Deer, and Butte creeks). Fish in these streams spawn outside of the action area but pass through it on their upstream and downstream migrations. Spring-run Chinook Salmon in the Feather River and Clear Creek spawn within the action area.

Designated critical habitat for Central Valley spring-run Chinook Salmon includes stream reaches of the American, Feather, Yuba, and Bear rivers; tributaries of the Sacramento River, including Big Chico, Butte, Deer, Mill, Battle, Antelope, and Clear creeks; and the main stem of the Sacramento River from Keswick Dam through the Delta. Designated critical habitat in the Delta includes portions of the Delta Cross Channel, Yolo Bypass, and portions of the network of channels in the northern Delta. Critical habitat for spring-run Chinook Salmon was not designated for the Stanislaus or San Joaquin rivers.

9B.5.4.2 Distribution

Prior to the construction of dams in the Sacramento and San Joaquin basins, spring-run Chinook Salmon migrated during the spring snowmelt flows to access coldwater holding and spawning habitat higher up in the basins. These steeper, higher-elevation reaches are often characterized by falls and cascades that may be obstacles to upstream movement of salmonids at lower flows. By migrating during the high spring snowmelt flows, spring-run Chinook Salmon can also access areas above reaches that become too warm for salmon in the summer and fall, isolating them from the fall run. Thus, under historical conditions, the spring- and fall-run Chinook Salmon were geographically isolated in terms of where they spawned in the basin, which maintained their genetic integrity.

Spring-run Chinook Salmon once occupied all major river systems in California where there was access to cool reaches that would support oversummering adults. Historically, they were widely distributed in streams of the Sacramento-San Joaquin basin, spawning and rearing over extensive areas in the upper and middle reaches (elevations ranging from 1,400 to 5,200 ft [450 to 1,600 m]) of the San Joaquin, American, Yuba, Feather, Sacramento, McCloud, and Pit rivers (Myers et al. 1998). Spring Chinook Salmon runs in the San Joaquin River were extirpated in the mid- to late 1940s following the closure of Friant Dam and diversion of water for agricultural purposes to the San Joaquin Valley.

In the Sacramento River, the closure of Shasta Dam in 1945 cut off access to the spring run's major historical spawning grounds in the McCloud, Pit, and upper Sacramento rivers. This represented a loss of 70 percent of spring-run spawning habitat in the Sacramento River basin (Yoshiyama et al. 2001). Populations of spawning spring-run Chinook Salmon in the Sacramento River basin are more common in east-side tributaries to the Sacramento River upstream of the mouth of the American River. The most important spawning populations are in Deer, Mill, and Butte creeks because of their relative lack of past hatchery influence, as well as relatively stable numbers. Some spawning also takes place in Big Chico, Antelope, Cottonwood, Beegum, Clear, and Battle Creeks, and in the mainstem Sacramento River downstream of Keswick Dam and upstream of RBDD (Association of California Water Agencies and California Urban Water Agencies 1997; DFG 1998, 2002b, 2012 [GrandTab data]). A spring run in the Feather River basin is maintained by hatchery production; however, the stock is believed to have been hybridized with the fall run to a great extent (Lindley et al. 2004).

9B.5.4.2.1 Changes in Distribution and Hybridization with Fall Chinook Salmon

Dams have reduced or eliminated spatial segregation between spawning spring- and fall-run Chinook Salmon in some areas, particularly in the mainstem Sacramento River, leading to increased potential for hybridization on the spawning grounds. The completion of Keswick and Shasta dams in the mid-1940s blocked spring-run Chinook Salmon access to habitat in the McCloud, Pit, and Little Sacramento rivers. After construction of the dams, spring-run Chinook Salmon were forced to spawn in the mainstem Sacramento River below Keswick Dam. Historically, water temperatures would have been too high in the mainstem Sacramento River for spring-run Chinook Salmon to hold in this area during the summer. But because of hypolimnetic releases from Shasta Lake, this reach provides temperatures during the summer that are now suitable for spring-run Chinook Salmon holding and spawning, where before they were only suitable for fall-run spawning once temperatures cooled in the fall. However, coldwater releases from Shasta Dam can warm relatively rapidly during the very hot days typical of the Sacramento Valley in summer and early fall. As a result, both the fall and spring runs must spawn in close enough proximity to Keswick Dam to benefit from these releases. The elimination of the spatial segregation that had existed between the fall and spring runs results in competition between the runs for the limited spawning habitat. Since fall-run Chinook Salmon spawn slightly later than spring-run, spring-run redds may also be superimposed by spawning fall-run fish. This may have contributed to the loss of the spring-run population, along with hybridization between the two runs, as described below.

The majority of spring-run Chinook Salmon used to spawn upstream in tributaries rather than in the mainstem Sacramento River; however, the completion and operation of Shasta Dam reduced water temperatures in the main stem downstream of Keswick Dam, which permitted spring-run Chinook Salmon to spawn there, resulting in hybridization with fall-run stocks. Although spring-run Chinook Salmon spawn earlier than fall-run, the timing of spawning of the two runs overlaps enough that hybridization can occur where they share the same spawning areas. Where the spring run is now forced to share spawning grounds in the mainstem Sacramento River with the fall run, fall-run Chinook Salmon may dominate because of their longer growth period in the ocean, slightly larger size, and less time spent holding in the stream prior to spawning. Hybridization between the two runs has tended to be to the detriment of the spring run life history.

Because of this hybridization with fall-run Chinook Salmon in the mainstem channel, there are considered to be only three “pure” self-sustaining populations of wild spring-run Chinook Salmon remaining in Deer, Mill, and Butte creeks.

Similar patterns have been observed in the Feather River, where the spring run historically spawned upstream of the location of Oroville Dam, and where they are now forced to spawn in the same area as the fall run, as well as in the Yuba and American rivers, where forced sympatry on the spawning grounds and subsequent hybridization following dam construction led to DFW concluding that the spring run was “extinct” in those rivers.

9B.5.4.3 Life History and Habitat Requirements

General habitat requirements for Chinook Salmon are described above; the following describes life history strategies and habitat requirements unique to the spring run or of primary importance to its life history. Spring-run Chinook Salmon display a stream-type life history strategy—adults migrate upstream while sexually immature, hold in deep cold pools over the summer, and spawn in late summer and early fall. Juvenile outmigration is highly variable, with some juveniles outmigrating in winter and spring, and others oversummering and then emigrating as yearlings. Table 9B.4 illustrates life-history timing for spring-run Chinook Salmon in the Sacramento River basin. The table illustrates some of the changes in timing that have been observed for the run over the years, particularly with regard to upstream migration and spawning.

Table 9B.4 Life History Timing of Spring-run Chinook Salmon in the Sacramento River Basin

Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Adult entry into Sacramento-San Joaquin Delta Estuary												
"Historical" adult migration past Red Bluff Diversion Dam[a]												
"Recent" adult migration past Red Bluff Diversion Dam[b]												
Entry into spawning tributaries (current)[c]												
Adult holding												
Historical spawning in Sacramento River basin[d]												
Spawning (Deer, Mill, Butte creeks[e])												
Spawning (mainstem Sacramento River[f])												
Incubation												
Fry emergence												
Fry/juvenile outmigration from tributaries[g]												
Subyearling/Yearling outmigration from tributaries[g, h]												
Presence at CVP/SWP salvage facilities[i]												
Outmigration toward and through the Delta[i]												
Ocean entry (yearlings)												

Sources*:* Fisher 1994; Myers et al. 1998; Hill and Weber 1999; Ward and McReynolds 2001; USFWS 2005

Notes:

a. As observed in the 1970s (Association of California Water Agencies and California Urban Water Agencies 1997)

b. As observed in the 1980s (Association of California Water Agencies and California Urban Water Agencies 1997)

c. Association of California Water Agencies and California Urban Water Agencies (1997), Hill and Webber (1999)

d. Rutter (1908), Parker and Hanson (1944)

e. Harvey (1995), Moyle et al. (1995)

f. Association of California Water Agencies and California Urban Water Agencies (1997)

g. Some spring run disperse downstream soon after emergence as fry in March and April, with others smolting after several months of rearing, and still others remaining to oversummer and emigrate as yearlings (USFWS 1995).

h. Based on outmigrant trapping in Butte Creek in 1999 and 2000, up to 69% of age 0+ juveniles outmigrate through the lower Sacramento River and Sacramento-San Joaquin Delta between mid-November and mid-February, with a peak in December and January (DFG 1998, Hill and Weber 1999, Ward and McReynolds 2001). A smaller number remain in Butte Creek and outmigrate in late spring or early summer; and in both Butte and Mill creeks, some of these oversummer and outmigrate as yearlings from October to March, with a peak in November (Association of California Water Agencies and California Urban Water Agencies 1997, Hill and Webber 1999)

i. NMFS 2012 (unpublished data)

Period of activity

Period of peak activity

9B.5.4.3.1 Adult Upstream Migration and Spawning

Adult spring-run Chinook Salmon may return between the ages of 2 to 5 years. Historically, adults of this run are believed to have returned predominantly at ages 4 and 5 years at a large size. Most spring-run Chinook Salmon now return at age 3, although some portion returns at age 4 (Fisher 1994, McReynolds et al. 2005) probably because of intense ocean harvest (which removes the largest fish from the population and selects for fish that spend fewer years at sea). In 2003, an estimated 69 percent of the spring run in Butte Creek returned at age 4 (Ward et al. 2004); however, in most years, the proportion of age 4 adults is much smaller.

Adult Central Valley spring-run Chinook Salmon begin their upstream migration in late January and early February (DFG 1998) and enter the Sacramento River between February and September, primarily in May and June (DFG 1998, Myers et al. 1998). Lindley et al. (2006) reported that adult Central Valley spring-run Chinook Salmon enter native tributaries from the Sacramento River primarily between mid-April and mid-June. Adults enter Deer and Mill creeks beginning in March, peaking in May, and concluding in June (Vogel 1987a, 1987b; Association of California Water Agencies and California Urban Water Agencies 1997). Their upstream migration is timed to take advantage of spring snowmelt flows, which allow them access to upstream holding areas where temperatures are cool enough to hold over the summer prior to the spawning season (NMFS 1999a). In the Sacramento River, upstream migration of spring-run Chinook Salmon overlaps to a certain extent with that of winter-run Chinook Salmon; and adults from particular runs are not generally distinguishable from one another by physical appearance alone, making it difficult to pinpoint migration timing with precision (Healey 1991).

Adults require large, deep pools with moderate flows for holding over the summer prior to spawning in the fall. Marcotte (1984) reported that suitability of pools declines at depths less than 7.9 ft (2.4 m) and that optimal water velocities range from 0.5 to 1.2 ft/s (15 to 37 cm/s). In the John Day River in Oregon, spring-run adults usually hold in pools deeper than 4.9 ft (1.5 m) that contain cover from undercut banks, overhanging vegetation, boulders, or woody debris (Lindsay et al. 1986).

In Sacramento River tributaries, adults will pack densely in the limited holding pool habitat that is available. Some fish remain to spawn at the tails of the holding pools, while most move upstream to the upper watersheds to spawn, and still others move back downstream to spawn. Although there are several deep pools in the upper Sacramento River that may provide holding habitat for adult spring-run Chinook Salmon, it is not clear which pools are heavily used. As a result of cold water releases from Shasta Reservoir and natural channel characteristics, numerous deep pools with suitable holding habitat are located between Keswick Dam and Red Bluff (Northern California Water Association and Sacramento Valley Water Users 2011).

Water temperatures for adult spring-run Chinook Salmon holding and spawning are reportedly best when less than 60.8°F (16°C), and are lethal when greater than 80.6°F (27°C) (Hinze 1959, Boles et al. 1988, DFG 1998). Spring Chinook Salmon in the Sacramento River typically hold in pools below 69.8 to 77°F (21 to 25°C). Adults may be particularly sensitive to temperatures during July and August, when energy reserves are low and adults are preparing to spawn. There is evidence that spring-run Chinook Salmon in the San Joaquin River were exposed to high temperatures during migration and holding under historical conditions (Clark 1943, Yoshiyama et al. 2001). It is possible that Central Valley spring-run Chinook Salmon are adapted to tolerate warmer temperatures than other Chinook Salmon stocks; however, there is no experimental evidence to confirm this hypothesis, and short-term exposure to temperatures as high as 25 to 27°C (77 to 80.6°F) is known to be tolerated by adult Chinook Salmon (Boles et al. 1988).

Habitat suitability studies conducted by USFWS (2004) indicate that suitable spawning velocities for spring-run Chinook Salmon in Butte Creek range from 0.80 to 3.22 ft/s (24.4 to 98 cm/s), and suitable substrate size ranges from 1 to 5 inches (2.5 to 12.7 cm) in diameter. Adult Chinook have been observed spawning in water greater than 0.8 foot deep and in water velocities of 1.2 to 3.5 ft/s (DFG 1998).

The timing of spring run spawning in the mainstem Sacramento River has shifted later in the year, which is believed to be a result of genetic introgression with the fall run (Association of California Water Agencies and California Urban Water Agencies 1997). Populations in Deer and Mill creeks, which do not appear to have significantly hybridized with the fall run, generally spawn earlier than those in the main stem (Lindley et al. 2004). Rutter (1908) noted that most spawning in the late 1800s/early 1900s in the Sacramento River basin occurred in August. Parker and Hanson (1944) observed intensive spawning of spring-run Chinook Salmon from the first week of September through the end of October in 1941. Redd counts have indicated that spring-run Chinook Salmon spawning typically begins in late August, peaks in September, and concludes in October in both Deer and Mill creeks (Harvey 1995, Moyle et al. 1995, NMFS 2004a).

In the Feather River, the time of river entry for spring-run Chinook Salmon has apparently shifted to later in the season, and is now intermediate between timing of entry of spring run into other tributaries and timing of entry of the fall run. Whereas wild-type spring-run Chinook Salmon enter Deer and Mill creeks primarily in mid-April to mid-June, coded-wire tag data and anecdotal information from anglers indicate that Feather River fish do not enter fresh water until June or July (Association of California Water Agencies and California Urban Water Agencies 1997).

9B.5.4.3.2 Egg Incubation and Alevin Development

In the Sacramento River and its tributaries, egg incubation for spring-run Chinook Salmon extends from August to March (Fisher 1994, Ward and McReynolds 2001). Egg incubation generally lasts between 40 and 90 days at water temperatures of 42.8 to 53.6°F (6 to 12°C) (Vernier 1969, Bams 1970, Heming

1982). At temperatures of 37°F (2.7°C), time to 50 percent hatching can take up to 159 days (Alderdice and Velsen 1978). Alevins remain in the gravel for 2 to 3 weeks after hatching while absorbing their yolk sacs. Emergence from the gravels occurs from November to March in the Sacramento River basin (Fisher 1994, Ward and McReynolds 2001). Once fry emerge from the gravel, they initially seek areas of shallow water and low velocities while they finish absorbing the yolk sac (Moyle 2002). As juvenile Chinook Salmon grow, they move into deeper water with higher current velocities, but still seek shelter and velocity refugia to minimize energy expenditures (Healey 1991). USFWS catches of juvenile salmon in the Sacramento River near West Sacramento showed that larger juvenile salmon were captured in the main channel and smaller fry were typically captured along the channel margins (USFWS 1997).

9B.5.4.3.3 Juvenile Rearing and Outmigration

Fry and juvenile rearing takes place in the natal streams, the mainstem of the Sacramento River, inundated floodplains (including the Sutter and Yolo bypasses), and the Delta. During the winter, some spring-run juveniles have been found rearing in the lower portions of non-natal tributaries and intermittent streams (Maslin et al. 1997, Snider et al. 2001).

The rearing and outmigration patterns exhibited by spring-run Chinook Salmon are highly variable, with fish rearing anywhere from 3 to 15 months before outmigrating to the ocean (Fisher 1994). Variation in length of juvenile residence may be observed both within and among streams (e.g., Butte versus Mill creeks, [USFWS 1996]). Some may disperse downstream soon after emergence as fry in March and April, with others smolting after several months of rearing, and still others remaining to oversummer and emigrate as yearlings (USFWS 1996). Scale analysis indicates that most returning adults have emigrated as subyearlings (Myers et al. 1998). Calkins et al. (1940) conducted an analysis of scales of returning adults, and estimated that more than 90 percent had emigrated as subyearlings, at about 3.5 inches (88 mm).

The term "yearling" is generally applied to any juveniles that remain to oversummer in their natal stream. Yearling outmigrants are common in Deer and Mill creeks, but rare in Butte Creek (Association of California Water Agencies and California Urban Water Agencies 1997). Extensive outmigrant trapping in Butte Creek has shown that spring-run Chinook Salmon outmigrate primarily as juvenile (age 0+) fish from November through June, with a small proportion remaining to emigrate as yearlings beginning in mid-September and extending through March, with a peak in November (Association of California Water Agencies and California Urban Water Agencies 1997, Hill and Webber 1999, Ward et al. 2004). Peak movement of juvenile spring-run Chinook Salmon in the Sacramento River at Knights Landing generally occurs in December, and again in March. However, juveniles also have been observed migrating between November and the end of May (Snider and Titus 1998, 2000b, c, d; Vincik et al. 2006; Roberts 2007).

Coded-wire-tag studies conducted on Butte Creek spring-run Chinook Salmon have shown that juveniles use the Sutter Bypass as a rearing area until it begins to drain in the late winter or spring (Hill and Webber 1999). Few juvenile Chinook Salmon are observed in the bypass after mid-May. Five recaptures indicate that juveniles leaving the Sutter Bypass migrate downstream rapidly and do not use the mainstem Sacramento River as rearing habitat (Hill and Webber 1999).

Within the Delta, juvenile Chinook Salmon forage in shallow areas with protective cover, such as tidally influenced sandy beaches and shallow water areas with emergent aquatic vegetation (Meyer 1979, Healey 1980). Very little information is available on the estuarine rearing of spring-run Chinook Salmon (NMFS 2004a). NMFS (2004a) postulates that, because spring-run Chinook Salmon yearling outmigrants are larger than fall-run Chinook Salmon smolts, and are ready to smolt upon entering the Delta, they may spend little time rearing in the estuary. Most have presumably left the estuary by mid-May (DFG 1995). Once in the ocean, spring-run Chinook Salmon perform extensive offshore migrations before returning to their natal streams to spawn.

9B.5.4.4 Population Trends

At one time, spring-run Chinook Salmon may have been the most abundant race in the Central Valley, with escapement in the hundreds of thousands (Mills and Fisher 1994). Spring-run Chinook Salmon have since declined to remnant populations totaling a few thousand fish, sometimes approaching 30,000 to 40,000 in good years (Mills and Fisher 1994, NMFS 1999a). Loss of access to upstream spawning and rearing areas due to the construction of dams in the Sacramento and San Joaquin rivers is believed to have been a major cause of the decline of the spring run.

Under historical conditions, it is doubtful that spring-run Chinook Salmon spawned in the mainstem Sacramento in significant numbers (Lindley et al. 2004). After the closure of Shasta and Keswick dams, spring-run Chinook Salmon began to spawn in the mainstem Sacramento River when changes in temperatures made this a viable life-history strategy. Throughout the 1970s and 1980s, thousands of spring-run Chinook Salmon passed RBDD en route to spawning grounds farther upstream. By the 1990s, escapements had declined; however, changes in the RBDD gate operations beginning in 1986 complicated the process of estimating spring-run Chinook Salmon abundance. Identification of the spring run at RBDD is also complicated by their low escapements and the difficulty of distinguishing fish of this run from those of the fall run. The two runs cannot be distinguished reliably by physical characteristics or run timing (Healey 1991) because of the naturally protracted run timing of the abundant fall run, and the apparent shift to later upstream migration timing by the spring run, which results in the runs being more temporally overlapped than they were historically.

Populations of spring-run Chinook Salmon in Butte Creek increased after the 1990s, and Butte Creek currently has the largest naturally spawning spring-run population (DFW 2014, GrandTab data). A few naturally spawning fish are also present in Battle, Clear, Cottonwood, Antelope, Mill, Deer, and Big Chico creeks (DFW 2014, GrandTab data). In general, spring-run Chinook Salmon that are most genetically similar to the runs that occurred historically in the Sacramento basin are currently confined to spawning primarily in Deer, Mill, and Butte creeks, with perhaps a few spawning in the mainstem Sacramento River.

Restrictions on ocean harvest to protect winter-run Chinook Salmon, as well as improved ocean conditions, have likely had a positive impact on spring-run Chinook Salmon adult returns to the Central Valley. In 2008, abundance in key indicator streams (e.g., Mill, Deer, and Butte Creeks) was at historical levels; however, between 2008 and 2011, spring-run populations in these same streams dropped closer to historical lows (as based on preliminary DFW 2014, GrandTab data). Spring-run Chinook Salmon populations generally increased from 1990 through 2006, but then returned to very low levels by 2008 and remained low through 2011. The preliminary total spring-run Chinook Salmon escapement count for 2013 was 23,697 adults, which was the highest count since 2003 (30,697 adults) and over three times that of 2011 (7,408 adults) (DFW 2014) (Table 9B.5).

Table 9B.5 Recent Spring-run Chinook Salmon Natural and Hatchery Escapement

YEAR	Sacramento River Mainstem	Battle Ck[a]	Clear Ck	Cottonwood Ck	Antelope Ck	Mill Ck	Deer Ck	Big Chico Ck	Butte Ck Snorkel	Butte Ck Carcass	Feather River Hatchery[b]	TOTAL SPRING RUN
1990	4,198	2	–	–	–	844	496	–	250	–	1,893	7,683
1991	825	–	–	–	–	319	479	–	–	–	4,303	5,926
1992	371	–	–	–	0	237	209	–	730	–	1,497	3,044
1993	391	–	1	1	3	61	259	38	650	–	4,672	6,076
1994	862	–	0	–	0	723	485	2	474	–	3,641	6,187
1995	426	66	2	8	7	320	1,295	200	7,500	–	5,414	15,238
1996	378	35	–	6	1	253	614	2	1,413	–	6,381	9,083
1997	128	107	–	0	0	202	466	2	635	–	3,653	5,193
1998	1,115	178	47	477	154	424	1,879	369	20,259	–	6,746	31,649
1999	262	73	35	102	40	560	1,591	27	3,679	–	3,731	10,100
2000	43	78	9	122	9	544	637	27	4,118	–	3,657	9,244
2001	621	111	0	245	8	1,104	1,622	39	9,605	18,670	4,135	26,663
2002	195	222	66	125	46	1,594	2,195	0	8,785	16,409	4,189	25,043
2003	0	221	25	73	46	1,426	2,759	81	4,398	17,404	8,662	30,697
2004	370	90	98	17	3	998	804	0	7,390	10,558	4,212	17,150
2005	30	73	69	47	82	1,150	2,239	37	10,625	17,592	1,774	23,093
2006	0	221	77	55	102	1,002	2,432	299	4,579	6,537	2,181	12,906
2007	248	291	194	34	26	920	644	0	4,943	6,871	2,635	11,144

YEAR	Sacramento River Mainstem	Battle Ck[a]	Clear Ck	Cottonwood Ck	Antelope Ck	Mill Ck	Deer Ck	Big Chico Ck	Butte Ck Snorkel	Butte Ck Carcass	Feather River Hatchery[b]	TOTAL SPRING RUN
2008	52	105	200	0	3	381	140	0	3,935	11,046	1,460	13,387
[2009]	0	194	120	0	0	220	213	6	2,059	2,763	989	4,505
[2010]	0	172	21	15	17	482	262	2	1,160	1,991	1,661	4,623
[2011]	0	157	8	2	6	366	271	124	2,130	4,505	1,969	7,408
[2012]	0	799	68	1	1	768	734	0	8,615	16,140	3,738	22,249
[2013]	0	608	659	1	0	644	708	0	11,470	16,783	4,294	23,697
[2014]	0	429	95	2	7	679	830	0	3,616	5,083	2,776	9,901

Source: DFW 2014, GrandTab data.

Notes:
Data for years in brackets are preliminary.

a. In 2009, USFWS conducted a comprehensive analysis of Battle Creek coded wire tag data from 2000-2008 to estimate numbers of fall- and late fall-run Chinook Salmon returning to Battle Creek. Previously, a cutoff date of December 1 was used to assign run. This changed some Battle Creek estimates.

b. Feather River Hatchery implemented a methodology change in 2005 for distinguishing spring- from fall-run. Fish arriving prior to the spring-run spawning period were tagged and returned to the river. The spring-run escapement was the number of these tagged fish that subsequently returned to the hatchery during the spring-run spawning period.

9B.5.5 Central Valley Fall-run and Late Fall-run Chinook Salmon

9B.5.5.1 Legal Status

Federal: Species of Concern
State: Central Valley fall-run – None; Central Valley late fall-run – Species of Special Concern

Fall-run populations occur throughout the range of Chinook Salmon and are currently the most abundant and widespread of the salmon runs in California and the Central Valley, largely because the construction of dams was not as damaging in terms of loss of historical habitat compared to the runs that spawned at higher elevations. Fall-run abundance is also a function of hatchery supplementation, because fall-run Chinook Salmon have been the primary focus of hatchery production at Central Valley hatcheries for several decades. As the most abundant salmonid species in the Central Valley, fall-run Chinook Salmon constitute an important component of the commercial and recreational salmon fishery in California. NMFS designated the Central Valley Fall (and Late fall) Chinook Salmon ESU as a Species of Concern in 2004 (NMFS 2004b).

NMFS classifies late fall-run Chinook Salmon as part of the Central Valley fall-run and late fall-run Chinook Salmon ESU, reasoning that the late fall-run population represents a life-history variation of the fall-run salmon population rather than a distinct run (NMFS 2004b). However, agencies generally treat late fall-run salmon in the Sacramento River basin as a distinct run, conducting separate carcass and redd surveys for them, and publishing separate reports to address the fall-run and late fall-run populations. Agencies also manage the hatchery propagation of late fall-run separately from fall-run Chinook Salmon. Except for hatchery propagation, there are relatively few restoration and management activities that focus specifically on late fall-run Chinook Salmon in the Sacramento River, as compared to the other runs of Chinook Salmon in the basin (USFWS 1996).

9B.5.5.2 Distribution

9B.5.5.2.1 Fall-run Chinook Salmon

Within the range of the Central Valley ESU, large populations of fall-run Chinook Salmon are found in the Sacramento River and its major tributaries. Fall-run Chinook Salmon are the most widely distributed salmonid in the Sacramento River basin, with significant spawning populations documented as far north as the upstream limit of anadromy in the upper Sacramento River (Keswick Dam at RM 302) and as far south as the American River near Sacramento. Sizeable spawning populations occur in other tributaries to the Sacramento River—Clear Creek, Battle Creek, Butte Creek, and Feather River—with more modest spawning populations in numerous smaller tributaries (e.g., Deer, Mill, Cow, and Antelope creeks). The San Joaquin River system once supported large runs of both spring-run and fall-run Chinook Salmon. Fall-run Chinook Salmon historically spawned in the mainstem San Joaquin River upstream of the Merced

River confluence and in the mainstem channels of the major tributaries—the Merced, Tuolumne, and Stanislaus rivers. Dam construction and water diversion dewatered much of the mainstem San Joaquin River, limiting fall-run Chinook to the three major tributaries where they currently spawn and rear downstream of mainstem dams.

9B.5.5.2.2 Late Fall-run Chinook Salmon

Little is known about the historical distribution of late fall-run salmon in the Sacramento River valley. Late fall-run Chinook Salmon currently spawn primarily in the mainstem Sacramento River between Red Bluff (RM 243.5) and Keswick Dam (RM 302). DFW conducts aerial redd surveys that target the late fall-run spawning period, and an analysis of the surveys suggests that adults generally spawn upstream of RBDD (RM 243.5). Yoshiyama et al. (1996) gleaned incidental references to late fall-run fish from historical documents to suggest that late fall-run Chinook Salmon historically spawned in the mainstem reaches of the upper Sacramento River and tributaries such as the Little Sacramento, Pit, and McCloud rivers. Because a significant fraction of juvenile late fall-run Chinook Salmon oversummer in natal streams before emigrating, mainstem reaches close to coldwater sources were likely the most important historical spawning areas for late fall-run Chinook Salmon. Unfortunately, there is little historical data on water temperatures in the upper Sacramento River basin to analyze the stream reaches that may have been important spawning and rearing areas for the late fall-run. Yoshiyama et al. (1996) also suggested the presence of historical spawning populations of late fall-run Chinook Salmon in the American and San Joaquin rivers prior to the era of large dam construction.

9B.5.5.3 Life History and Habitat Requirements

General habitat requirements for Chinook Salmon were described previously. Only habitat requirements specific to fall-run and late fall-run Chinook Salmon are described here.

Historically, the summer water temperature regime in the Sacramento River was a key variable that influenced the life history timing and strategy of the different salmonids that occur in the basin. Fall-run Chinook Salmon avoid stressful summer conditions by migrating upstream in the fall (September–November) when both air and water temperatures begin to cool. Because they arrive at spawning grounds with fully developed gonads, adult fall-run can spawn immediately (October–November), which allows their progeny to emerge in time to emigrate from the Sacramento River as fry in the subsequent spring (February–May) before water temperatures become too high.

Because fall-run Chinook Salmon adults migrate upstream during periods of low fall baseflows, spawning is generally limited to the alluvial reaches of mainstem rivers below flow-related obstacles. There is relatively little oversummering habitat in these lower mainstem reaches to support a yearling life history strategy, so the majority of fall-run juveniles emigrate as fry before spring water temperatures become lethal. Historically, warming spring water temperatures may have imposed a lethal penalty on the progeny of any late-arriving fall-run adults.

Yoshiyama et al. (1996) suggested that spawning populations of late fall-run salmon occurred in the Sacramento River prior to the construction of Shasta Dam, citing what are mostly incidental references to late fall-run salmon in several historical documents. Although these historical accounts indicate the occurrence of salmon migrating upstream and spawning in December or later on several different Central Valley tributaries, it is not clear whether such migration and spawning activity occurred consistently or in substantial numbers. These historical references to late fall-run fish may document fall-run stragglers whose progeny perished the subsequent spring and contributed little to the population, or they may indicate passage barriers that delayed the upstream migration and spawning of fall-run fish en masse.

Late fall-run salmon in the Sacramento River have been a collateral beneficiary of the operation of the Shasta and Trinity divisions of the CVP, which maintain suitable water conditions for endangered winter-run Chinook Salmon. Since 1994, coldwater releases designed to protect winter-run eggs incubating through the summer months have likely expanded suitable oversummering habitat for late fall-run juveniles downstream. Fall-run juveniles could continue to emigrate as fry or spend a summer growing in the river before emigrating as subyearlings.

The late fall-run Chinook Salmon strategy is successful because a substantial fraction of juveniles oversummer in the Sacramento River before emigrating, which allows them to avoid predation through both their larger size and greater swimming ability (larger juvenile salmon can evade a certain amount of predation through size alone). One implication of this life history strategy is that rearing habitat is most likely the limiting factor for late fall-run Chinook Salmon, especially if availability of cool water determines the downstream extent of spawning habitat for late fall-run salmon.

Tables 9B.6 and 9B.7 display the life-history timing of fall-run and late fall-run Chinook Salmon in the action area.

Table 9B.6 Life History Timing of Central Valley Fall-run Chinook Salmon

Life Stage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Adult migration past Red Bluff Diversion Dam												
Spawning												
Incubation												
Fry emergence[a]												
Rearing in mainstem Sacramento River[b]												
Outmigration past Red Bluff Diversion Dam												
Presence at CVP/SWP salvage facilities												
Emigration toward and through the Delta[c]												

Notes:

a. Northern California Water Association and Sacramento Valley Water Users (2011) shows emergence ending in February; Williams (2006) shows emergence ending in April.

b. A few fall-run Chinook Salmon remain upstream of RBDD location to rear to a yearling life stage.

c. NMFS (2012, unpublished data)

Period of light activity
Period of moderate activity
Period of peak activity

Table 9B.7 Life History Timing of Central Valley Late Fall-run Chinook Salmon

Life Stage	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sept		Oct		Nov		Dec	
Adult entry into mainstem Sacramento River[a, b]	Peak	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate													Moderate	Moderate	Moderate	Peak	Peak
Migration past Red Bluff Diversion Dam[a, b, c]	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate													Moderate	Moderate	Moderate	Peak	Peak
Adult holding[d]																				Moderate	Moderate	Moderate	Moderate	Moderate
Spawning[a, b, c, e, f, g]	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate																Moderate	Moderate
Incubation	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate												
Fry emergence[a, c]							Peak	Peak	Peak	Peak	Moderate	Moderate												
Stream residency[a, c]	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Fry outmigration past Red Bluff Diversion Dam[b]							Peak	Peak	Peak	Peak	Moderate	Moderate												
Smolt outmigration past Red Bluff Diversion Dam[b]													Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Peak	Peak	Moderate	Moderate		
Presence at CVP/SWP salvage facilities	Peak	Peak	Moderate	Moderate	Light	Light	Light	Light	Light	Light	Light	Light			Light	Light	Light	Light			Moderate	Moderate	Moderate	Moderate
Emigration toward and through the Delta[c]	Peak	Peak	Light	Light			Moderate	Moderate	Moderate	Moderate			Light	Light	Light	Light	Light	Light	Light	Light	Peak	Peak	Peak	Peak
Smolt outmigration[a]	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate											Moderate	Moderate	Moderate	Moderate
Ocean entry[c]	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate									Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

Sources:
a. Yoshiyama et al. 1998
b. Association of California Water Agencies and California Urban Water Agencies
c. Fisher 1994
d. Moyle 2002
e. Snider et al. 1998, 1999, 2000
f. Northern California Water Association and Sacramento Valley Water Users 2011
g. Williams 2006

Period of light activity
Period of moderate activity
Period of peak activity

9B.5.5.3.1 Adult Upstream Migration and Spawning

Adult fall-run Chinook Salmon migrate into the Sacramento River and its tributaries from June through December in mature condition, with upstream migration peaking in September and October. Fall-run Chinook Salmon in the San Joaquin system typically enter spawning streams from September through November. Adults spawn soon after arriving at their spawning grounds between late September and December, with peak spawning activity in late October and early November.

Adult late fall-run Chinook Salmon migrate up the Sacramento River between mid-October and mid-April, with peak migration occurring in December (Reclamation 1991) (Table 9B.7). Adults spawn soon after reaching spawning areas between January and April. Fisher reports that peak spawning in the Sacramento River occurs in early February (1994), but carcass surveys conducted in the late 1990s suggest that peak spawning may occur in January (Snider et al 1998, 1999, 2000).

Fall-run and late fall-run Chinook Salmon are generally able to spawn in deeper water with higher velocities than Chinook Salmon in other runs because of their larger size (Healey 1991). Late fall-run salmon tend to be the largest individuals of the Chinook Salmon species that occur in the Sacramento River basin (USFWS 1996).

Fry emergence occurs from December through March, and fry rear in freshwater for only a few months before migrating downstream to the ocean as smolts between March and July (Yoshiyama et al. 1998). Late fall-run fry emerge from redds between April and June (Vogel and Marine 1991).

9B.5.5.3.2 Juvenile Rearing and Outmigration

Fall-run Chinook Salmon in the Sacramento River generally exhibit two rearing strategies: migrating to the lower reaches of the river or Delta as fry, or remaining to rear in the gravel-bedded reach for about 3 months and then smolting and outmigrating. The highest abundances of fry in the Delta are observed in wet years (Brandes and McLain 2001). Fall-run Chinook Salmon fry rear during a time and in a location where floodplain inundation is most likely to occur, thereby expanding the amount of rearing habitat available. Relative survival of fry appears to be higher in the upper Sacramento River than in the Delta or bay, especially in wet years (Brandes and McClain 2001).

One potential disadvantage of early emergence and emigration and rearing in mainstem channels and the estuary is the possibility of higher predation mortality because of the relatively small size of emigrants. However, fall-run Chinook Salmon fry exhibit several characteristics to combat predation mortality. Predators often occupy deep pools in mainstem channels, so fry generally use shallow water habitat found along channel margins or in runs and riffles to avoid predators. Because rearing habitat is not limiting for fall-run Chinook Salmon fry, they do not exhibit territorial behavior, which allows them to rear, smolt, and outmigrate in higher densities. By emigrating synchronously in schools rather than as individuals, fall-run Chinook Salmon fry and smolts can swamp potential predators to avoid significant losses to predation; and by emigrating in late spring, they have the advantage of higher discharge fueled by early snowmelt, which can reduce their exposure to predation.

Fall-run Chinook Salmon juvenile smolt during early spring, prior to increases in water temperatures. Juvenile Chinook Salmon feed and grow as they move downstream in spring and summer; larger individuals are more likely to move downstream earlier than smaller juveniles (Nicholas and Hankin 1989, Beckman et al. 1998), and it appears that in some systems juveniles that do not reach a critical size threshold will not outmigrate, but will remain to oversummer (Bradford et al. 2001). Bell (1958) suggests that the timing of yearling smolt outmigration corresponds to increasing spring discharges and temperatures. Kjelson et al. (1981) observed that peak seine catches of Chinook Salmon fry in the Sacramento-San Joaquin Delta correlated with increases in flow associated with storm runoff. Flow accounted for approximately 30 percent of the variability in the fry catch.

As fall-run Chinook Salmon fry and parr migrate downstream, they also use the lower reaches of non-natal tributaries as rearing habitat (Maslin et al. 1997). During periods of high winter and spring runoff, fall-run Chinook Salmon juveniles are also diverted into the bypasses that border the Sacramento River, where growing conditions are generally better than mainstem rearing habitats, which can facilitate higher rates of juvenile survival (Sommer et al. 2001). Natural floodplain or riparian areas that become inundated during high flows may also provide good habitat for juvenile Chinook Salmon and prevent them from being displaced downstream (The Nature Conservancy 2003).

Research conducted in the Central Valley suggests that seasonally inundated, shallow water habitats may provide superior rearing habitat for juvenile salmonids than mainstem channels (Sommer et al. 2001). Juvenile fall-run salmon migrate downstream between January and June when floodplains and bypasses are periodically flooded during wet water years. By promoting faster growth, prolonged floodplain inundation likely helps the fall-run population by increasing juvenile salmon survival.

As described above, the timing of late fall-run spawning in January through March means that fry emerge between April and June. Water temperatures in the lower Sacramento River are often too high in May and June to support fry survival, so later-emerging fry that migrate downstream likely suffer high rates of mortality and contribute little to the population. This suggests that a significant fraction of late fall-run juveniles rear in the upper Sacramento River throughout the summer before emigrating in the following fall and early winter as large subyearlings (Fisher 1994). Summer rearing is made possible by the cold water releases from the Shasta-Trinity divisions of the CVP. Late fall-run juveniles generally leave the Sacramento River by December (Vogel and Marine 1991), with peak emigration of smolts in October.

Although growth rates of juvenile Chinook Salmon may be high at temperatures approaching 19°C (66°F), cooler temperatures may be required to successfully complete the physiological transformation from parr to smolt. Smoltification in juvenile Sacramento River fall-run Chinook Salmon was studied by Marine (1997), who found that juveniles reared under a high temperature regime of 21 to 24°C (70 to 75°F) exhibited altered and impaired smoltification patterns relative to those reared at low 55 to 61°F (13 to 16°C) and moderate 17 to 20°C (63 to 68°F) temperatures. Some alteration and impairment of smoltification was also seen in the juveniles reared at the moderate temperatures.

Chronic exposure to high temperatures may also result in greater vulnerability to predation. In this same study by Marine (1997), Sacramento River fall-run Chinook Salmon reared at the highest temperatures (21 to 24°C [70 to 75°F]) were preyed upon by Striped Bass more often than those reared at low or moderate temperatures. Consumption rates of piscivorous fish such as Sacramento pikeminnow, Striped Bass, and largemouth bass increase with temperature, which may compound the effects of high temperature on juvenile and smolt predation mortality. Juvenile growth rates are an important influence on survival; faster growth thus both increases the range of food items available to them and decreases their vulnerability to predation (Myrick and Cech 2004).

9B.5.5.3.3 Ocean Residence

When fall-run Chinook Salmon produced from the Sacramento-San Joaquin system enter the ocean, they appear to head north to inhabit the northern California-southern Oregon coast (Oregon Department of Fish and Wildlife 1987). They typically have a greater tendency to remain along the continental shelf than do stream-type Chinook Salmon (Healey 1983). The age of returning Chinook Salmon adults in California ranges from 2 to 5 years.

9B.5.5.4 Population Trends

Although NMFS considers fall-run and late fall-run Chinook Salmon as part of the same ESU in the Central Valley, most resource agencies have tracked the two runs separately. For example, DFW has conducted aerial redd surveys specifically targeting late fall-run salmon, and the Anadromous Fish Restoration Program (AFRP) has tracked late fall-run salmon escapements as a separate population. However, reports on fall-run escapement estimates vary because some include late fall-run in the estimates, while others do not. Because the older reports often fail to clarify which runs are being enumerated in the escapement estimate, care must be exercised when using fall-run escapement estimates, especially from different sources.

9B.5.5.4.1 Fall-run Chinook Salmon

Fall-run Chinook Salmon estimates are available from 1940; however, systematic counts of Chinook Salmon in the San Joaquin Basin began in 1953, long after construction of large dams on the major San Joaquin basin rivers. Comparable estimates of population size before 1940 are not available. Since population estimates began, the number of fall-run Chinook returning to the San Joaquin

Basin annually has fluctuated widely. Escapement in the Tuolumne River dropped from a high of 40,300 in 1985 to a low of about 100 resulting from the 1987 to 1992 dry period (TID/MID 1997). With increased precipitation and improved flow conditions, escapement increased to 3,300 in 1996 (TID/MID 1997). From 1971 to 2007, hatchery production is estimated to have composed about 29 percent of the returning adult fall-run Chinook Salmon in the San Joaquin basin (PFMC 2008). Table 9B.8 provides a summary of estimated escapement from 1990 to 2013 in the Sacramento and San Joaquin River systems.

Table 9B.8 Recent Fall-run Chinook Salmon Natural and Hatchery Escapement

Year	Sacramento River System				San Joaquin River System			Sacramento and San Joaquin Combined		
	Hatch.	Main.	Trib.	Total	Hatch.	Trib.	Total	Hatch.	In-River	Total
1990	25,611	48,284	12,803	86,698	114	1,041	1,155	25,725	62,128	87,853
1991	28,528	30,631	72,296	131,455	83	917	1,000	28,611	103,844	132,455
1992	30,171	32,229	44,995	107,395	1,078	1,940	3,018	31,249	79,164	110,413
1993	30,234	46,231	82,975	159,440	2,573	3,410	5,983	32,807	132,616	165,423
1994	42,760	58,546	111,078	212,384	2,862	5,421	8,283	45,622	175,045	220,667
1995	45,324	63,934	211,025	320,283	3,925	5,960	9,885	49,249	280,919	330,168
1996	36,936	84,086	213,646	334,668	5,024	11,859	16,883	41,960	309,591	351,551
1997	71,448	119,296	185,484	376,228	7,440	19,129	26,569	78,888	323,909	402,797
1998	75,028	6,318	141,079	222,425	3,890	19,711	23,601	78,918	167,108	246,026
1999	49,657	161,192	180,501	391,350	4,787	18,122	22,909	54,444	359,815	414,259
2000	50,965	96,688	290,698	438,351	7,396	39,934	47,330	58,361	427,320	485,681
2001	61,318	75,296	453,323	589,937	7,391	27,303	34,694	68,709	555,922	624,631
2002	96,248	65,690	672,962	834,900	9,753	28,016	37,769	106,001	766,668	872,669
2003	118,097	89,229	362,161	569,487	8,666	12,839	21,505	126,763	464,229	590,992
2004	116,869	43,604	202,904	363,377	11,406	12,065	23,471	128,275	258,573	386,848
2005	187,427	57,012	172,457	416,896	5,984	14,813	20,797	193,411	244,282	437,693
2006	80,594	55,468	146,427	282,489	4,289	6,176	10,465	84,883	208,071	292,954
2007	22,511	17,061	54,767	94,339	1,130	1,699	2,829	23,641	73,527	97,168
2008	18,785	24,743	25,618	69,146	315	1,830	2,145	19,100	52,191	71,291
[2009]	20,904	5,827	22,842	49,573	1,799	1,757	3,556	22,703	30,426	53,129

Year	Sacramento River System				San Joaquin River System			Sacramento and San Joaquin Combined		
	Hatch.	Main.	Trib.	Total	Hatch.	Trib.	Total	Hatch.	In-River	Total
[2010]	46,306	16,372	90,154	152,832	5,421	4,937	10,358	51,727	111,463	163,190
[2011]	87,679	11,957	105,460	205,096	16,293	6,500	22,793	103,972	123,917	227,889
[2012]	136,710	28,701	155,450	320,861	7,620	13,342	20,962	144,330	197,493	341,823
[2013]	107,001	40,084	279,871	426,956	6,279	14,668	20,947	113,280	334,623	447,903
[2014]	50,713	34,876	152,587	238,176	9,627	8,094	17,721	60,340	195,557	255,897

Source: DFW 2014

Note:
Data for years in brackets are preliminary.

9B.5.5.4.2 Late Fall-run Chinook Salmon

There is little information to evaluate the historical abundance of late fall-run salmon in the Sacramento River basin. In fact, late fall-run salmon were first recognized by fishery agencies as a distinct run only after the construction of RBDD in 1966, which permitted more accurate counting of upstream migrants and the timing of upstream migration (USFWS 1996). Between 1967 and 1976, late fall-run salmon escapements averaged 22,000 adults (USFWS 1996); however, between 1977 and 1985, escapements averaged only about 9,900 adults (DFW 2014). Population estimates of late fall-run salmon after 1985 are complicated by changes in RBDD gate operations, when Reclamation began raising the dam gates during winter months to facilitate the upstream migration of winter-run Chinook Salmon. Because the upstream migration of late fall-run salmon overlaps with that of winter-run Chinook Salmon, late fall-run benefited from improved upstream access, but the accuracy of escapement estimates suffered (USFWS 1996). RBDD gate operations were revised again in 1994 so that gates were raised between September 15 and May 15, encompassing the entire upstream migration period of late fall-run salmon and further compromising the calculation of escapements. Post-1985 escapement estimates are cruder because of the change in RBDD gate operations. Table 9B.9 provides a summary of estimated escapement from 1970 to 2013 in the mainstem Sacramento River, Battle Creek, and Clear Creek.

Table 9B.9 Recent Late Fall-run Chinook Salmon Natural and Hatchery Escapement

Year	Sacramento River above RBDD	CNFH Transfers	Total above RBDD	Sacramento River below RBDD	Battle Creek	Battle Creek CNFH	Battle Creek Total	Clear Creek	Total
Nov 1990-Apr 1991	6,493	118	6,611	1,491	–	161	161	–	8,263
Nov 1991-Apr 1992	8,958	398	9,356	431	–	344	344	–	10,131
Nov 1992-Apr 1993	339	400	739	–	–	528	528	–	1,267
Nov 1993-Apr 1994	137	154	291	–	–	598	598	–	889
Nov 1994-Apr 1995	–	166	166	–	–	323	323	–	489
Nov 1995-Apr 1996	–	48	48	–	–	1,337	1,337	–	1,385
Nov 1996-Apr 1997	–	–	–	–	–	4,578	4,578	–	4,578
Nov 1997-Apr 1998	38,239	–	38,239	1,101	–	3,079	3,079	–	42,419
Nov 1998-Apr 1999	8,683	–	8,683		–	7,075	7,075	–	15,758
Nov 1999-Apr 2000	8,580	–	8,580	122	0	4,181	4,181	–	12,883
Nov 2000-Apr 2001	18,351	–	18,351	925	98	2,439	2,537	–	21,813
Nov 2001-Apr 2002	36,004	–	36,004	0	216	4,186	4,402	–	40,406
Nov 2002-Apr 2003	5,346	38	5,384	148	57	3,183	3,240	110	8,882
Nov 2003-Apr 2004	8,824	60	8,884	0	40	5,166	5,206	60	14,150
Nov 2004-Apr 2005	9,493	79	9,572	1,031	23	5,562	5,585	94	16,282
Nov 2005-Apr 2006	7,678	12	7,690	2,485	50	4,822	4,872	42	15,089
Nov 2006-Apr 2007	13,798	66	13,864	1,477	72	3,361	3,433	69	18,843
Nov 2007-Apr 2008	3,673	0	3,673	291	19	6,334	6,353	55	10,372

Year	Sacramento River above RBDD	CNFH Transfers	Total above RBDD	Sacramento River below RBDD	Battle Creek	Battle Creek CNFH	Battle Creek Total	Clear Creek	Total
Nov 2008-Apr 2009	3,271	58	3,329	63	32	6,436	6,468	336	10,196
[Nov 2009-Apr 2010]	3,843	81	3,924	439	27	5,505	5,532	91	9,986
[Nov 2010-Apr 2011]	3,686	39	3,725	0	28	4,635	4,663	58	8,446
[Nov 2011-Apr 2012]	2,811	47	2,858	11	19	3,031	3,050	50	5,969
[Nov 2012-Apr 2013]	4,918	43	4,961	309	42	3,577	3,619	77	8,966
[Nov 2013-Apr 2014]	7,227	39	7,266	723	120	4,869	4,989	72	13,050

Source: DFW 2014

Note:
Data for years in brackets are preliminary.

9B.5.5.4.3 Hybridization

Historically, spring-run Chinook Salmon and fall-run Chinook Salmon both spawned during the fall, but they were separated spatially because spring-run Chinook Salmon spawned in upper tributaries that the fall-run Chinook Salmon could not access. Under current conditions, the Keswick and Shasta dams have prevented spring-run Chinook Salmon from accessing upper tributaries, and instead they spawn in the mainstem Sacramento River where the fall run spawns. The elimination of spatial segregation of fall-run Chinook Salmon and spring-run Chinook Salmon spawning contributed to hybridization on the spawning grounds (Yoshiyama et al. 1998). Also, hatchery practices have likely mixed fall-run and spring-run Chinook Salmon stocks, causing even greater hybridization. By hybridizing with spring-run Chinook Salmon, the peak spawning activity of fall-run Chinook Salmon has likely shifted to occur earlier than it did historically.

9B.5.5.5 Hatchery Influence

Fall-run Chinook Salmon have long been a focus of hatchery production in the Central Valley, and the artificial propagation of the fall run supports the commercial and recreational harvest of salmon in California. Within the Sacramento River basin, Coleman National Fish Hatchery on Battle Creek produces substantial numbers of fall-run salmon for release in the Sacramento River and Bay-Delta estuary. Using a mixed-stock model to estimate the contribution of wild fish from the Central Valley to the fall-run Chinook Salmon ocean fishery, Barnett-Johnson et al. (2007) found that the contribution of wild fish was about 10 percent, which suggests that hatchery supplementation is a substantial contributor to the population.

Late fall-run salmon have been artificially propagated at the Coleman National Fish Hatchery on Battle Creek for more than two decades. USFWS releases between 200,000 and 2.5 million late fall-run juveniles in the Sacramento basin each year, primarily in Battle Creek. Although hatchery strays likely compose a portion of the spawning population of late fall-run salmon in the Sacramento River, it is unclear what proportion of escapements that hatchery-origin fish constitutes. It is also unclear whether hatchery juveniles that are released in Battle Creek compete with naturally spawned juveniles for oversummering habitat in the mainstem Sacramento River.

9B.5.6 Upper Klamath and Trinity Rivers Spring-Run Chinook Salmon

9B.5.6.1 Legal Status

Federal: Not warranted
State: Species of Special Concern

Two Chinook Salmon ESUs are found in the Klamath basin, the Southern Oregon and Coastal (SOCC) ESU and the Upper Klamath and Trinity Rivers ESU. The former are fall-run fish that spawn in the mainstem of the lower Klamath River. The Upper Klamath and Trinity Rivers ESU contains fall-run, late fall-run, and spring-run fish that spawn in the Klamath and Trinity rivers upstream of the Trinity River's confluence with the Klamath. Although wild spring-run Chinook Salmon in the Klamath River system differ from fall-run Chinook Salmon genetically, as well as in terms of life history and habitat requirements (NRC 2004), all are included within this ESU (Myers et al. 1998). The following profile pertains only to the spring-run, and focuses on the South Fork Trinity River (SFTR), which is within the action area and supports one of the few remaining stocks of wild spring-run Chinook Salmon within the greater Klamath Basin (Van Kirk and Naman 2008). The SFTR is the largest undammed river remaining in California.

A status review in 1999 concluded that neither ESU warranted listing (NMFS 1999b). A petition to list the Upper Klamath and Trinity Rivers ESU was submitted to NMFS in January 2011 (CBD et al. 2011); in April 2011, NMFS announced that listing was not warranted. Of primary importance in their decision was their conclusion that the spring-run and fall-run Chinook Salmon in the basin constitute a single ESU (NMFS 2012). The genetic structure of Chinook Salmon populations in coastal basins (as opposed to the Central Valley) indicates that the spring- and fall-run life histories have evolved multiple times in different watersheds (Myers et al. 1998, Waples et al. 2004). Three hatchery stocks from the Iron Gate and Trinity River hatcheries are considered part of the ESU because they were founded using native, local stock in the watershed where fish are released (NMFS 2012).

9B.5.6.2 Distribution

The Upper Klamath and Trinity Rivers ESU includes all naturally spawned and hatchery populations of spring, fall, and late-fall runs of Chinook Salmon in the Klamath and Trinity rivers upstream of the confluence of the Klamath and Trinity rivers. Iron Gate Dam currently blocks upstream migration to historical spawning habitat on the Klamath River, and Lewiston Dam is likewise a barrier to upstream migration on the Trinity River.

9B.5.6.3 Life History and Habitat Requirements

General habitat requirements for Chinook Salmon are described earlier; the following describes life-history strategies and habitat requirements unique to the spring-run Chinook or of primary importance to its life history. Spring-run Chinook Salmon display a stream-type life-history strategy—adults migrate upstream while sexually immature, hold in deep cold pools over the summer, and spawn in late summer and early fall. Juvenile outmigration is highly variable, with some age 0+ juveniles outmigrating in their first spring, but others oversummering and then emigrating as yearlings the following spring.

Table 9B.10 illustrates life-history timing for spring-run Chinook Salmon in the South Fork Trinity River basin.

Table 9B.10 Life History Timing of Spring-run Chinook Salmon in the South Fork Trinity River

Life Stage	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sept		Oct		Nov		Dec	
Adult upstream migration in Klamath River[a]																								
Spawning in SFTR[b]																								
Incubation and alevin development																								
Fry emergence[c]																								
Age 0+ outmigration in SFTR[d, e]																								
Age 1+ outmigration in SFTR[d, f]						?	?	?	?	?	?													
Ocean entry (yearlings)																								

Sources:
a. Snyder 1931; Strange 2008
b. State Coastal Conservancy 2009
c. West et al. 1990
d. Dean 1994, 1995
e. It is not possible to differentiate between fall-run and spring-run juveniles; therefore, exact timing for the spring run is unknown and may differ from the fall run.
f. Occurs in the spring after spawning; exact timing unknown.

Period of activity
Period of peak activity

9B.5.6.3.1 Adult Upstream Migration, Holding, and Spawning

Adults spawn from September through early November in the South Fork Trinity River (State Coastal Conservancy 2009).

Within the SFTR watershed, spring-run Chinook Salmon spawning takes place primarily between Hitchcock Creek and the East Fork of the SFTR on the mainstem SFTR, in Plummer Creek, in the mainstem of Hayfork Creek and the lower reaches of Salt and Tule creeks (USFS 2001a, Reclamation 1994), and possibly Big Creek (Chilcote et al. 2012). The East Fork of Hayfork Creek is used as summer holding habitat by adults, according to USFS (2001b), and adults have been observed during August in the lower SFTR below Surprise Creek and below Mule Bridge (USFS 2011).

9B.5.6.3.2 Egg Incubation and Alevin Development

Emergence takes place from March until early June (West et al. 1990).

9B.5.6.3.3 Juvenile Rearing and Outmigration

Rearing in the SFTR basin takes place in the mainstem SFTR between Hitchcock Creek and the East Fork of the SFTR (USFS 2001a). This area was noted to be an oversummering area by USFS (2001a). Rearing also takes place in Plummer Creek (USFS 2001a).

Juvenile spring-run Chinook Salmon of the Upper Klamath and Trinity Rivers ESU generally remain in fresh water for a year or more. On the South Fork Trinity River, outmigration occurs in late April and May with a peak in May (Dean 1994, 1995); however, it is not possible to differentiate between spring and fall juveniles, so spring-run outmigration timing may differ somewhat from the fall run. Age-1 juveniles (Type III) have been found to outmigrate from the South Fork Trinity River during the following spring (Dean 1994, 1995).

9B.5.6.4 Population Trends

A review by Williams et al. (2011) of Myers et al. (1998) and DFG (1965) estimates historical abundance of the entire ESU (both spring and fall runs) at approximately 130,000 adults for 1912, evenly split between the Klamath and Trinity rivers (NMFS 2012). Since the review by Myers et al. (1998) was published, there apparently has been little change in abundance, population trends, or population growth rates (Williams et al. 2011), except for two of the three spring-run populations that were evaluated, one of which was the South Fork Trinity River, where abundance is low relative to historical estimates (NMFS 2012). The spring run likely dominated numbers of Chinook Salmon in the South Fork Trinity River historically (Reclamation 1994). Declines in the SFTR basin have been attributed to increased sediment delivery and destruction of riparian vegetation from a history of logging and road-building in the characteristically unstable soils found there (USFS 1996; Trinity County Resource Conservation District 2003), effects of the 1964 flood (Reclamation 1994), major wildfire events (e.g., 1987, 2008), mining, and livestock grazing (Chilcote et al. 2012), as well as water withdrawals and clearing of large woody debris from stream channels (USFS 1994). Water withdrawals for domestic and agricultural uses appear to be a major factor influencing fish production in Hayfork Creek (Reclamation 1994), a major tributary to the SFTR that is located in more stable soils. Temperatures in the SFTR and Hayfork Creek are believed to be limiting spring-run populations in the SFTR and Hayfork Creek (Chilcote et al. 2012), thus climate change could result in future declines (Van Kirk and Naman 2008). NMFS suspects that dams on the mainstem Klamath and Trinity rivers caused as much as 90 percent of the spring-run Chinook Salmon decline (USFS 2001b). These dams may affect Chinook Salmon populations by altering natural seasonal flow patterns and temperatures, which affects habitat as well as behavioral cues for life-history transitions (USFS 1999). Escapement of spring-run Chinook Salmon to the Trinity River is shown in Figure 9B.1.

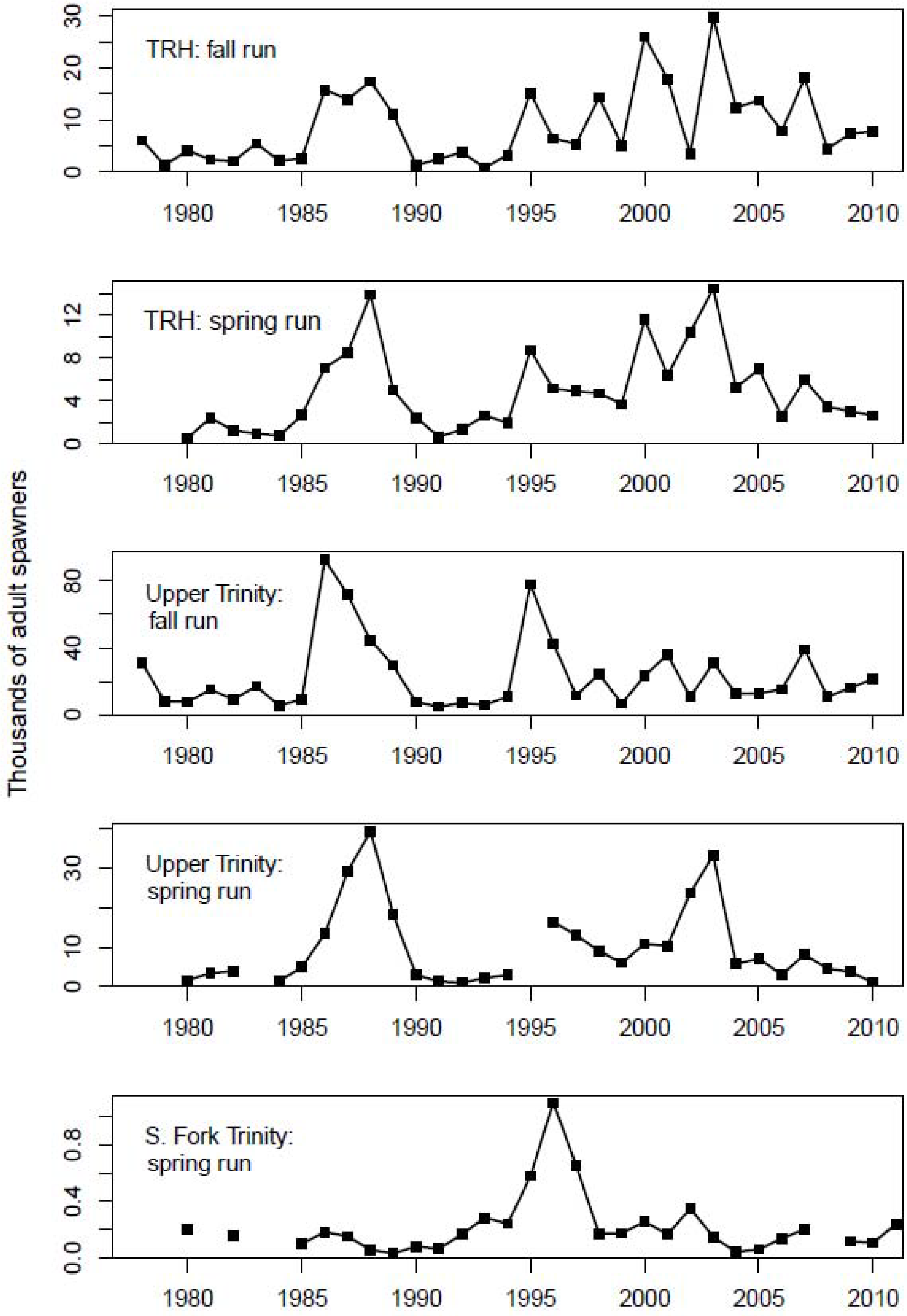

Figure 9B.1 Spring-run Chinook Salmon Escapement in the Trinity River, 1980–2010 (from Williams et al. 2011)

9B.5.6.5 Hatchery Influences

Hatchery stocking using native Chinook Salmon began in 1917 and includes both fall- and spring-run fish. There are two hatcheries in the basin: Iron Gate Hatchery on the Klamath River and Trinity River Hatchery on the Trinity River. Chinook Salmon released from Iron Gate Hatchery are all fall-run fish (NRC 2004), while the Trinity River Hatchery produces both spring- and fall-run Chinook Salmon. Approximately 10.3 million fingerling and yearling Chinook Salmon are released annually from these two hatcheries (NMFS 2012). The stocks from these hatcheries were founded from local, native fish and are genetically similar to local, natural populations; they are considered part of the same ESU by NMFS (NMFS 2012).

9B.5.7 References

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9B.6 Central Valley Steelhead (*Oncorhynchus mykiss*)

9B.6.1 Legal Status

Federal: Threatened; Designated Critical Habitat
State: None

NMFS listed the Central Valley Steelhead ESU as threatened under the Federal ESA in 1998 (NMFS 1998). In 2004, NMFS proposed that all west coast steelhead ESUs be reclassified to DPSs and proposed to retain Central Valley Steelhead as threatened. In January 2006, after a status review (Good et al. 2005), NMFS issued its final decision to retain the status of Central Valley Steelhead as threatened (NMFS 2006).

Designated critical habitat for Central Valley Steelhead includes stream reaches of the American, Feather, Yuba, and Bear rivers and their tributaries and tributaries of the Sacramento River including Deer, Mill, Battle, Antelope, and Clear creeks in the Sacramento River basin; the Mokelumne, Calaveras, Stanislaus, Tuolumne, and Merced rivers in the San Joaquin River basin; and portions of the Sacramento and San Joaquin rivers. Designated critical habitat in the Delta includes portions of the Delta Cross Channel Yolo Bypass, Ulatis Creek, and portions of the network of channels in the Sacramento River portion of the Delta as well as portions of the San Joaquin, Cosumnes, and Mokelumne rivers and portions of the network of channels in the San Joaquin portion of the Delta.

The DPS includes naturally spawned anadromous *O. mykiss* (steelhead) populations below natural and manmade impassable barriers in the Sacramento and San Joaquin rivers and their tributaries, excluding steelhead from San Francisco and San Pablo bays and their tributaries and those from two artificial propagation programs: the Coleman Nimbus Fish Hatchery and Feather River Hatchery steelhead hatchery programs.

NMFS considered including resident *O. mykiss* in listed steelhead DPSs in certain instances, including (1) where resident *O. mykiss* have the opportunity to interbreed with anadromous fish below natural or artificial barriers, or (2) where resident fish of native lineage once had the ability to interbreed with anadromous fish but no longer do because they are above artificial barriers and are considered essential for the recovery of the DPS (NMFS 1998). However, USFWS, which under the ESA has authority over resident fish, concluded that behavioral forms of *O. mykiss* can be regarded as separate DPSs and that lacking evidence that resident Rainbow Trout need ESA protection, only anadromous forms should be included in the DPS and listed under the ESA (NMFS 1998). USFWS also did not believe that steelhead recovery would rely on the intermittent exchange of genetic material between resident and anadromous forms. In the final rule, the listing includes only the anadromous form of *O. mykiss*.

However, NMFS considers all *O. mykiss* that have access to the ocean (including resident Rainbow Trout) to potentially be steelhead and will treat these fish as steelhead because (1) resident fish can produce anadromous offspring, and (2) it is difficult or impossible to distinguish between juveniles of the different forms. Adult resident Rainbow Trout in Central Valley streams are often larger than Central Valley Steelhead. Several sources indicate that resident trout in the Central Valley commonly exceed 16 inches (406 mm) in length. Cramer et al. (1995) reported that resident Rainbow Trout in Central Valley rivers grow longer than 20 inches (508 mm). Hallock et al. (1961) observed resident trout in the upper Sacramento River upstream of the Feather River that were 14 to 20 inches (356 to 508 mm) in length. Also, at Coleman National Fish Hatchery, USFWS found about 15 percent overlap in size distribution between resident and anadromous *O. mykiss* at a length of 22.8 inches (579 mm) (Cramer et al. 1995). Steelhead, therefore, have significant size overlap with resident Rainbow Trout in Central Valley rivers, and many resident adult trout will be considered by NMFS to be steelhead.

The following profiles focus on the anadromous form of the species because these are the most likely to be affected by the proposed action, and several have special status under the ESA.

9B.6.2 Distribution

Central Valley Steelhead are widely distributed throughout their range but are low in abundance, particularly in the San Joaquin River basin, and they continue to decline (NMFS 2003). Microchemical analyses of otoliths taken from *O. mykiss* in the San Joaquin River basin have verified that the anadromous form of this species occurs in low numbers in the San Joaquin River basin (Zimmerman et al. 2009).

9B.6.2.1 Historical Distribution

O. mykiss once occurred throughout the Central Valley, spawning in the upper reaches of tributaries to the Sacramento and San Joaquin rivers. Lindley et al. (2006) conducted geographic information system (GIS) habitat modeling to estimate the amount of suitable habitat to support *O. mykiss* populations in the Central Valley, and their results suggest that steelhead were widely distributed throughout the Sacramento River basin, but relatively less abundant in the San Joaquin River basin due to natural barriers to migration. Yoshiyama et al. (1996) conducted a review of historical sources to document the historical distribution of Chinook Salmon in the Central Valley, which can be used to infer historical distribution of steelhead. The assumption that steelhead distribution in the Sacramento River basin overlapped with, and was likely more extensive than, spring-run Chinook distribution under historical conditions has been supported by studies conducted in the Klamath-Trinity River basin (Bureau of Indian Affairs 1985, Voight and Gale 1998). Yoshiyama et al. (1996) concluded that, because steelhead upstream migration occurs during high flows, their leaping abilities are superior to those of Chinook Salmon, and they have less restrictive spawning gravel criteria. Steelhead in the Sacramento River basin “could have used at least hundreds of miles of smaller tributaries not accessible to the earlier-spawning salmon.” The model created by Lindley et al. (2006) estimates that 80 percent of historically accessible habitat for Central Valley Steelhead is now behind impassable dams; this estimate is supported by other research into steelhead and Chinook Salmon habitat loss in the Central Valley (Clark 1929; Yoshiyama et al. 1996, 2001).

9B.6.2.2 Current Distribution

Steelhead distribution in Central Valley drainages has been greatly reduced (McEwan and Jackson 1996). Steelhead are now primarily restricted to a few remaining free-flowing tributaries and to stream reaches below large dams, although a few steelhead may also spawn in intermittent streams during wet years. Naturally spawning steelhead populations have been found in the upper Sacramento River and tributaries below Keswick Dam; Mill, Deer, and Butte creeks; and the Feather, Yuba, American, and Mokelumne rivers (CMARP 1998). However, the records of naturally spawning populations depend on fish monitoring programs. Recent implementation of monitoring programs has found steelhead in additional streams, such as Auburn Ravine, Dry Creek, and the Stanislaus River. It is possible that naturally spawning populations exist in many other streams but are undetected because of the lack of monitoring or research programs. Although impassable dams prevent resident Rainbow Trout from emigrating, populations with steelhead ancestry may still exist above some dams (Reclamation 2008).

In the Sacramento River basin, populations of *O. mykiss* are known to spawn in the upper Sacramento, Yuba, Feather, and American rivers and in Deer, Mill, and Butte creeks. Saeltzer Dam was removed from Clear Creek in 2000, granting easier access to habitats in the higher-elevation canyon reaches. Though improved access may have opened up suitable spawning and rearing habitat for steelhead, it is not clear if steelhead have colonized Clear Creek since removal of the dam. A summary of recent distribution information for steelhead in Sacramento River tributaries in Good et al. (2005) shows that steelhead are widespread in accessible streams, if not abundant.

Research and monitoring on steelhead are limited in comparison with Chinook Salmon, so there is little specific information about the status and trend of the species and how adults and juveniles use habitats in the mainstem river and the Bay-Delta estuary. Though the upper reaches of the Sacramento River support a spawning population of resident Rainbow Trout, the mainstem river habitat used by the species is atypical for steelhead, which usually spawn in higher elevation, steeper, and narrower channels. Management of the species is also complicated by its polymorphism, with individuals being capable of exhibiting either a resident (Rainbow Trout) or an anadromous (steelhead) life history.

9B.6.3 Life History and Habitat Requirements

Steelhead generally exhibit a more flexible life history strategy than Chinook Salmon, and the habitat requirements of juvenile steelhead differ from those of juvenile Chinook Salmon. Unlike Chinook Salmon, steelhead can be iteroparous—that is, they can survive spawning, return to the ocean, and migrate into fresh water to spawn again. Post-spawning adults are known as kelts. In general, there are two types of steelhead: winter steelhead and summer steelhead.

Winter steelhead are of the ocean-maturing reproductive ecotype, becoming sexually mature during their ocean phase and spawning soon after their arrival at the spawning grounds. Adult summer steelhead are of the stream-maturing type, which enter their natal streams and spend several months holding and maturing in fresh water before spawning. Central Valley Steelhead are predominantly winter steelhead, and this section describes the life history and habitat requirements of winter steelhead.

Table 9B.11 illustrates aspects of the life-history timing of Central Valley Steelhead.

Table 9B.11 Life-History Timing of Central Valley Steelhead

Life Stage	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sept		Oct		Nov		Dec	
Adult Upstream Migration[a]	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Peak	Peak	Peak	Black	Peak	Peak	Peak	Peak	Activity	Activity
Spawning in Mainstem Sacramento River Downstream of Keswick Dam[b]	Peak	Peak	Peak	Peak	Peak	Peak	?																?	?
Incubation and Alevin Development[c]	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity																
Fry Emergence[c]			Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity													
Age 0+ Outmigration from Upper Sacramento River[b]	Peak	Peak	Peak	Peak	Peak	Peak	Activity	Activity	Activity	Activity	Activity	Activity									Activity	Activity	Activity	Activity
Age 1+ Outmigration through the Delta[d]	Activity	Activity	Peak	Peak	Peak	Peak	Peak	Peak	Activity	Activity	Activity	Activity									Activity	Activity	Activity	Activity

Notes:
a. Bailey 1954, Hallock et al. 1961, McEwan 2001
b. Reclamation 2004
c. Based on timing of spawning
d. Based on fish facility salvage data (Reclamation 2004)

Period of activity
Period of peak activity

9B.6.3.1 Adult Migration and Spawning

Central Valley Steelhead generally leave the ocean and migrate upstream from August through March (Busby et al. 1996), In the Sacramento River, steelhead migrate upstream nearly every month of the year, with the bulk of migration from August through November and the peak in late September (Bailey 1954, Hallock et al. 1961, McEwan 2001). Spawning in the upper Sacramento River generally occurs from December through April (Newton and Stafford 2011).

The majority of steelhead in the mainstem Sacramento River spawn downstream of Keswick Dam (RM 302), with peak spawning from January through March when water temperatures throughout much of the Sacramento River are suitable to support egg incubation and emergence. The highest-density spawning within the mainstem is likely in the upstream portion of this area near Redding; however, the downstream extent of spawning is likely determined by the location of suitable water temperatures to support summer rearing of 0+ juveniles, which lack the swimming ability to move significant distances upstream to follow the upstream retreat of cold water in summer. Most Sacramento River steelhead are believed to spawn in the tributary streams. The progeny of adults that construct redds downstream of locations with suitable water temperatures in summer likely suffer high rates of mortality and contribute little to the population.

Steelhead migrate and spawn during high flows when observations and sampling are difficult (McEwan 2001). They may have a spawning distribution similar to late fall-run Chinook Salmon in that the juveniles of both species oversummer at least once before outmigration, so redds must be located where summer water temperatures can support summer rearing. The downstream extent of late fall-run Chinook Salmon spawning is generally near Ball's Ferry Bridge (RM 276) in most years. Steelhead generally have higher thermal tolerances than Chinook Salmon (Moyle 2002), so steelhead spawning may extend slightly farther downstream.

Under historical conditions, steelhead likely spawned in much higher-gradient reaches in the Sacramento River and its tributaries, as do steelhead in other portions of their range. Steelhead are common in reaches with gradients of less than 6 percent (Burnett 2001, Harvey et al. 2002, Hicks and Hall 2003) and occur in some systems in reaches of up to 12 percent and more (Engle 2002). Though steelhead will spawn in mainstem river channels, it is unlikely that they spawned in the reach of the mainstem Sacramento River below Keswick Dam where they currently spawn because summer water temperatures in this reach were likely too high to support oversummering by juveniles.

As with Chinook Salmon, steelhead spawn in areas with suitable gravel and hydraulics. Work by Bovee (1978) found that steelhead prefer water depths of 14 inches (36 cm) for spawning, with a range between 6 and 24 inches (15 and 61 cm), and water velocities of 2 feet/second (61 cm/second), with a range of 1 to 3.6 feet/second (30 to 110 cm/second), which is similar to the hydraulic conditions preferred by Chinook Salmon in the Central Valley. Steelhead generally prefer to spawn in gravels, with optimal grain sizes ranging between

0.6 and 10 cm (6 and 102 mm) (Bjornn and Reiser 1991). For comparison, grain sizes used by spawning Chinook range from a D_{50} of 0.43 inch (10.8 mm) (Platts et al. 1979) to a D_{50} of 3.1 inches (78.0 mm) (Chambers et al. 1954, 1955).

Research in more northerly populations suggests that optimal spawning temperatures range from 39 to 52°F (4 to 11°C), with egg mortality at water temperatures above 56°F (13°C) (Hooper 1973, Bovee 1978, Reiser and Bjornn 1979, Bell 1986). More research is needed to understand the specific temperature tolerances of steelhead in the Central Valley and southern portions of their range. There is evidence that different strains of *O. mykiss* may have different thermal tolerances at the egg and embryo stage (Myrick and Cech 2001).

As stated above, steelhead can survive spawning, return to the ocean, and migrate into fresh water to spawn again. Although some kelts have been documented in the Sacramento River, there are probably few repeat spawners in the Sacramento River population (Reclamation 2004).

9B.6.3.2 Fry and Juvenile Rearing

Fry emergence is influenced by water temperature, but hatching generally requires 4 weeks, with another 4 to 6 weeks in the gravels before emergence. After emerging, steelhead fry typically disperse to shallow (<14 inches [36 cm]), low-velocity near-shore areas such as stream margins and low-gradient riffles and will forage in open areas lacking instream cover (Hartman 1965, Everest et al. 1986, Fontaine 1988). Everest and Chapman (1972) found that juvenile steelhead of all sizes most often chose territories over large-sized substrates. As they increase in size in late summer and fall, they increasingly use areas with cover and show a preference for higher-velocity, deeper mid-channel areas near the thalweg (Hartman 1965, Everest and Chapman 1972, Fontaine 1988). Bovee (1978) reports that fry prefer water depths ranging between 10 inches (25 cm) and 20 inches (51 cm) and water temperatures ranging between 45°F (7°C) and 60°F (16°C). Age 0+ steelhead have been relatively abundant in backwater pools and often live in the downstream ends of pools in late summer (Bisson et al. 1988, Fontaine 1988).

Steelhead fry may establish and defend territories soon after emerging (Shapovalov and Taft 1954). Fry and juvenile steelhead that are unsuccessful in establishing a territory may be displaced downstream where they may suffer higher rates of mortality from predation, entrainment, or elevated water temperatures (Dambacher 1991, Peven et al. 1994, Reedy 1995). Keeley (2001) found that increased competition between juvenile steelhead, caused by higher fish densities or lower food densities, caused increased mortality, lower or more variable growth rates, and emigration of smaller fish. Downstream dispersal due to overcrowding or high flows in rearing habitat does not necessarily increase mortality where there is suitable habitat downstream (Kahler et al. 2001). Downstream dispersal to larger stream reaches for further rearing prior to smolting appears common in many systems (Bjornn 1978, Loch et al. 1985, Leider et al. 1986, Dambacher 1991).

9B.6.3.3 Summer Rearing

Summer habitat can generally be assumed to be more limiting for age 1+ and 2+ juvenile steelhead than for age 0+ in many streams. Older age classes of juvenile steelhead (ages 1+ and 2+) prefer deeper water in summer than fry and show a stronger preference for pool habitats, especially deep pools near the thalweg with ample cover, as well as higher-velocity rapid and cascade habitats (Bisson et al. 1982, 1988; Dambacher 1991). Dambacher (1991) observed that most 1+ steelhead in the Steamboat Creek watershed of the North Umpqua River in Oregon were concentrated in mainstem reaches with relatively deep riffles and large substrates. Age 1+ fish typically feed in pools, especially scour and plunge pools (Fontaine 1988, Bisson et al. 1988). Age 1+ steelhead appear to avoid secondary channel and dammed pools, glides, and low-gradient riffles with mean depths less than 7.8 inches (20 cm) (Fontaine 1988, Bisson et al. 1988, Dambacher 1991). Beecher et al. (1993) reported that juvenile steelhead longer than 3 inches (75 mm) avoided areas less than 6 inches (15 cm) deep. Reedy (1995) indicates that age 1+ steelhead especially prefer high-velocity pool heads, where food resources are abundant, and pool tails, which provide optimal feeding conditions in summer due to lower energy expenditure requirements than the more turbulent pool heads. Fast, deep water, in addition to optimizing feeding versus energy expenditure, provides greater protection from avian and terrestrial predators (Everest and Chapman 1972).

9B.6.3.4 Winter Rearing

For juvenile steelhead to survive winter, they must avoid predation and high flows. The higher-gradient reaches typically used for spawning by steelhead (generally >3 percent) are often confined and characterized by coarse substrate that is immobile at all but the highest flows. Juvenile steelhead often use the interstitial spaces between cobbles and boulders as cover from high water velocity and presumably to avoid predation (Bjornn 1971, Hartman 1965, Bustard and Narver 1975, Swales et al. 1986, Everest et al. 1986, Grunbaum 1996). Age 0+ steelhead can use shallower habitats and can find interstitial cover in gravel-size substrates, while age 1+ or 2+ steelhead, because of their larger size, need coarser cobble/boulder substrate for cover (Bustard and Narver 1975; Bisson et al. 1982, 1988; Fontaine 1988; Dambacher 1991). Bustard and Narver (1975) reported that 1+ steelhead prefer water deeper than 17.5 inches (45 cm) in winter, while age 0+ steelhead often occupy water less than 5.8 inches (15 cm) deep and are rarely found at depths over about 23.4 inches (60 cm). In winter, age 1+ steelhead typically stay within the area of streambed that remains inundated at summer low flows, while age 0+ fish frequently overwinter beyond the summer low flow perimeter along the stream margins (Everest et al. 1986). Consequently, winter rearing habitat for age 1+ and 2+ juvenile steelhead is assumed to be more limiting than for age 0+ juveniles.

9B.6.3.5 Length of Stream Residence

Juvenile steelhead typically rear in fresh water from 1 to 3 years before outmigrating (McEwan and Jackson 1996). The majority of returning adult steelhead in the Central Valley have spent 2 years in fresh water before emigrating to the ocean (McEwan 2001). A scale analysis conducted by Hallock et al. (1961) indicated that 70 percent emigrated after 2 years, 29 percent after 1 year, and 1 percent after 3 years in fresh water. Juvenile emigration from the upper Sacramento River occurs between November and late June, with a peak between early January and late March (Reclamation 2004).

9B.6.3.6 Bay-Delta Residence

The Delta serves as an adult and juvenile migration corridor, connecting inland habitat to the ocean. The Delta may also serve as a nursery area for juvenile steelhead (McEwan and Jackson 1996); however, much is unknown regarding historical and current role of the Delta as steelhead nursery habitat. In coastal populations of winter steelhead, it is common for juvenile steelhead to migrate downstream at age 1+ and rear in the estuary for an additional year before smolting. Based on fish facility salvage data, most steelhead move through the Delta from November through June, with the peak salvage during February, March, and April. The majority of steelhead salvaged range from 175 to 325 mm, with the most common size ranging from 226 to 250 mm. Some of the age 1+ steelhead captured in rotary screw traps at RBDD, GCID, and Knights Landing may continue rearing for another year before entering the ocean. There may be some areas of the Bay-Delta estuary where summer water temperatures are moderated by tidal action so that steelhead 1+ migrants are able to rear throughout summer (Reclamation 2008).

9B.6.4 Population Trends

Construction of large dams in the Central Valley had great impact on *O. mykiss* populations because it eliminated access to nearly 80 percent of historical spawning and rearing habitat (Lindley et al. 2006). Construction of Shasta and Keswick dams eliminated access to many upstream tributaries (e.g., McCloud River, Pit River, and Sacramento River) that provided the cold water temperatures required for year-round rearing by steelhead. Dam construction also landlocked potentially anadromous *O. mykiss* populations in the upper watershed, forcing them to adopt a resident life history strategy (McEwan 2001).

In general, the majority of Central Valley Steelhead are confined to nonhistorical spawning and rearing habitat below impassable dams, but the existing spawning and rearing habitat can sustain steelhead at current population levels. In addition, monitoring data indicate that much of the anadromous form of the species is hatchery supported. Also, a strong resident component to the population (Rainbow Trout) interacts with and produces both resident and anadromous offspring.

In general, steelhead stocks throughout California have declined substantially. McEwan and Jackson (1996) reported that the adult population of steelhead in California was approximately 250,000, less than half the population that existed in the 1960s (McEwan and Jackson 1996). In the Central Valley, approximately 1 to 2 million adult steelhead may have returned annually prior to 1850, as based on historical Chinook Salmon abundance (McEwan 2001, NMFS 2006). In the Sacramento River basin, the average run size of steelhead in the 1950s was estimated to be approximately 20,540 adults (McEwan and Jackson 1996). In contrast, escapement estimates in 1991 and 1992 were less than 10,000 adults, less than half of the run size in the 1950s (McEwan and Jackson 1996). Similarly, counts of wild steelhead at RBDD declined from an average annual run size of 12,900 in the late 1960s to 1,100 adults in the 1993–94 season (McEwan and Jackson 1996). The most recent 5-year average for steelhead spawning upstream of RBDD is less than 2,000 adults (Good et al. 2005). NMFS (2006) notes that escapement estimates have not been made for the area upstream of RBDD since the mid-1990s and that estimates of abundance are derived from extrapolation of incidental catch of outmigrating juvenile steelhead captured as part of the midwater-trawl sampling for juvenile Chinook Salmon at Chipps Island, downstream of the confluence of the Sacramento and San Joaquin rivers.

Populations of naturally spawned Central Valley Steelhead have declined and are composed predominantly of hatchery fish. The California Fish and Wildlife Plan of 1965 estimated the combined annual run size for Central Valley and San Francisco Bay tributaries to be about 40,000 during the 1950s (DFG 1965). The spawning population during the mid-1960s for the Central Valley basin was estimated at about 27,000 (DFG 1965). These numbers likely consisted of both hatchery and wild steelhead. McEwan and Jackson (1996) estimated the annual run size for the Central Valley basin to be less than 10,000 adults by the early 1990s. Much of the abundance data since the mid-1960s were obtained by visual fish counts at the RBDD fish ladders when gates were closed during much of the steelhead migration season. Current abundance estimates are not available for naturally spawned fish since RBDD gate operations were changed, so the extent to which populations have changed following the 1987−94 drought is unknown. NMFS’ (2003) status review estimated the Central Valley Steelhead population at less than 3,000 adults.

9B.6.5 Hatchery Influence

Reclamation funds the operation of Coleman Hatchery, Livingston Stone Hatchery, Nimbus Hatchery, and Trinity River Hatchery. DWR funds the operation of the Feather River Hatchery. USFWS operates Coleman and Livingston Stone hatcheries, and DFW operates Feather River, Nimbus, and Trinity hatcheries. These hatcheries are operated to mitigate for the anadromous salmonids that would be produced by the habitat if not for the dams on each respective river. Reclamation and DWR have discretion over how the hatcheries are operated, but generally leave operational decisions on how to meet mitigation goals to the operating agency (Reclamation 2008).

Hatchery production of steelhead is large compared to natural production, based on the Chipps Island trawl data (Good et al. 2005). The bulk of hatchery releases in the Central Valley occurs in the Sacramento River basin. An analysis of steelhead captures from trawl data by Nobriga and Cadrett (2001) indicated that hatchery steelhead composed 63 to 77 percent of the steelhead catch. Steelhead stocks at the Mokelumne River Hatchery and Nimbus Hatchery on the American River are not part of the Central Valley Steelhead DPS because of the source of broodstock used and genetic similarities to Eel River stocks (Good et al. 2005).

Genetic analysis indicated steelhead from the American River (collected from both the Nimbus Hatchery and the American River) are genetically more similar to Eel River steelhead (Northern California ESU) than other Central Valley Steelhead stocks. Eel River steelhead were used to found the Nimbus Hatchery stock. Mokelumne River Rainbow Trout (hatchery produced and naturally spawned) are genetically most similar to Mount Shasta Hatchery trout, but also show genetic similarity to the Northern California ESU (Nielsen 1997). Nielsen et al. (2005) found American River steelhead to be genetically different from other Central Valley stocks.

9B.6.6 References

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9B.7 Klamath Mountains Province Steelhead (*Oncorhynchus mykiss*)

9B.7.1 Legal Status

Federal: Not warranted
State: Species of Special Concern

A status review in 2001 (NMFS 2001) concluded that the Klamath Mountains Province Steelhead DPS was not in danger of extinction or likely to become so in the foreseeable future; therefore, it was not warranted for listing as threatened or endangered. This conclusion was based on population estimates and a finding that the genetic risk from naturally spawning hatchery fish was lower than estimated in previous reviews, as well as consideration of ongoing and proposed conservation efforts for anadromous salmonids in the basin (NMFS 2001).

The Klamath Mountains Province Steelhead DPS contains both summer and winter runs. Moyle (2002) describes steelhead in the Klamath Basin as having a summer run and a winter run. Some divide the winter run into fall and winter runs (Barnhart 1994, Hopelain 1998, USFWS 1998, Papa et al. 2007). In this section, winter steelhead refers to steelhead returning from fall through winter, except in cases when the distinction is pertinent to the discussion. The following summary focuses on steelhead in the Trinity River, which is within the area potentially affected by the proposed action, and on the mainstem Klamath in terms of potential effects on its role as a migration corridor for the steelhead runs.

9B.7.2 Distribution

Based on escapement data, approximately 55 percent of the summer run spawn in the Trinity River and other lower-elevation tributaries to the Klamath River. The Trinity, Scott, Shasta, and Salmon rivers are important spawning streams for the winter run.

Historically, steelhead probably ascended Clear Creek past the French Gulch area, but access to the upper basin was blocked by Whiskeytown Dam in 1964 (Yoshiyama et al. 1996). Operation of Whiskeytown Dam can produce suitable cold-water habitat downstream to Placer Road Bridge depending on flow releases (DFG 1998). McCormick-Saeltzer Dam, which limited steelhead migrations through ineffective fish ladders, was removed in 2000, allowing steelhead potential access to good habitat up to Whiskeytown Dam. USFWS has conducted snorkel surveys targeting spring-run Chinook (May through September) since 1999. Steelhead/rainbow are enumerated and separated into small, medium, and large (>22 inches) during these surveys, but because the majority of the steelhead run is unsurveyed, no spawner abundance estimates have been attempted (Reclamation 2008). Redd counts conducted during the 2001-02 run found that most spawning occurred upstream, near Whiskeytown Dam. Because of the large resident rainbow population, no steelhead population estimate could be made (Reclamation 2008). A remnant “landlocked” population of Rainbow Trout with steelhead ancestry may exist in Clear Creek above Whiskeytown Dam (Reclamation 2008).

9B.7.3 Life History and Habitat Requirements

General habitat requirements for steelhead are described in the Central Valley Steelhead profile; the following describes life history strategies and habitat requirements unique to steelhead of the Upper Klamath Mountains Province DPS or of primary importance to its life history. Both winter and summer runs of steelhead are included in the DPS. Winter steelhead become sexually mature during their ocean phase and spawn soon after arriving at their spawning grounds. Adult summer steelhead enter their natal streams and spend several months holding and maturing in fresh water before spawning. Throughout the entire year, at least one of the diverse life stages can be found present in the river (Israel 2003). As with the Central Valley DPS, this DPS is composed predominantly of winter steelhead.

9B.7.3.1 Winter Run

Winter steelhead adults generally enter the Klamath River from July through October (fall run) and from November through March (winter run) (USFWS 1998). Winter steelhead primarily spawn in tributaries from January through April (USFWS 1998), with peak spawn timing in February and March (ranging from January to April) (NRC 2004). Adults may repeat spawning in subsequent years after returning to the ocean. Half-pounders typically use the mainstem Klamath River until leaving the following March (NRC 2004), although they also use larger tributaries such as the Trinity River (Dean 1994, 1995).

Fry emerge in spring (NRC 2004), with fry observed in outmigrant traps in Bogus Creek and Shasta River from March through mid-June (Dean 1994). Age-0+ and 1+ juveniles have been captured in outmigrant traps in spring and summer in tributaries to the Klamath River above Seiad Creek (DFG 1990a, 1990b). These fish are likely rearing in the mainstem or non-natal tributaries before leaving as age-2+ outmigrants.

Juvenile outmigration primarily occurs between May and September with peaks between April and June, although smolts are captured in the estuary as early as March and as late as October (Wallace 2004). Most adult returns (86 percent) originate from fish that smolt at age 2+, in comparison with only 10 percent for age-1 juveniles and 4 percent for age 3+ juveniles (Hopelain 1998).

Similar limiting factors listed for summer steelhead also affect winter steelhead populations, including degraded habitats, decreased habitat access, fish passage, predation, and competition (for more species information see USFWS 1998, NRC 2004, and Wallace 2004).

9B.7.3.2 Summer Run

Summer steelhead adults enter and migrate up the Klamath River from March through June while sexually immature (Hopelain 1998), then hold in cooler tributary habitat until spawning begins in December (USFWS 1998).

Juvenile summer steelhead in the Klamath Basin may rear in fresh water for up to 3 years before outmigrating. Although many juveniles migrate downstream at age 1+ (Scheiff et al. 2001), those that outmigrate to the ocean at age 2+ appear to have the highest survival (Hopelain 1998). Juveniles outmigrating from tributaries at age 0+ and age 1+ may rear in the mainstem or in non-natal tributaries (particularly during periods of poor water quality) for 1 or more years before reaching an appropriate size for smolting. Age-0 juvenile steelhead have been observed migrating upstream into tributaries, off-channel ponds, and other winter refuge habitat in the lower Klamath River. Juvenile outmigration can occur from spring through fall. Smolts are captured in the mainstem and estuary throughout fall and winter (Wallace 2004), but peak smolt outmigration normally occurs from April through June, based on estuary captures (Wallace 2004). Temperatures in the mainstem are generally suitable for juvenile steelhead, except during summer, especially upstream of Seiad Valley.

9B.7.4 Population Trends

Long-term data are not available to evaluate Klamath River steelhead population trends. DFG (1965) estimated a basinwide annual run size of 283,000 adult steelhead (spawning escapement + harvest). Busby et al. (1994) reported winter steelhead runs in the basin to be 222,000 during the 1960s. Steelhead spawning surveys on tributaries to the mainstem Trinity River were conducted in 1964, 1971, 1972, and 1974 to monitor the effect of Lewiston Dam on steelhead populations. Hopelain (2001) used creel and gill net harvest data to estimate the winter-run steelhead population at 10,000 to 30,000 adults annually in the early 1980s. Spawning surveys were also conducted in South Fork Trinity River tributaries from 1989 to 1995 under DFW's Trinity River Project (Garrison 2000).

Population estimates of summer steelhead showed a steep decline during the 1990s (Reclamation 2008), but Koch (2001) reported increasing runs on the Klamath and Trinity rivers following the late 1990s.

9B.7.5 Hatchery Influence

Reclamation funds the operation of Coleman Hatchery, Livingston Stone Hatchery, Nimbus Hatchery, and Trinity River Hatchery. DWR funds the operation of the Feather River Hatchery. USFWS operates Coleman and Livingston Stone hatcheries, and DFW operates Feather River, Nimbus, and Trinity hatcheries. These hatcheries are operated to mitigate for the anadromous salmonids that would be produced by the habitat if not for the dams on each respective river. Reclamation and DWR have discretion over how the hatcheries are operated, but generally leave operational decisions on how to meet mitigation goals to the operating agency (Reclamation 2008).

NMFS (2001) reported that the Trinity River population is thought to contain a large percentage of hatchery origin spawners of mostly fall-run fish (20-70 percent).

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9B.8 Southern Oregon/Northern California Coast Coho Salmon ESU (*Oncorhynchus kisutch*)

9B.8.1 Legal Status

Federal: Threatened
State: Threatened

Coho Salmon (*Oncorhynchus kisutch*) in the Trinity River are in the Southern Oregon/Northern California Coast Coho Salmon ESU and were listed as threatened under the ESA in 1997 (NMFS 1997) and threatened under the California Endangered Species Act in 2002. This ESU includes naturally spawning populations between Punta Gorda, California, and Cape Blanco, Oregon, which encompasses the Trinity and Klamath basins (NMFS 1997). Three artificial propagation programs are considered to be part of the ESU: the Cole Rivers Hatchery, Trinity River Hatchery, and Iron Gate Hatchery Coho Salmon programs. NMFS has determined that these artificially propagated stocks are no more than moderately diverged from the local natural populations. In addition, Coho Salmon in the Klamath Basin have been listed by the California Fish and Game Commission as threatened under the California Endangered Species Act (DFG 2002).

9B.8.2 Life History and Habitat Requirements

Coho Salmon exhibit a 3-year life cycle in the Trinity River and depend on freshwater habitat conditions year-round because they spend a full year residing in fresh water. Most Coho Salmon enter rivers between August and January, with some more northerly populations entering as early as June. Coho Salmon river entry timing is influenced by such factors as genetics, stage of maturity, river discharge, and access past the river mouth. Spawning is concentrated in riffles or in gravel deposits at the downstream end of pools with suitable water depth, velocity, and substrate size. Spawning in the Trinity River occurs mostly in November and December. Coho eggs incubate from 35 to more than 100 days depending on water temperature and emerge from the gravel 2 to 7 weeks after hatching. Coho eggs hatch after an accumulation of 400 to 500 temperature units measured in degrees Celsius and emerge from the gravel after 700 to 800 temperature units. After emergence, fry move into areas out of the main current. As Coho grow, they spread out from the areas where they were spawned. During summer, juvenile Coho prefer pools and riffles with adequate cover such as large woody debris with smaller branches, undercut banks, and overhanging vegetation and roots.

Juvenile Coho Salmon overwinter in large mainstem pools, beaver ponds, backwater areas, and off-channel pools with cover such as woody debris and undercut banks. Most juvenile Coho Salmon spend a year in fresh water, with northerly populations spending 2 full years in fresh water. Coho in the Trinity River are thought be exclusively 3-year-life-cycle fish (1 year in fresh water). Because juvenile Coho remain in their spawning stream for a full year after emerging from the gravel, they are exposed to the full range of freshwater conditions. Most smolts migrate to the ocean between March and June, with most leaving in April and May. Coho Salmon typically spend about 16 to 18 months in the ocean before returning to their natal streams to spawn as 3- or 4-year-olds, age 1.2 or 2.2. Trinity River Coho are mostly 3-year-olds. Some precocious males, called jacks, return to spawn after only 6 months in the ocean.

Juvenile Coho Salmon in the Trinity River spend up to a full year in fresh water before migrating to the ocean. Their habitat preferences change throughout the year and are highly influenced by water temperature. During summer, when Coho are most actively feeding and growing, they spend more time closer to main channel habitats. Coho use slower water than steelhead or Chinook Salmon. Coho juveniles are more oriented to submerged objects, such as woody debris, while Chinook and steelhead select habitats in summer based largely on water movement and velocities, although the species are often intermixed in the same habitat. Juvenile Coho use the same habitats as pikeminnows, a possible reason that Coho are not present in Central Valley watersheds. Juvenile Coho would be vulnerable to predation from larger pikeminnows during warm-water periods. Pikeminnow do not occur in Southern Oregon/Northern California Coast coho streams. When the water cools in fall, juvenile Coho move farther into backwater areas or into off-channel areas and beaver ponds if available. There is often no water velocity in the areas inhabited by Coho during winter. These same off-channel habitats are often dry or unsuitable during summer because temperatures get too high.

Lewiston Dam blocks access to 109 miles of upstream habitat. Trinity River Hatchery produces Coho Salmon with a production goal of 500,000 yearlings to mitigate for the upstream habitat loss. Habitat in the Trinity River has changed since flow regulation with the encroachment of riparian vegetation restricting channel movement and limiting fry rearing habitat (Trush et al. 2000). According to the Trinity River Restoration Plan, higher peak flows are needed to restore attributes of a more alluvial river such as alternate bar features and more off-channel habitats. These are projected in the restoration plan to provide better rearing habitat for Coho Salmon than the dense riparian vegetation currently present. A number of restoration actions have been completed. A new flow schedule has provided higher spring releases to geomorphically maintain habitat. Physical habitat manipulations have been implemented providing better juvenile rearing in selected sites along the river.

9B.8.3 Population Trends

Coho Salmon were not likely the dominant species of salmon in the Trinity River before dam construction. However, Coho were widespread in the Trinity Basin ranging as far upstream as Stuarts Fork above Trinity Dam. Wild Coho in the Trinity Basin today are not abundant, and the majority of the fish returning to the river are of hatchery origin. An estimated 2 percent (200 fish) of the total Coho Salmon run in the Trinity River were composed of naturally produced Coho from 1991 through 1995 at a point in the river near Willow Creek (USFWS 1998). This, in part, prompted the threatened status listing in 1997. These estimates included a combination of hatchery produced and wild Coho. About 10 percent of the Coho were naturally produced since 1995.

9B.8.4 Hatchery Influences

The Trinity River portion of the Southern Oregon/Northern California Coast Coho Salmon ESU is predominately of hatchery origin. Termination of hatchery production of Coho Salmon at the Mad River and Rowdy Creek facilities has eliminated further potential adverse risks associated with hatchery releases from these facilities. Likewise, restrictions on recreational and commercial harvest of Coho Salmon since 1994 likely have had a positive impact on Coho Salmon adult returns.

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9B.9 Sacramento Splittail (*Pogonichthys macrolepidotus*)

9B.9.1 Legal Status

Federal: None
State: Species of Special Concern

USFWS listed Sacramento Splittail as a threatened species on March 10, 1999, because of the reduction in its historical range and because of the large population decline during the 1987-93 drought (USFWS 1996, 1999). On June 23, 2000, the Federal Eastern District Court of California found the final rule to be unlawful and on September 22, 2000, remanded the determination back to USFWS for a reevaluation of the final decision. After a thorough review, USFWS removed the Sacramento Splittail from the list of threatened species (USFWS 2003) and reaffirmed this decision in 2010 (USFWS 2010).

9B.9.2 Distribution

Sacramento Splittail are endemic to the Sacramento and San Joaquin River systems of California, including the Delta and the San Francisco Bay. Historically, splittail were found in the Sacramento River as far upstream as Redding, in the Feather River to Oroville, and in the American River upstream to Folsom. In the San Joaquin River, they were once documented as far upstream as Friant (Rutter 1908). Splittail are thought to have originally ranged throughout the San Francisco estuary, with catches reported by Snyder (1905) from southern San Francisco Bay and at the mouth of Coyote Creek.

In wet years, Sacramento Splittail have been found in the San Joaquin River as far upstream as Salt Slough (Saiki 1984, Baxter 1999, Brown and Moyle 1993, Baxter 2000) and in the Tuolumne River as far upstream as Modesto (Moyle 2002), where the presence of both adults and juveniles during wet years in the 1980s and 1990s indicated successful spawning.

When spawning, splittail can be found in the lower reaches of rivers and flooded areas. Otherwise they are primarily confined to the Delta, Suisun Bay, Suisun Marsh, the lower Napa River, the lower Petaluma River, and other parts of the San Francisco estuary (Meng et al. 1994, Meng and Moyle 1995). In general, splittail are most abundant in Suisun Marsh, especially in drier years (Meng and Moyle 1995), and reportedly rare in southern San Francisco Bay (Leidy 1984). Splittail abundance appears to be highest in the northern and western Delta when population levels are low, and they are more evenly distributed throughout the Delta during successful year classes (Sommer et al. 1997, Moyle 2002).

Splittail are largely absent from the upper river reaches where they formerly occurred, residing primarily in the lower parts of the Sacramento and San Joaquin rivers and tributaries and in Central Valley lakes and sloughs (Moyle 2002, Moyle et al. 2004). In wet years, however, they have been known to ascend the Sacramento River as far as RBDD and into the lower Feather and American rivers (Baxter et al. 1996; Sommer et al. 1997; Baxter 1999, 2000). The Sutter and Yolo bypasses along the lower Sacramento River appear to be important splittail spawning areas (Sommer et al. 1997). Splittail now migrate into the San Joaquin River only during wet years, and use of the Sacramento River and its tributaries is likely more important (Moyle 2002).

9B.9.3 Life History and Habitat Requirements

9B.9.3.1 Non-Breeding

Non-reproductive adult splittail are most abundant in moderately shallow, brackish areas, but can also be found in freshwater areas with tidal or riverine flow (Moyle et al. 2004). Non-breeding splittail are found in temperatures ranging from 5 to 24°C, depending on the season, and acclimated fish can survive temperatures up to 33°C for short periods (Young and Cech 1996). Juveniles and adult splittail demonstrate optimal growth at 20ºC and signs of physiological distress only above 29ºC (Young and Cech 1995).

Because splittail are adapted for living in brackish waters with fluctuating conditions, they are tolerant of high salinities and low dissolved oxygen (DO) levels. Splittail are often found in salinities of 10 to 18 parts per thousand (ppt), although lower salinities may be preferred (Meng and Moyle 1995) and can survive low DO levels (0. 6 to 1.2 milligrams per liter for young-of-the-year, juveniles, and subadults) (Young and Cech 1995, 1996). Because splittail have a high tolerance for variable environmental conditions (Young and Cech 1996) and are generally opportunistic feeders (prey includes mysid shrimp, clams, copepods, amphipods, and terrestrial invertebrates), reduced prey abundance will not likely have major population-level impacts. Year class success appears dependent on access and availability of floodplain spawning and rearing habitats, high outflow, and wet years (Sommer et al. 1997).

9B.9.3.2 Spawning

Adults typically migrate upstream from brackish areas in January and February and spawn in fresh water on inundated floodplains in March and April (Moyle et al. 2004). Foraging in flooded areas along the main rivers, bypasses, and tidal freshwater marsh areas of Montezuma and Suisun sloughs and San Pablo Bay before the onset of spawning may contribute to spawning success and survival of adults after spawning (Moyle et al. 2004). Splittail are adapted to the wet-dry climatic cycles of Northern California and thus concentrate their reproductive effort in wet years when potential success is enhanced by the availability of inundated floodplain (Meng and Moyle 1995, Sommer et al. 1997). Splittail are thought to be fractional spawners, with individuals spawning over a protracted period—often as long as several months (Wang 1995). Older fish are believed to begin spawning first (Caywood 1974).

Splittail eggs are deposited in flooded areas among submerged vegetation, to which they adhere until hatching. Rising flows appear to be the major trigger for splittail spawning, but increases in water temperature and day length may also be factors (Moyle et al. 2004). Spawning typically occurs on inundated floodplains from February through June, with peak spawning in March and April. Information indicates that splittail spawn in open areas with moving, turbid water less than 5 feet (1.5 m) deep, among dense annual vegetation and where water temperatures are below 15°C (Moyle et al. 2004). Perhaps the most important spawning habitat in the eastern Delta is the Cosumnes River floodplain, where ripe splittail have been observed in flooded fields with cool temperatures below 15°C, turbid water, and submerged terrestrial vegetation (Crain et al. 2004).

Females are typically highly fecund, with the largest individuals potentially producing 100,000 or more eggs (Daniels and Moyle 1983, Feyrer and Baxter 1998). Fecundity has been found to be variable, however, and may be influenced by food supplies in the year before spawning (Moyle et al. 2004). The adhesive eggs are released by the female, fertilized by one or more attendant males, and adhere to vegetation until hatching (Moyle 2002). Splittail eggs, which are 0.4 to 0.6 inch (1.0 to 1.6 mm) in diameter (Wang 1986, Feyrer and Baxter 1998), begin to hatch within 3 to 7 days, depending on temperature (Bailey 1994). Eggs laid in clumps hatch more quickly than individual eggs (Moyle et al. 2004). Within 5 to 7 days after hatching, swim bladder inflation occurs, and larvae begin active swimming and feeding (Moyle 2002). Little is known regarding the tolerance of splittail eggs and developing larvae to DO, temperature, pH, or other water quality parameters, or to other factors such as physical disturbance or desiccation.

9B.9.3.3 Larvae

Juveniles are strong swimmers and are usually found in shallow (less than 6.6 feet [2 m] deep), turbid water (Young and Cech 1996). As their swimming ability increases, juveniles move away from the shallow areas near spawning sites into faster, deeper water (Moyle 2002). Floodplain habitat offers high food quality and production and low predator densities to increase juvenile growth.

After emergence, most larval splittail remain in flooded riparian areas for 10 to 14 days, most likely feeding among submerged vegetation before moving off floodplains into deeper water as they become stronger swimmers (Sommer et al. 1997, Wang 1986). Although juvenile splittail rear in upstream areas for a year or more (Baxter 1999), most move to tidal waters after only a few weeks, often in response to flow pulses (Moyle et al. 2004). The majority of juveniles move downstream into shallow, productive bay and estuarine waters from April to August (Meng and Moyle 1995). Growth likely depends on the availability of high-quality food, especially in the first year of life (Moyle et al. 2004).

9B.9.4 Population Trends

A variety of surveys have compiled splittail abundance data. None of these, however, was specifically designed to systematically sample splittail abundance, and definitive conclusions are therefore not possible (Moyle et al. 2004). Combined, the survey data indicate that successful reproduction occurs on a yearly basis, but large numbers of juvenile splittail are produced only when outflow is relatively high. Thus, the majority of adult fish in the population probably result from spawning in wet years (Moyle et al. 2004). The stock-recruitment relationship in splittail is apparently weak, indicating that given the right environmental conditions, a small number of large females can produce many young (Sommer et al. 1997, Meng and Moyle 1995).

Accounts of early fisheries suggested that splittail had large seasonal migrations (Walford 1931). Splittail migration now appears closely tied to river outflow. In wet years with increased river flow, adult splittail will still move long distances upstream to spawn, allowing juvenile rearing in upstream habitats. The upstream migration is smaller during dry years, although larvae and juveniles are often found upstream of Sacramento to Colusa or Ord Bend on the Sacramento River (Moyle et al. 2004). The tidal upper estuary, including Suisun Bay, provides most juvenile rearing habitat, although young-of-the-year may rear over a broader area, including the lower Sacramento River. Brackish water provides optimal rearing habitat for splittail.

DFW estimates that splittail during most years are only 35 to 60 percent as abundant as they were in 1940 (DFG 1992). DFW midwater trawl data indicate considerable fluctuations in splittail numbers since the mid-1960s, with abundance often tracking river and Delta outflow conditions. The overall trends include a decline from the mid-1960s to the late 1970s, somewhat of a resurgence through the mid-1980s, and another decline from the mid-1980s through 1994 (Moyle 2002). In 1995 and 1998, the population increased dramatically, demonstrating the extreme short- and long-term variability of splittail recruitment success and the apparent correlation with river outflow (Sommer et al. 1997). In 2006, when spring outflows were the highest since 1998, beach seine surveys conducted by USFWS in the lower portion of the estuary recorded the highest number of 0+ fish individuals since the surveys began in 1992 (Greiner et al. 2007). Surveys in the upper portions of the estuary showed a decline in catches of splittail and many other Delta fish. These declines were coupled with declines in zooplankton, which are the primary food source for splittail (Hieb et al. 2004). Pesticide use in the Central Valley may contribute to reduced zooplankton abundance in the Delta and thus to the POD (Oros and Werner 2005).

Splittail may also be negatively affected by the introduction of the overbite clam (*Potamocorbula amurensis*) in the 1980s, which resulted in a collapse of opossum shrimp (*Neomysis mercedis*) populations, which were a primary source of food for splittail. The recent introduction of the Siberian prawn may similarly pose a threat to splittail food sources, as the Siberian prawns prey on mysid shrimp, which make up a large portion of spittail diets (Moyle et al. 2004). River outflow in February through May can explain between 55 and 69 percent of the variability in abundance of splittail young, depending on the abundance measure. Age -0 abundance of splittail declined in the estuary during most dry years, particularly in the drought that began in 1987 (Sommer et al. 1997). However, not all wet years result in high splittail recruitment because recruitment success largely depends on the availability of flooded spawning habitat. In 1996, for example, most high river flows occurred in December and January, before the onset of the splittail spawning season (Moyle 2002).

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9B.10 Delta Smelt (*Hypomesus transpacificus*)

9B.10.1 Legal Status

Federal: Threatened, Designated Critical Habitat
State: Endangered

The USFWS listed the Delta Smelt as threatened in March 1993 (USFWS 1993), and critical habitat for this species was designated in 1994 (USFWS 1994). The Delta Smelt was one of eight fish species addressed in the Recovery Plan for the Sacramento–San Joaquin Delta Native Fishes (USFWS 1996). This recovery plan is currently under revision. The 2004 status review affirmed the need to retain the Delta Smelt as a threatened species (USFWS 2004). A 12-month finding on a petition to reclassify the Delta Smelt was completed in April 2010 and the USFWS determined that re-classifying the Delta Smelt from a threatened to an endangered species was warranted, but precluded by other higher-priority listing actions (USFWS 2010).

9B.10.2 Distribution

Delta Smelt are endemic to and resident in the Delta and San Francisco Bay. According to a recent review (Merz et al. 2011), the distribution of Delta Smelt includes an area from northern San Francisco Bay in the west, the confluence of the Sacramento and Feather rivers in the north, and the junction of Old and San Joaquin rivers in the south. The highest densities most frequently occur near the center of their range, which appears to extend from Suisun Marsh down through Grizzly Bay and east Suisun Bay through the confluence of the Sacramento and

San Joaquin rivers, and into the lower portions of the Sacramento River, Cache Slough area, and the Sacramento Deepwater Ship Channel.

Delta Smelt abundance and geographic distribution are dependent upon freshwater outflows and the salinity of the Bay and Delta (Herbold et al. 1992). There is a close association between Delta Smelt abundance and surface salinity of 0–18 practical salinity units (psu) (psu are roughly equivalent to ppt), suggesting that their distribution is determined largely by the interaction with salinity conditions as determined by tidal currents, freshwater outflow, and diffusion, rather than by geography (Bennett 2000, 2005; Moyle 2002). For instance, water clarity and salinity were found to be the most reliable abiotic predictors of Delta Smelt abundance during the summer and fall (Feyrer et al. 2007, Nobriga et al. 2008). In addition, geographic distribution for particular life stages can vary dramatically between dry and wet years. Thus, in low outflow years, Delta Smelt occur primarily in the lower Sacramento River, with the area near Decker Island consistently exhibiting greatest catch over time. In years of very high outflow, however, their distribution extends into San Pablo Bay and the Napa River (Bennett 2000).

9B.10.3 Life History and Habitat Requirements

Overall, the Delta Smelt life cycle is completed in the brackish and tidal freshwater reaches of the upper San Francisco Estuary. However, salinity requirements vary by life stage. Apart from spawning and egg-embryo development, the distribution and movements of all life stages are influenced by transport processes associated with water flows in the estuary, which also affect the quality and location of suitable open water habitat (Dege and Brown 2004; Feyrer et al. 2007; Nobriga et al. 2008).

9B.10.3.1 Spawning

Delta Smelt generally exhibit an annual, 1-year lifecycle. They are found at 0-18 psu surface salinity (Baxter et al. 1999), although most are caught at salinities less than 6.0 psu, with older juveniles and adults being found at the higher end of that gradient (Bennett 2005). Delta Smelt feed primarily on planktonic copepods, cladocerans, and amphipods (Baxter et al. 2008). In recent years, a small to moderate number of Delta Smelt have been observed in the Deep Water Ship Channel during the late fall. The Deep Water Ship Channel can provide suitable water temperatures for Delta Smelt year-round (Sommer and Mejia 2013), which likely promotes freshwater residence in Delta Smelt in this region of the Delta (Sommer and Mejia 2013).

Delta Smelt are weakly anadromous and undergo a spawning migration from the low salinity zone to freshwater in most years (Grimaldo et al. 2009; Sommer et al. 2011). Spawning migrations occur between late December and late February, typically during “first flush” periods when inflow and turbidity increase on the Sacramento and San Joaquin Rivers (Grimaldo et al. 2009, Sommer et al. 2011). Notably, spawning movements are not always upstream. Under high outflow conditions, when total outflow exceeds 100,000 cubic feet per second (cfs), adult smelt tend to concentrate and spawn in Suisun Bay, Cache Slough Complex, and

Napa River (Hobbs et al. 2007; Sommer et al. 2011). During drier years, when total outflow is less than 20,000 cfs, smelt tend to concentrate and spawn in the Cache Slough Complex and western Delta.

Adequate flows and suitable water quality are needed to attract migrating adults in the Sacramento and San Joaquin River channels and their associated tributaries, including Cache and Montezuma sloughs and their tributaries (USFWS 1996). Adult smelt do not spawn immediately after migration to freshwater, but appear to stage in upstream habitats (Sommer et al. 2011). Spawning typically commences when water temperatures reach 12°C, which typically occurs in early March. Spawning can continue into July (Wang 1986, Sweetnam and Stevens 1993), although most spawning takes place from early April to mid-May (Moyle 2002).

Delta Smelt are believed to spawn in shallow water along edges of rivers and sloughs subject to tidal influence (USFWS 2001). Based upon the occurrence of ripe females and yolk-sac larvae, spawning areas during dry and typical years are found in the north Delta reaches of the Sacramento River (Moyle 2002). Spawning locations in the Delta have not been identified and are inferred from larval catches (Bennett 2005). Larval fish have been observed in Montezuma Slough (Wang 1986), Suisun Slough in Suisun Marsh (Moyle 2002), the Napa River estuary (Stillwater Sciences 2006), the Sacramento River above Rio Vista, and Cache, Lindsey, Georgiana, Prospect, Beaver, Hog, Sycamore, and Barker sloughs (USFWS 1996). During wet years, Delta Smelt can be found spawning throughout most of the Delta, Suisun Marsh, and west to the Napa River (Herbold et al. 1992).

Although the specific substrates or habitats used for spawning by Delta Smelt are not known, spawning habitat preferences of closely related species (Bennett 2005) suggest that spawning may occur in shallow areas over sandy substrates. Although smelt can be found within a wide salinity range, from 0 to 18.4 ppt (Swanson et al. 2000), spawning occurs within in freshwater (Wang 1986). Spawning apparently can occur at temperatures ranging from 45-72°F (7-22°C) (Moyle 2002), but most often takes place between 45 and 59°F (7 and 15°C) (Wang 1986).

Spawning is thought to occur at night during new or full moons when the tide is low (Moyle 2002). Females (2.3-2.8 in [59-70 mm] SL) typically lay between 1,200 and 2,600 eggs (Moyle et al. 1992) and the relationship between female size (FL) and fecundity has been determined to be: Number of eggs = $0.266FL^{2.089}$ (Mager 1996). Most adults die after spawning, although a small number remain in the population for a second year (Moyle 2002) and may contribute disproportionately to the egg supply because of their increased size (3.5-4.7 in [90-120 mm] SL) (Moyle 2002).

9B.10.3.2 Hatching and Larval Distribution

No data are available on optimal temperature for survival of embryos, though some data suggest that high temperatures correspond to low hatching success and low embryo survival (R. Mager, unpubl. data; as cited in Winternitz and Wadsworth 1997). According to Moyle (2002), “it is likely that survival decreases as temperature increases beyond 18°C [64°F]." At temperatures between 59 and 62°F (14.8 and 16.5°C), embryonic development is reported to take approximately 9-13 days (Mager 1996). Although hatching has been detected from late February to June, peak hatching typically occurs in April.

Newly hatched smelt begin feeding on rotifers and other microscopic prey approximately 4-5 days after hatching, maintaining a position just above the bottom with the help of a large oil globule that makes them semi-buoyant (Mager 1996). The swim bladder and fins are fully developed several weeks later, and larvae rise up into the water column (Moyle 2002). During high outflow periods, larvae are distributed more widely as the spawning range extends further west when Delta outflows are high (Hobbs et al. 2007). Dege and Brown (2004) found that larvae less than 20 mm rear 5 to 20 km upstream of X2 (Dege and Brown 2004; Sommer and Mejia 2013). As larvae grow and water temperatures increase in the Delta (to approximately 23°C), their distribution shifts towards the low salinity zone (Dege and Brown 2004; Nobriga et al. 2008), where they circulate with the abundant zooplankton (Moyle 2002). By fall, the centroid of Delta Smelt distribution is tightly coupled with X2 (Sommer et al. 2011; Sommer and Mejia 2013).

Sommer and Mejia (2013) conducted a General Additive Model (GAM) analysis of Delta Smelt catch data from the 20-mm survey to determine suitable habitat parameters. They found larval Delta Smelt are more frequently captured in turbid and low salinity water. The analysis also showed that larval smelt presence in the survey peaked when water temperatures reach 20°C with low capture probability below 10°C and above 25°C.

The abundance of suitable rearing habitat for larvae varies from year to year, depending upon when peak spawning occurs. Peak larval density may occur as late as July or August. Base flows and pulse flows that transport and provide behavioral cues for Delta Smelt larvae and juveniles from February through June may not be adequate if larval peaks occur in July or August.

9B.10.3.3 Juvenile Rearing and Growth

The specific geographic area critical to the maintenance of suitable rearing habitat for Delta Smelt extends eastward from Carquinez Strait, up the Sacramento River to its confluence with Three Mile Slough (at RM 9), and south along the San Joaquin River including Big Break (USFWS 1996). Within this area, Delta Smelt typically rear in shallow (less than 10 ft [3 m]), open estuarine waters (Moyle 2002), in salinities ranging from 2-7 ppt (Swanson and Cech 1995) where "fresh and brackish water mix and hydrodynamics are complex as a result of the meeting of tidal and riverine currents" (Moyle 2002). These conditions are typically most common in Suisun Bay, which provides vital nursery habitat for Delta Smelt. When the mixing zone is located in Suisun Bay, it provides optimal conditions for algal and zooplankton growth, an important food source for Delta Smelt (Moyle 2002). When freshwater outflow is low, the mixing zone moves further up into the deeper, narrow channels of the Delta and Sacramento River, reducing food availability and total area available to the smelt (Moyle 2002).

Water quality preferences and thresholds for Delta Smelt are not well documented. Winternitz and Wadsworth (1997) observed that fewer Delta Smelt were collected in areas of higher temperatures than in areas of lower temperatures. Because other factors were not controlled, it is not clear whether temperature or other factors were driving Delta Smelt distribution. Nobriga et al. (2000) reported that Delta Smelt tolerated slightly higher water temperatures at a salinity of 4 ppt than in fresh water, but noted that further study is needed of these potentially interacting factors. Similar to larvae, a GAM analysis of the tow net survey data shows that suitable smelt habitat is best defined by water clarity, specific conductance (salinity), water temperature (Nobriga et al. 2008). As previously noted, some juvenile smelt will remain in the Sacramento Deep Water Ship Channel during the summer and fall months. The channel is deep, turbid, and offers some temperature refuge, which may explain why smelt remain in this freshwater habitat when most other smelt at this life stage are in found in the low salinity zone.

Planktonic copepods, cladocerans, amphipods, and, to a lesser extent, insect larvae, are the primary prey items for Delta Smelt (Moyle 2002). Delta Smelt larvae have more specific prey-size requirements for first feeding. In a study conducted in the northern estuary and Delta, Lott (1998) found that smaller size classes of Delta Smelt tended to consume more nauplii and juvenile copepods, while larger size classes consumed more adult copepods. It appears that food availability after yolk-sac absorption is critical in determining success of Delta Smelt (Nobriga 1998). However, it is not known if a limited food supply contributes to reduced year-class success and therefore has population-level implications.

Juvenile Delta Smelt grow rapidly, typically reaching 1.6-2 inches (40-50 mm) FL by early August (Radtke 1966, Moyle et al. 1992). Growth rate appears to be dependent on the quality and abundance of food (Moyle 2002). Adult length (2.2-2.8 inches [55-70 mm] SL) is typically reached by September, or approximately 7-9 months after hatching (Moyle 2002). By fall, Delta Smelt are fully capable of altering their distribution to suitable habitat. Using a GAM approach, Feyrer et al. (2007) showed that Delta Smelt habitat is best defined by turbidity and specific conductance (salinity). Unlike the other analyses, Feyrer et al. (2010) converted the GAM model results to a habitat index for Delta Smelt, showing that habitat improves and expands for Delta Smelt when X2 is in Suisun Bay compared to when X2 is located at or above the confluence. The relationship between the habitat index and X2 is asymptotic, whereby the index does not increase for X2 ≤74 km or decrease for X2 ≥81 km. For the period 1967 – 2008, relative abundance of juvenile delta smelt, as measured by the fall midwater trawl index, was positively correlated with the fall habitat index (Feyrer et al. 2010).

The quantity and suitability of Delta Smelt habitat increases with higher outflow (Bennett 2005). When the near-bottom mixing zone is contained within Suisun Bay and when adequate outflow from both the Sacramento and San Joaquin rivers have allowed downstream movement, young Delta Smelt are dispersed more widely throughout a large expanse of shallow-water and marsh habitat than when the isohaline is upstream in the narrower, deeper Delta sloughs and channels. If smelt use this habitat and their distribution is wider and shifted downstream, subsequent entrainment in the winter will be reduced. Habitat conditions suitable for transport of larvae and juveniles are needed as early as February 1 and as late as August 31, because the spawning season varies from year to year and starts as early as December and extends until July (USFWS 1996). Adequate river flow is necessary to provide this transport to Suisun Bay and to maintain rearing habitat (USFWS 1996).

The abundance of many local estuarine taxa has tended to increase in years when flows into the estuary are high and the X2 location is pushed seaward (Jassby et al. 1995), implying that over the range of historical experience the quantity or suitability of estuarine habitat increases when outflows are high. Feyrer et al. (2007) reported that fall environmental quality has declined over the long-term in the core range of Delta Smelt, including Suisun Bay and the Delta. This decline was largely due to changes in salinity in Suisun Bay and the western Delta, and changes in water clarity within the Delta. Baxter et al. (2008) reported the long-term environmental quality declines for Delta Smelt and Striped Bass are defined by a lowered probability of occurrence in samples based on changes in specific conductance and Secchi depth.

Planktonic copepods, cladocerans, amphipods, and, to a lesser extent, insect larvae, are the primary prey items for Delta Smelt (Moyle 2002). Delta Smelt larvae have more specific prey-size requirements for first feeding. In a study conducted in the northern estuary and Delta, Lott (1998) found that smaller size classes of Delta Smelt tended to consume more nauplii and juvenile copepods, while larger size classes consumed more adult copepods. It appears that food availability after yolk-sac absorption is critical in determining success of Delta Smelt (Nobriga 1998). However, it is not known if a limited food supply contributes to reduced year-class success and therefore has population-level implications.

The overbite clam has been associated with large changes in phytoplankton abundance in San Francisco Bay and the western Delta (Carlton et al. 1990), causing a decrease in abundance of other species that depend on phytoplankton (zooplankton) for food. Due in part to its efficiency in filtering water, the clarity of Suisun Bay and delta waters has increased. This has affected Delta Smelt by reducing food supply and increasing its susceptibility to predation.

9B.10.4 Population Trends

California Department of Fish and Wildlife has conducted several long-term monitoring surveys that have been used to index the relative abundance of Delta Smelt. The 20-mm Survey has been conducted every year since 1995. This survey targets late-stage Delta Smelt larvae. Most sampling has occurred from April to June. The Summer Townet Survey (TNS) has been conducted nearly every year since 1959. This survey targets 38-mm Striped Bass, but collects similar-sized juvenile Delta Smelt. Most sampling has occurred from June to August. The Fall Midwater Trawl Survey (FMWT has been conducted nearly every year since 1967. This survey also targets age-0 Striped Bass, but collects Delta Smelt longer than 40 mm. The FMWT samples monthly from September to December. These abundance index time series document the long-term decline of the Delta Smelt.

Early statistical assessments of Delta Smelt population dynamics concluded that the relative abundance of the adult Delta Smelt population had only a very weak influence on subsequent juvenile abundance (Sweetnam and Stevens 1993). Thus, early attempts looked for environmental variables that were directly correlated with interannual abundance variation (e.g., Stevens and Miller 1983; Moyle et al. 1992; Sweetnam and Stevens 1993; Jassby et al. 1995). Because these analyses did not find strong support for an outflow-abundance linkage, the prevailing conceptual model was that multiple interacting factors had caused the Delta Smelt decline (Moyle et al. 1992; Bennett and Moyle 1995; Bennett 2005). It has also recently been noted that Delta Smelt's FMWT index is partly influenced by concurrent environmental conditions (Feyrer et al. 2007; 2010).

It is now recognized that Delta Smelt abundance plays an important role in subsequent smelt abundance. Bennett (2005) examined (1) the influence of adult stock (FMWT) on the next generation of juveniles (TNS); (2) the influence of the juvenile stock (TNS) on the subsequent adult stock (FMWT); (3) the influence of the FMWT on the following year's FMWT and on the FMWT two years later, and (4) the influence of the TNS abundance on the following year's TNS and on the TNS 2 years later. His conclusions were that (1) 2-year-old Delta Smelt might play an important role in Delta Smelt population dynamics, (2) it was not clear whether juvenile production was a density-independent or density dependent function of adult abundance, and (3) adult production was a density-dependent function of juvenile abundance and the carrying capacity of the estuary to support this life-stage transition had declined over time. These conclusions are also supported by Maunder and Deriso (2011).

Delta Smelt were historically one of the most common species in the San Francisco Estuary, but exhibited significant declines during the 1980s (DFG 2000). Kimmerer (2002) and Thomson et al. (2010) reported a Delta Smelt step-decline during 1981-1982. Prior to this decline, the stock-recruit data are consistent with "Ricker" type density-dependence where increasing adult abundance resulted in decreased juvenile abundance. Since the decline, recruitment has been positively and essentially linearly related to prior adult abundance, suggesting that reproduction has been basically density-independent for about the past 30 years. In contrast to the transition among generations, the weight of scientific evidence strongly supports the hypothesis that, at least over the history of IEP fish monitoring, Delta Smelt has experienced density-dependence during the juvenile stage of its life cycle (i.e., between the summer and fall) (Bennett 2005; Maunder and Deriso 2011). The most relevant aspect of this juvenile density dependence is that the carrying capacity of the estuary for Delta Smelt has likely declined (Bennett 2005).

Therefore, the USFWS (2012) believes that the Delta Smelt population decline has occurred for two basic reasons. First, the compensatory density-dependence that historically enabled juvenile abundance to rebound from low adult numbers stopped happening. This change had occurred by the early 1980s as described above. The reason is still not known, but the consequence of the change is that for the past several decades, adult abundance has driven juvenile production in a largely density-independent manner (Kimmerer 2011). Second, because juvenile carrying capacity has declined, juvenile production hits a 'ceiling' at a lower abundance than it once did. This limits adult abundance and possibly per capita fecundity, which cycles around and limits the abundance of the next generation of juveniles. The mechanism causing carrying capacity to decline is likely due to the long-term accumulation of adverse changes in both physical and biological aspects of habitat during the summer to fall (Bennett et al. 2008; Feyrer et al. 2007; 2010; Maunder and Deriso 2011).

9B.10.5 References

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9B.11 Longfin Smelt (*Spirinchus thaleichthys*)

9B.11.1 Legal Status

Federal: Candidate for listing as Endangered
State: Threatened

Longfin Smelt is a state-listed threatened species throughout its range in California (DFG 2009). USFWS denied a petition for Federal listing because the population in California (and specifically the San Francisco Bay) was not believed to be sufficiently genetically isolated from other populations (USFWS 2009). The Center for Biological Diversity challenged the merits of this determination. In 2011, USFWS entered into a settlement agreement with the Center for Biological Diversity and agreed to conduct a rangewide status review and prepare a 12-month finding to be published by September 30, 2011. The 12-month finding on the petition to list the San Francisco Bay-Delta population of the Longfin Smelt as endangered or threatened was completed in March 2012. USFWS determined that listing the Longfin Smelt rangewide was not warranted at the time, but that listing the Bay-Delta DPS of Longfin Smelt was warranted but precluded by other higher priority listing actions (USFWS 2012).

9B.11.2 Distribution

Populations of the Longfin Smelt have been found in estuaries along the Pacific coast from Prince William Sound, Alaska, to the Sacramento-San Joaquin estuary (USFWS 2012). The largest population occupies the Sacramento-San Joaquin estuary, with a smaller population in Humboldt Bay and the Eel River (Moyle 2002). They may occur throughout the year in the estuary and lowest reaches of the Klamath River, but little is known of this population.

Merz et al. (2013) utilized recently available sampling data (~1959-2012) from the Interagency Ecological Program and regional monitoring programs to provide a comprehensive description of the range and temporal and geographic distribution of Longfin Smelt (Spirinchus thaleichthys) by life stage within the San Francisco Estuary. Observations occurred as far west as Tiburon in Central San Francisco Bay and south as far as the Dumbarton Bridge in South San Francisco Bay; north as far as the town of Colusa on the Sacramento River and east as far as Lathrop on the San Joaquin River. Longfin smelt were also observed in seasonally-inundated habitat of the Yolo Bypass and in tributaries like the Napa and Petaluma rivers, Cache Slough, and the Mokelumne River (Merz et al. 2013).

9B.11.3 Life History and Habitat Requirements

Longfin Smelt typically live in bays and estuaries and make seasonal migrations. During winter, they congregate for spawning in the upper reaches of the bays and lower reaches of the river deltas. Juvenile and adult Longfin Smelt have been found throughout the year in salinities ranging from pure fresh water to pure seawater, although once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 ppt (Baxter 1999). Within the Delta, adult Longfin Smelt occupy water at temperatures from 16 to 20°C (61 to 68°F) and spawn in water with temperatures from 5.6 to 14.5°C (41 to 58°F) (Wang 1986).

Longfin Smelt have been observed in their winter and spring spawning period as far upstream as Isleton in the Sacramento River, Santa Clara shoal in the San Joaquin system, Hog Slough off the South-Fork Mokelumne River, and Old River south of Indian Slough (DFG 2009). Merz et al. (2013) found that adults were frequently detected in the central regions (from Carquinez Straight upstream to the Confluence), adults were also detected relatively frequently upstream of the Sacramento-San Joaquin confluence. Both adult and larval Longfin Smelt were detected relatively frequently upstream of the confluence, unlike the juvenile and subadult life stages, likely indicating that Longfin Smelt spawning habitat extends further upstream into freshwater areas than rearing habitat. Spawning adults appear to be able to disperse into upper Delta reaches and into San Francisco Bay as well. The presence of adult Longfin Smelt in San Francisco Bay during the spawning period likely relates to years with high Delta inflows, when low salinity habitat shifted westward (Merz et al. 2013). Exact spawning locations in the Delta are unknown and may vary from year to year, depending on environmental conditions. However, it seems likely that spawning locations consist of the overlap of appropriate conditions of flow, temperature, and salinity with appropriate substrate (Rosenfield 2010). Most individuals die after spawning, but occasionally a female may live to spawn a second time.

Longfin Smelt congregate in deep waters near the low salinity zone near X2 during the spawning period, and they likely make short runs upstream, possibly at night, to spawn from these locations (DFG 2009, Rosenfield 2010). Longfin Smelt in the Delta may spawn as early as November and as late as June, although spawning typically occurs from January to April (DFG 2009, Moyle 2002). The adhesive eggs are deposited on rocks or aquatic plants in the freshwater sections of bays and river deltas. Baxter et al. (2010) found that female Longfin Smelt produced between 1,900 and 18,000 eggs, with fecundity greater in fish with greater lengths.

Larval Longfin Smelt less than 12 mm (0.5 inch) in length are buoyant because they have not yet developed an air bladder; as a result, they occupy the upper one-third of the water column. Longfin Smelt develop an air bladder at approximately 12 to 15 mm (0.5 to 0.6 inch) in length and are able to migrate vertically in the water column. At this time, they shift habitat and live in the bottom two-thirds of the water column (DFG 2009). Longfin Smelt are dispersed broadly in the Delta by high flows and currents, which facilitate transport of larvae and juveniles long distances. Longfin Smelt larvae are dispersed farther downstream during high freshwater flows (Dege and Brown 2004). Longfin Smelt larvae were detected relatively frequently upstream of the Sacramento-San Joaquin confluence; greater than 73 percent of the time in the Lower Sacramento, Upper Sacramento, Cache Slough and Ship Channel, and Lower San Joaquin regions, and greater than 31 percent of the time in the East Delta and South Delta regions during the smelt larval surveys (Merz et al. 2013).

Longfin Smelt spend approximately 21 months of their 24-month life cycle in brackish or marine waters (Baxter 1999, Dege and Brown 2004). In the Bay-Delta, most Longfin Smelt spend their first year in Suisun Bay and Marsh. The remainder of their life is spent in the San Francisco Bay or the Gulf of Farallones (Moyle 2008). Based on monthly survey results, Rosenfield and Baxter (2007) inferred that the majority of Longfin Smelt from the Bay-Delta migrate out of the estuary after the first winter of their life cycle and return during late fall to winter of their second year. They noted that migration out of the estuary into nearby coastal waters is consistent with captures of Longfin Smelt in the coastal waters of the Gulf of Farallones and hypothesized that the movement is a behavioral response to warm water temperatures during summer and early fall in the shallows of south San Francisco Bay and San Pablo Bay. Some Longfin Smelt may stay in the ocean and not re-enter fresh water to spawn until the end of their third year.

In the Bay-Delta, calanoid copepods such as *Pseudodiatomus forbesi* and *Eurytemora* sp., as well as the cyclopoid copepod *Acanthocyclops vernali*, are the primary prey of Longfin Smelt during the first few months of their lives (approximately January through May) (Slater 2008). The Longfin Smelt's diet shifts to include mysids such as opossum shrimp (*Neomysis mercedis*) and other small crustaceans (*Acanthomysis* sp.) as soon as they are large enough (20 to 30 mm [0.78 to 1.18 inches]) to consume these larger prey items (DFG 2009).

Longfin Smelt numbers in the Bay-Delta have declined significantly since the 1980s (Rosenfield and Baxter 2007, Baxter et. al. 2010). Rosenfield and Baxter (2007) confirmed the positive correlation between Longfin Smelt abundance and freshwater flow that had been previously documented by others (Stevens and Miller 1983, Baxter 1999, Kimmerer 2002), noting that abundances of both adults and juveniles were significantly lower during the 1987–94 drought than during either the pre- or post-drought periods. Abundance of Longfin Smelt has remained low since 2000, even though freshwater flows increased during several of these years (Baxter et al. 2010). Abundance indices derived from the FMWT, Bay Study Midwater Trawl, and Bay Study Otter Trawl show marked declines in Longfin Smelt populations from 2002 to 2009. Longfin Smelt abundance over the last decade is the lowest recorded in the 40-year history of DFG's FMWT monitoring surveys (USFWS 2012).

Research on declines of Longfin Smelt and other pelagic fish species in the Bay-Delta since 2002 (referred to as pelagic organism decline) have most recently been summarized in the Interagency Ecological Program 2010 Pelagic Organism Decline Work Plan and Synthesis of Results (Baxter et al. 2010). Although there is substantial uncertainty about the causal mechanisms underlying the pelagic organism decline, reduced Delta freshwater flows have been identified as one of several key factors believed to contribute to recent declines in the abundance of Longfin Smelt (Baxter et al. 2010).

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9B.12 Eulachon (*Thaleichthys pacificus*)

9B.12.1 Legal Status

Federal: Threatened
State: Species of Special Concern

9B.12.2 Summary

Eulachon are anadromous fish that occur in the lower portions of certain rivers draining into the northeastern Pacific Ocean, ranging from northern California to the southeastern Bering Sea in Bristol Bay, Alaska (Scott and Crossman 1973, Willson et al. 2006).

The southern population of Pacific Eulachon consists of populations spawning in rivers south of the Nass River in British Columbia, Canada, to and including the Mad River in California (NMFS 2009). On March 18, 2010, NMFS listed the southern DPS of Pacific Eulachon as threatened under the ESA (NMFS 2010); critical habitat was designated in 2011 (NMFS 2011). The Klamath River is near the southern limit of the range of Eulachon (Eulachon BRT 2010).

Spawning occurs in gravel riffles, with hatching about a month later. The larvae generally move downstream to the estuary following hatching.

Large spawning aggregations of Pacific Eulachon used to regularly occur in the Klamath River (Fry 1979), migrating in March and April to spawn, but they rarely moved more than 8 miles inland (NRC 2004). DFW sampled in the Klamath River from 1989 to 2003 with no Pacific Eulachon captures (USDI and DFG 2011). The Yurok Tribe sampled extensively for Pacific Eulachon in early 2011, and although tribal fishermen did not capture Pacific Eulachon from the Klamath River itself, they did recover Pacific Eulachon from the surf zone at the mouth of the river (USDI and DFG 2011).

9B.12.3 References

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9B.13 Striped Bass (*Morone saxatilis*)

9B.13.1 Legal Status

Federal: None
State: None

Striped Bass are native to the Atlantic Coast of North America and were introduced to California in 1879. Striped Bass are a large (>1 meter), long-lived (>10 years) species. They are widespread in the San Francisco Estuary watershed as juveniles and adults. Striped Bass move regularly from salt to fresh water. They require a large body of water for foraging on fish (usually estuaries or large reservoirs) and large cool rivers for spawning. Striped Bass spend most of their lives in estuaries.

9B.13.2 Distribution in Affected Area

Adult Striped Bass are distributed mainly in the lower bays and ocean during the summer, and in the Delta during fall and winter. Spawning takes place in the spring (April–June), at which time Striped Bass swim upstream to spawning grounds. In the Sacramento River, most spawning takes place between RM 77.7 and RM 121.2 (Moyle 2002). After spawning, adults move downstream into the Delta and bays (Blunt 1962).

9B.13.3 Life History and Habitat Requirements

Female Striped Bass mature at between 4 and 6 years of age and can spawn every year. In the Delta and Sacramento and San Joaquin rivers, spawning occurs from April to June at temperatures between 14°C and 21°C. Eggs are free-floating and negatively buoyant, and hatch in about two days as they drift downstream, with larvae occurring in shallow and open waters of the lower reaches of the Sacramento and San Joaquin rivers, the Delta, Suisun Bay, Montezuma Slough, and Carquinez Strait. Location of spawning varies based on temperature, flow, and salinity (Turner 1972). In the Yolo Bypass, Harrell and Sommer (2003) observed that flow pulses immediately preceding floodplain inundation triggered upstream movement of Striped Bass, resulting in successful spawning. During low flow years, spawning occurs within the Delta itself.

Newly hatched Striped Bass feed off their yolk sac for up to 8 days (Wang 1986), after which they start feeding on zooplankton. Larvae in the Sacramento River migrate into the water column from April to mid-June (Stevens 1966). In the Sacramento River, embryos and larvae are carried into the Delta and Suisun Bay (Moyle 2002). In the San Joaquin River, embryos remain in the same general area where spawning took place, as freshwater outflow is balanced by tidal currents (Moyle 2002). When larval bass from both rivers begin to feed, they are concentrated in the most productive part of the estuary—where freshwater and salt water meet or near X2 (Moyle 2002).

Striped Bass are tolerant of a wide range of environmental conditions, surviving temperatures up to 25°C (77ºF) (and up to 34°C [93ºF] for shorter periods), rapid temperature swings, low oxygen levels between 3 and 5 milligrams per liter (mg/L), and high turbidity (Moyle 2002). Hassler (1988), in a summary of environmental tolerance studies, reported that Striped Bass could tolerate dissolved oxygen concentrations ranging from 3 to 20 mg/L, and a pH range of 6 to 10, although the optimum level ranged from 6 to 12 mg/L and 7 to 9, respectively. The information compiled by Hassler (1988) suggested juveniles preferred rearing temperatures of 24 to 26°C (60.8 to 66.2°F). As Striped Bass grow, their temperature preference shifts towards cooler water (Hill et al. 1989). Adult Striped Bass appear to prefer water temperatures ranging from 20 to 24°C (68 to 75.2°F) (Emmett et al. 1991).

Typical of an anadromous species, salinity tolerance of Striped Bass also changes with age (Lal et al. 1977, Hill et al. 1989). Eggs and larvae reportedly thrive at salinities less than 3 practical salinity units (psu) (Mansueti 1958, Dovel 197l), and can tolerate salinities of 8 to 9 psu without ill effects (Morgan and Rasin 1973). Adults can apparently tolerate salinities from 0 to 34 psu or more (Rogers and Westin 1978), with a range of 10 to 20 psu reported as optimal for larger juveniles (Bogdanov et al. 1967).

9B.13.4 Biotic Interactions

Striped Bass are pelagic, opportunistic predators, feeding on invertebrates and fishes. They tend to exhibit a roving school foraging strategy (Pickard et al. 1982). Larval and juvenile Striped Bass feed on invertebrates such as copepods or opossum shrimp. In the San Francisco Bay area, juvenile bass form small schools or feeding groups (Skinner 1962) with specific prey varying with fish size, habitat, and season (Hill et al. 1989).

Striped Bass are a top predator in the Delta and are considered major predators on fish (Thomas 1967). Fish become important in the diet of juveniles when they reach a FL of 130 to 350 mm, especially late in the summer when young-of-the-year Striped Bass and shad become available (Moyle 2002). Striped Bass are primarily piscivorous as subadults, when they reach 250 to 470 mm FL (approximately age 2+). Stevens (1966) found that the importance of fish in the diet of subadult (260 to 470 mm FL) and adult (>380 mm FL) Striped Bass in the Sacramento-San Joaquin estuary varied seasonally. Fish were most prevalent in the diet of subadults in fall, and occurred most frequently in the diet of adults in fall and winter. Adult Striped Bass feed primarily on smaller Striped Bass, threadfin shad, and juvenile salmonids, as well as pelagic ocean fishes (Moyle 2002). Striped Bass can successfully switch to feeding on novel prey (Moyle 2002). Striped Bass are considered important predators on juvenile salmon in the Sacramento River (Tucker et al. 1998, Moyle 2002). Average populations of 1.7 million adults during the late 1960s to early 1970s, and 1.25 million adults during 1967-1991 (USFWS 1995), likely exerted considerable predation pressure on outmigrating juvenile salmon (Yoshiyama et al. 1998). The impact of Striped Bass on Delta Smelt and Sacramento Splittail is not known (Moyle 2002). Delta Smelt were occasional prey fish for Striped Bass in the early 1960s (Turner and Kelley 1966) but went undetected in a recent study of predator stomach contents (Nobriga and Feyrer 2007). Striped Bass are likely the primary predator of juvenile and adult Delta Smelt given their spatial overlap in pelagic habitats (NMFS 2009).

Though Striped Bass may commonly exhibit a roving school foraging strategy (Pickard et al. 1982), they appear to take advantage of prey that is concentrated at screened diversions or pumps, and may be partially responsible for the decline of some native fishes, including salmon, thicktail chub, and Sacramento perch (Tucker et al. 1998). Striped Bass are considered to be a primary cause of juvenile salmon mortality at the state water-export facility in the south Delta (USFWS 1995). Tucker et al. (1998) observed Striped Bass preying heavily on juvenile Chinook Salmon that passed through the diversion facilities at Red Bluff Diversion Dam on the Sacramento River. Juvenile Chinook Salmon were found by Thomas (1967) to be a major food item in the diet of Striped Bass in the spring and early summer during smolt outmigration through the Sacramento and San Joaquin rivers and Delta.

The introduction of the overbite clam in the 1980s has been associated with large decreases in zooplankton and phytoplankton densities in San Francisco Bay and the western Delta (Carlton et al.1990), which has decreased the amount of food available for larval and juvenile Striped Bass. The population responses of juvenile Striped Bass to winter-spring outflows changed after the overbite clam invasion as young Striped Bass relative abundance stopped responding to outflow altogether (Sommer et al. 2007). In addition to decreased copepod densities, the principal historic copepod food source, *Eurytemora affinis*, for larval and juvenile Striped Bass has largely been replaced by alien copepod species that may be energetically less desirable (Meng and Orsi 1991).

Within the Delta, adult Striped Bass feed primarily on Threadfin Shad and juvenile Striped Bass. Thus, when shortages of alternate prey exist, survival rates of juvenile bass may decrease as they become increasingly important to adult diets, resulting in an unusually high response to decreased productivity in the Delta (Moyle 2002).

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9B.14 Southern Resident Killer Whale (*Orcinus orca*)

9B.14.1 Legal Status

Federal: Endangered
State: None

Three distinct forms of Killer Whales, termed residents, transients, and offshores, are recognized in the northeastern Pacific Ocean. Resident Killer Whales in U.S. waters are distributed from Alaska to California, with four distinct communities recognized: Southern, Northern, Southern Alaska, and Western Alaska (Krahn et al. 2002, 2004). Resident Killer Whales are fish eaters and live in stable matrilineal pods. Of these, only the Southern Resident Distinct Population Segment (DPS) is listed as endangered.

The designated critical habitat does not overlap with the action area for this consultation, nor are there any discernible changes to the physical environment that occur within designated critical that could be correlated to project operations. The only potential effects of project operations on the identified physical or biological features essential to conservation would be to prey quantity, quality, and availability. Project operations have the potential to affect only a portion of juvenile salmon originating in California's Central Valley streams. As discussed earlier, salmon originating in California streams are estimated to contribute between 3 and 5 percent of the salmon population off the Washington coast based on analysis of troll catches. These estimates were made based on data collected during the time of year when the Southern Residents are present. As discussed above, the majority of the fish attributed to California streams that are affected by the project are expected to be hatchery fish.

9B.14.2 Distribution

The Southern Resident Killer Whale DPS is designated as endangered under the ESA (NMFS 2005). This DPS primarily occurs in the inland waters of Washington state and southern Vancouver Island, particularly during the spring, summer, and fall, but members of the population have been observed off coastal California in Monterey Bay, near the Farallon Islands, and off Point Reyes (Heimlich-Boran 1988, Felleman et al. 1991, Olson 1998, Osborne 1999, NMFS 2005). The action area is outside of the DPS's designated Critical Habitat, which is in Washington state (NMFS 2006a).

9B.14.3 Life History and Habitat Requirements

Southern Resident Killer Whales spend a significant portion of the year in the inland waterways of the Strait of Georgia, Strait of Juan de Fuca, and Puget Sound, particularly during the spring, summer, and fall, when all three pods are regularly present in the Georgia Basin (defined as the Georgia Strait, San Juan

Islands, and Strait of Juan de Fuca) (Heimlich-Boran 1988, Felleman et al. 1991, Olson 1998, Osborne 1999). The Southern Resident population consists of three pods, identified as J, K, and L pods. Typically, K and L pods arrive in May or June and spend most of their time in this core area until departing in October or November. During this time, both pods also make frequent trips lasting a few days to the outer coasts of Washington and southern Vancouver Island (Ford et al. 2000). J pod continues to spend intermittent periods of time in the Georgia Basin and Puget Sound during late fall, winter, and early spring.

While the Southern Residents are in inland waters during the warmer months, all of the pods concentrate their activities in Haro Strait, Boundary Passage, the southern Gulf Islands, the eastern end of the Strait of Juan de Fuca, and several localities in the southern Georgia Strait (Heimlich-Boran 1988, Felleman et al. 1991, Olson 1998, Ford et al. 2000). In general, they spend less time elsewhere, including other sections of the Georgia Strait, Strait of Juan de Fuca, and San Juan Islands, Admiralty Inlet west of Whidbey Island, and Puget Sound. Individual pods are similar in their preferred areas of use (Olson 1998), although there are some seasonal and temporal differences in certain areas visited by each pod (Hauser 2006). For example, J pod visits Rosario Strait more frequently than K or L pods (Hauser 2006). The movements of Southern Resident Killer Whales relate to those of their preferred prey—salmon. Pods commonly seek out and forage in areas where salmon occur, especially those associated with migrating salmon (Heimlich-Boran 1986, 1988; Nichol and Shackleton 1996). Notable locations of particularly high use include Haro Strait and Boundary Passage, the southern tip of Vancouver Island, Swanson Channel off North Pender Island, and the mouth of the Fraser River delta, which is visited by all three pods in September and October (Felleman et al. 1991, Ford et al. 2000). These sites are major corridors for migrating salmon.

Wild female Southern Resident Killer Whales give birth to their first surviving calf between the ages of 12 and 16 years (mean = about 14.9 years) (Olesiuk et al. 1990, Matkin et al. 2003). Females produce an average of 5.4 surviving calves during a reproductive life span lasting about 25 years (Olesiuk et al. 1990). Males become sexually mature at body lengths ranging from 5.2 to 6.4 meters, which corresponds to between the ages of 10 and 17.5 years (mean = about 15 years) (Christensen 1984, Perrin and Reilly 1984, Duffield and Miller 1988, Olesiuk et al. 1990), and are presumed to remain sexually active throughout their adult lives (Olesiuk et al. 1990).

Southern Resident Killer Whales are known to consume 22 species of fish and one species of squid (Scheffer and Slipp 1948; Ford et al. 1998, 2000; Ford and Ellis 2005; Saulitis et al. 2000). Ford and Ellis (2005) found that salmon represent over 96 percent of the prey consumed during the spring, summer, and fall. Chinook Salmon were selected over other species, comprising over 70 percent of the identified salmonids taken. This preference occurred despite the much lower abundance of Chinook in the study area in comparison to other salmonids and is probably related to the species' large size, high fat and energy content, and year-round occurrence in the area. Other salmonids eaten in smaller amounts include chum (22 percent of the diet), pink (3 percent), coho (2 percent), sockeye (less than 1 percent), and steelhead (less than 1 percent) (Ford and Ellis 2005). This work suggested an overall preference of these whales for Chinook during the summer and fall, but also revealed extensive feeding on chum salmon in the fall.

Southern Resident Killer Whale survival and fecundity are correlated with Chinook Salmon abundance (Ward et al. 2009, Ford et al. 2009). Southern Resident Killer Whales could potentially be affected by changes in salmon populations caused by the Proposed Action, because their survival and fecundity appear dependent on the abundance of Chinook Salmon (Ward et al. 2009, Ford et al. 2009).

Chinook Salmon originating from the Fraser River are the dominant prey of resident Killer Whales in the summer months when they are usually in inland marine waters (Hanson et al. 2010). Less is known of their diet during the remainder of the year (September through May), when they spend much of their time in outer coastal waters, and may range from central California to northern British Columbia (Hanson et al. 2010). However, it is believed likely that they preferentially feed on Chinook Salmon when available, and roughly in proportion to their relative abundance (Hanson et al. 2010). Hanson et al. (2010) found Southern Resident stomachs to contain several different ESUs of salmon, including Central Valley fall-run Chinook Salmon.

NMFS (2008) estimated the biological requirements of Southern Resident Killer Whales including the diet composition and number of salmon the population requires in their coastal range. NMFS estimated that the current population of Southern Residents at the time (87) would be required to consume between 392,555 and 470,288 salmon based on diet compositions and bioenergetic needs in their coastal range. These estimates were based on Chinook Salmon comprising 70 to 88 percent of their diet.

Salmon originating in California streams are estimated to contribute 3 percent of the salmon population off the Washington coast based on genetic stock identification (GSI) of Washington troll catch in May of 1981 and 1982 (Utter et al. 1983). Research in the mid-1970s estimated California's contribution at 5 percent (Wright 1976). More recent data from Collaborative Research on Oregon Ocean Salmon using GSI estimate that 59 percent of salmon analyzed from the Oregon commercial harvest (June–October 2006) were Central Valley fall-run or spring-run Chinook Salmon (https://fp.pacificfishtrax.org/portal/). It is important to note that these percentages could vary during different years or seasons.

Reclamation funds the operation and maintenance of the Coleman, Livingstone, and Nimbus hatcheries. These hatcheries have a combined yearly production goal of 17,200,000 Chinook Salmon smolts. DWR funds the operation of the Feather River hatcheries for production of approximately 8 million Chinook Salmon smolts annually (yearly production goal).

Analysis of Chinook Salmon otoliths in 1999 and 2002 found that the contribution of hatchery-produced fish (from the Sacramento and San Joaquin river system) made up approximately 90 percent of the ocean fishery off the central California coast from Bodega Bay to Monterey Bay (Barnett-Johnson et al. 2007). Similar studies have not been completed to assess the percentage that Central Valley hatcheries contribute to the salmon originating from California off the Oregon and Washington coasts, but it suggests that hatchery fish would likely be the majority.

Based on observations of captive Killer Whales, studies have extrapolated the energy requirements of wild Killer Whales and estimate an average size value for the five salmon species combined. Osborne (1999) estimated that adult Killer Whales would consume 28 to 34 adult salmon per day, and that younger Killer Whales (less than 13 years of age) would consume about 15 to 17 salmon per day to meet their daily energy requirements. Extrapolating these results, the Southern Resident population (approximately 90 individuals) would consume about 750,000 to 850,000 adult salmon per year.

9B.14.4 Population Trends

Some evidence suggests that until the mid- to late-1800s, the Southern Resident Killer Whale population may have numbered more than 200 animals (Krahn et al. 2002). This estimate was based, in part, on a recent genetic analysis of microsatellite DNA, which found that the genetic diversity of the Southern Resident population resembles that of the Northern Residents (Barrett-Lennard 2000, Barrett-Lennard and Ellis 2001), and concluded that the two populations were possibly once similar in size. Recent efforts to assess the Killer Whale population during the past century have been hindered by an absence of empirical information prior to 1974 (NMFS 2006b). For example, a report by Scheffer and Slipp (1948) is the only pre-1974 account of Southern Resident abundance in the area, and it merely noted that the species was "frequently seen" during the 1940s in the Strait of Juan de Fuca, northern Puget Sound, and off the coast of the Olympic Peninsula, with smaller numbers along Washington's outer coast. Olesiuk et al. (1990) estimated the Southern Resident population size in 1967 to be 96 animals. At about this time, marine mammals became popular attractions in zoos and marine parks, which increased the demand for interesting and exotic display animals. Between 1967 and 1973, it is estimated that 47 Killer Whales, mostly immature, were taken from the Southern Resident population for public display. The rapid removal of individual whales caused an immediate decline in numbers (Ford et al. 2000). By 1971, the level of removal decreased the population by about 30 percent, to approximately 67 whales (Olesiuk et al. 1990). In 1993, two decades after the live capture of Killer Whales ended, the three Southern Resident pods—J, K, and L—totaled 96 animals (Ford et al. 2000).

Over the past decade, the Southern Resident population has fluctuated. For example, the population appeared to experience a period of recovery by increasing to 99 whales in 1995, but then declined by 20 percent to 79 whales in 2001 (-3.3 percent per year) before another slight increase to 83 whales in 2003 (Ford et al. 2000, Carretta et al. 2004). NMFS (2008) estimated the 2007 population to be 87 whales. The population estimate in 2006 was approximately

90 animals (+3.5 percent per year since 2001); the decline in the 1990s, unstable population status, and population structure (e.g., few reproductive age males and non-calving adult females) continue to be causes for concern. Moreover, it is unclear whether the recent increasing trend will continue because these observations may represent an anomaly in the general pattern of survival or a longer-term shift in the survival pattern.

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Appendix 9C

Reclamation Salmon Mortality Model Analysis Documentation

This appendix provides information about the methods and assumptions used for the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis using the Bureau of Reclamation (Reclamation) Salmon Mortality Model. It is organized in two main sections that are briefly described below:

- Section 9C.1: Reclamation Salmon Mortality Model Methodology and Assumptions
  - The EIS Salmon Mortality analysis uses the Reclamation Salmon Mortality model to quantify salmon early life stage (pre-spawned eggs, fertilized eggs, and pre-emergent fry) losses on the Trinity, Sacramento, Feather, American, and Stanislaus Rivers. This section briefly describes the overall analytical approach and assumptions of the Reclamation Salmon Mortality model.
- Section 9C.2: Reclamation Salmon Mortality Model Results
  - This section presents the salmon early life stage (pre-spawned eggs, fertilized eggs, and pre-emergent fry) mortality percentage of Trinity River Fall-Run, Sacramento River fall-run, late fall-run, spring-run, and winter-run, Feather River fall-run, American River fall-run, and Stanislaus River fall-run Chinook Salmon. Statistics are presented in tabular format.

9.C.1 Reclamation Salmon Mortality Model Methodology and Assumptions

9.C.1.1 Reclamation Salmon Mortality Model Methodology

The Reclamation Salmon Mortality Model simulates the early life stage mortality of Chinook Salmon along reaches of the Trinity (below Lewiston Dam to Burnt Ranch), Sacramento (below Keswick Dam to Princeton), Feather (below the Fish Dam to the Sacramento River confluence), American (below Nimbus Dam to the Sacramento River confluence), and Stanislaus Rivers (below Goodwin Dam to Riverbank). The model sets an initial spawning distribution along the different river reaches (as a percentage) and uses water temperature data to simulate egg development and mortality based on temperature relationships specified in the model. Daily water temperature results for the Sacramento, American, and Stanislaus rivers come from the HEC5Q models; and monthly water temperature results for the Trinity and Feather rivers come from the Reclamation Temperature Model are used as an input to Reclamation Salmon Mortality Model. The final output from the Reclamation Salmon Mortality Model used in this analysis is the resulting annual percent mortality. Operations Criteria and Plan (OCAP)

Biological Assessment (BA) Appendix L (Reclamation 2008) provides detailed description of the Reclamation Salmon Mortality Model structure, assumptions, and processes.

9.C.1.2 Reclamation Salmon Mortality Model Analysis Scenario Assumptions

This section describes the assumptions for the Reclamation Salmon Mortality Model analysis for the No Action Alternative, Second Basis of Comparison, and other alternatives.

The following CalSim II model simulations were performed as the basis of evaluating the impacts of Alternatives 1 through 5 as compared to the No Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

Assumptions for each of these alternatives were developed with the surface water modeling tools and are described in Appendix 5A, Section B.

Alternative 1 modeling assumptions are the same as the Second Basis of Comparison, and Alternative 2 modeling assumptions are the same as the No Action Alternative; therefore, the assumptions for those alternatives are not discussed separately in this document.

Assumptions for each of these alternatives are reflected to monthly CalSim II flow data that are used in the HEC5Q and Reclamation Temperature Models to generate flow and water temperature data that are then used in the Reclamation Salmon Mortality Model. Table 9C.1 provides the assumed spawning distributions for fall-, late fall-, winter-, and spring-Run Chinook Salmon on the Sacramento River in simulating various scenarios in this EIS. The OCAP BA Appendix L (Reclamation 2008) Tables L-2 to L-5 provide the assumed spawning distributions for Trinity River, Feather River, American River, and Stanislaus River fall-run Chinook Salmon.

Table 9C.1 Upper Sacramento River Spawning Distributions

Reach	No.	River Reach	Spawning Distribution (%) Fall	Late Fall	Winter	Spring
UPPER	1	Keswick Dam – ACID Dam	16.28%	67.6%	45.03%	12.43%
	2	ACID Dam – Hwy 44	5.48%	5.0%	42.09%	32.77%
	3	Hwy 44 – Upper Anderson Bridge	12.26%	3.7%	12.23%	27.66%
	4	Upper Anderson Bridge – Balls Ferry	16.19%	7.9%	0.26%	10.90%
	5	Balls Ferry – Jellys Ferry	23.08%	8.0%	0.28%	8.75%
	6	Jellys Ferry – Bend Bridge	6.61%	1.0%	0.06%	2.58%
	7	Bend Bridge – Red Bluff Pumping Plant (previously Red Bluff Diversion Dam)	3.48%	0.5%	0.00%	0.83%
	Total – Upper Salmon Reach		**83.37%**	**93.8%**	**99.95%**	**95.92%**
MIDDLE	8	Red Bluff Pumping Plant – Tehama Bridge	10.82%	3.1%	0.05%	4.08%
	9	Tehama Bridge – Woodson Bridge	3.07%	1.2%	0.00%	0.00%
	10	Woodson Bridge – Hamilton City	1.82%	1.1%	0.00%	0.00%
	Total – Middle Salmon Reach		**15.71%**	**5.4%**	**0.05%**	**4.08%**
LOWER	11	Hamilton City – Ord Ferry	0.82%	0.6%	0.00%	0.0%
	12	Ord Ferry – Princeton	0.10%	0.2%	0.00%	0.0%
	Total – Lower Salmon Reach		**0.92%**	**0.8%**	**0.0%**	**0.0%**

NOTE:

Sacramento River salmon spawning distributions were revised based on average 2003-2014 redd survey data, provided by David Swank at National Marine Fisheries Service in April 2015.

9.C.2 Reclamation Salmon Mortality Model Results

Results are provided for each of the following runs separately:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1
- Alternative 3
- Alternative 5

In addition, the same statistics are provided for the following comparisons to establish changes of the alternative with respect to one of the bases of comparison:

- Alternative 1 compared to No Action Alternative
- Alternative 3 compared to No Action Alternative
- Alternative 5 compared to No Action Alternative

- No Action Alternative compared to Second Basis of Comparison
- Alternative 1 compared to Second Basis of Comparison
- Alternative 3 compared to Second Basis of Comparison
- Alternative 5 compared to Second Basis of Comparison

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

The results are provided as tables summarizing the annual losses with long-term averages over the 82-year CalSim II simulation period. Averages are also provided by water year type.

The following results are presented in this section:

- B.1. Sacramento River Percent Salmon Loss Summary – Fall-Run Chinook Salmon
- B.2. Sacramento River Percent Salmon Loss Summary – Late Fall-Run Chinook Salmon
- B.3. Sacramento River Percent Salmon Loss Summary – Spring-Run Chinook Salmon
- B.4. Sacramento River Percent Salmon Loss Summary – Winter-Run Chinook Salmon
- B.5. Trinity River Percent Salmon Loss Summary – Fall-Run Chinook Salmon
- B.6. American River Percent Salmon Loss Summary – Fall-Run Chinook Salmon
- B.7. Feather River Percent Salmon Loss Summary – Fall-Run Chinook Salmon
- B.8. Stanislaus River Percent Salmon Loss Summary – Fall-Run Chinook Salmon

9.C.3 References

Reclamation (Bureau of Reclamation). 2008. *2008 Central Valley Project and State Water Project Operations Criteria and Plan Biological Assessment*, Appendix L Reclamation Salmon Mortality Model.

Table B-1. Sacramento River Percent Mortality - Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	17.0	---	-0.1
Wet	10.7	---	-0.8
Above Normal	10.5	---	-1.3
Below Normal	15.3	---	0.1
Dry	17.3	---	-0.1
Critical	37.9	---	2.4
Second Basis of Comparison			
Long-term Average	17.1	0.1	
Wet	11.5	0.8	---
Above Normal	11.9	1.3	---
Below Normal	15.2	-0.1	---
Dry	17.4	0.1	---
Critical	35.5	-2.4	---
Alternative 3			
Long-term Average	16.8	-0.2	-0.3
Wet	11.3	0.6	-0.2
Above Normal	11.6	1.0	-0.3
Below Normal	14.7	-0.7	-0.6
Dry	16.9	-0.4	-0.5
Critical	35.6	-2.3	0.1
Alternative 5			
Long-term Average	16.9	-0.1	-0.2
Wet	10.6	0.0	-0.8
Above Normal	10.4	-0.1	-1.4
Below Normal	15.0	-0.3	-0.2
Dry	17.0	-0.3	-0.5
Critical	38.5	0.6	3.0

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-2. Sacramento River Percent Mortality - Late Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	3.1	---	0.4
Wet	3.1	---	0.8
Above Normal	2.4	---	0.5
Below Normal	2.5	---	-0.1
Dry	2.7	---	0.1
Critical	4.8	---	0.2
Second Basis of Comparison			
Long-term Average	2.7	-0.4	
Wet	2.2	-0.8	---
Above Normal	1.9	-0.5	---
Below Normal	2.6	0.1	---
Dry	2.5	-0.1	---
Critical	4.6	-0.2	---
Alternative 3			
Long-term Average	2.7	-0.4	0.0
Wet	2.3	-0.8	0.0
Above Normal	1.8	-0.6	-0.1
Below Normal	2.6	0.1	0.0
Dry	2.6	-0.1	0.1
Critical	4.6	-0.2	-0.1
Alternative 5			
Long-term Average	3.1	0.0	0.4
Wet	3.0	0.0	0.8
Above Normal	2.4	0.0	0.5
Below Normal	2.4	-0.1	-0.1
Dry	2.7	0.0	0.2
Critical	4.9	0.1	0.2

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-3. Sacramento River Percent Mortality - Spring-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	21.9	---	0.7
Wet	6.3	---	-2.4
Above Normal	4.8	---	-2.4
Below Normal	13.3	---	0.8
Dry	19.4	---	0.7
Critical	84.8	---	10.4
Second Basis of Comparison			
Long-term Average	21.1	-0.7	
Wet	8.6	2.4	---
Above Normal	7.2	2.4	---
Below Normal	12.5	-0.8	---
Dry	18.6	-0.7	---
Critical	74.3	-10.4	---
Alternative 3			
Long-term Average	21.1	-0.7	0.0
Wet	8.4	2.1	-0.3
Above Normal	7.3	2.4	0.0
Below Normal	10.8	-2.5	-1.6
Dry	17.5	-1.9	-1.1
Critical	78.1	-6.6	3.8
Alternative 5			
Long-term Average	21.9	0.1	0.8
Wet	6.3	0.0	-2.4
Above Normal	4.9	0.0	-2.4
Below Normal	13.3	0.0	0.8
Dry	18.1	-1.3	-0.6
Critical	87.4	2.6	13.1

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-4. Sacramento River Percent Mortality - Winter-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	5.0	---	0.7
Wet	0.6	---	-0.1
Above Normal	0.1	---	0.0
Below Normal	0.2	---	-0.8
Dry	0.3	---	0.0
Critical	31.4	---	5.4
Second Basis of Comparison			
Long-term Average	4.3	-0.7	
Wet	0.6	0.1	---
Above Normal	0.1	0.0	---
Below Normal	1.0	0.8	---
Dry	0.3	0.0	---
Critical	26.0	-5.4	---
Alternative 3			
Long-term Average	4.2	-0.8	-0.1
Wet	0.6	0.1	0.0
Above Normal	0.1	0.0	0.0
Below Normal	1.0	0.7	0.0
Dry	0.3	-0.1	0.0
Critical	25.3	-6.0	-0.7
Alternative 5			
Long-term Average	4.6	-0.4	0.3
Wet	0.6	0.0	-0.1
Above Normal	0.1	0.0	0.0
Below Normal	0.3	0.0	-0.8
Dry	0.3	0.0	0.0
Critical	28.9	-2.5	2.9

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-5. Trinity River Percent Mortality - Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	4.0	---	0.2
Wet	1.3	---	-0.6
Above Normal	1.5	---	0.2
Below Normal	3.8	---	0.5
Dry	2.5	---	0.2
Critical	14.8	---	1.8
Second Basis of Comparison			
Long-term Average	3.7	-0.2	
Wet	1.9	0.6	---
Above Normal	1.2	-0.2	---
Below Normal	3.4	-0.5	---
Dry	2.3	-0.2	---
Critical	13.0	-1.8	---
Alternative 3			
Long-term Average	3.7	-0.2	0.0
Wet	1.9	0.5	-0.1
Above Normal	1.2	-0.2	0.0
Below Normal	3.2	-0.6	-0.2
Dry	2.2	-0.3	-0.1
Critical	13.3	-1.5	0.3
Alternative 5			
Long-term Average	3.9	0.0	0.2
Wet	1.3	0.0	-0.6
Above Normal	1.4	0.0	0.2
Below Normal	3.6	-0.2	0.3
Dry	2.5	0.0	0.2
Critical	14.9	0.1	1.9

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-6. American River Percent Mortality - Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	23.2	---	0.2
Wet	22.6	---	-0.6
Above Normal	23.2	---	0.6
Below Normal	23.5	---	2.0
Dry	22.9	---	-0.1
Critical	25.0	---	0.1
Second Basis of Comparison			
Long-term Average	23.1	-0.2	
Wet	23.2	0.6	---
Above Normal	22.7	-0.6	---
Below Normal	21.5	-2.0	---
Dry	23.0	0.1	---
Critical	24.9	-0.1	---
Alternative 3			
Long-term Average	23.2	-0.1	0.1
Wet	23.2	0.6	-0.1
Above Normal	22.6	-0.6	0.0
Below Normal	21.8	-1.7	0.3
Dry	22.9	0.0	-0.1
Critical	25.4	0.4	0.6
Alternative 5			
Long-term Average	23.0	-0.3	-0.1
Wet	22.7	0.1	-0.5
Above Normal	22.5	-0.7	-0.2
Below Normal	22.5	-1.0	1.0
Dry	22.9	0.0	-0.1
Critical	24.7	-0.3	-0.2

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-7. Feather River Percent Mortality - Fall Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	7.2	---	0.2
Wet	4.6	---	2.8
Above Normal	3.4	---	0.2
Below Normal	8.4	---	-0.9
Dry	7.7	---	-0.9
Critical	14.5	---	-3.0
Second Basis of Comparison			
Long-term Average	7.0	-0.2	
Wet	1.7	-2.8	---
Above Normal	3.1	-0.2	---
Below Normal	9.2	0.9	---
Dry	8.6	0.9	---
Critical	17.4	3.0	---
Alternative 3			
Long-term Average	6.0	-1.1	-0.9
Wet	1.9	-2.7	0.1
Above Normal	2.9	-0.4	-0.2
Below Normal	6.8	-1.6	-2.4
Dry	7.8	0.0	-0.8
Critical	14.6	0.2	-2.8
Alternative 5			
Long-term Average	6.9	-0.2	-0.1
Wet	4.5	0.0	2.8
Above Normal	3.2	-0.2	0.1
Below Normal	10.6	2.3	1.4
Dry	7.4	-0.3	-1.1
Critical	13.9	-0.6	-3.6

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-8. Stanislaus River Percent Mortality - Fall-Run Chinook Salmon

	Percent Mortality	Difference from No Action Alternative	Difference from Second Basis of Comparison
	%	%	%
No Action Alternative			
Long-term Average	7.0	---	-0.4
Wet	1.6	---	0.1
Above Normal	5.3	---	-0.1
Below Normal	4.4	---	0.3
Dry	4.9	---	-0.3
Critical	14.4	---	-1.5
Second Basis of Comparison			
Long-term Average	7.4	0.4	
Wet	1.5	-0.1	---
Above Normal	5.4	0.1	---
Below Normal	4.1	-0.3	---
Dry	5.1	0.3	---
Critical	15.9	1.5	---
Alternative 3			
Long-term Average	6.2	-0.8	-1.2
Wet	1.6	0.0	0.1
Above Normal	4.0	-1.3	-1.4
Below Normal	3.8	-0.6	-0.3
Dry	4.2	-0.7	-0.9
Critical	13.4	-1.0	-2.5
Alternative 5			
Long-term Average	8.5	1.5	1.0
Wet	1.8	0.2	0.3
Above Normal	6.4	1.1	1.0
Below Normal	6.1	1.6	2.0
Dry	7.0	2.2	1.9
Critical	16.9	2.5	1.0

Notes: All results are based on the 82-year simulation period. The water year types are defined by the San Joaquin Valley 60-20-20 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Appendix 9D

SALMOD Analysis Documentation

This appendix provides information about the methods and assumptions used for the Remanded Biological Opinions on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis using the SALMOD model. It is organized in two main sections that are briefly described below:

- Section 9D.1: SALMOD Methodology and Assumptions
  - The analysis uses the SALMOD model to quantify fall-run, late fall-run, spring-run, and winter-run Chinook Salmon survival and mortality for different life-stages within the Sacramento River, specifically from below Keswick Dam to the Red Bluff Pumping Plant (previously at Red Bluff Diversion Dam). This section briefly describes the overall analytical approach and assumptions of the SALMOD Model.
- Section 9D.2: SALMOD Model Results
  - This section presents the production (survival) and mortality by life-stages and various causes of Sacramento River fall-run, late fall-run, spring-run, and winter-run Chinook Salmon. Statistics are presented in exceedance plots and in tabular format.

9D.1 SALMOD Methodology and Assumptions

9D.1.1 SALMOD Methodology

The SALMOD model simulates the life-stage dynamics of fall-run, late fall-run, spring-run, and winter-run Chinook Salmon populations within the Sacramento River, from below Keswick Dam to the Red Bluff Diversion Dam. The model uses daily flow and temperature data from the Sacramento River HEC5Q model to simulate the annual growth, movement, and mortality of the various riverine life stages of the four Chinook Salmon populations based on an initial annual adult population that resets each biological year. The dynamics simulated are based on assumptions and relations specified in the model. The final output from SALMOD used in this analysis is annual production (number of surviving members of each life-stage) and annual mortality based on a variety of factors, including temperature and habitat (flow) based mortality. The 2008 Operations Criteria and Plan (OCAP) Biological Assessment (BA), Appendix P provides detailed description of the SALMOD model structure, assumptions, and processes (Reclamation 2008).

9D.1.2 SALMOD Analysis Scenario Assumptions

This section describes the assumptions for the SALMOD analysis for the No Action Alternative, Second Basis of Comparison, and other alternatives.

The following CalSim II model simulations were performed as the basis of evaluating the impacts of the Alternatives 1 through 5 as compared to the No Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

Assumptions for each of these alternatives were developed with the surface water modeling tools and are described in Appendix 5A, Section B.

Alternative 1 modeling assumptions are the same as the Second Basis of Comparison, and Alternative 2 modeling assumptions are the same as the No Action Alternative; therefore, the assumptions for those alternatives are not discussed separately in this document.

Assumptions for each of these alternatives are reflected in monthly CalSim II flow data that are used in the Sacramento River HEC5Q Model to generate daily flow and temperature data that are input to the SALMOD model. For this analysis, the initial population of adult were assumed to be 23,356 for fall-run, 5,545 for late fall-run, 500 for spring-run, and 4,108 for winter-run based on geometric mean of 2003-2014 GrandTab escapement data provided by David Swank at the National Marine Fisheries Service (NMFS) in April 2015. For spring-run, the number of adults in the mainstem Sacramento River are significantly low (arithmetic mean of 69). Based on further discussion with NMFS, 500 adults were assumed as the input in SALMOD. The assumed spawning distribution by reach is shown in Table 9D.1. Assumptions of the spawning distributions were based on average 2003-2014 Redd survey data, provided by David Swank at NMFS in April 2015.

Table 9D.1 Upper Sacramento River Spawning Distributions.

River Reach	Spawning Distribution (%) Fall	Spawning Distribution (%) Late Fall	Spawning Distribution (%) Spring	Spawning Distribution (%) Winter
Keswick Dam – Anderson Cottonwood Irrigation District (ACID) Dam	19.50	71.30	12.80	45.10
ACID Dam – Highway 44 Bridge	6.60	5.20	33.90	42.10
Highway 44 Bridge – Airport Road Bridge	14.70	3.90	29.70	12.20
Airport Road Bridge – Balls Ferry	19.40	8.90	11.10	0.30
Balls Ferry – Battle Creek	12.50	5.90	7.40	0.10
Battle Creek – Jellys Ferry	15.20	3.10	1.50	0.10
Jellys Ferry – Bend Bridge	8.00	1.20	2.60	0.10
Bend Bridge – Red Bluff Pumping Plant (previously Red Bluff Diversion Dam)	4.20	0.60	0.80	0.00

9D.2 SALMOD Results

Results are provided for each of the following runs separately:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1
- Alternative 3
- Alternative 5

In addition, the same statistics are provided for the following comparisons to establish changes of the alternative with respect to one of the bases of comparison:

- Alternative 1 compared to No Action Alternative
- Alternative 3 compared to No Action Alternative
- Alternative 5 compared to No Action Alternative
- No Action Alternative compared to Second Basis of Comparison
- Alternative 1 compared to Second Basis of Comparison
- Alternative 3 compared to Second Basis of Comparison
- Alternative 5 compared to Second Basis of Comparison

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

The first set of results is provided as probability of exceedance curves of annual production and mortality for the four Sacramento River salmonid populations. For this analysis, exceedance plots for annual production and mortality were generated based on the 82-year CalSim II time period for each of the alternatives and basis of comparison. Differences among alternatives were evaluated using the exceedance probability corresponding to varying levels of survival. The results are provided at the end of this appendix in the following subsections:

- B.1. Fall-Run Chinook Salmon
- B.2. Late Fall-Run Chinook Salmon
- B.3. Spring-Run Chinook Salmon
- B.4. Winter-Run Chinook Salmon

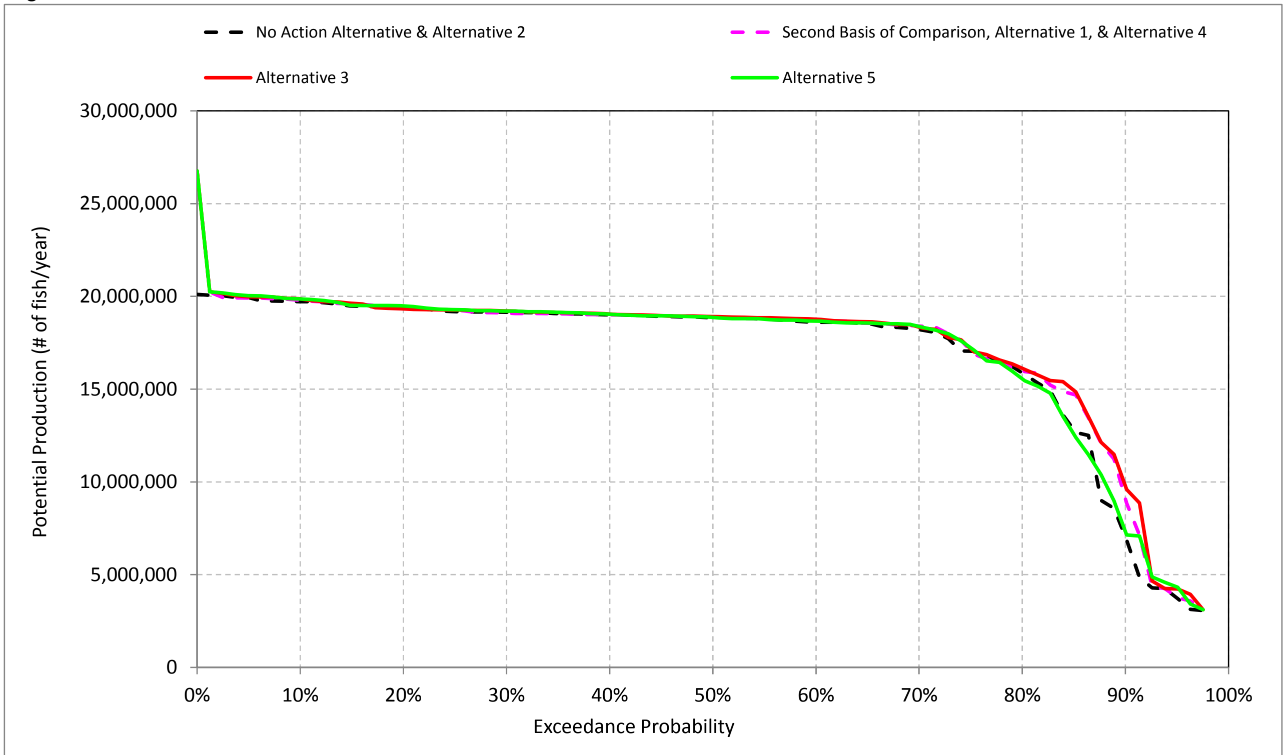
The second set of results is provided as tables summarizing the comparison between alternatives of annual production and mortality with long-term averages over the entire CalSim II simulation period. Averages are also provided by water year type.

9D.3 References

Reclamation (Bureau of Reclamation). 2008. *2008 Central Valley Project and State Water Project Operations Criteria and Plan Biological Assessment*, Appendix P SALMOD Model.

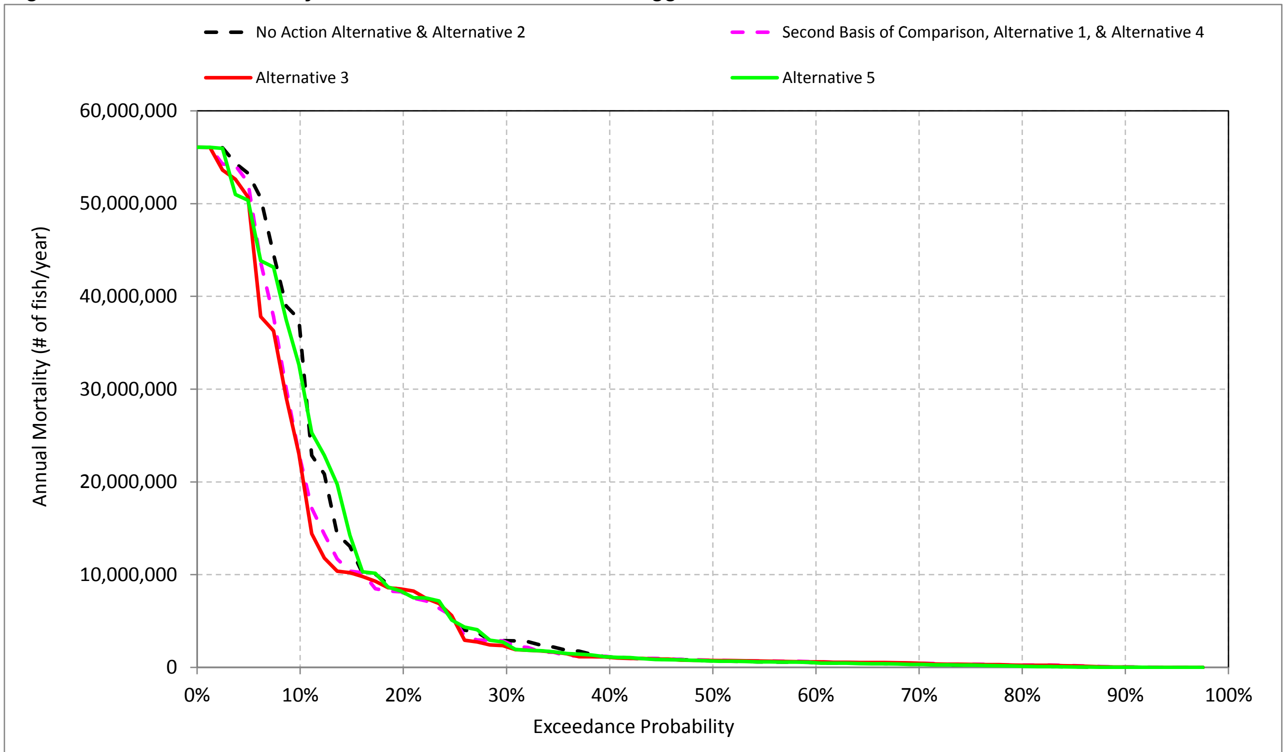
B.1. Fall-Run Chinook Salmon

Figure B-1-1. Annual Potential Production for Fall-Run Chinook Salmon



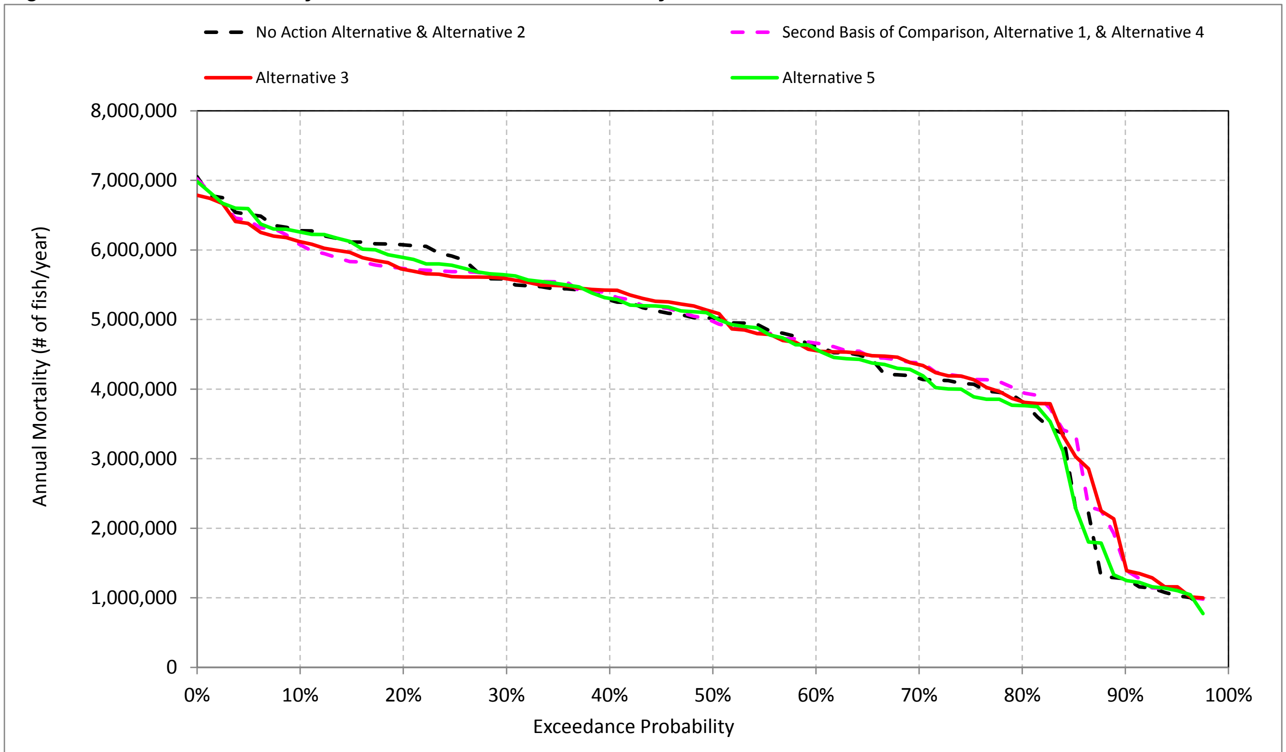
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-2. Annual Mortality for Fall-Run Chinook Salmon - Eggs



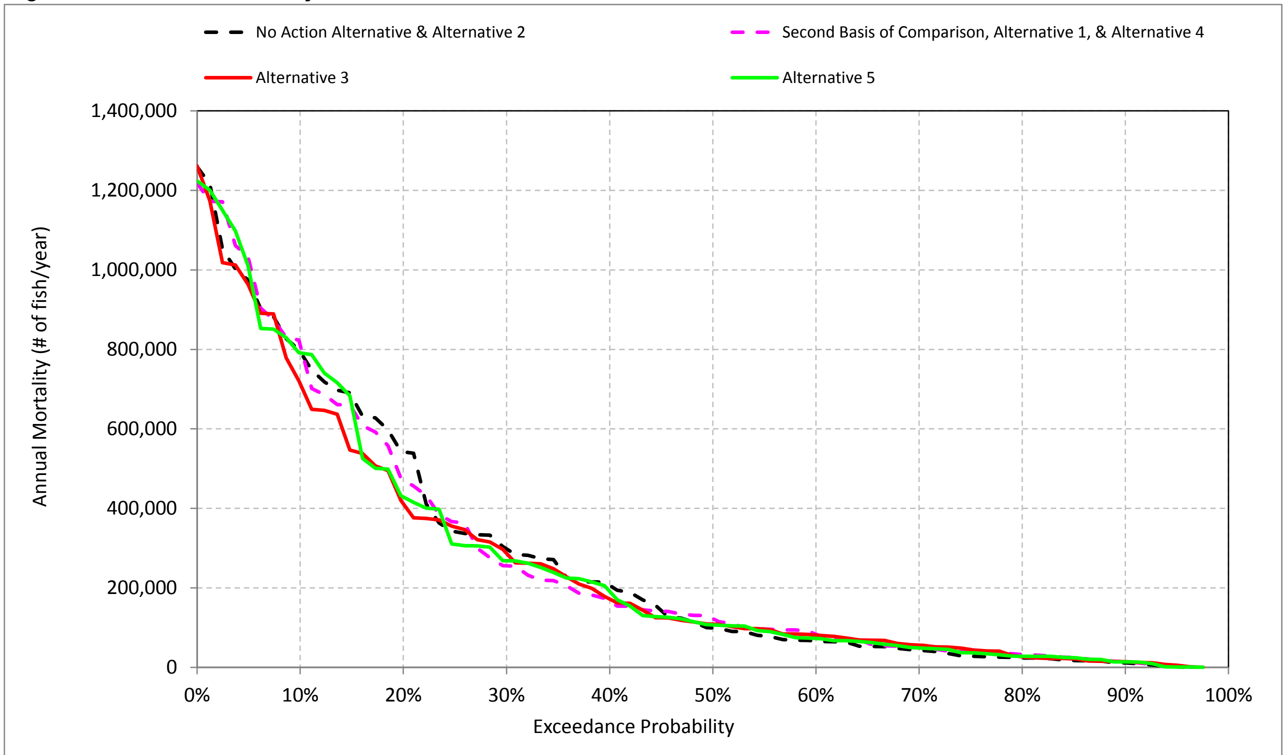
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-3. Annual Mortality for Fall-Run Chinook Salmon - Fry



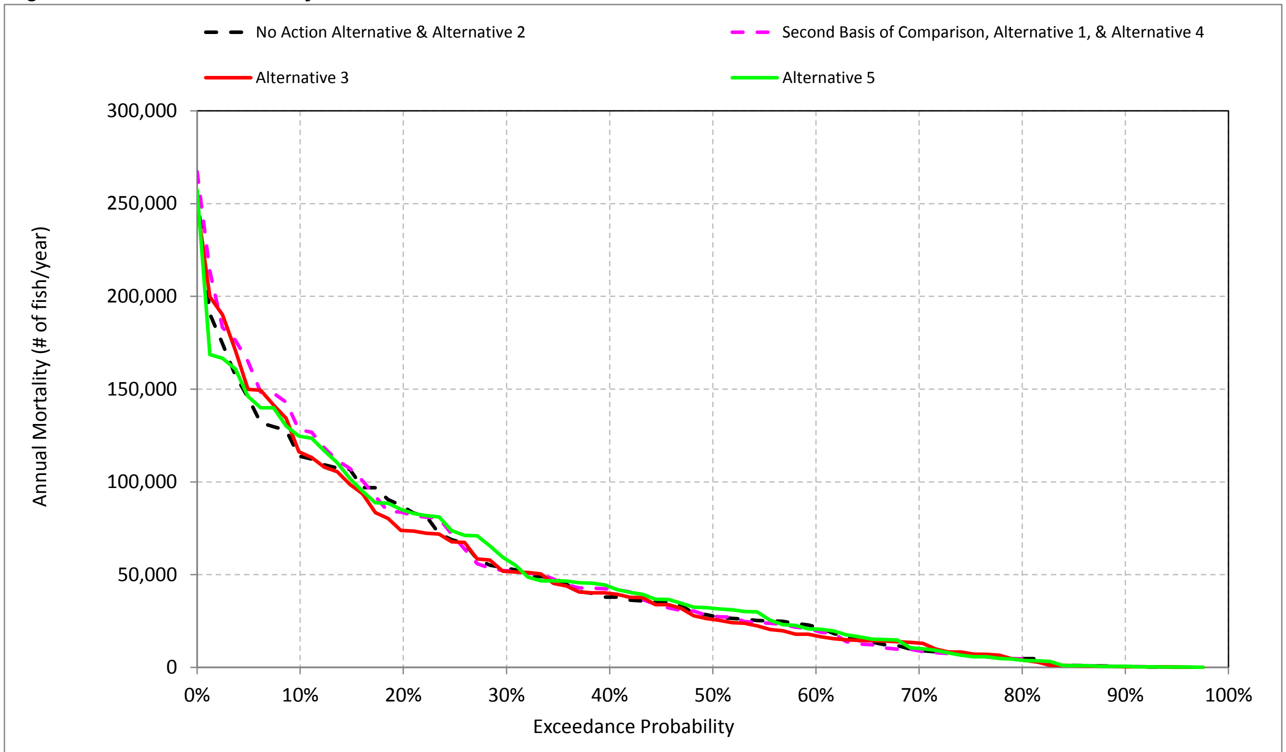
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-4. Annual Mortality for Fall-Run Chinook Salmon - Pre-Smolt



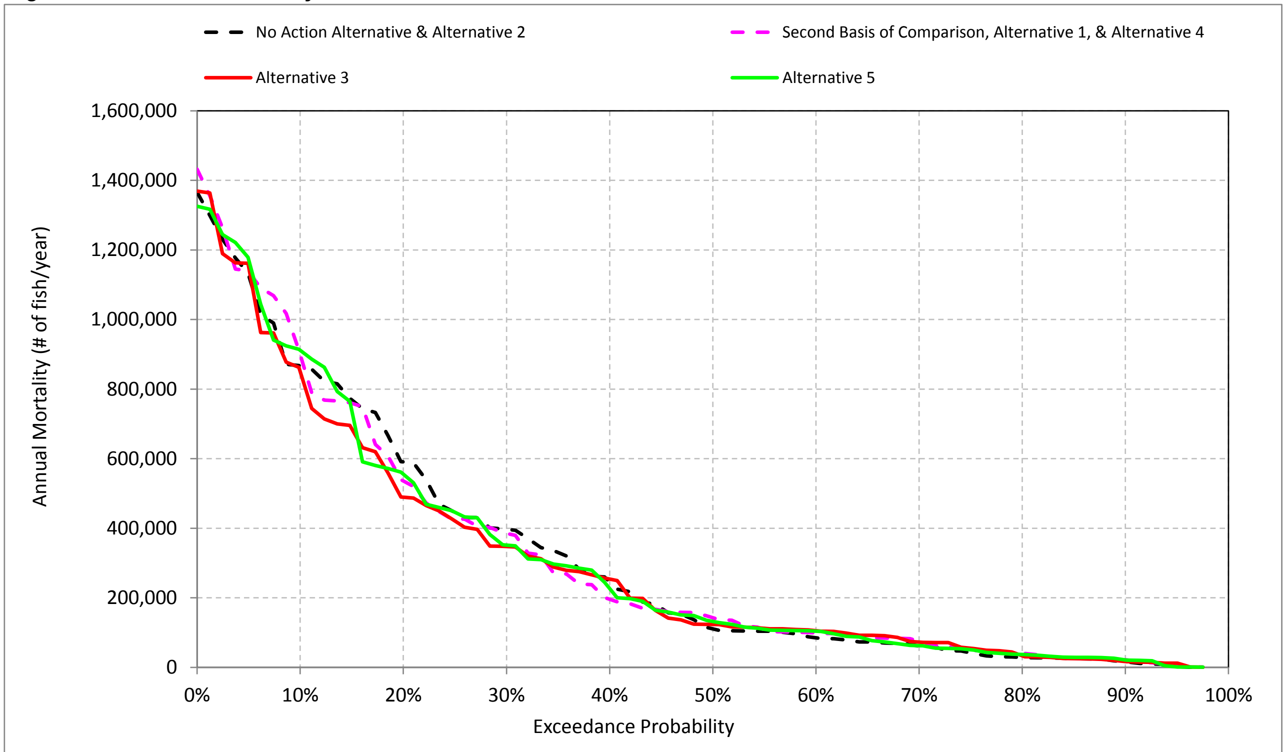
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-5. Annual Mortality for Fall-Run Chinook Salmon - Immature Smolt



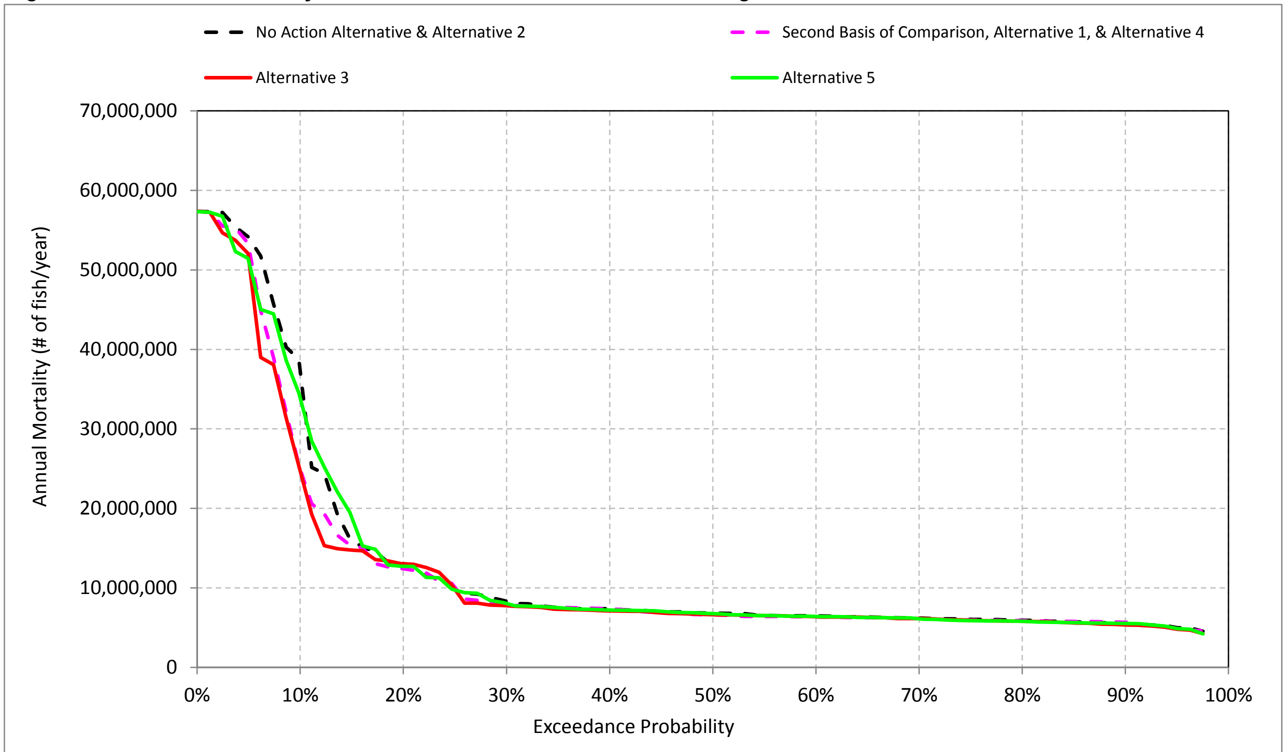
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-6. Annual Mortality for Fall-Run Chinook Salmon - Pre- & Immature Smolts



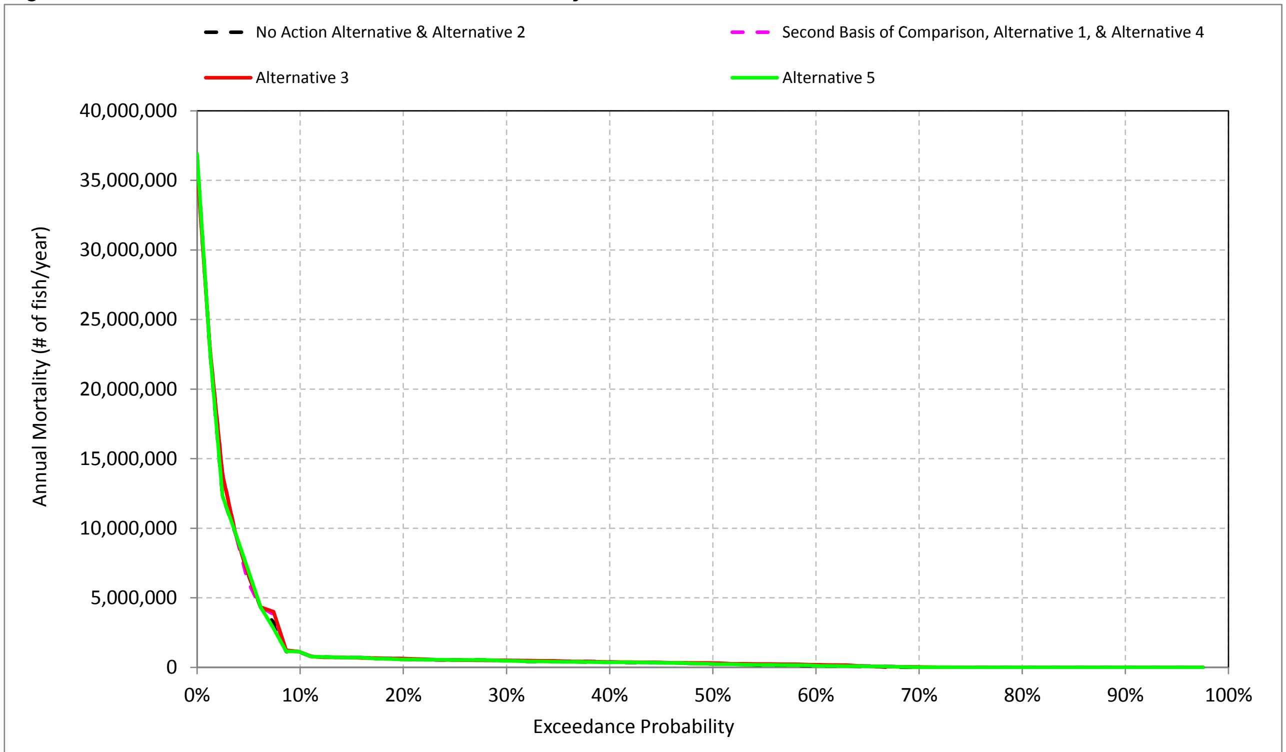
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-7. Annual Mortality for Fall-Run Chinook Salmon - All Lifestages



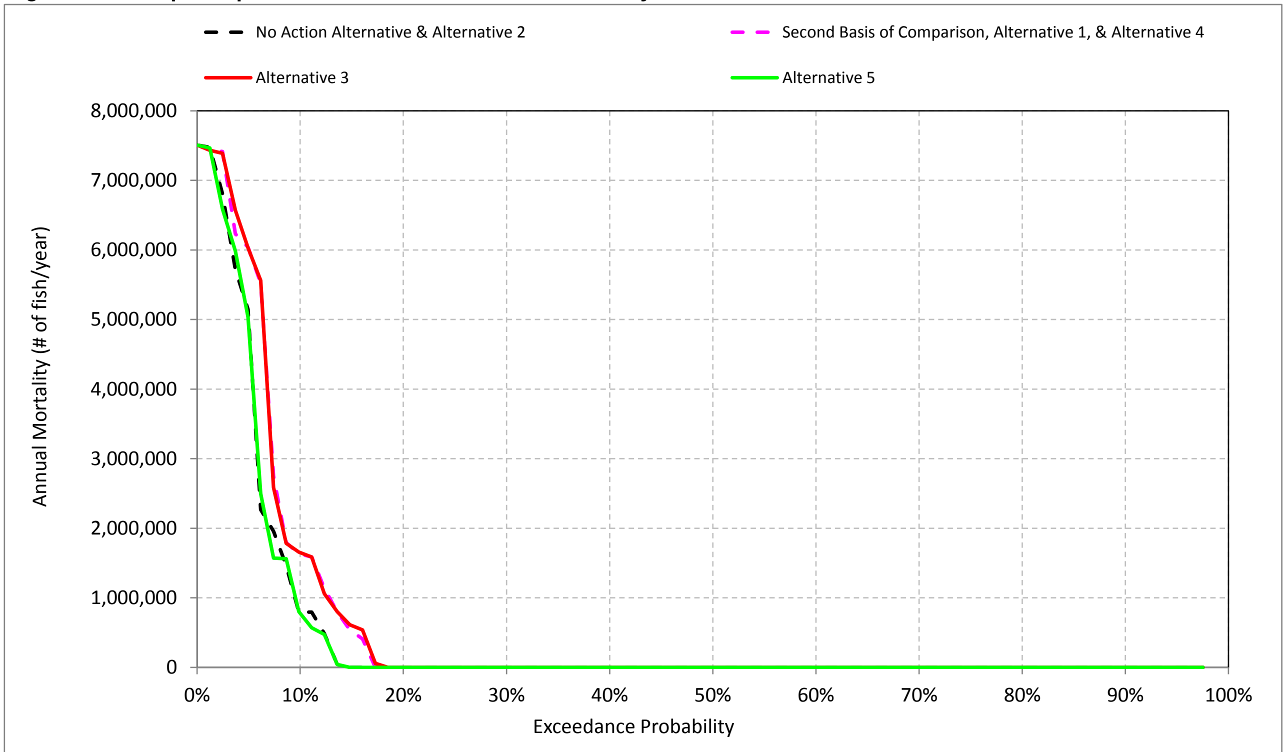
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-8. Incubation - Habitat based Annual Mortality for Fall-Run Chinook Salmon



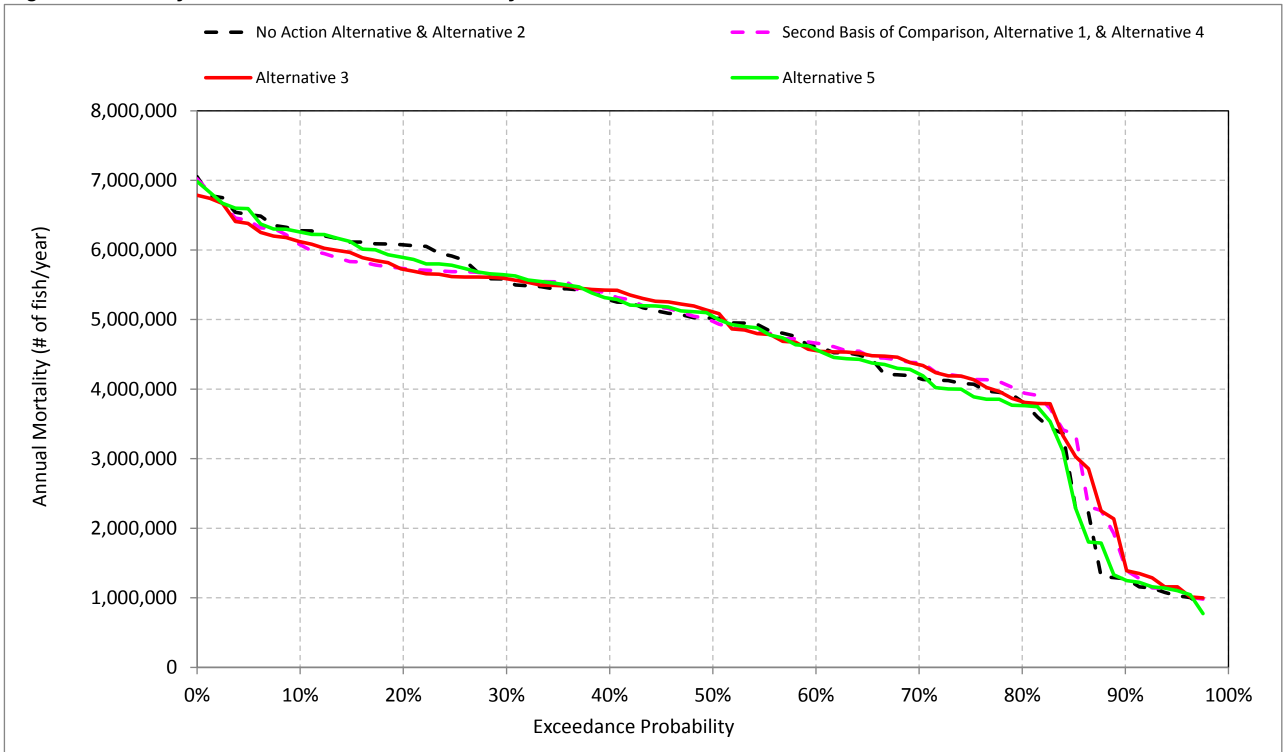
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-9. Super-imposition - Habitat based Annual Mortality for Fall-Run Chinook Salmon



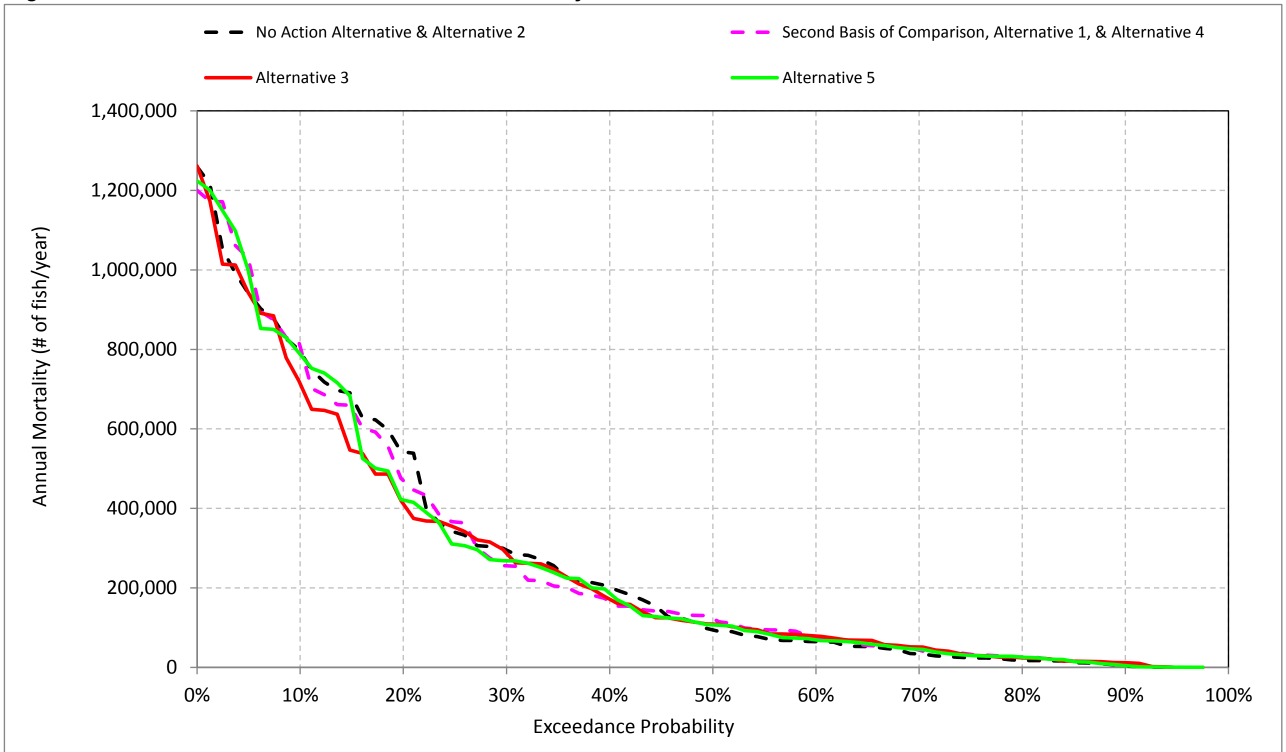
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-10. Fry - Habitat based Annual Mortality for Fall-Run Chinook Salmon



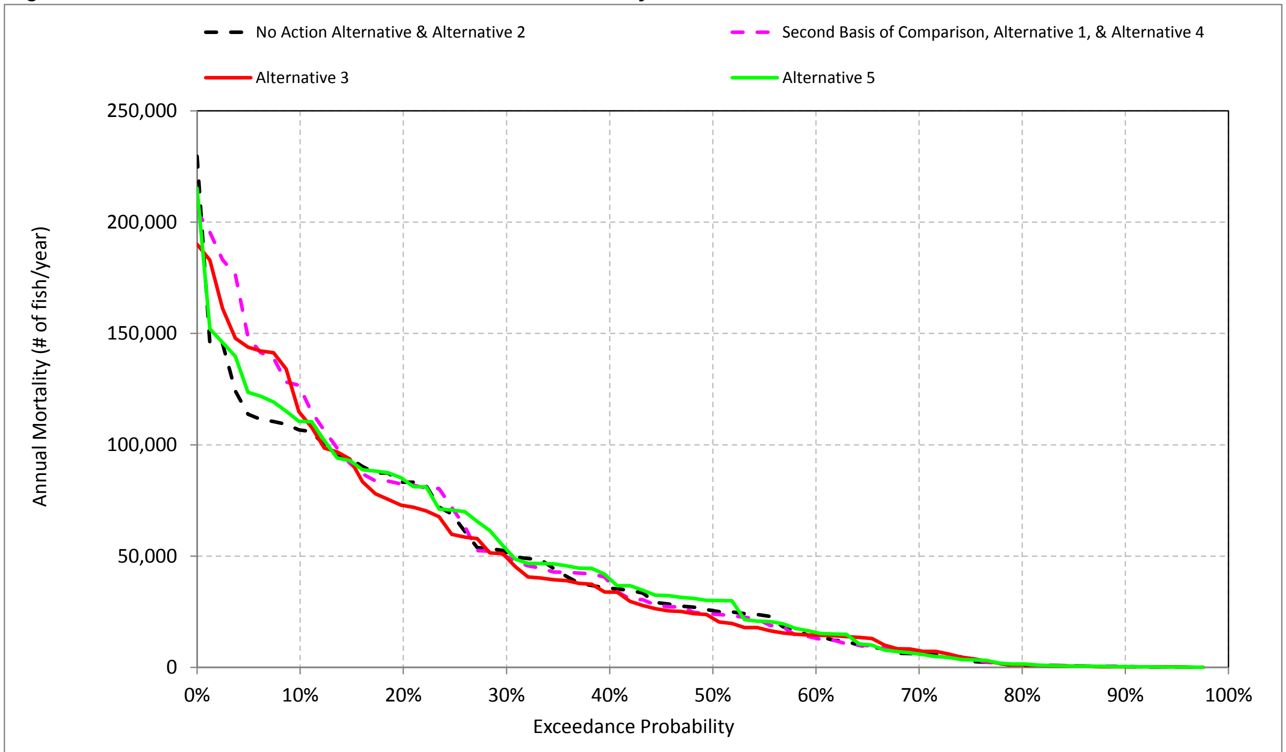
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-11. Pre-smolt - Habitat based Annual Mortality for Fall-Run Chinook Salmon



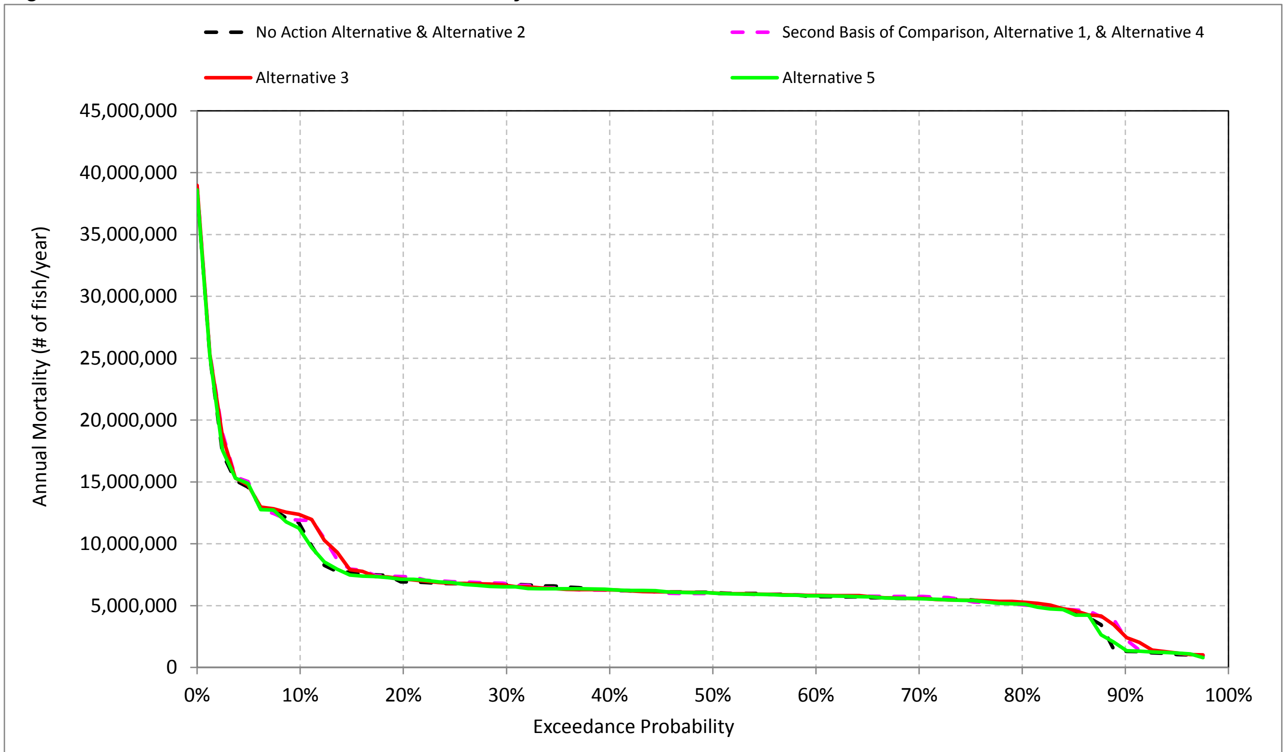
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-12. Immature Smolt - Habitat based Annual Mortality for Fall-Run Chinook Salmon



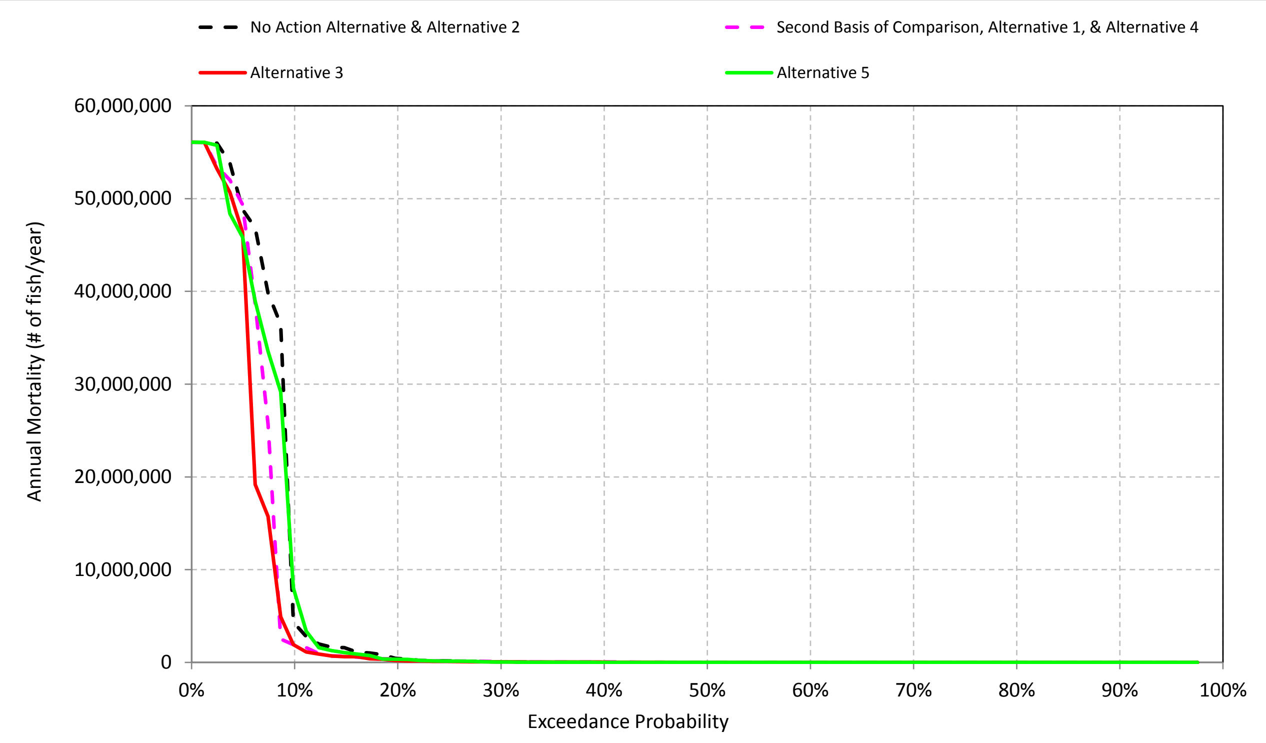
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-13. Total Habitat based Annual Mortality for Fall-Run Chinook Salmon



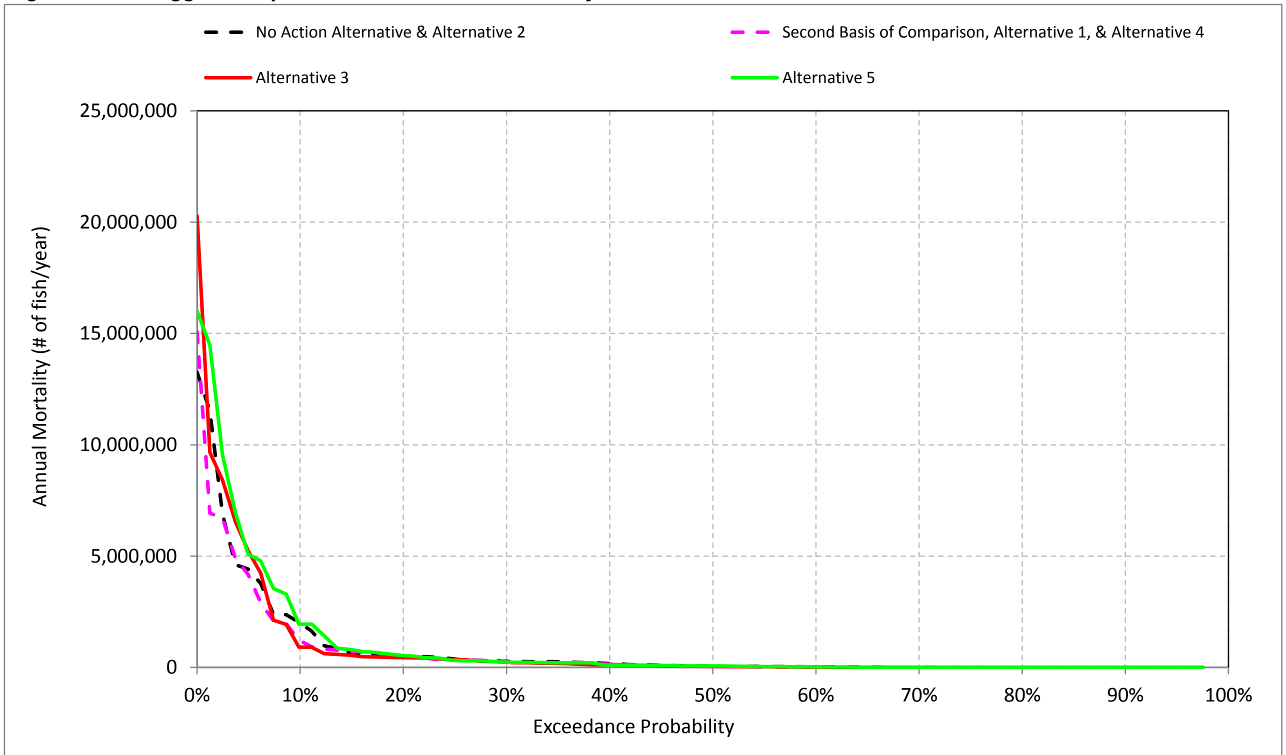
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Fall-Run Chinook Salmon



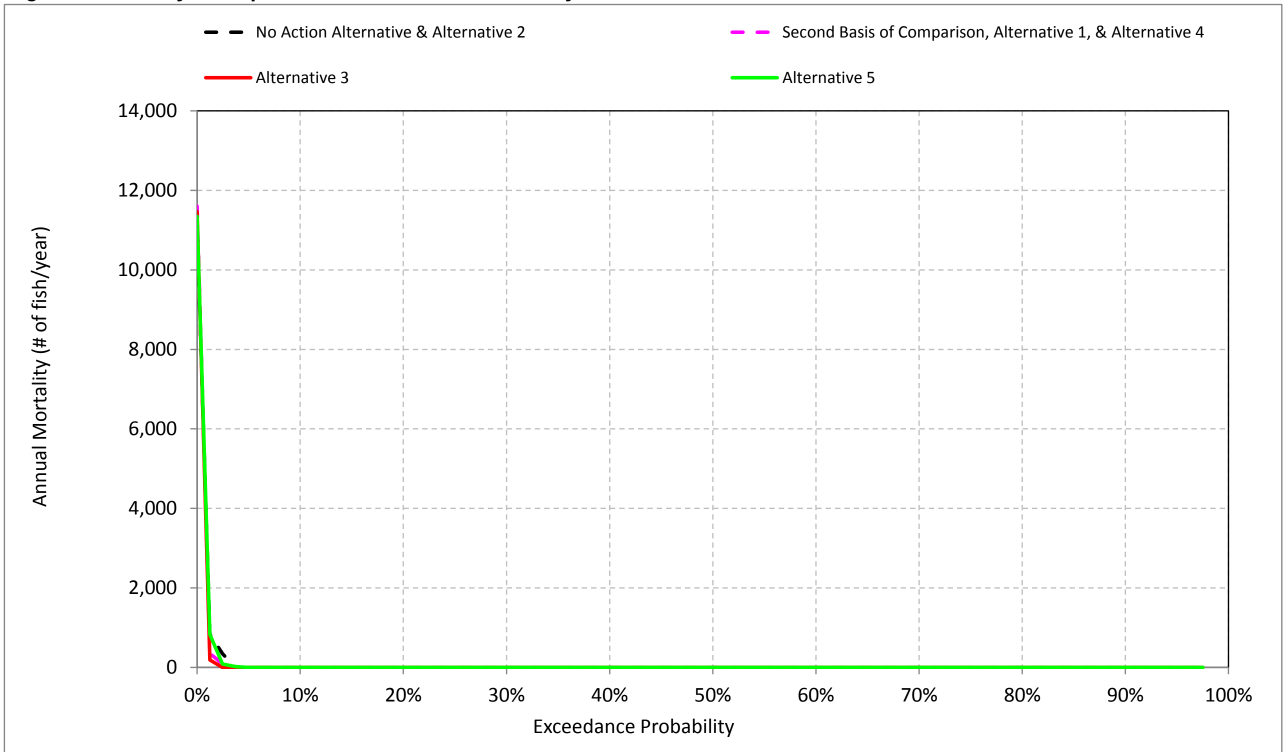
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-15. Eggs - Temperature based Annual Mortality for Fall-Run Chinook Salmon



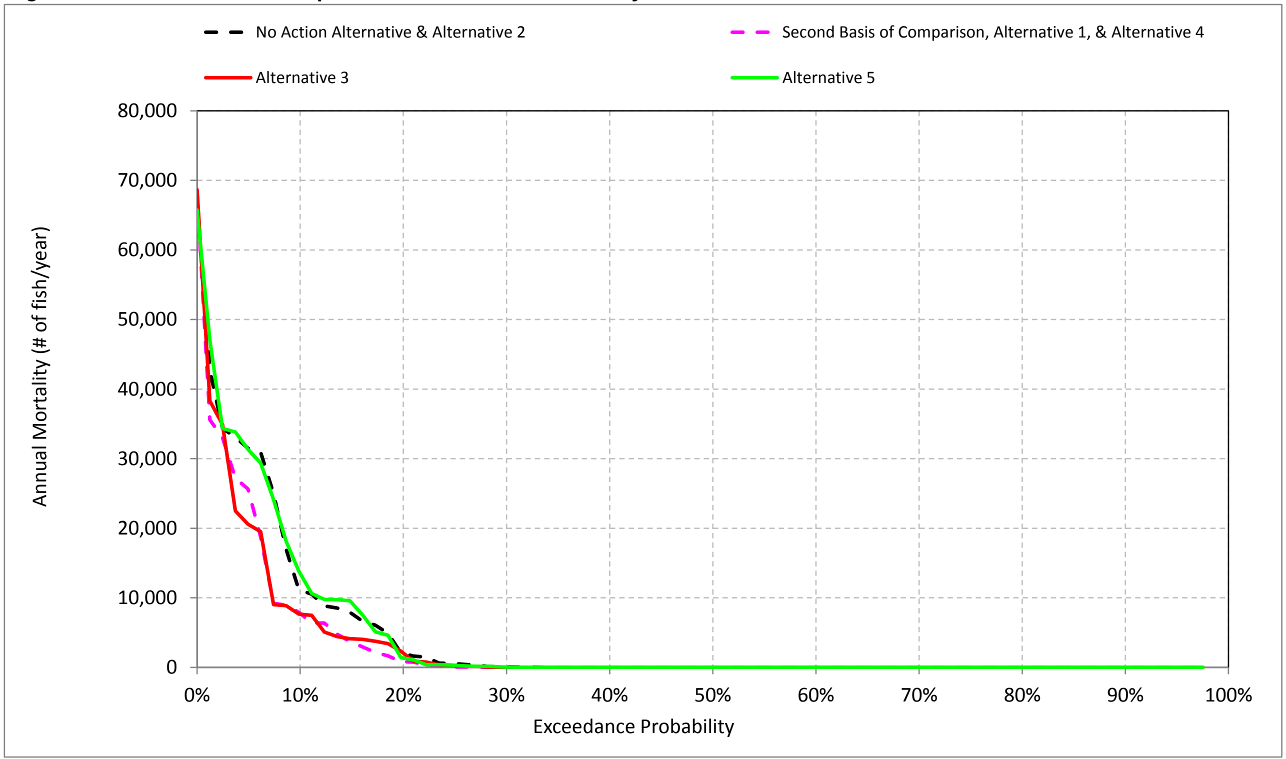
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-16. Fry - Temperature based Annual Mortality for Fall-Run Chinook Salmon



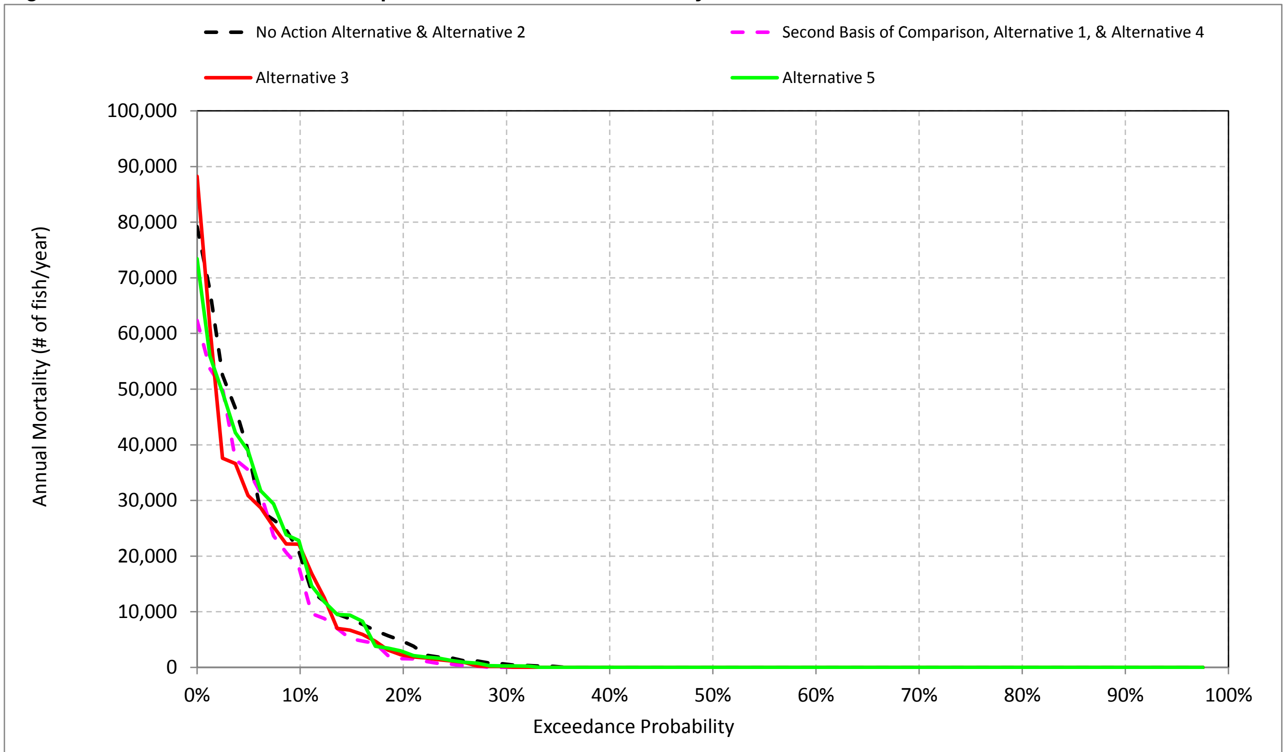
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-17. Pre-smolt - Temperature based Annual Mortality for Fall-Run Chinook Salmon



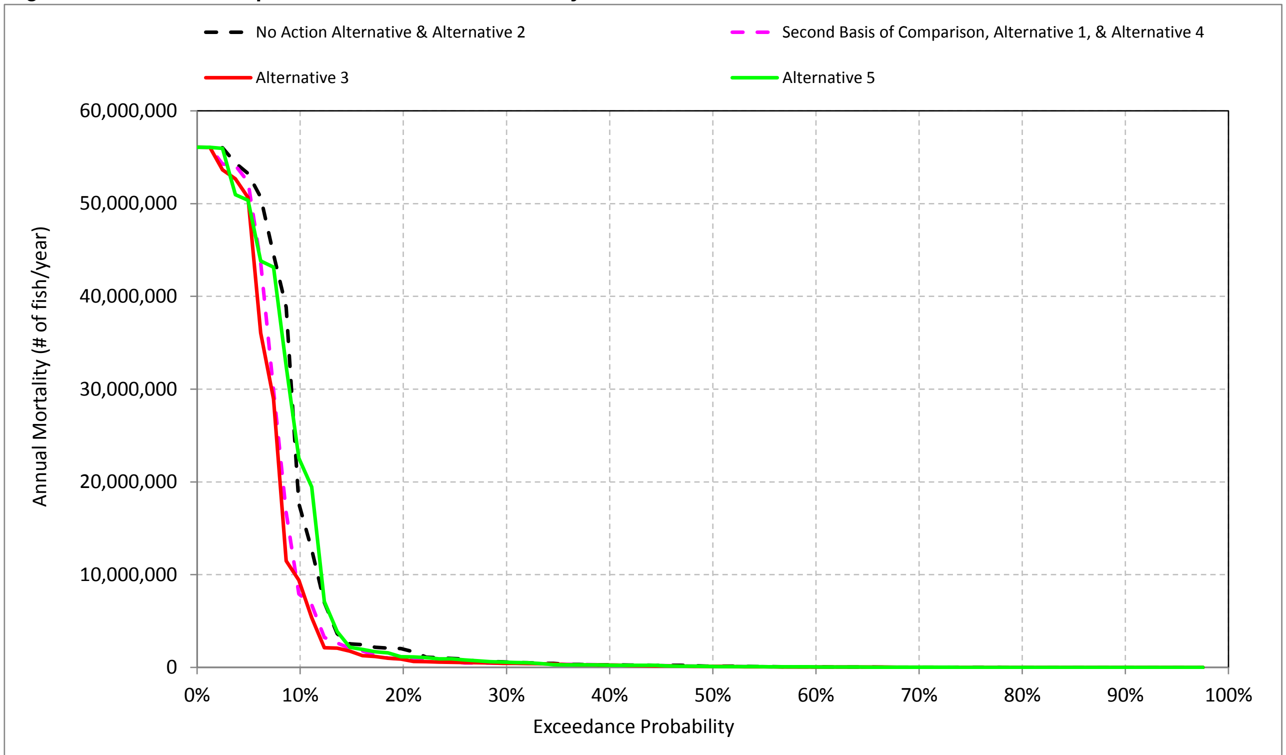
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-18. Immature Smolt - Temperature based Annual Mortality for Fall-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-19. Total Temperature based Annual Mortality for Fall-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-1. Annual Potential Production for Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	16,838,069
Alternative 1	17,037,309
Difference	199,240
Percent Difference[3]	1
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	16,537,313
Alternative 1	16,525,365
Difference	-11,948
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	15,696,855
Alternative 1	15,746,827
Difference	49,972
Percent Difference	0
Below Normal (17.5%)	
No Action Alternative	17,922,930
Alternative 1	17,847,310
Difference	-75,620
Percent Difference	0
Dry (22.5%)	
No Action Alternative	17,754,135
Alternative 1	17,934,726
Difference	180,590
Percent Difference	1
Critical (15%)	
No Action Alternative	15,800,949
Alternative 1	16,930,799
Difference	1,129,850
Percent Difference	7

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-1-2. Annual Mortality by Life Stage for Fall-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)				
Analysis Period	Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	7,894,954	4,684,028	272,676	47,521	320,197
Alternative 1	7,110,950	4,709,109	269,215	49,405	318,621
Difference	-784,003	25,081	-3,461	1,885	-1,576
Percent Difference[3]	-10	1	-1	4	0
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	6,019,065	5,201,105	74,435	15,865	90,301
Alternative 1	6,023,551	5,129,591	71,744	16,838	88,581
Difference	4,486	-71,514	-2,692	973	-1,719
Percent Difference	0	-1	-4	6	-2
Above Normal (12.5%)					
No Action Alternative	11,831,604	5,007,353	161,828	32,005	193,834
Alternative 1	11,326,553	5,120,441	96,157	31,173	127,329
Difference	-505,051	113,088	-65,672	-833	-66,505
Percent Difference	-4	2	-41	-3	-34
Below Normal (17.5%)					
No Action Alternative	4,975,839	4,911,742	266,079	45,556	311,635
Alternative 1	4,943,736	4,895,243	284,538	50,880	335,418
Difference	-32,103	-16,499	18,459	5,324	23,783
Percent Difference	-1	0	7	12	8
Dry (22.5%)					
No Action Alternative	6,357,019	4,408,740	501,702	61,525	563,227
Alternative 1	5,846,335	4,371,799	440,615	59,727	500,342
Difference	-510,683	-36,940	-61,087	-1,798	-62,885
Percent Difference	-8	-1	-12	-3	-11
Critical (15%)					
No Action Alternative	14,391,374	3,441,525	458,729	110,322	569,051
Alternative 1	10,379,320	3,744,097	566,311	117,959	684,270
Difference	-4,012,054	302,572	107,582	7,638	115,220
Percent Difference	-28	9	23	7	20

1 Based on the 80-year simulation period
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average
4 Mortality values do not include base mortality
5 Eggs mortality includes pre-spawn mortality

Table B-1-3. Annual Mortality by Cause for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	5,949,693	6,949,486	12,899,179
Alternative 1	5,010,581	7,128,100	12,138,680
Difference	-939,112	178,614	-760,499
Percent Difference[3]	-16	3	-6
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	927,546	10,382,925	11,310,471
Alternative 1	485,103	10,756,621	11,241,723
Difference	-442,443	373,695	-68,747
Percent Difference	-48	4	-1
Above Normal (12.5%)			
No Action Alternative	11,689,545	5,343,245	17,032,790
Alternative 1	11,136,551	5,437,771	16,574,323
Difference	-552,994	94,526	-458,468
Percent Difference	-5	2	-3
Below Normal (17.5%)			
No Action Alternative	4,200,054	5,999,162	10,199,216
Alternative 1	4,155,751	6,018,646	10,174,397
Difference	-44,304	19,484	-24,819
Percent Difference	-1	0	0
Dry (22.5%)			
No Action Alternative	5,983,150	5,345,836	11,328,986
Alternative 1	5,469,925	5,248,551	10,718,477
Difference	-513,224	-97,285	-610,509
Percent Difference	-9	-2	-5
Critical (15%)			
No Action Alternative	14,038,861	4,363,089	18,401,950
Alternative 1	10,019,091	4,788,596	14,807,687
Difference	-4,019,770	425,507	-3,594,263
Percent Difference	-29	10	-20

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-4. Annual Mortality by Cause and Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	5,139,812	1,955,690	799,452	154	4,683,874	10,275	309,922	12,899,179
Alternative 1	4,292,224	2,108,590	710,136	151	4,708,958	8,069	310,552	12,138,680
Difference	-847,588	152,900	-89,315	-3	25,084	-2,206	630	-760,499
Percent Difference[3]	-16	8	-11	-2	1	-21	0	-6
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	213,200	5,097,346	708,520	428	5,200,677	5,398	84,903	11,310,471
Alternative 1	76,487	5,544,710	402,355	446	5,129,145	5,816	82,766	11,241,723
Difference	-136,713	447,364	-306,165	18	-71,532	417	-2,137	-68,747
Percent Difference	-64	9	-43	4	-1	8	-3	-1
Above Normal (12.5%)								
No Action Alternative	11,397,132	146,831	287,640	34	5,007,318	4,738	189,095	17,032,790
Alternative 1	10,875,176	194,605	256,772	9	5,120,432	4,595	122,734	16,574,323
Difference	-521,956	47,774	-30,868	-26	113,113	-144	-66,361	-458,468
Percent Difference	-5	33	-11	-74	2	-3	-35	-3
Below Normal (17.5%)								
No Action Alternative	4,050,002	780,040	145,797	60	4,911,682	4,196	307,440	10,199,216
Alternative 1	4,055,314	789,925	98,496	25	4,895,218	1,915	333,503	10,174,397
Difference	5,312	9,886	-47,300	-35	-16,465	-2,280	26,064	-24,819
Percent Difference	0	1	-32	-58	0	-54	8	0
Dry (22.5%)								
No Action Alternative	5,226,978	377,492	752,548	0	4,408,740	3,623	559,604	11,328,986
Alternative 1	4,603,020	378,293	865,023	0	4,371,799	1,883	498,459	10,718,477
Difference	-623,959	801	112,475	0	-36,940	-1,740	-61,145	-610,509
Percent Difference	-12	0	15	0	-1	-48	-11	-5
Critical (15%)								
No Action Alternative	11,740,400	395,039	2,255,935	0	3,441,525	42,525	526,526	18,401,950
Alternative 1	7,750,732	392,537	2,236,052	0	3,744,097	32,307	651,963	14,807,687
Difference	-3,989,668	-2,502	-19,884	0	302,572	-10,218	125,438	-3,594,263
Percent Difference	-34	-1	-1	0	9	-24	24	-20

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-5. Annual Mortality by All Factors for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	5,139,812	1,449,851	505,839	799,452	154	4,683,874	4,419	268,257	5,856	41,665	12,899,179
Alternative 1	4,292,224	1,473,372	635,217	710,136	151	4,708,958	3,312	265,903	4,757	44,648	12,138,680
Difference	-847,588	23,521	129,379	-89,315	-3	25,084	-1,106	-2,354	-1,099	2,984	-760,499
Percent Difference[3]	-16	2	26	-11	-2	1	-25	-1	-19	7	-6
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	213,200	3,859,065	1,238,281	708,520	428	5,200,677	4,236	70,199	1,162	14,703	11,310,471
Alternative 1	76,487	3,907,496	1,637,214	402,355	446	5,129,145	4,203	67,541	1,613	15,225	11,241,723
Difference	-136,713	48,431	398,933	-306,165	18	-71,532	-33	-2,659	451	522	-68,747
Percent Difference	-64	1	32	-43	4	-1	-1	-4	39	4	-1
Above Normal (12.5%)											
No Action Alternative	11,397,132	67,263	79,569	287,640	34	5,007,318	3,300	158,529	1,438	30,567	17,032,790
Alternative 1	10,875,176	114,650	79,955	256,772	9	5,120,432	3,015	93,141	1,579	29,593	16,574,323
Difference	-521,956	47,387	386	-30,868	-26	113,113	-285	-65,387	141	-974	-458,468
Percent Difference	-5	70	0	-11	-74	2	-9	-41	10	-3	-3
Below Normal (17.5%)											
No Action Alternative	4,050,002	246,033	534,007	145,797	60	4,911,682	2,887	263,192	1,308	44,248	10,199,216
Alternative 1	4,055,314	257,762	532,163	98,496	25	4,895,218	1,115	283,424	801	50,079	10,174,397
Difference	5,312	11,729	-1,844	-47,300	-35	-16,465	-1,773	20,232	-508	5,832	-24,819
Percent Difference	0	5	0	-32	-58	0	-61	8	-39	13	0
Dry (22.5%)											
No Action Alternative	5,226,978	377,492	0	752,548	0	4,408,740	1,403	500,298	2,220	59,306	11,328,986
Alternative 1	4,603,020	378,293	0	865,023	0	4,371,799	423	440,192	1,460	58,267	10,718,477
Difference	-623,959	801	0	112,475	0	-36,940	-980	-60,107	-760	-1,038	-610,509
Percent Difference	-12	0	0	15	0	-1	-70	-12	-34	-2	-5
Critical (15%)											
No Action Alternative	11,740,400	395,039	0	2,255,935	0	3,441,525	12,058	446,671	30,467	79,854	18,401,950
Alternative 1	7,750,732	392,537	0	2,236,052	0	3,744,097	8,529	557,782	23,779	94,181	14,807,687
Difference	-3,989,668	-2,502	0	-19,884	0	302,572	-3,529	111,111	-6,689	14,327	-3,594,263
Percent Difference	-34	-1	0	-1	0	9	-29	25	-22	18	-20

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-6. Annual Potential Production for Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	16,838,069
Alternative 3	17,129,024
Difference	290,955
Percent Difference[3]	2
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	16,537,313
Alternative 3	16,544,696
Difference	7,383
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	15,696,855
Alternative 3	15,897,563
Difference	200,708
Percent Difference	1
Below Normal (17.5%)	
No Action Alternative	17,922,930
Alternative 3	17,877,415
Difference	-45,515
Percent Difference	0
Dry (22.5%)	
No Action Alternative	17,754,135
Alternative 3	18,382,793
Difference	628,657
Percent Difference	4
Critical (15%)	
No Action Alternative	15,800,949
Alternative 3	16,667,512
Difference	866,563
Percent Difference	5

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-1-7. Annual Mortality by Life Stage for Fall-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)				
Analysis Period	Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	7,894,954	4,684,028	272,676	47,521	320,197
Alternative 3	6,873,719	4,709,136	258,786	47,224	306,009
Difference	-1,021,235	25,108	-13,891	-297	-14,187
Percent Difference[3]	-13	1	-5	-1	-4
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	6,019,065	5,201,105	74,435	15,865	90,301
Alternative 3	5,981,293	5,099,805	75,392	16,365	91,757
Difference	-37,772	-101,300	957	500	1,457
Percent Difference	-1	-2	1	3	2
Above Normal (12.5%)					
No Action Alternative	11,831,604	5,007,353	161,828	32,005	193,834
Alternative 3	10,983,177	5,061,047	110,803	26,403	137,207
Difference	-848,427	53,694	-51,025	-5,602	-56,627
Percent Difference	-7	1	-32	-18	-29
Below Normal (17.5%)					
No Action Alternative	4,975,839	4,911,742	266,079	45,556	311,635
Alternative 3	4,905,579	4,909,824	267,778	50,091	317,869
Difference	-70,260	-1,918	1,699	4,535	6,234
Percent Difference	-1	0	1	10	2
Dry (22.5%)					
No Action Alternative	6,357,019	4,408,740	501,702	61,525	563,227
Alternative 3	4,403,331	4,450,665	464,033	59,943	523,976
Difference	-1,953,687	41,925	-37,668	-1,583	-39,251
Percent Difference	-31	1	-8	-3	-7
Critical (15%)					
No Action Alternative	14,391,374	3,441,525	458,729	110,322	569,051
Alternative 3	11,384,504	3,723,000	461,093	109,012	570,105
Difference	-3,006,871	281,476	2,364	-1,310	1,055
Percent Difference	-21	8	1	-1	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-1-8. Annual Mortality by Cause for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	5,949,693	6,949,486	12,899,179
Alternative 3	4,751,566	7,137,299	11,888,865
Difference	-1,198,127	187,813	-1,010,314
Percent Difference[3]	-20	3	-8
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	927,546	10,382,925	11,310,471
Alternative 3	389,939	10,782,916	11,172,855
Difference	-537,606	399,991	-137,615
Percent Difference	-58	4	-1
Above Normal (12.5%)			
No Action Alternative	11,689,545	5,343,245	17,032,790
Alternative 3	10,788,099	5,393,332	16,181,431
Difference	-901,446	50,087	-851,359
Percent Difference	-8	1	-5
Below Normal (17.5%)			
No Action Alternative	4,200,054	5,999,162	10,199,216
Alternative 3	4,135,609	5,997,663	10,133,272
Difference	-64,445	-1,499	-65,944
Percent Difference	-2	0	-1
Dry (22.5%)			
No Action Alternative	5,983,150	5,345,836	11,328,986
Alternative 3	4,017,083	5,360,888	9,377,972
Difference	-1,966,066	15,053	-1,951,014
Percent Difference	-33	0	-17
Critical (15%)			
No Action Alternative	14,038,861	4,363,089	18,401,950
Alternative 3	10,991,653	4,685,957	15,677,609
Difference	-3,047,208	322,868	-2,724,340
Percent Difference	-22	7	-15

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-9. Annual Mortality by Cause and Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	5,139,812	1,955,690	799,452	154	4,683,874	10,275	309,922	12,899,179
Alternative 3	3,882,019	2,130,887	860,812	146	4,708,991	8,589	297,421	11,888,865
Difference	-1,257,793	175,198	61,360	-8	25,116	-1,686	-12,501	-1,010,314
Percent Difference[3]	-24	9	8	-5	1	-16	-4	-8
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	213,200	5,097,346	708,520	428	5,200,677	5,398	84,903	11,310,471
Alternative 3	37,613	5,597,671	346,009	441	5,099,364	5,877	85,881	11,172,855
Difference	-175,587	500,325	-362,510	13	-101,313	478	978	-137,615
Percent Difference	-82	10	-51	3	-2	9	1	-1
Above Normal (12.5%)								
No Action Alternative	11,397,132	146,831	287,640	34	5,007,318	4,738	189,095	17,032,790
Alternative 3	10,309,394	196,462	477,321	0	5,061,047	1,384	135,823	16,181,431
Difference	-1,087,738	49,631	189,681	-34	53,729	-3,354	-53,273	-851,359
Percent Difference	-10	34	66	-100	1	-71	-28	-5
Below Normal (17.5%)								
No Action Alternative	4,050,002	780,040	145,797	60	4,911,682	4,196	307,440	10,199,216
Alternative 3	4,049,375	773,748	82,456	14	4,909,811	3,764	314,105	10,133,272
Difference	-627	-6,292	-63,341	-46	-1,871	-431	6,665	-65,944
Percent Difference	0	-1	-43	-77	0	-10	2	-1
Dry (22.5%)								
No Action Alternative	5,226,978	377,492	752,548	0	4,408,740	3,623	559,604	11,328,986
Alternative 3	3,355,934	388,784	658,614	0	4,450,665	2,536	521,440	9,377,972
Difference	-1,871,044	11,291	-93,934	0	41,925	-1,088	-38,164	-1,951,014
Percent Difference	-36	3	-12	0	1	-30	-7	-17
Critical (15%)								
No Action Alternative	11,740,400	395,039	2,255,935	0	3,441,525	42,525	526,526	18,401,950
Alternative 3	7,449,300	428,029	3,507,175	0	3,723,000	35,178	534,928	15,677,609
Difference	-4,291,101	32,990	1,251,240	0	281,475	-7,347	8,402	-2,724,340
Percent Difference	-37	8	55	0	8	-17	2	-15

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-10. Annual Mortality by All Factors for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	5,139,812	1,449,851	505,839	799,452	154	4,683,874	4,419	268,257	5,856	41,665	12,899,179
Alternative 3	3,882,019	1,491,155	639,732	860,812	146	4,708,991	3,342	255,443	5,247	41,977	11,888,865
Difference	-1,257,793	41,304	133,893	61,360	-8	25,116	-1,077	-12,814	-609	313	-1,010,314
Percent Difference[3]	-24	3	26	8	-5	1	-24	-5	-10	1	-8
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	213,200	3,859,065	1,238,281	708,520	428	5,200,677	4,236	70,199	1,162	14,703	11,310,471
Alternative 3	37,613	3,945,868	1,651,803	346,009	441	5,099,364	4,272	71,120	1,605	14,761	11,172,855
Difference	-175,587	86,803	413,522	-362,510	13	-101,313	36	921	442	58	-137,615
Percent Difference	-82	2	33	-51	3	-2	1	1	38	0	-1
Above Normal (12.5%)											
No Action Alternative	11,397,132	67,263	79,569	287,640	34	5,007,318	3,300	158,529	1,438	30,567	17,032,790
Alternative 3	10,309,394	116,493	79,969	477,321	0	5,061,047	576	110,227	808	25,595	16,181,431
Difference	-1,087,738	49,230	401	189,681	-34	53,729	-2,724	-48,301	-630	-4,972	-851,359
Percent Difference	-10	73	1	66	-100	1	-83	-30	-44	-16	-5
Below Normal (17.5%)											
No Action Alternative	4,050,002	246,033	534,007	145,797	60	4,911,682	2,887	263,192	1,308	44,248	10,199,216
Alternative 3	4,049,375	242,891	530,857	82,456	14	4,909,811	2,116	265,663	1,649	48,442	10,133,272
Difference	-627	-3,142	-3,151	-63,341	-46	-1,871	-771	2,470	340	4,195	-65,944
Percent Difference	0	-1	-1	-43	-77	0	-27	1	26	9	-1
Dry (22.5%)											
No Action Alternative	5,226,978	377,492	0	752,548	0	4,408,740	1,403	500,298	2,220	59,306	11,328,986
Alternative 3	3,355,934	388,784	0	658,614	0	4,450,665	698	463,335	1,837	58,105	9,377,972
Difference	-1,871,044	11,291	0	-93,934	0	41,925	-705	-36,963	-382	-1,200	-1,951,014
Percent Difference	-36	3	0	-12	0	1	-50	-7	-17	-2	-17
Critical (15%)											
No Action Alternative	11,740,400	395,039	0	2,255,935	0	3,441,525	12,058	446,671	30,467	79,854	18,401,950
Alternative 3	7,449,300	428,029	0	3,507,175	0	3,723,000	9,030	452,064	26,148	82,864	15,677,609
Difference	-4,291,101	32,990	0	1,251,240	0	281,475	-3,028	5,392	-4,320	3,010	-2,724,340
Percent Difference	-37	8	0	55	0	8	-25	1	-14	4	-15

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-11. Annual Potential Production for Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	16,838,069
Alternative 5	16,908,477
Difference	70,408
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	16,537,313
Alternative 5	16,493,092
Difference	-44,221
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	15,696,855
Alternative 5	15,891,098
Difference	194,243
Percent Difference	1
Below Normal (17.5%)	
No Action Alternative	17,922,930
Alternative 5	17,951,192
Difference	28,262
Percent Difference	0
Dry (22.5%)	
No Action Alternative	17,754,135
Alternative 5	18,003,040
Difference	248,905
Percent Difference	1
Critical (15%)	
No Action Alternative	15,800,949
Alternative 5	15,797,949
Difference	-3,000
Percent Difference	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-1-12. Annual Mortality by Life Stage for Fall-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)				
Analysis Period	Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	7,894,954	4,684,028	272,676	47,521	320,197
Alternative 5	7,723,389	4,663,905	266,371	49,003	315,374
Difference	-171,565	-20,123	-6,305	1,482	-4,823
Percent Difference[3]	-2	0	-2	3	-2
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	6,019,065	5,201,105	74,435	15,865	90,301
Alternative 5	6,169,444	5,177,967	78,031	16,578	94,608
Difference	150,379	-23,138	3,595	712	4,308
Percent Difference	2	0	5	4	5
Above Normal (12.5%)					
No Action Alternative	11,831,604	5,007,353	161,828	32,005	193,834
Alternative 5	11,229,256	4,990,191	153,381	34,302	187,683
Difference	-602,348	-17,162	-8,448	2,296	-6,151
Percent Difference	-5	0	-5	7	-3
Below Normal (17.5%)					
No Action Alternative	4,975,839	4,911,742	266,079	45,556	311,635
Alternative 5	4,934,725	4,906,604	268,136	45,725	313,861
Difference	-41,114	-5,138	2,056	169	2,226
Percent Difference	-1	0	1	0	1
Dry (22.5%)					
No Action Alternative	6,357,019	4,408,740	501,702	61,525	563,227
Alternative 5	5,727,952	4,357,900	490,190	66,478	556,668
Difference	-629,067	-50,840	-11,512	4,953	-6,559
Percent Difference	-10	-1	-2	8	-1
Critical (15%)					
No Action Alternative	14,391,374	3,441,525	458,729	110,322	569,051
Alternative 5	14,415,310	3,454,056	430,811	109,120	539,931
Difference	23,936	12,531	-27,918	-1,202	-29,120
Percent Difference	0	0	-6	-1	-5

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-1-13. Annual Mortality by Cause for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	5,949,693	6,949,486	12,899,179
Alternative 5	5,781,882	6,920,785	12,702,667
Difference	-167,811	-28,701	-196,511
Percent Difference[3]	-3	0	-2
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	927,546	10,382,925	11,310,471
Alternative 5	1,088,909	10,353,111	11,442,020
Difference	161,363	-29,814	131,549
Percent Difference	17	0	1
Above Normal (12.5%)			
No Action Alternative	11,689,545	5,343,245	17,032,790
Alternative 5	11,083,720	5,323,409	16,407,129
Difference	-605,825	-19,836	-625,661
Percent Difference	-5	0	-4
Below Normal (17.5%)			
No Action Alternative	4,200,054	5,999,162	10,199,216
Alternative 5	4,169,106	5,986,084	10,155,190
Difference	-30,948	-13,078	-44,026
Percent Difference	-1	0	0
Dry (22.5%)			
No Action Alternative	5,983,150	5,345,836	11,328,986
Alternative 5	5,349,191	5,293,329	10,642,520
Difference	-633,958	-52,507	-686,466
Percent Difference	-11	-1	-6
Critical (15%)			
No Action Alternative	14,038,861	4,363,089	18,401,950
Alternative 5	14,062,400	4,346,896	18,409,296
Difference	23,539	-16,193	7,347
Percent Difference	0	0	0

1 Based on the 80-year simulation period
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average
4 Mortality values do not include base mortality

Table B-1-14. Annual Mortality by Cause and Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	5,139,812	1,955,690	799,452	154	4,683,874	10,275	309,922	12,899,179
Alternative 5	4,786,653	1,951,663	985,073	154	4,663,751	10,003	305,371	12,702,667
Difference	-353,159	-4,026	185,621	0	-20,123	-272	-4,551	-196,511
Percent Difference[3]	-7	0	23	0	0	-3	-1	-2
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	213,200	5,097,346	708,520	428	5,200,677	5,398	84,903	11,310,471
Alternative 5	348,257	5,086,105	735,082	436	5,177,531	5,134	89,475	11,442,020
Difference	135,058	-11,241	26,562	8	-23,146	-265	4,572	131,549
Percent Difference	63	0	4	2	0	-5	5	1
Above Normal (12.5%)								
No Action Alternative	11,397,132	146,831	287,640	34	5,007,318	4,738	189,095	17,032,790
Alternative 5	10,385,418	149,961	693,877	9	4,990,182	4,417	183,266	16,407,129
Difference	-1,011,714	3,130	406,236	-26	-17,136	-321	-5,830	-625,661
Percent Difference	-9	2	141	-75	0	-7	-3	-4
Below Normal (17.5%)								
No Action Alternative	4,050,002	780,040	145,797	60	4,911,682	4,196	307,440	10,199,216
Alternative 5	4,052,333	769,810	112,581	59	4,906,545	4,133	309,728	10,155,190
Difference	2,331	-10,229	-33,215	0	-5,137	-63	2,289	-44,026
Percent Difference	0	-1	-23	-1	0	-1	1	0
Dry (22.5%)								
No Action Alternative	5,226,978	377,492	752,548	0	4,408,740	3,623	559,604	11,328,986
Alternative 5	4,376,903	382,888	968,162	1	4,357,898	4,125	552,543	10,642,520
Difference	-850,076	5,395	215,614	1	-50,841	502	-7,061	-686,466
Percent Difference	-16	1	29	0	-1	14	-1	-6
Critical (15%)								
No Action Alternative	11,740,400	395,039	2,255,935	0	3,441,525	42,525	526,526	18,401,950
Alternative 5	11,208,869	393,784	2,812,657	0	3,454,056	40,874	499,057	18,409,296
Difference	-531,531	-1,255	556,722	0	12,531	-1,651	-27,469	7,347
Percent Difference	-5	0	25	0	0	-4	-5	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-15. Annual Mortality by All Factors for Fall-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)										
Analysis Period	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	5,139,812	1,449,851	505,839	799,452	154	4,683,874	4,419	268,257	5,856	41,665	12,899,179
Alternative 5	4,786,653	1,450,386	501,277	985,073	154	4,663,751	4,489	261,882	5,514	43,488	12,702,667
Difference	-353,159	535	-4,561	185,621	0	-20,123	70	-6,375	-342	1,824	-196,511
Percent Difference[3]	-7	0	-1	23	0	0	2	-2	-6	4	-2
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	213,200	3,859,065	1,238,281	708,520	428	5,200,677	4,236	70,199	1,162	14,703	11,310,471
Alternative 5	348,257	3,861,662	1,224,443	735,082	436	5,177,531	4,005	74,026	1,129	15,449	11,442,020
Difference	135,058	2,597	-13,838	26,562	8	-23,146	-231	3,827	-33	746	131,549
Percent Difference	63	0	-1	4	2	0	-5	5	-3	5	1
Above Normal (12.5%)											
No Action Alternative	11,397,132	67,263	79,569	287,640	34	5,007,318	3,300	158,529	1,438	30,567	17,032,790
Alternative 5	10,385,418	69,983	79,978	693,877	9	4,990,182	3,244	150,137	1,173	33,128	16,407,129
Difference	-1,011,714	2,721	409	406,236	-26	-17,136	-56	-8,391	-265	2,561	-625,661
Percent Difference	-9	4	1	141	-75	0	-2	-5	-18	8	-4
Below Normal (17.5%)											
No Action Alternative	4,050,002	246,033	534,007	145,797	60	4,911,682	2,887	263,192	1,308	44,248	10,199,216
Alternative 5	4,052,333	236,463	533,348	112,581	59	4,906,545	2,782	265,353	1,350	44,375	10,155,190
Difference	2,331	-9,570	-659	-33,215	0	-5,137	-105	2,161	42	128	-44,026
Percent Difference	0	-4	0	-23	-1	0	-4	1	3	0	0
Dry (22.5%)											
No Action Alternative	5,226,978	377,492	0	752,548	0	4,408,740	1,403	500,298	2,220	59,306	11,328,986
Alternative 5	4,376,903	382,888	0	968,162	1	4,357,898	1,827	488,363	2,298	64,180	10,642,520
Difference	-850,076	5,395	0	215,614	1	-50,841	424	-11,936	79	4,874	-686,466
Percent Difference	-16	1	0	29	0	-1	30	-2	4	8	-6
Critical (15%)											
No Action Alternative	11,740,400	395,039	0	2,255,935	0	3,441,525	12,058	446,671	30,467	79,854	18,401,950
Alternative 5	11,208,869	393,784	0	2,812,657	0	3,454,056	12,558	418,253	28,316	80,804	18,409,296
Difference	-531,531	-1,255	0	556,722	0	12,531	500	-28,418	-2,151	949	7,347
Percent Difference	-5	0	0	25	0	0	4	-6	-7	1	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-16. Annual Potential Production for Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	17,037,309
No Action Alternative	16,838,069
Difference	-199,240
Percent Difference[3]	-1
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	16,525,365
No Action Alternative	16,537,313
Difference	11,948
Percent Difference	0
Above Normal (12.5%)	
Second Basis of Comparison	15,746,827
No Action Alternative	15,696,855
Difference	-49,972
Percent Difference	0
Below Normal (17.5%)	
Second Basis of Comparison	17,847,310
No Action Alternative	17,922,930
Difference	75,620
Percent Difference	0
Dry (22.5%)	
Second Basis of Comparison	17,934,726
No Action Alternative	17,754,135
Difference	-180,590
Percent Difference	-1
Critical (15%)	
Second Basis of Comparison	16,930,799
No Action Alternative	15,800,949
Difference	-1,129,850
Percent Difference	-7

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-1-17. Annual Mortality by Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	7,110,950	4,709,109	269,215	49,405	318,621
No Action Alternative	7,894,954	4,684,028	272,676	47,521	320,197
Difference	784,003	-25,081	3,461	-1,885	1,576
Percent Difference[3]	11	-1	1	-4	0
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	6,023,551	5,129,591	71,744	16,838	88,581
No Action Alternative	6,019,065	5,201,105	74,435	15,865	90,301
Difference	-4,486	71,514	2,692	-973	1,719
Percent Difference	0	1	4	-6	2
Above Normal (12.5%)					
Second Basis of Comparison	11,326,553	5,120,441	96,157	31,173	127,329
No Action Alternative	11,831,604	5,007,353	161,828	32,005	193,834
Difference	505,051	-113,088	65,672	833	66,505
Percent Difference	4	-2	68	3	52
Below Normal (17.5%)					
Second Basis of Comparison	4,943,736	4,895,243	284,538	50,880	335,418
No Action Alternative	4,975,839	4,911,742	266,079	45,556	311,635
Difference	32,103	16,499	-18,459	-5,324	-23,783
Percent Difference	1	0	-6	-10	-7
Dry (22.5%)					
Second Basis of Comparison	5,846,335	4,371,799	440,615	59,727	500,342
No Action Alternative	6,357,019	4,408,740	501,702	61,525	563,227
Difference	510,683	36,940	61,087	1,798	62,885
Percent Difference	9	1	14	3	13
Critical (15%)					
Second Basis of Comparison	10,379,320	3,744,097	566,311	117,959	684,270
No Action Alternative	14,391,374	3,441,525	458,729	110,322	569,051
Difference	4,012,054	-302,572	-107,582	-7,638	-115,220
Percent Difference	39	-8	-19	-6	-17

1 Based on the 80-year simulation period
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average
4 Mortality values do not include base mortality
5 Eggs mortality includes pre-spawn mortality

Table B-1-18. Annual Mortality by Cause for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
	Long-term		
Full Simulation Period[1]			
Second Basis of Comparison	5,010,581	7,128,100	12,138,680
No Action Alternative	5,949,693	6,949,486	12,899,179
Difference	939,112	-178,614	760,499
Percent Difference[3]	19	-3	6
	Water Year Types[2]		
Wet (32.5%)			
Second Basis of Comparison	485,103	10,756,621	11,241,723
No Action Alternative	927,546	10,382,925	11,310,471
Difference	442,443	-373,695	68,747
Percent Difference	91	-3	1
Above Normal (12.5%)			
Second Basis of Comparison	11,136,551	5,437,771	16,574,323
No Action Alternative	11,689,545	5,343,245	17,032,790
Difference	552,994	-94,526	458,468
Percent Difference	5	-2	3
Below Normal (17.5%)			
Second Basis of Comparison	4,155,751	6,018,646	10,174,397
No Action Alternative	4,200,054	5,999,162	10,199,216
Difference	44,304	-19,484	24,819
Percent Difference	1	0	0
Dry (22.5%)			
Second Basis of Comparison	5,469,925	5,248,551	10,718,477
No Action Alternative	5,983,150	5,345,836	11,328,986
Difference	513,224	97,285	610,509
Percent Difference	9	2	6
Critical (15%)			
Second Basis of Comparison	10,019,091	4,788,596	14,807,687
No Action Alternative	14,038,861	4,363,089	18,401,950
Difference	4,019,770	-425,507	3,594,263
Percent Difference	40	-9	24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-19. Annual Mortality by Cause and Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	4,292,224	2,108,590	710,136	151	4,708,958	8,069	310,552	12,138,680
No Action Alternative	5,139,812	1,955,690	799,452	154	4,683,874	10,275	309,922	12,899,179
Difference	847,588	-152,900	89,315	3	-25,084	2,206	-630	760,499
Percent Difference[3]	20	-7	13	2	-1	27	0	6
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	76,487	5,544,710	402,355	446	5,129,145	5,816	82,766	11,241,723
No Action Alternative	213,200	5,097,346	708,520	428	5,200,677	5,398	84,903	11,310,471
Difference	136,713	-447,364	306,165	-18	71,532	-417	2,137	68,747
Percent Difference	179	-8	76	-4	1	-7	3	1
Above Normal (12.5%)								
Second Basis of Comparison	10,875,176	194,605	256,772	9	5,120,432	4,595	122,734	16,574,323
No Action Alternative	11,397,132	146,831	287,640	34	5,007,318	4,738	189,095	17,032,790
Difference	521,956	-47,774	30,868	26	-113,113	144	66,361	458,468
Percent Difference	5	-25	12	287	-2	3	54	3
Below Normal (17.5%)								
Second Basis of Comparison	4,055,314	789,925	98,496	25	4,895,218	1,915	333,503	10,174,397
No Action Alternative	4,050,002	780,040	145,797	60	4,911,682	4,196	307,440	10,199,216
Difference	-5,312	-9,886	47,300	35	16,465	2,280	-26,064	24,819
Percent Difference	0	-1	48	138	0	119	-8	0
Dry (22.5%)								
Second Basis of Comparison	4,603,020	378,293	865,023	0	4,371,799	1,883	498,459	10,718,477
No Action Alternative	5,226,978	377,492	752,548	0	4,408,740	3,623	559,604	11,328,986
Difference	623,959	-801	-112,475	0	36,940	1,740	61,145	610,509
Percent Difference	14	0	-13	0	1	92	12	6
Critical (15%)								
Second Basis of Comparison	7,750,732	392,537	2,236,052	0	3,744,097	32,307	651,963	14,807,687
No Action Alternative	11,740,400	395,039	2,255,935	0	3,441,525	42,525	526,526	18,401,950
Difference	3,989,668	2,502	19,884	0	-302,572	10,218	-125,438	3,594,263
Percent Difference	51	1	1	0	-8	32	-19	24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-20. Annual Mortality by All Factors for Fall-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)										
Analysis Period	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	4,292,224	1,473,372	635,217	710,136	151	4,708,958	3,312	265,903	4,757	44,648	12,138,680
No Action Alternative	5,139,812	1,449,851	505,839	799,452	154	4,683,874	4,419	268,257	5,856	41,665	12,899,179
Difference	847,588	-23,521	-129,379	89,315	3	-25,084	1,106	2,354	1,099	-2,984	760,499
Percent Difference[3]	20	-2	-20	13	2	-1	33	1	23	-7	6
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	76,487	3,907,496	1,637,214	402,355	446	5,129,145	4,203	67,541	1,613	15,225	11,241,723
No Action Alternative	213,200	3,859,065	1,238,281	708,520	428	5,200,677	4,236	70,199	1,162	14,703	11,310,471
Difference	136,713	-48,431	-398,933	306,165	-18	71,532	33	2,659	-451	-522	68,747
Percent Difference	179	-1	-24	76	-4	1	1	4	-28	-3	1
Above Normal (12.5%)											
Second Basis of Comparison	10,875,176	114,650	79,955	256,772	9	5,120,432	3,015	93,141	1,579	29,593	16,574,323
No Action Alternative	11,397,132	67,263	79,569	287,640	34	5,007,318	3,300	158,529	1,438	30,567	17,032,790
Difference	521,956	-47,387	-386	30,868	26	-113,113	285	65,387	-141	974	458,468
Percent Difference	5	-41	0	12	287	-2	9	70	-9	3	3
Below Normal (17.5%)											
Second Basis of Comparison	4,055,314	257,762	532,163	98,496	25	4,895,218	1,115	283,424	801	50,079	10,174,397
No Action Alternative	4,050,002	246,033	534,007	145,797	60	4,911,682	2,887	263,192	1,308	44,248	10,199,216
Difference	-5,312	-11,729	1,844	47,300	35	16,465	1,773	-20,232	508	-5,832	24,819
Percent Difference	0	-5	0	48	138	0	159	-7	63	-12	0
Dry (22.5%)											
Second Basis of Comparison	4,603,020	378,293	0	865,023	0	4,371,799	423	440,192	1,460	58,267	10,718,477
No Action Alternative	5,226,978	377,492	0	752,548	0	4,408,740	1,403	500,298	2,220	59,306	11,328,986
Difference	623,959	-801	0	-112,475	0	36,940	980	60,107	760	1,038	610,509
Percent Difference	14	0	0	-13	0	1	232	14	52	2	6
Critical (15%)											
Second Basis of Comparison	7,750,732	392,537	0	2,236,052	0	3,744,097	8,529	557,782	23,779	94,181	14,807,687
No Action Alternative	11,740,400	395,039	0	2,255,935	0	3,441,525	12,058	446,671	30,467	79,854	18,401,950
Difference	3,989,668	2,502	0	19,884	0	-302,572	3,529	-111,111	6,689	-14,327	3,594,263
Percent Difference	51	1	0	1	0	-8	41	-20	28	-15	24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-21. Annual Potential Production for Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	17,037,309
Alternative 3	17,129,024
Difference	91,715
Percent Difference[3]	1
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	16,525,365
Alternative 3	16,544,696
Difference	19,331
Percent Difference	0
Above Normal (12.5%)	
Second Basis of Comparison	15,746,827
Alternative 3	15,897,563
Difference	150,736
Percent Difference	1
Below Normal (17.5%)	
Second Basis of Comparison	17,847,310
Alternative 3	17,877,415
Difference	30,105
Percent Difference	0
Dry (22.5%)	
Second Basis of Comparison	17,934,726
Alternative 3	18,382,793
Difference	448,067
Percent Difference	2
Critical (15%)	
Second Basis of Comparison	16,930,799
Alternative 3	16,667,512
Difference	-263,288
Percent Difference	-2

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-1-22. Annual Mortality by Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	7,110,950	4,709,109	269,215	49,405	318,621
Alternative 3	6,873,719	4,709,136	258,786	47,224	306,009
Difference	-237,232	27	-10,430	-2,182	-12,611
Percent Difference[3]	-3	0	-4	-4	-4
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	6,023,551	5,129,591	71,744	16,838	88,581
Alternative 3	5,981,293	5,099,805	75,392	16,365	91,757
Difference	-42,258	-29,786	3,648	-473	3,176
Percent Difference	-1	-1	5	-3	4
Above Normal (12.5%)					
Second Basis of Comparison	11,326,553	5,120,441	96,157	31,173	127,329
Alternative 3	10,983,177	5,061,047	110,803	26,403	137,207
Difference	-343,376	-59,394	14,647	-4,769	9,878
Percent Difference	-3	-1	15	-15	8
Below Normal (17.5%)					
Second Basis of Comparison	4,943,736	4,895,243	284,538	50,880	335,418
Alternative 3	4,905,579	4,909,824	267,778	50,091	317,869
Difference	-38,157	14,582	-16,760	-789	-17,549
Percent Difference	-1	0	-6	-2	-5
Dry (22.5%)					
Second Basis of Comparison	5,846,335	4,371,799	440,615	59,727	500,342
Alternative 3	4,403,331	4,450,665	464,033	59,943	523,976
Difference	-1,443,004	78,865	23,419	215	23,634
Percent Difference	-25	2	5	0	5
Critical (15%)					
Second Basis of Comparison	10,379,320	3,744,097	566,311	117,959	684,270
Alternative 3	11,384,504	3,723,000	461,093	109,012	570,105
Difference	1,005,183	-21,096	-105,218	-8,947	-114,165
Percent Difference	10	-1	-19	-8	-17

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-1-23. Annual Mortality by Cause for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	5,010,581	7,128,100	12,138,680
Alternative 3	4,751,566	7,137,299	11,888,865
Difference	-259,015	9,199	-249,816
Percent Difference[3]	-5	0	-2
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	485,103	10,756,621	11,241,723
Alternative 3	389,939	10,782,916	11,172,855
Difference	-95,164	26,295	-68,868
Percent Difference	-20	0	-1
Above Normal (12.5%)			
Second Basis of Comparison	11,136,551	5,437,771	16,574,323
Alternative 3	10,788,099	5,393,332	16,181,431
Difference	-348,452	-44,440	-392,892
Percent Difference	-3	-1	-2
Below Normal (17.5%)			
Second Basis of Comparison	4,155,751	6,018,646	10,174,397
Alternative 3	4,135,609	5,997,663	10,133,272
Difference	-20,141	-20,983	-41,125
Percent Difference	0	0	0
Dry (22.5%)			
Second Basis of Comparison	5,469,925	5,248,551	10,718,477
Alternative 3	4,017,083	5,360,888	9,377,972
Difference	-1,452,842	112,337	-1,340,505
Percent Difference	-27	2	-13
Critical (15%)			
Second Basis of Comparison	10,019,091	4,788,596	14,807,687
Alternative 3	10,991,653	4,685,957	15,677,609
Difference	972,562	-102,640	869,922
Percent Difference	10	-2	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-24. Annual Mortality by Cause and Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	4,292,224	2,108,590	710,136	151	4,708,958	8,069	310,552	12,138,680
Alternative 3	3,882,019	2,130,887	860,812	146	4,708,991	8,589	297,421	11,888,865
Difference	-410,205	22,298	150,676	-5	32	520	-13,131	-249,816
Percent Difference[3]	-10	1	21	-3	0	6	-4	-2
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	76,487	5,544,710	402,355	446	5,129,145	5,816	82,766	11,241,723
Alternative 3	37,613	5,597,671	346,009	441	5,099,364	5,877	85,881	11,172,855
Difference	-38,874	52,961	-56,345	-5	-29,781	61	3,115	-68,868
Percent Difference	-51	1	-14	-1	-1	1	4	-1
Above Normal (12.5%)								
Second Basis of Comparison	10,875,176	194,605	256,772	9	5,120,432	4,595	122,734	16,574,323
Alternative 3	10,309,394	196,462	477,321	0	5,061,047	1,384	135,823	16,181,431
Difference	-565,781	1,857	220,549	-9	-59,385	-3,210	13,088	-392,892
Percent Difference	-5	1	86	-100	-1	-70	11	-2
Below Normal (17.5%)								
Second Basis of Comparison	4,055,314	789,925	98,496	25	4,895,218	1,915	333,503	10,174,397
Alternative 3	4,049,375	773,748	82,456	14	4,909,811	3,764	314,105	10,133,272
Difference	-5,939	-16,178	-16,041	-12	14,593	1,849	-19,399	-41,125
Percent Difference	0	-2	-16	-46	0	97	-6	0
Dry (22.5%)								
Second Basis of Comparison	4,603,020	378,293	865,023	0	4,371,799	1,883	498,459	10,718,477
Alternative 3	3,355,934	388,784	658,614	0	4,450,665	2,536	521,440	9,377,972
Difference	-1,247,086	10,491	-206,409	0	78,865	653	22,981	-1,340,505
Percent Difference	-27	3	-24	0	2	35	5	-13
Critical (15%)								
Second Basis of Comparison	7,750,732	392,537	2,236,052	0	3,744,097	32,307	651,963	14,807,687
Alternative 3	7,449,300	428,029	3,507,175	0	3,723,000	35,178	534,928	15,677,609
Difference	-301,433	35,492	1,271,124	0	-21,096	2,870	-117,035	869,922
Percent Difference	-4	9	57	0	-1	9	-18	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-25. Annual Mortality by All Factors for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	4,292,224	1,473,372	635,217	710,136	151	4,708,958	3,312	265,903	4,757	44,648	12,138,680
Alternative 3	3,882,019	1,491,155	639,732	860,812	146	4,708,991	3,342	255,443	5,247	41,977	11,888,865
Difference	-410,205	17,783	4,515	150,676	-5	32	30	-10,460	490	-2,671	-249,816
Percent Difference[3]	-10	1	1	21	-3	0	1	-4	10	-6	-2
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	76,487	3,907,496	1,637,214	402,355	446	5,129,145	4,203	67,541	1,613	15,225	11,241,723
Alternative 3	37,613	3,945,868	1,651,803	346,009	441	5,099,364	4,272	71,120	1,605	14,761	11,172,855
Difference	-38,874	38,372	14,589	-56,345	-5	-29,781	69	3,579	-8	-465	-68,868
Percent Difference	-51	1	1	-14	-1	-1	2	5	-1	-3	-1
Above Normal (12.5%)											
Second Basis of Comparison	10,875,176	114,650	79,955	256,772	9	5,120,432	3,015	93,141	1,579	29,593	16,574,323
Alternative 3	10,309,394	116,493	79,969	477,321	0	5,061,047	576	110,227	808	25,595	16,181,431
Difference	-565,781	1,843	14	220,549	-9	-59,385	-2,439	17,086	-771	-3,998	-392,892
Percent Difference	-5	2	0	86	-100	-1	-81	18	-49	-14	-2
Below Normal (17.5%)											
Second Basis of Comparison	4,055,314	257,762	532,163	98,496	25	4,895,218	1,115	283,424	801	50,079	10,174,397
Alternative 3	4,049,375	242,891	530,857	82,456	14	4,909,811	2,116	265,663	1,649	48,442	10,133,272
Difference	-5,939	-14,871	-1,307	-16,041	-12	14,593	1,001	-17,761	848	-1,637	-41,125
Percent Difference	0	-6	0	-16	-46	0	90	-6	106	-3	0
Dry (22.5%)											
Second Basis of Comparison	4,603,020	378,293	0	865,023	0	4,371,799	423	440,192	1,460	58,267	10,718,477
Alternative 3	3,355,934	388,784	0	658,614	0	4,450,665	698	463,335	1,837	58,105	9,377,972
Difference	-1,247,086	10,491	0	-206,409	0	78,865	275	23,144	378	-162	-1,340,505
Percent Difference	-27	3	0	-24	0	2	65	5	26	0	-13
Critical (15%)											
Second Basis of Comparison	7,750,732	392,537	0	2,236,052	0	3,744,097	8,529	557,782	23,779	94,181	14,807,687
Alternative 3	7,449,300	428,029	0	3,507,175	0	3,723,000	9,030	452,064	26,148	82,864	15,677,609
Difference	-301,433	35,492	0	1,271,124	0	-21,096	501	-105,719	2,369	-11,317	869,922
Percent Difference	-4	9	0	57	0	-1	6	-19	10	-12	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-26. Annual Potential Production for Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	17,037,309
Alternative 5	16,908,477
Difference	-128,832
Percent Difference[3]	-1
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	16,525,365
Alternative 5	16,493,092
Difference	-32,272
Percent Difference	0
Above Normal (12.5%)	
Second Basis of Comparison	15,746,827
Alternative 5	15,891,098
Difference	144,271
Percent Difference	1
Below Normal (17.5%)	
Second Basis of Comparison	17,847,310
Alternative 5	17,951,192
Difference	103,882
Percent Difference	1
Dry (22.5%)	
Second Basis of Comparison	17,934,726
Alternative 5	18,003,040
Difference	68,315
Percent Difference	0
Critical (15%)	
Second Basis of Comparison	16,930,799
Alternative 5	15,797,949
Difference	-1,132,850
Percent Difference	-7

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-1-27. Annual Mortality by Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	7,110,950	4,709,109	269,215	49,405	318,621
Alternative 5	7,723,389	4,663,905	266,371	49,003	315,374
Difference	612,438	-45,204	-2,845	-402	-3,247
Percent Difference[3]	9	-1	-1	-1	-1
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	6,023,551	5,129,591	71,744	16,838	88,581
Alternative 5	6,169,444	5,177,967	78,031	16,578	94,608
Difference	145,893	48,376	6,287	-260	6,027
Percent Difference	2	1	9	-2	7
Above Normal (12.5%)					
Second Basis of Comparison	11,326,553	5,120,441	96,157	31,173	127,329
Alternative 5	11,229,256	4,990,191	153,381	34,302	187,683
Difference	-97,297	-130,250	57,224	3,129	60,354
Percent Difference	-1	-3	60	10	47
Below Normal (17.5%)					
Second Basis of Comparison	4,943,736	4,895,243	284,538	50,880	335,418
Alternative 5	4,934,725	4,906,604	268,136	45,725	313,861
Difference	-9,011	11,362	-16,403	-5,155	-21,557
Percent Difference	0	0	-6	-10	-6
Dry (22.5%)					
Second Basis of Comparison	5,846,335	4,371,799	440,615	59,727	500,342
Alternative 5	5,727,952	4,357,900	490,190	66,478	556,668
Difference	-118,383	-13,900	49,576	6,751	56,326
Percent Difference	-2	0	11	11	11
Critical (15%)					
Second Basis of Comparison	10,379,320	3,744,097	566,311	117,959	684,270
Alternative 5	14,415,310	3,454,056	430,811	109,120	539,931
Difference	4,035,990	-290,041	-135,500	-8,839	-144,340
Percent Difference	39	-8	-24	-7	-21

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-1-28. Annual Mortality by Cause for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	5,010,581	7,128,100	12,138,680
Alternative 5	5,781,882	6,920,785	12,702,667
Difference	771,302	-207,314	563,987
Percent Difference[3]	15	-3	5
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	485,103	10,756,621	11,241,723
Alternative 5	1,088,909	10,353,111	11,442,020
Difference	603,806	-403,510	200,296
Percent Difference	124	-4	2
Above Normal (12.5%)			
Second Basis of Comparison	11,136,551	5,437,771	16,574,323
Alternative 5	11,083,720	5,323,409	16,407,129
Difference	-52,831	-114,362	-167,193
Percent Difference	0	-2	-1
Below Normal (17.5%)			
Second Basis of Comparison	4,155,751	6,018,646	10,174,397
Alternative 5	4,169,106	5,986,084	10,155,190
Difference	13,356	-32,563	-19,207
Percent Difference	0	-1	0
Dry (22.5%)			
Second Basis of Comparison	5,469,925	5,248,551	10,718,477
Alternative 5	5,349,191	5,293,329	10,642,520
Difference	-120,734	44,777	-75,957
Percent Difference	-2	1	-1
Critical (15%)			
Second Basis of Comparison	10,019,091	4,788,596	14,807,687
Alternative 5	14,062,400	4,346,896	18,409,296
Difference	4,043,309	-441,700	3,601,609
Percent Difference	40	-9	24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-29. Annual Mortality by Cause and Life Stage for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	4,292,224	2,108,590	710,136	151	4,708,958	8,069	310,552	12,138,680
Alternative 5	4,786,653	1,951,663	985,073	154	4,663,751	10,003	305,371	12,702,667
Difference	494,428	-156,926	274,936	3	-45,207	1,934	-5,181	563,987
Percent Difference[3]	12	-7	39	2	-1	24	-2	5
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	76,487	5,544,710	402,355	446	5,129,145	5,816	82,766	11,241,723
Alternative 5	348,257	5,086,105	735,082	436	5,177,531	5,134	89,475	11,442,020
Difference	271,771	-458,605	332,727	-10	48,386	-682	6,709	200,296
Percent Difference	355	-8	83	-2	1	-12	8	2
Above Normal (12.5%)								
Second Basis of Comparison	10,875,176	194,605	256,772	9	5,120,432	4,595	122,734	16,574,323
Alternative 5	10,385,418	149,961	693,877	9	4,990,182	4,417	183,266	16,407,129
Difference	-489,758	-44,644	437,104	0	-130,249	-178	60,531	-167,193
Percent Difference	-5	-23	170	-4	-3	-4	49	-1
Below Normal (17.5%)								
Second Basis of Comparison	4,055,314	789,925	98,496	25	4,895,218	1,915	333,503	10,174,397
Alternative 5	4,052,333	769,810	112,581	59	4,906,545	4,133	309,728	10,155,190
Difference	-2,981	-20,115	14,085	34	11,327	2,218	-23,775	-19,207
Percent Difference	0	-3	14	137	0	116	-7	0
Dry (22.5%)								
Second Basis of Comparison	4,603,020	378,293	865,023	0	4,371,799	1,883	498,459	10,718,477
Alternative 5	4,376,903	382,888	968,162	1	4,357,898	4,125	552,543	10,642,520
Difference	-226,117	4,595	103,139	1	-13,901	2,243	54,084	-75,957
Percent Difference	-5	1	12	0	0	119	11	-1
Critical (15%)								
Second Basis of Comparison	7,750,732	392,537	2,236,052	0	3,744,097	32,307	651,963	14,807,687
Alternative 5	11,208,869	393,784	2,812,657	0	3,454,056	40,874	499,057	18,409,296
Difference	3,458,137	1,247	576,606	0	-290,041	8,567	-152,907	3,601,609
Percent Difference	45	0	26	0	-8	27	-23	24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-1-30. Annual Mortality by All Factors for Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	4,292,224	1,473,372	635,217	710,136	151	4,708,958	3,312	265,903	4,757	44,648	12,138,680
Alternative 5	4,786,653	1,450,386	501,277	985,073	154	4,663,751	4,489	261,882	5,514	43,488	12,702,667
Difference	494,428	-22,986	-133,940	274,936	3	-45,207	1,176	-4,021	758	-1,160	563,987
Percent Difference[3]	12	-2	-21	39	2	-1	36	-2	16	-3	5
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	76,487	3,907,496	1,637,214	402,355	446	5,129,145	4,203	67,541	1,613	15,225	11,241,723
Alternative 5	348,257	3,861,662	1,224,443	735,082	436	5,177,531	4,005	74,026	1,129	15,449	11,442,020
Difference	271,771	-45,835	-412,770	332,727	-10	48,386	-198	6,485	-484	224	200,296
Percent Difference	355	-1	-25	83	-2	1	-5	10	-30	1	2
Above Normal (12.5%)											
Second Basis of Comparison	10,875,176	114,650	79,955	256,772	9	5,120,432	3,015	93,141	1,579	29,593	16,574,323
Alternative 5	10,385,418	69,983	79,978	693,877	9	4,990,182	3,244	150,137	1,173	33,128	16,407,129
Difference	-489,758	-44,667	23	437,104	0	-130,249	228	56,996	-406	3,535	-167,193
Percent Difference	-5	-39	0	170	-4	-3	8	61	-26	12	-1
Below Normal (17.5%)											
Second Basis of Comparison	4,055,314	257,762	532,163	98,496	25	4,895,218	1,115	283,424	801	50,079	10,174,397
Alternative 5	4,052,333	236,463	533,348	112,581	59	4,906,545	2,782	265,353	1,350	44,375	10,155,190
Difference	-2,981	-21,299	1,184	14,085	34	11,327	1,668	-18,071	550	-5,704	-19,207
Percent Difference	0	-8	0	14	137	0	150	-6	69	-11	0
Dry (22.5%)											
Second Basis of Comparison	4,603,020	378,293	0	865,023	0	4,371,799	423	440,192	1,460	58,267	10,718,477
Alternative 5	4,376,903	382,888	0	968,162	1	4,357,898	1,827	488,363	2,298	64,180	10,642,520
Difference	-226,117	4,595	0	103,139	1	-13,901	1,404	48,171	838	5,912	-75,957
Percent Difference	-5	1	0	12	0	0	332	11	57	10	-1
Critical (15%)											
Second Basis of Comparison	7,750,732	392,537	0	2,236,052	0	3,744,097	8,529	557,782	23,779	94,181	14,807,687
Alternative 5	11,208,869	393,784	0	2,812,657	0	3,454,056	12,558	418,253	28,316	80,804	18,409,296
Difference	3,458,137	1,247	0	576,606	0	-290,041	4,029	-139,529	4,538	-13,377	3,601,609
Percent Difference	45	0	0	26	0	-8	47	-25	19	-14	24

1 Based on the 80-year simulation period

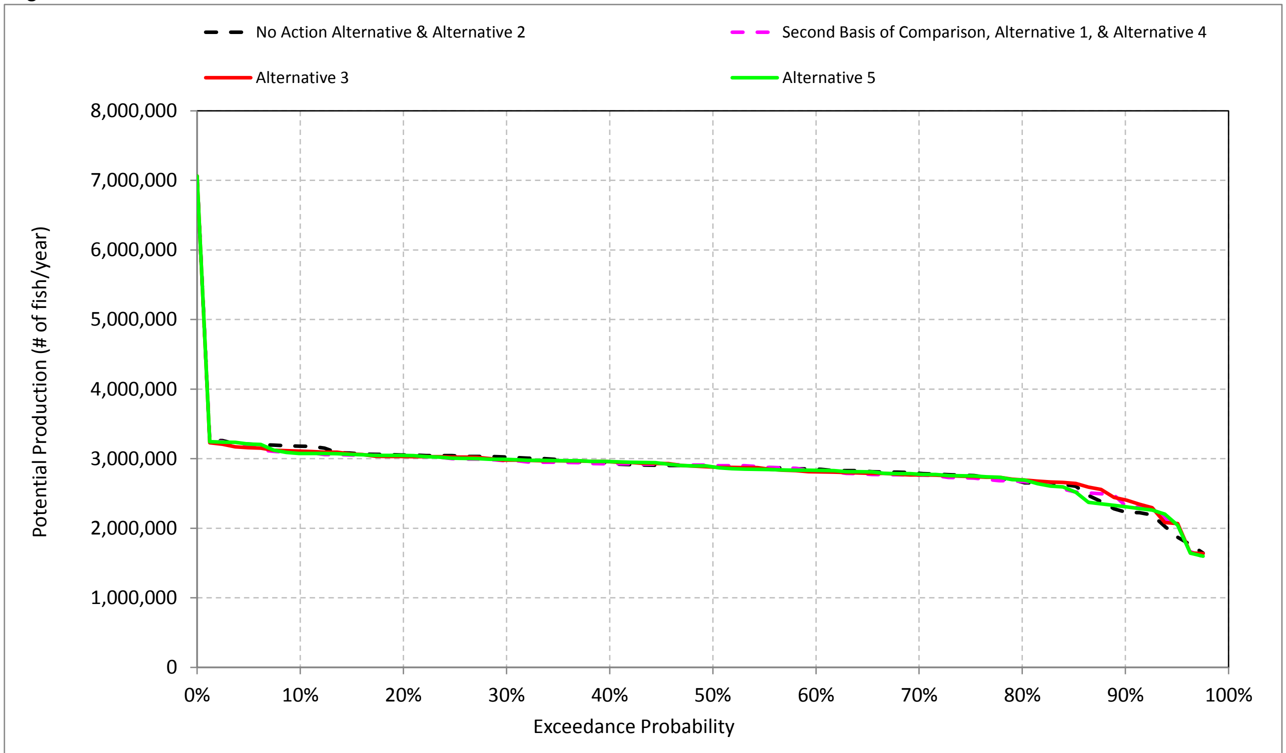
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

B.2. Late Fall-Run Chinook Salmon

Figure B-2-1. Annual Potential Production for Late Fall-Run Chinook Salmon

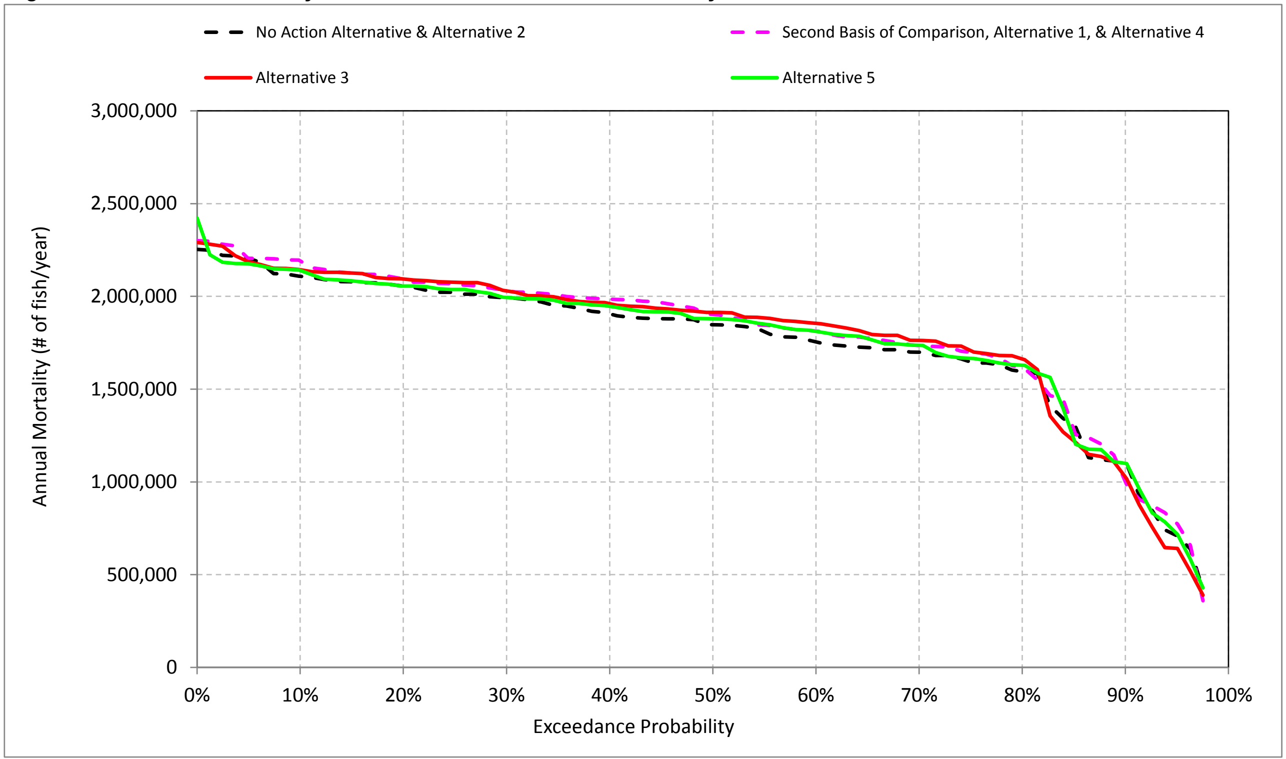


Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-2. Annual Mortality for Late Fall-Run Chinook Salmon - Eggs

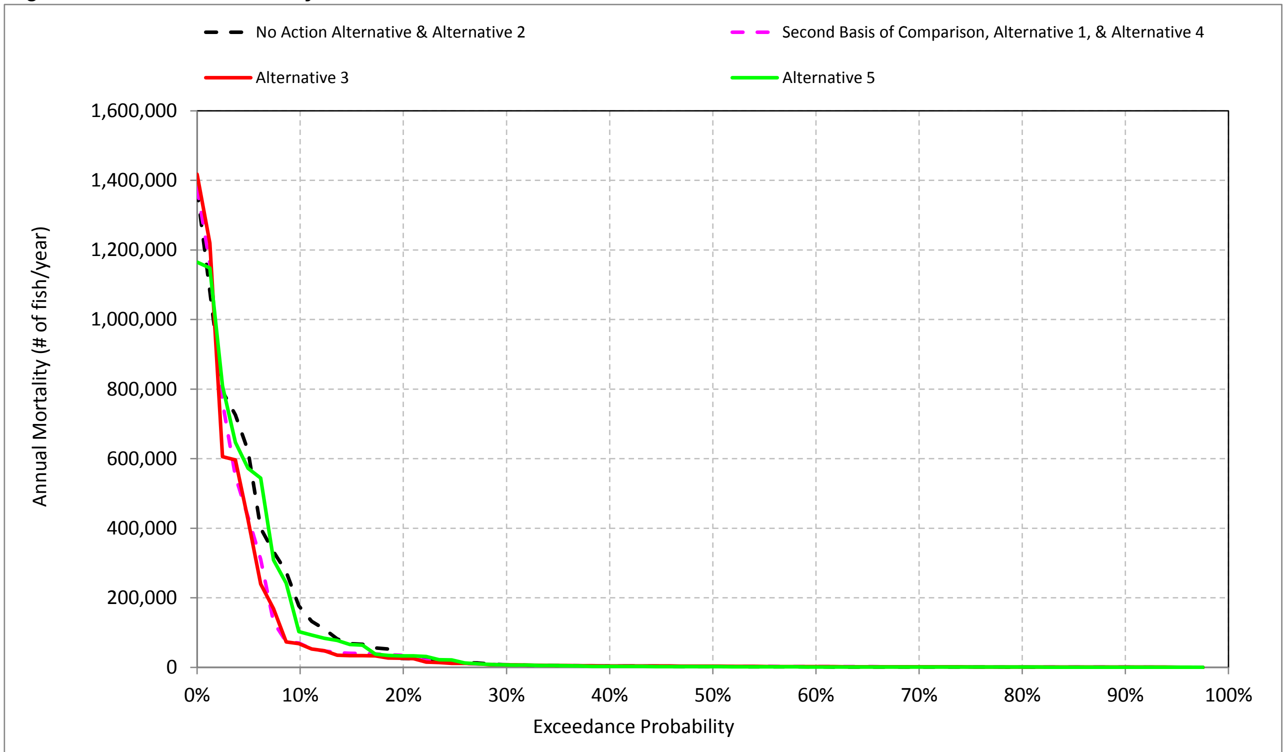
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-3. Annual Mortality for Late Fall-Run Chinook Salmon - Fry



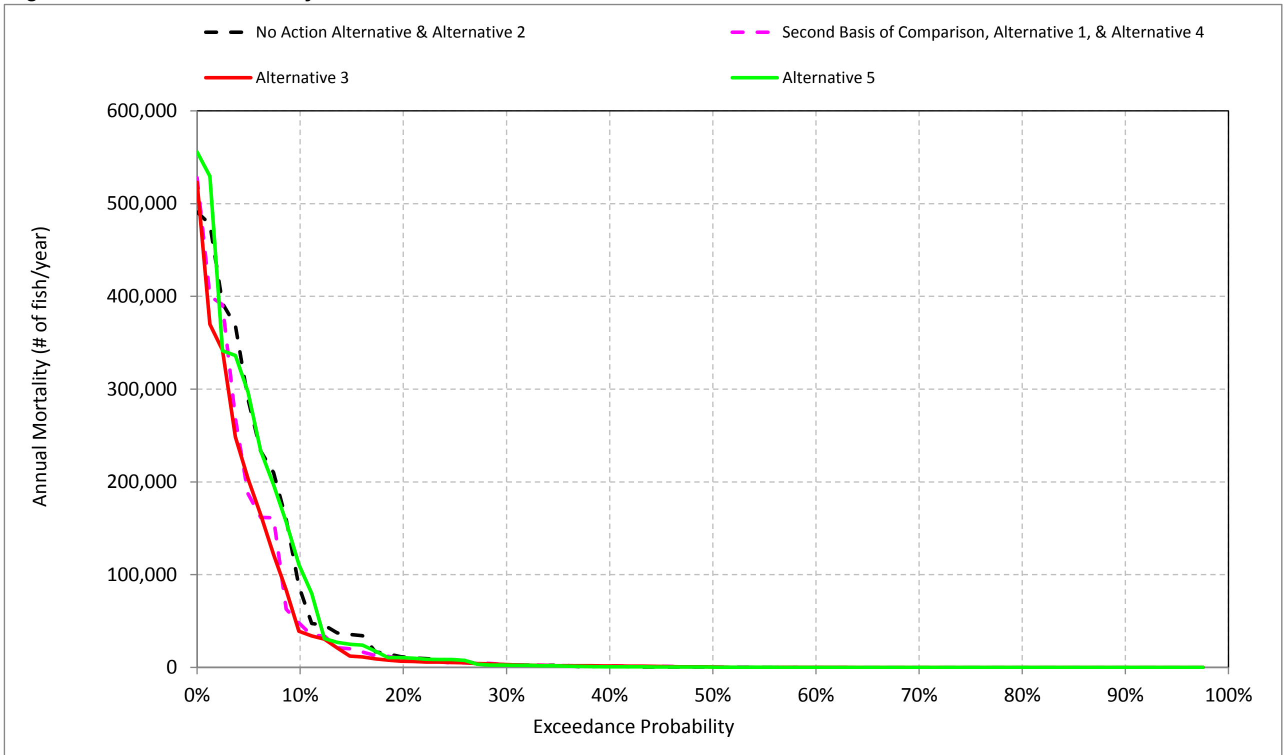
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-4. Annual Mortality for Late Fall-Run Chinook Salmon - Pre-Smolt



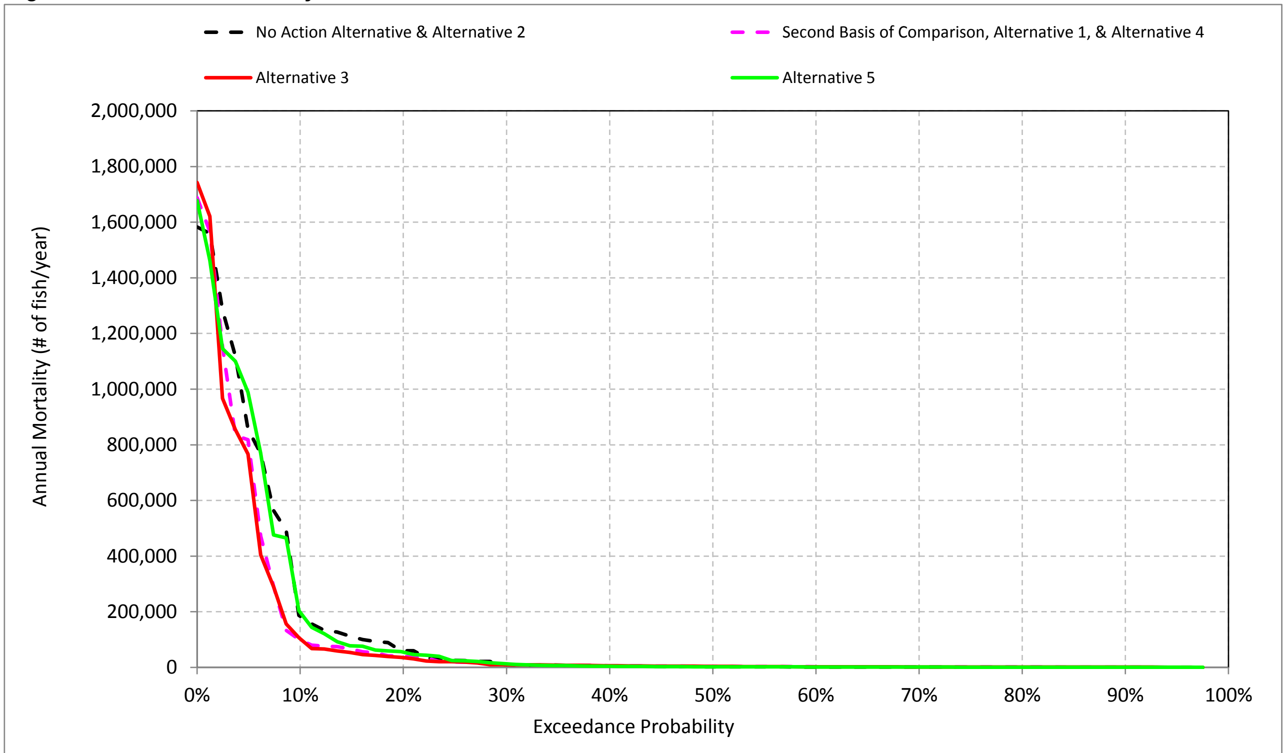
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-5. Annual Mortality for Late Fall-Run Chinook Salmon - Immature Smolt



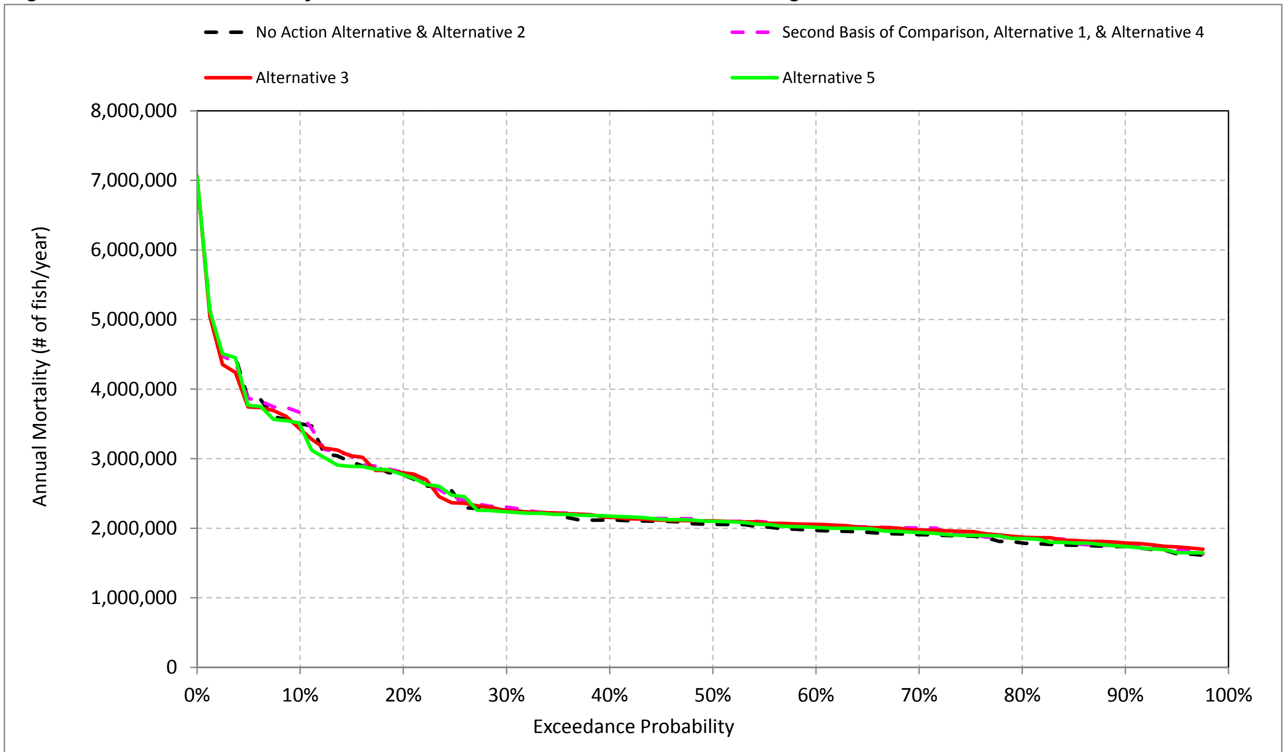
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-6. Annual Mortality for Late Fall-Run Chinook Salmon - Pre- & Immature Smolts



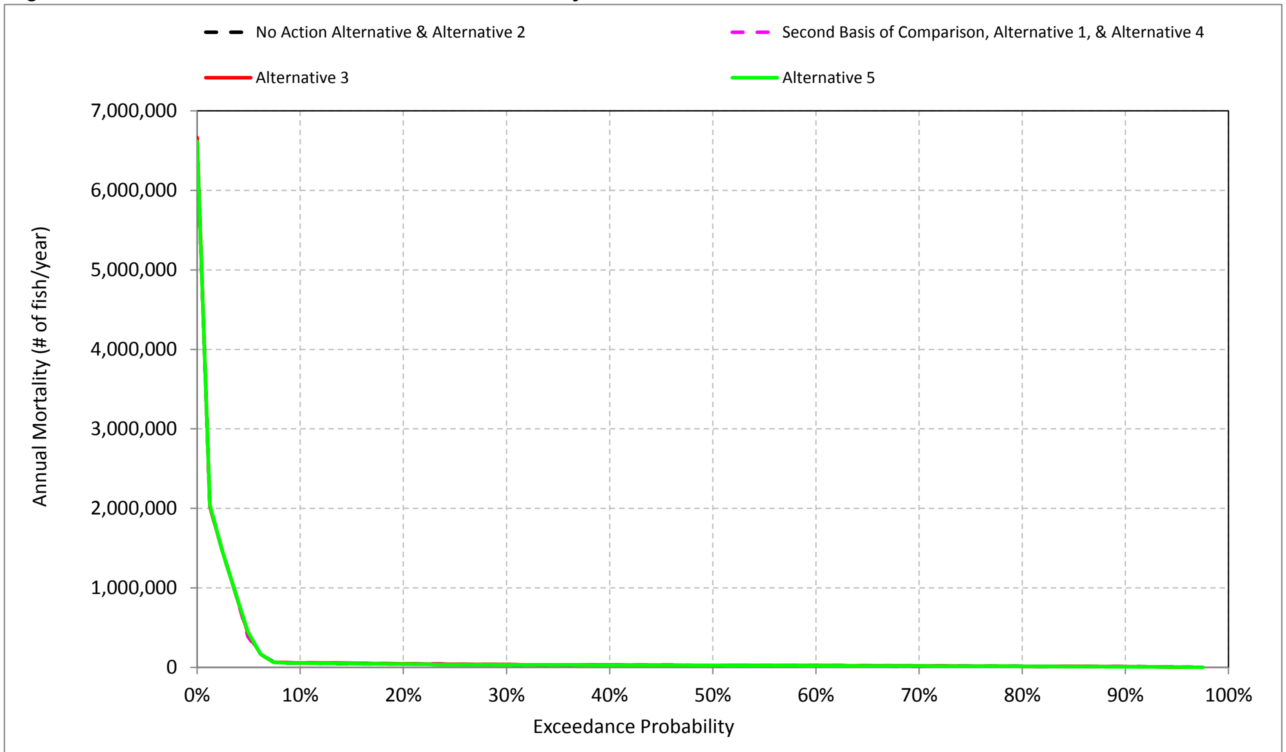
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-7. Annual Mortality for Late Fall-Run Chinook Salmon - All Lifestages



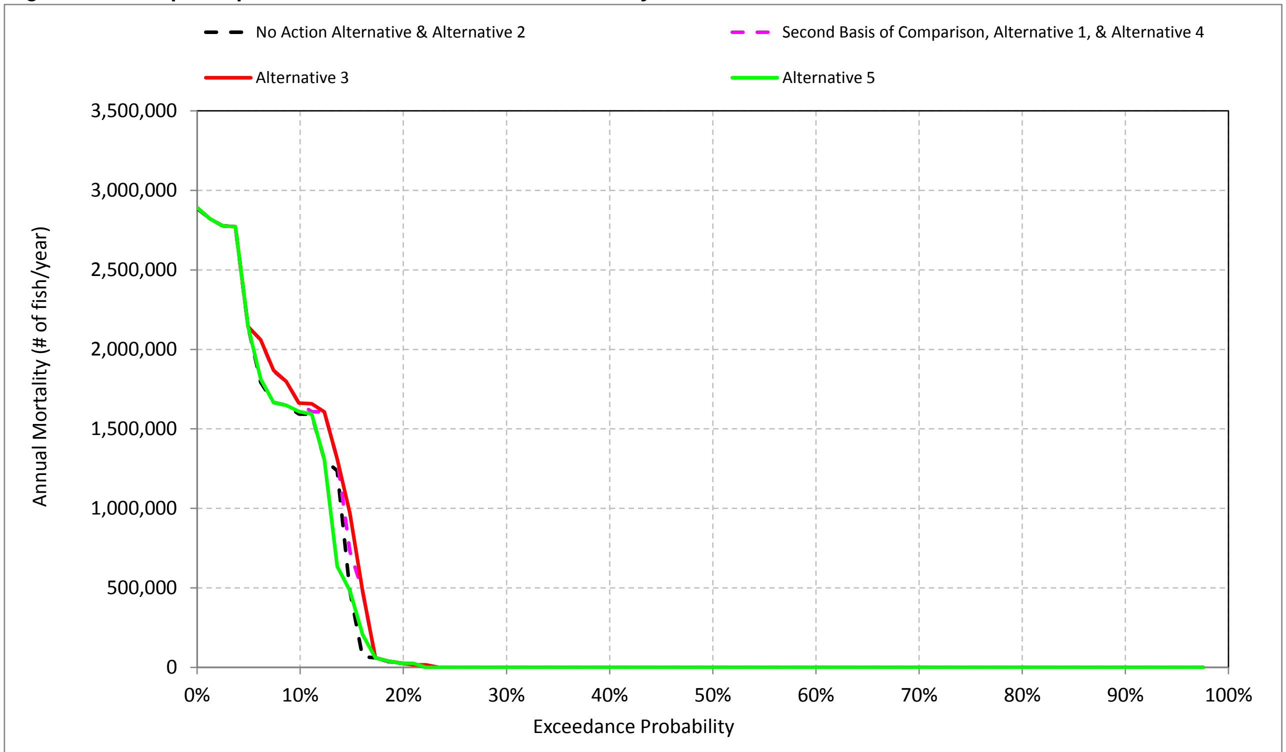
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-8. Incubation - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon



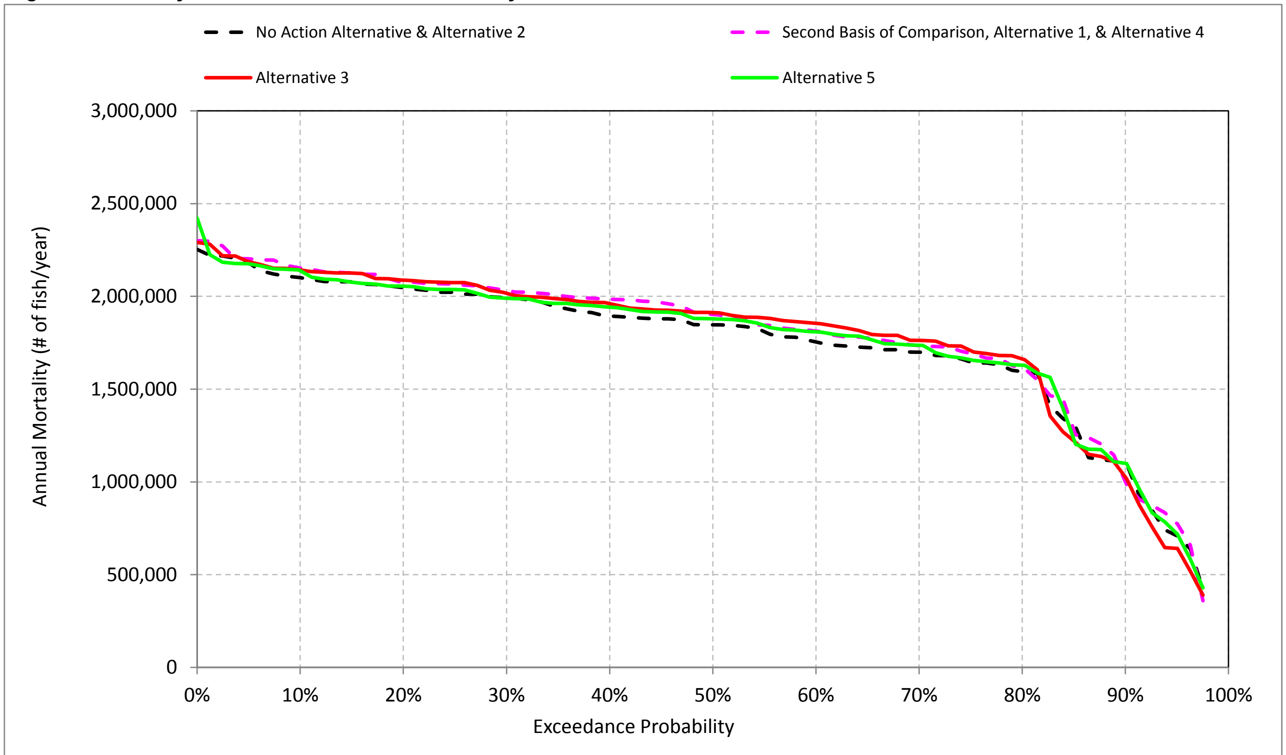
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-9. Super-imposition - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon



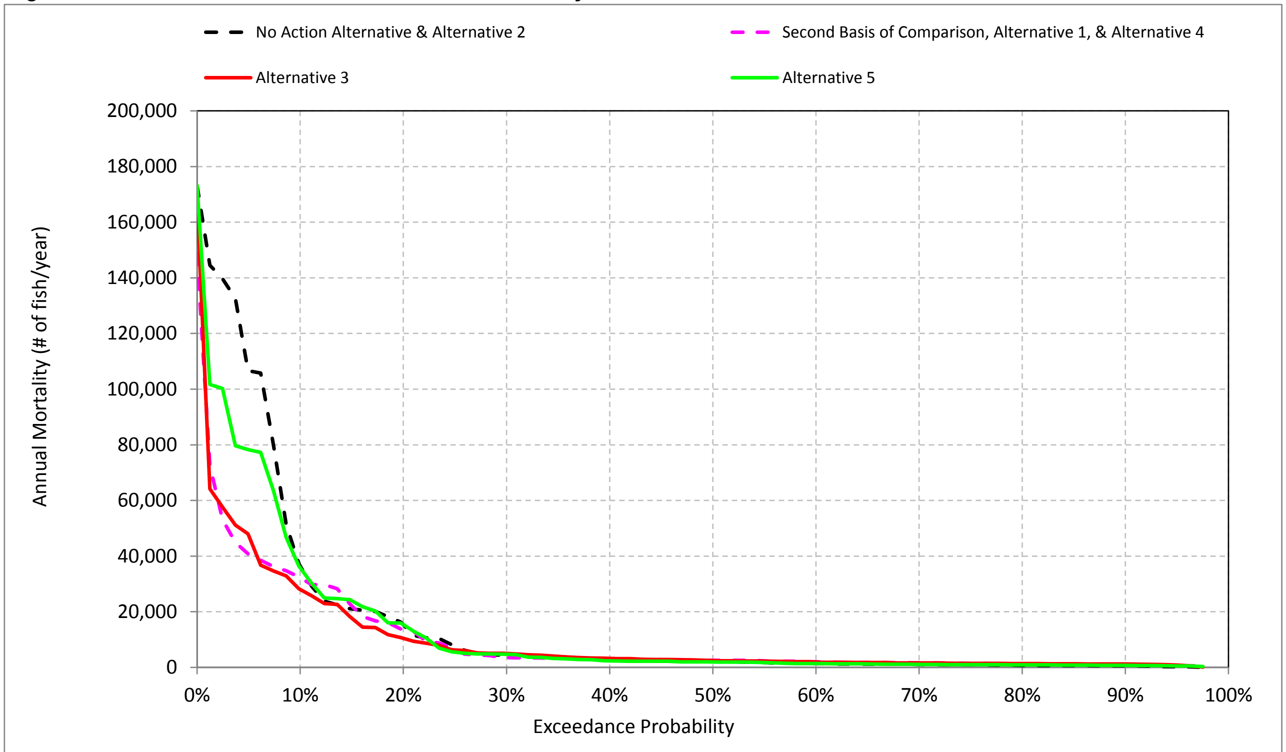
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-10. Fry - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon



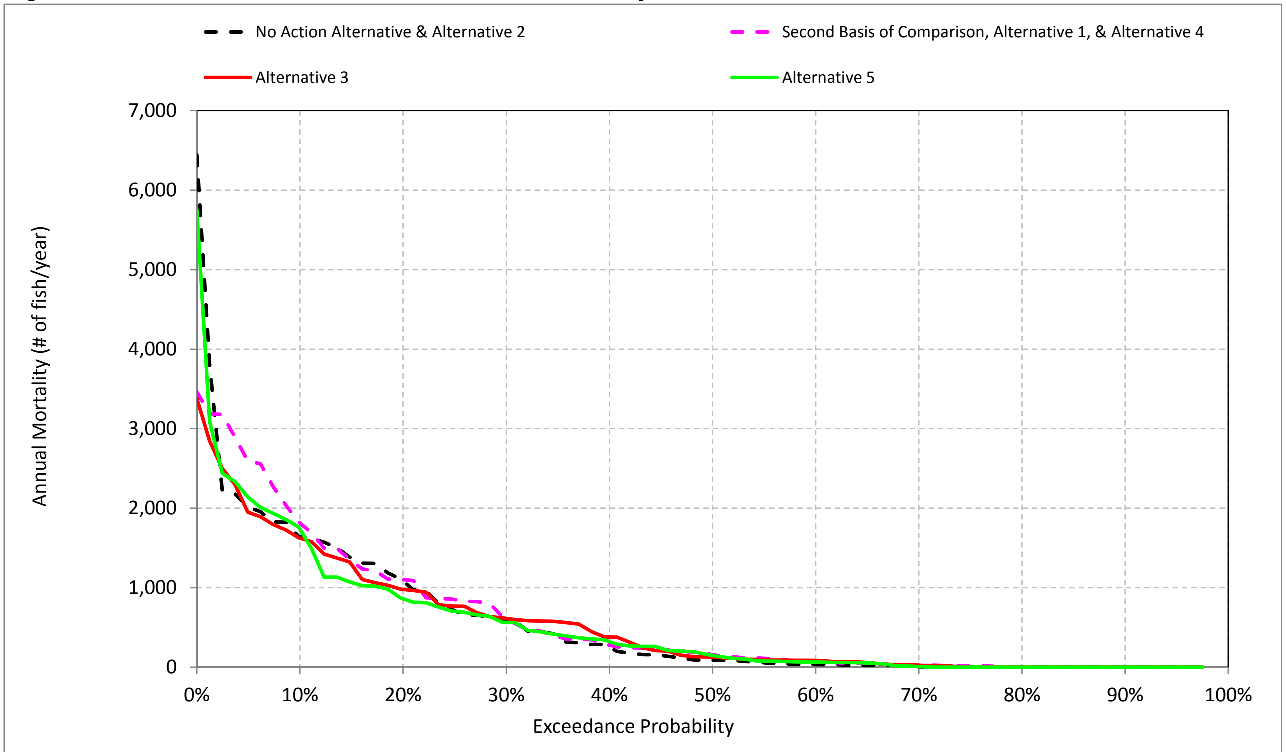
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-11. Pre-smolt - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon



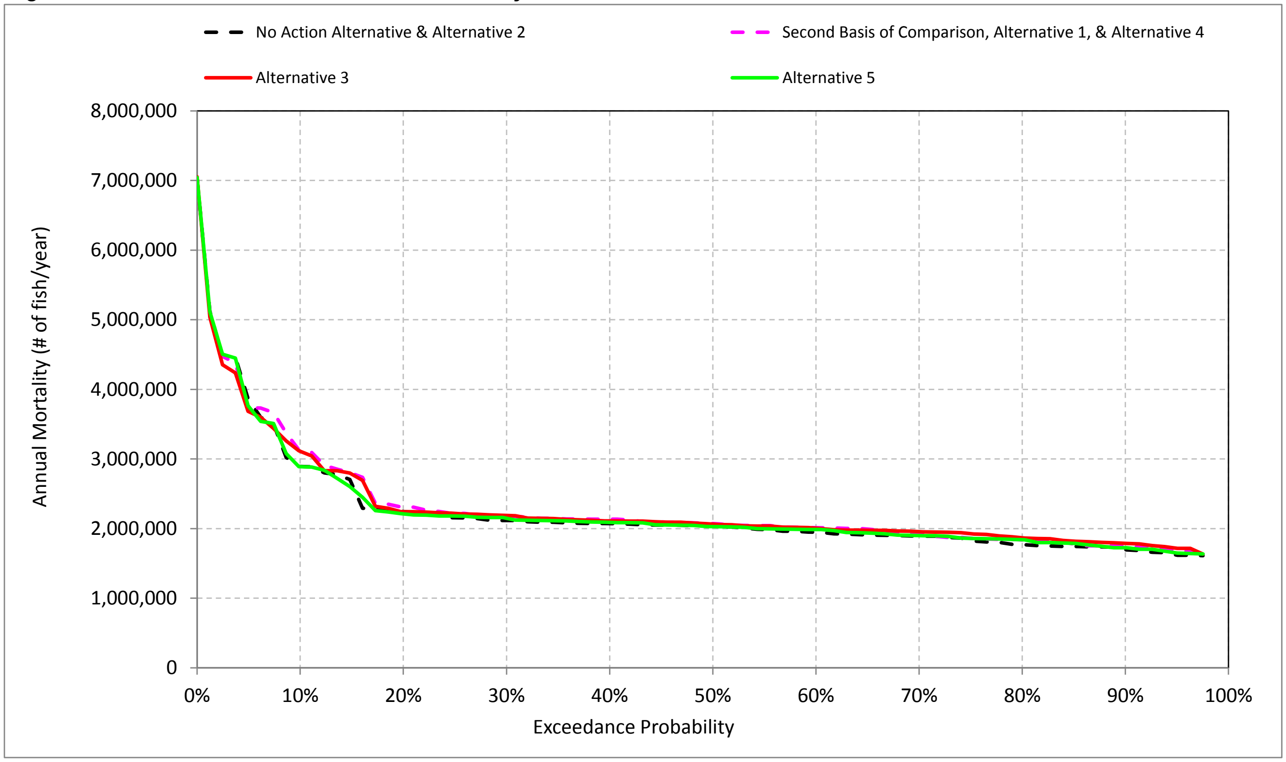
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-12. Immature Smolt - Habitat based Annual Mortality for Late Fall-Run Chinook Salmon



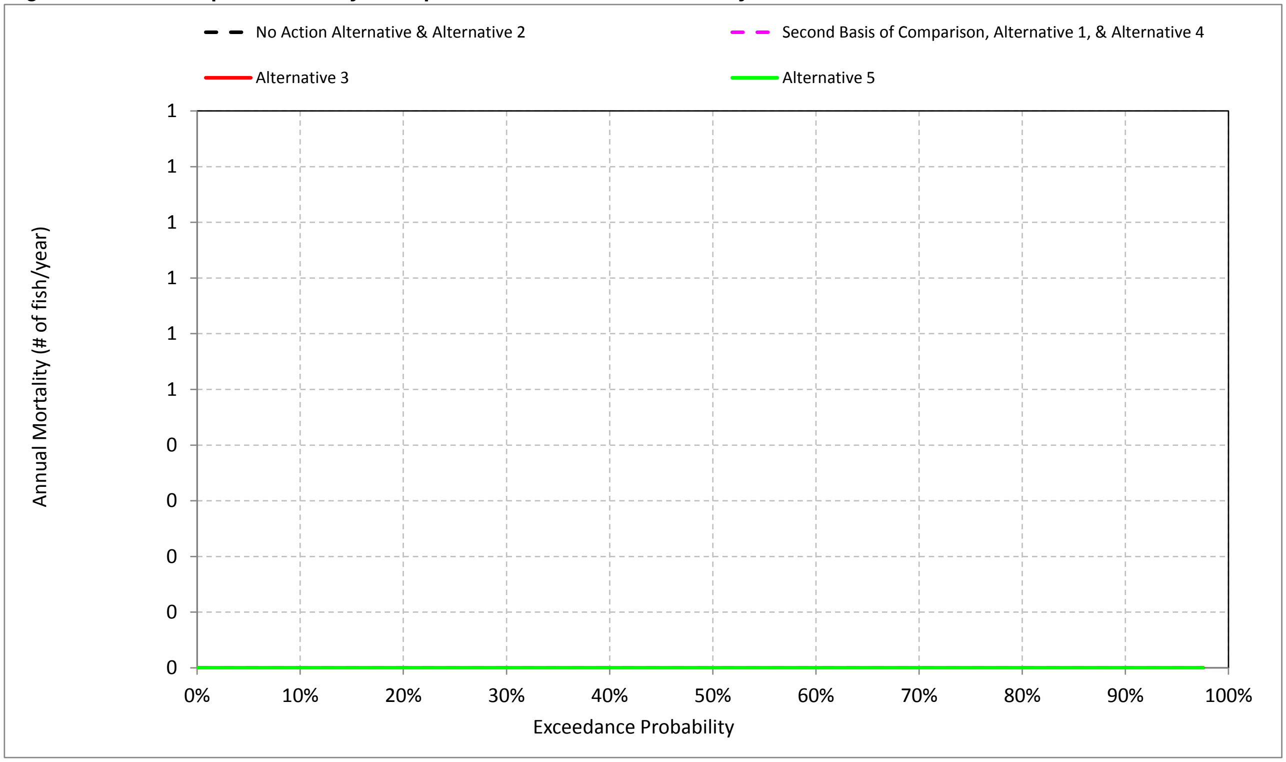
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-13. Total Habitat based Annual Mortality for Late Fall-Run Chinook Salmon



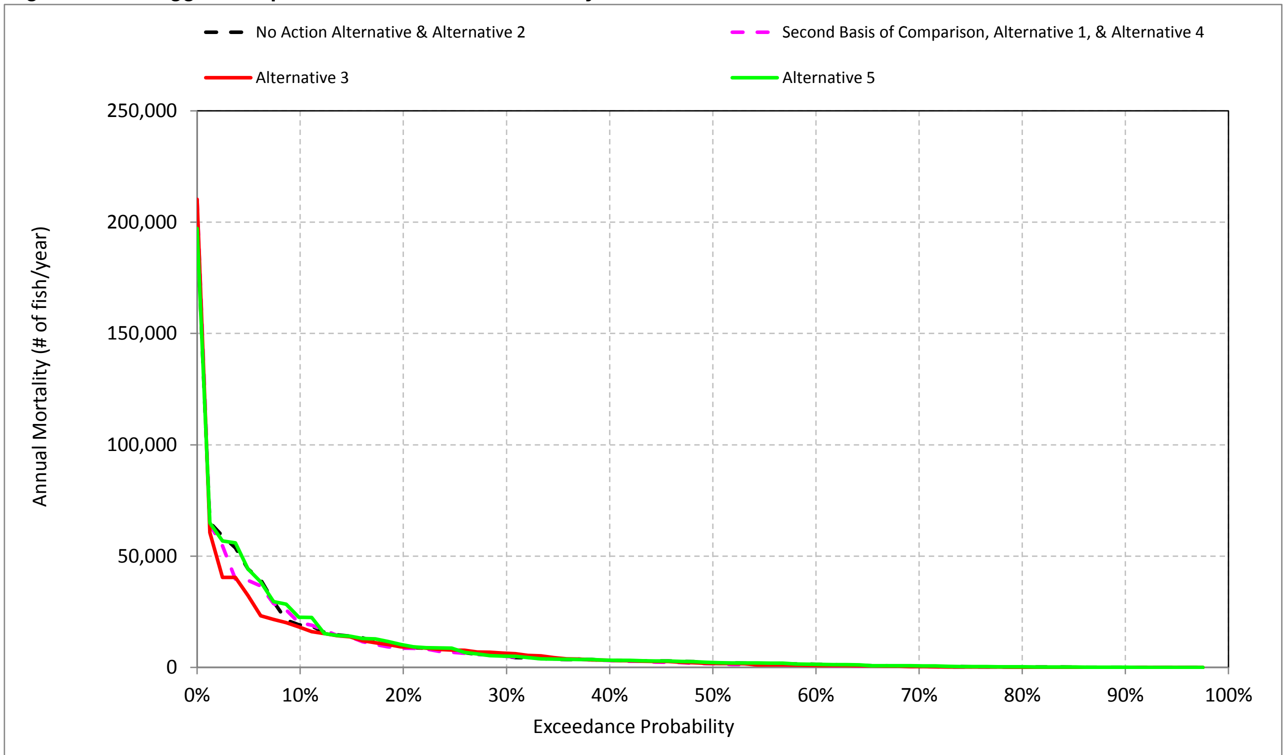
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon



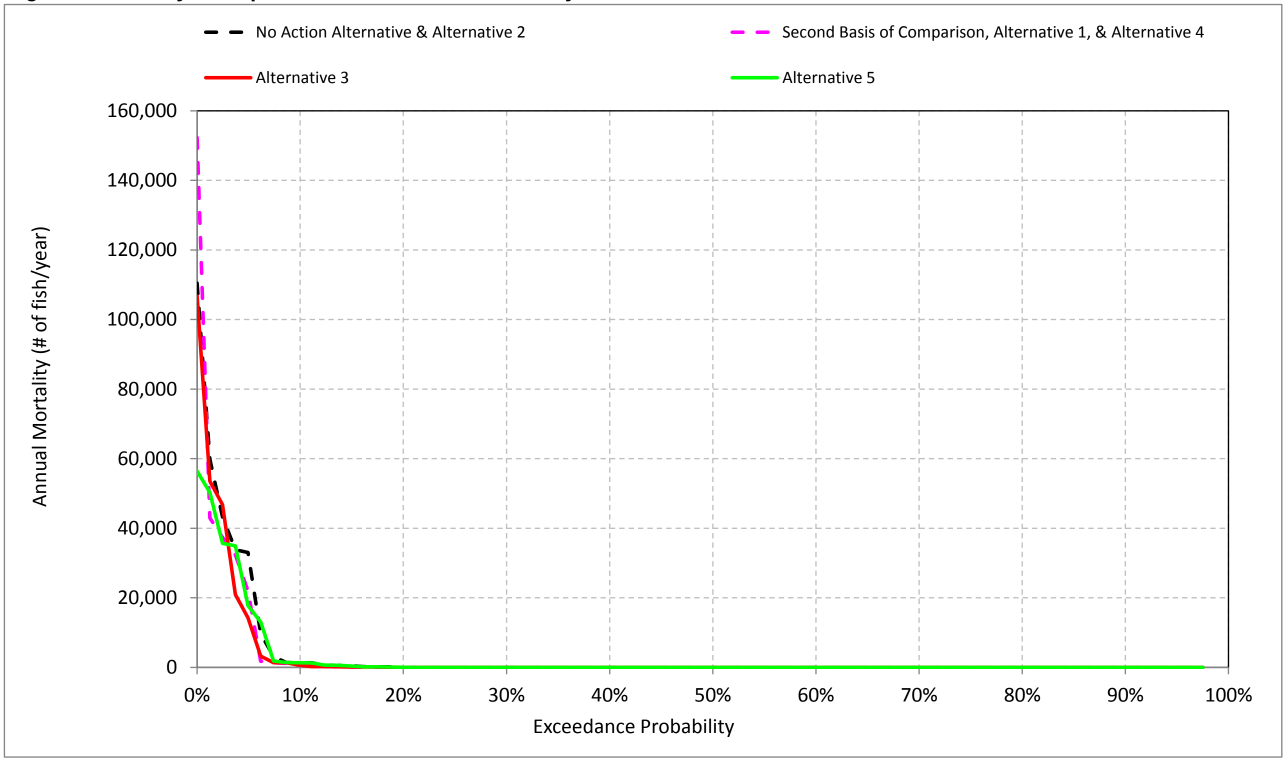
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-15. Eggs - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon



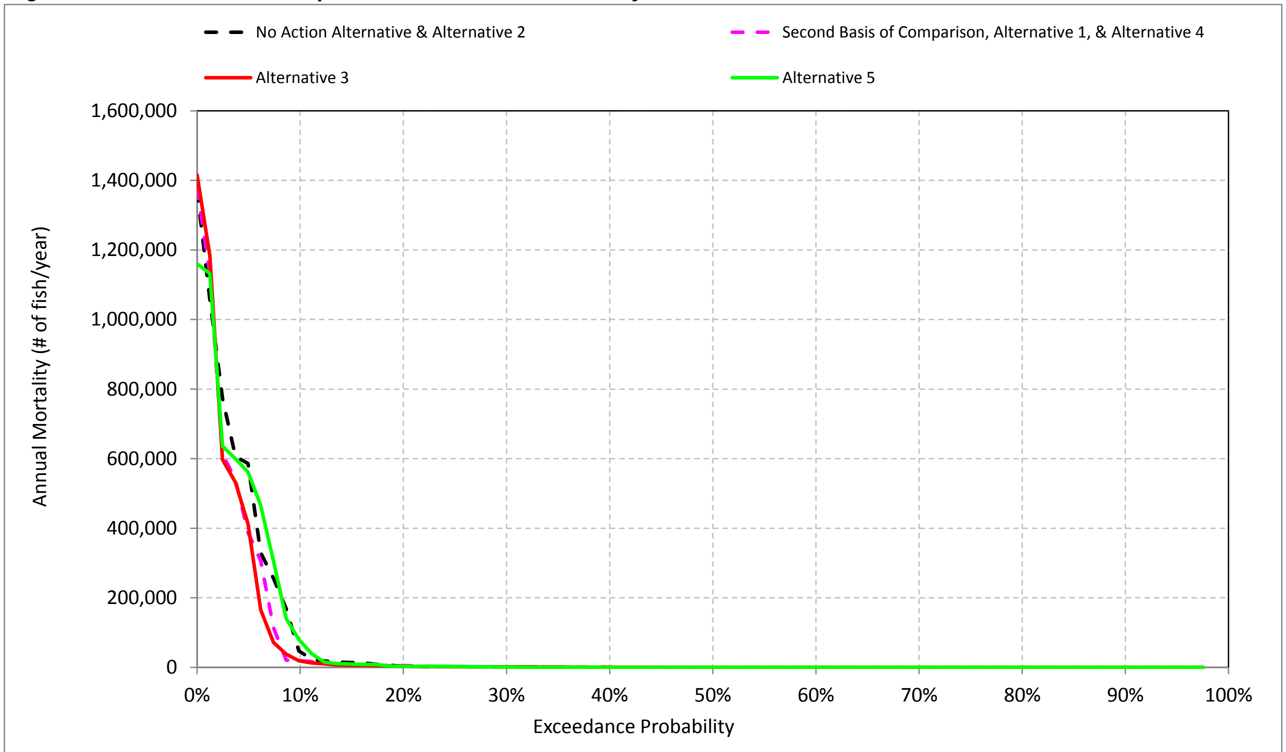
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-16. Fry - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon



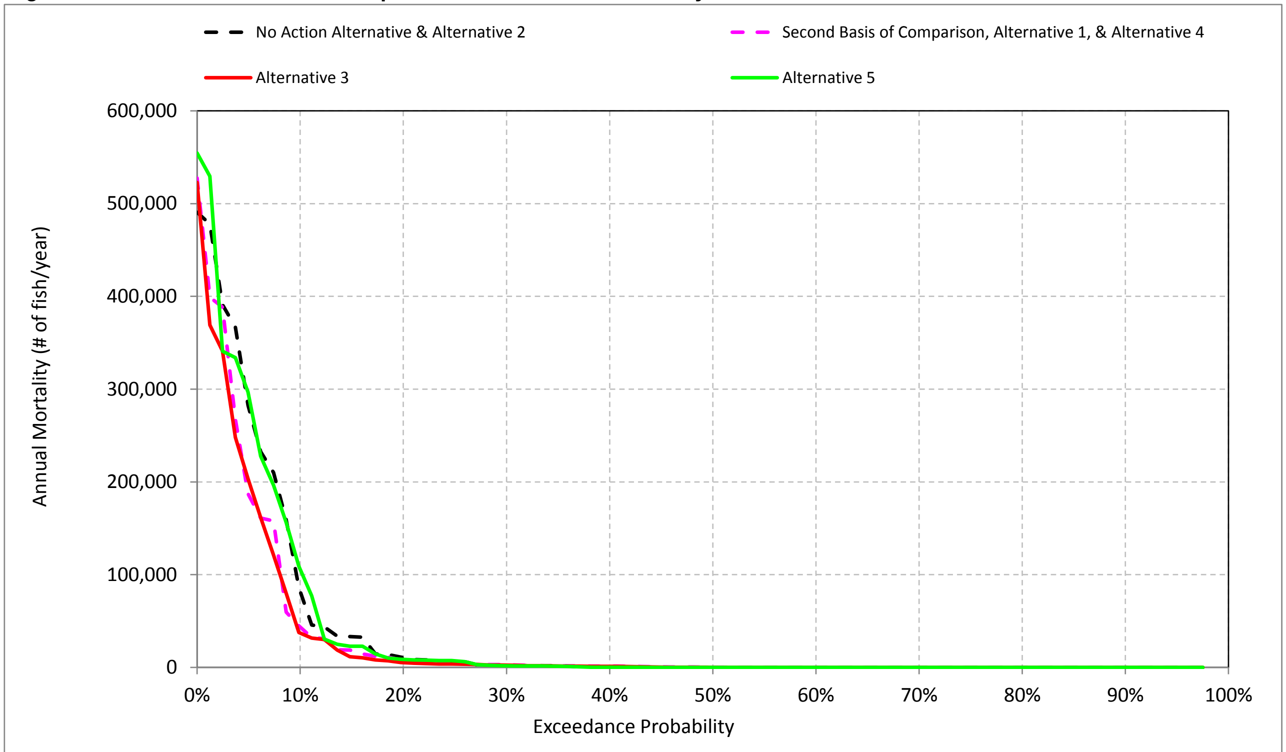
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-17. Pre-smolt - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon



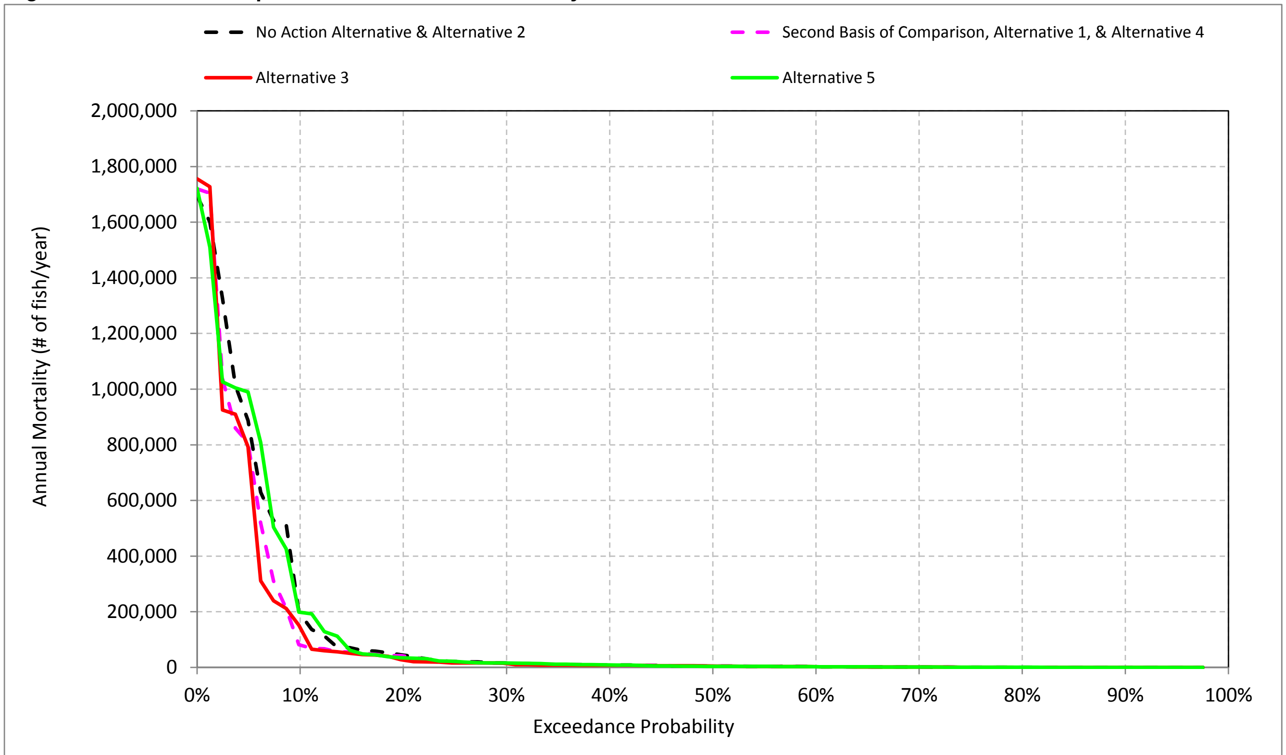
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-18. Immature Smolt - Temperature based Annual Mortality for Late Fall-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-19. Total Temperature based Annual Mortality for Late Fall-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-1. Annual Potential Production for Late Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	2,813,219
Alternative 1	2,800,061
Difference	-13,158
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	2,692,145
Alternative 1	2,691,035
Difference	-1,111
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	2,860,264
Alternative 1	2,802,912
Difference	-57,352
Percent Difference	-2
Below Normal (17.5%)	
No Action Alternative	2,982,412
Alternative 1	2,930,472
Difference	-51,940
Percent Difference	-2
Dry (22.5%)	
No Action Alternative	3,023,892
Alternative 1	2,976,338
Difference	-47,554
Percent Difference	-2
Critical (15%)	
No Action Alternative	2,522,939
Alternative 1	2,617,343
Difference	94,404
Percent Difference	4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-2-2. Annual Mortality by Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	492,142	1,757,035	82,787	37,844	120,631
Alternative 1	513,890	1,802,954	68,169	30,510	98,679
Difference	21,748	45,920	-14,618	-7,334	-21,952
Percent Difference[3]	4	3	-18	-19	-18
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	1,305,939	1,487,095	6,012	78	6,089
Alternative 1	1,331,500	1,479,904	4,935	609	5,544
Difference	25,561	-7,191	-1,076	531	-545
Percent Difference	2	0	-18	684	-9
Above Normal (12.5%)					
No Action Alternative	371,926	1,810,494	1,361	103	1,464
Alternative 1	482,073	1,869,446	2,387	187	2,573
Difference	110,146	58,952	1,025	84	1,109
Percent Difference	30	3	75	82	76
Below Normal (17.5%)					
No Action Alternative	38,722	1,885,067	14,022	4,588	18,610
Alternative 1	41,496	1,985,382	9,337	3,123	12,460
Difference	2,774	100,315	-4,685	-1,465	-6,150
Percent Difference	7	5	-33	-32	-33
Dry (22.5%)					
No Action Alternative	34,945	1,894,612	38,990	16,946	55,936
Alternative 1	34,962	1,979,833	29,461	15,809	45,270
Difference	17	85,221	-9,529	-1,137	-10,666
Percent Difference	0	4	-24	-7	-19
Critical (15%)					
No Action Alternative	43,879	1,941,615	462,907	221,268	684,174
Alternative 1	38,435	1,969,335	386,693	174,569	561,262
Difference	-5,445	27,720	-76,214	-46,699	-122,912
Percent Difference	-12	1	-16	-21	-18

1 Based on the 80-year simulation period
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average
4 Mortality values do not include base mortality
5 Eggs mortality includes pre-spawn mortality

Table B-2-3. Annual Mortality by Cause for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	117,312	2,252,495	2,369,807
Alternative 1	100,569	2,314,954	2,415,523
Difference	-16,743	62,459	45,716
Percent Difference[3]	-14	3	2
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	11,538	2,787,586	2,799,124
Alternative 1	13,087	2,803,861	2,816,949
Difference	1,549	16,276	17,825
Percent Difference	13	1	1
Above Normal (12.5%)			
No Action Alternative	9,419	2,174,466	2,183,885
Alternative 1	9,812	2,344,280	2,354,092
Difference	393	169,814	170,208
Percent Difference	4	8	8
Below Normal (17.5%)			
No Action Alternative	16,631	1,925,768	1,942,399
Alternative 1	15,158	2,024,180	2,039,338
Difference	-1,474	98,412	96,938
Percent Difference	-9	5	5
Dry (22.5%)			
No Action Alternative	44,530	1,940,964	1,985,493
Alternative 1	40,463	2,019,602	2,060,065
Difference	-4,067	78,638	74,572
Percent Difference	-9	4	4
Critical (15%)			
No Action Alternative	663,032	2,006,637	2,669,669
Alternative 1	555,549	2,013,483	2,569,032
Difference	-107,483	6,846	-100,637
Percent Difference	-16	0	-4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-4. Annual Mortality by Cause and Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	0	482,477	9,665	3,749	1,753,285	103,897	16,733	2,369,807
Alternative 1	0	504,586	9,304	3,662	1,799,292	87,603	11,076	2,415,523
Difference	0	22,110	-361	-87	46,006	-16,294	-5,657	45,716
Percent Difference[3]	0	5	-4	-2	3	-16	-34	2
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	0	1,294,487	11,452	61	1,487,035	26	6,063	2,799,124
Alternative 1	0	1,319,517	11,983	61	1,479,843	1,043	4,501	2,816,949
Difference	0	25,030	531	0	-7,192	1,018	-1,563	17,825
Percent Difference	0	2	5	1	0	3,925	-26	1
Above Normal (12.5%)								
No Action Alternative	0	362,747	9,179	167	1,810,328	73	1,392	2,183,885
Alternative 1	0	472,813	9,259	147	1,869,299	405	2,168	2,354,092
Difference	0	110,066	80	-19	58,971	333	776	170,208
Percent Difference	0	30	1	-12	3	459	56	8
Below Normal (17.5%)								
No Action Alternative	0	28,022	10,701	143	1,884,924	5,787	12,822	1,942,399
Alternative 1	0	30,282	11,214	62	1,985,320	3,882	8,578	2,039,338
Difference	0	2,261	513	-81	100,396	-1,906	-4,244	96,938
Percent Difference	0	8	5	-57	5	-33	-33	5
Dry (22.5%)								
No Action Alternative	0	28,946	5,999	570	1,894,042	37,961	17,975	1,985,493
Alternative 1	0	30,519	4,444	1,218	1,978,615	34,802	10,468	2,060,065
Difference	0	1,573	-1,556	648	84,573	-3,159	-7,508	74,572
Percent Difference	0	5	-26	114	4	-8	-42	4
Critical (15%)								
No Action Alternative	0	33,389	10,490	23,702	1,917,913	628,839	55,335	2,669,669
Alternative 1	0	29,837	8,597	22,262	1,947,073	524,689	36,573	2,569,032
Difference	0	-3,552	-1,893	-1,440	29,160	-104,150	-18,762	-100,637
Percent Difference	0	-11	-18	-6	2	-17	-34	-4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-5. Annual Mortality by All Factors for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	0	170,688	311,789	9,665	3,749	1,753,285	66,626	16,161	37,272	572	2,369,807
Alternative 1	0	171,160	333,426	9,304	3,662	1,799,292	57,690	10,479	29,913	597	2,415,523
Difference	0	472	21,637	-361	-87	46,006	-8,936	-5,682	-7,359	25	45,716
Percent Difference[3]	0	0	7	-4	-2	3	-13	-35	-20	4	2
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	0	465,305	829,182	11,452	61	1,487,035	19	5,993	7	71	2,799,124
Alternative 1	0	464,856	854,662	11,983	61	1,479,843	549	4,386	494	114	2,816,949
Difference	0	-449	25,479	531	0	-7,192	530	-1,606	488	43	17,825
Percent Difference	0	0	3	5	1	0	2,784	-27	7,082	61	1
Above Normal (12.5%)											
No Action Alternative	0	24,311	338,436	9,179	167	1,810,328	54	1,307	18	84	2,183,885
Alternative 1	0	27,524	445,289	9,259	147	1,869,299	297	2,089	108	79	2,354,092
Difference	0	3,213	106,853	80	-19	58,971	243	782	90	-6	170,208
Percent Difference	0	13	32	1	-12	3	448	60	491	-7	8
Below Normal (17.5%)											
No Action Alternative	0	28,022	0	10,701	143	1,884,924	1,766	12,256	4,022	566	1,942,399
Alternative 1	0	30,282	0	11,214	62	1,985,320	1,247	8,090	2,635	488	2,039,338
Difference	0	2,261	0	513	-81	100,396	-519	-4,166	-1,386	-79	96,938
Percent Difference	0	8	0	5	-57	5	-29	-34	-34	-14	5
Dry (22.5%)											
No Action Alternative	0	28,946	0	5,999	570	1,894,042	21,850	17,140	16,111	835	1,985,493
Alternative 1	0	30,519	0	4,444	1,218	1,978,615	19,975	9,486	14,827	982	2,060,065
Difference	0	1,573	0	-1,556	648	84,573	-1,875	-7,654	-1,284	147	74,572
Percent Difference	0	5	0	-26	114	4	-9	-45	-8	18	4
Critical (15%)											
No Action Alternative	0	33,389	0	10,490	23,702	1,917,913	409,251	53,656	219,588	1,679	2,669,669
Alternative 1	0	29,837	0	8,597	22,262	1,947,073	351,747	34,946	172,942	1,627	2,569,032
Difference	0	-3,552	0	-1,893	-1,440	29,160	-57,504	-18,710	-46,646	-52	-100,637
Percent Difference	0	-11	0	-18	-6	2	-14	-35	-21	-3	-4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-6. Annual Potential Production for Late Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	2,813,219
Alternative 3	2,812,234
Difference	-985
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	2,692,145
Alternative 3	2,691,402
Difference	-743
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	2,860,264
Alternative 3	2,810,515
Difference	-49,749
Percent Difference	-2
Below Normal (17.5%)	
No Action Alternative	2,982,412
Alternative 3	2,961,353
Difference	-21,059
Percent Difference	-1
Dry (22.5%)	
No Action Alternative	3,023,892
Alternative 3	3,012,660
Difference	-11,233
Percent Difference	0
Critical (15%)	
No Action Alternative	2,522,939
Alternative 3	2,600,856
Difference	77,917
Percent Difference	3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-2-7. Annual Mortality by Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	492,142	1,757,035	82,787	37,844	120,631
Alternative 3	517,818	1,792,455	66,941	28,700	95,641
Difference	25,677	35,421	-15,845	-9,144	-24,990
Percent Difference[3]	5	2	-19	-24	-21
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	1,305,939	1,487,095	6,012	78	6,089
Alternative 3	1,334,935	1,484,912	3,275	536	3,812
Difference	28,996	-2,184	-2,736	459	-2,278
Percent Difference	2	0	-46	590	-37
Above Normal (12.5%)					
No Action Alternative	371,926	1,810,494	1,361	103	1,464
Alternative 3	504,894	1,838,570	2,383	216	2,598
Difference	132,968	28,076	1,021	113	1,134
Percent Difference	36	2	75	110	77
Below Normal (17.5%)					
No Action Alternative	38,722	1,885,067	14,022	4,588	18,610
Alternative 3	39,609	1,946,219	10,333	2,164	12,497
Difference	887	61,152	-3,689	-2,424	-6,113
Percent Difference	2	3	-26	-53	-33
Dry (22.5%)					
No Action Alternative	34,945	1,894,612	38,990	16,946	55,936
Alternative 3	34,674	1,958,252	19,261	12,124	31,385
Difference	-271	63,640	-19,729	-4,822	-24,551
Percent Difference	-1	3	-51	-28	-44
Critical (15%)					
No Action Alternative	43,879	1,941,615	462,907	221,268	684,174
Alternative 3	40,798	1,992,284	396,247	169,277	565,524
Difference	-3,082	50,669	-66,660	-51,990	-118,650
Percent Difference	-7	3	-14	-23	-17

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-2-8. Annual Mortality by Cause for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	117,312	2,252,495	2,369,807
Alternative 3	96,645	2,309,269	2,405,915
Difference	-20,666	56,774	36,108
Percent Difference[3]	-18	3	2
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	11,538	2,787,586	2,799,124
Alternative 3	13,133	2,810,525	2,823,658
Difference	1,595	22,940	24,535
Percent Difference	14	1	1
Above Normal (12.5%)			
No Action Alternative	9,419	2,174,466	2,183,885
Alternative 3	6,036	2,340,026	2,346,062
Difference	-3,382	165,560	162,178
Percent Difference	-36	8	7
Below Normal (17.5%)			
No Action Alternative	16,631	1,925,768	1,942,399
Alternative 3	13,519	1,984,806	1,998,326
Difference	-3,112	59,038	55,926
Percent Difference	-19	3	3
Dry (22.5%)			
No Action Alternative	44,530	1,940,964	1,985,493
Alternative 3	27,396	1,996,915	2,024,311
Difference	-17,134	55,952	38,818
Percent Difference	-38	3	2
Critical (15%)			
No Action Alternative	663,032	2,006,637	2,669,669
Alternative 3	553,950	2,044,656	2,598,606
Difference	-109,082	38,019	-71,063
Percent Difference	-16	2	-3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-9. Annual Mortality by Cause and Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	0	482,477	9,665	3,749	1,753,285	103,897	16,733	2,369,807
Alternative 3	0	509,000	8,818	3,126	1,789,329	84,700	10,941	2,405,915
Difference	0	26,523	-847	-623	36,043	-19,197	-5,793	36,108
Percent Difference[3]	0	5	-9	-17	2	-18	-35	2
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	0	1,294,487	11,452	61	1,487,035	26	6,063	2,799,124
Alternative 3	0	1,322,789	12,146	61	1,484,851	927	2,885	2,823,658
Difference	0	28,302	694	0	-2,184	901	-3,178	24,535
Percent Difference	0	2	6	0	0	3,475	-52	1
Above Normal (12.5%)								
No Action Alternative	0	362,747	9,179	167	1,810,328	73	1,392	2,183,885
Alternative 3	0	499,275	5,619	31	1,838,539	386	2,212	2,346,062
Difference	0	136,528	-3,560	-136	28,212	314	821	162,178
Percent Difference	0	38	-39	-82	2	433	59	7
Below Normal (17.5%)								
No Action Alternative	0	28,022	10,701	143	1,884,924	5,787	12,822	1,942,399
Alternative 3	0	28,753	10,857	75	1,946,144	2,588	9,910	1,998,326
Difference	0	731	156	-68	61,220	-3,200	-2,913	55,926
Percent Difference	0	3	1	-47	3	-55	-23	3
Dry (22.5%)								
No Action Alternative	0	28,946	5,999	570	1,894,042	37,961	17,975	1,985,493
Alternative 3	0	30,082	4,592	188	1,958,065	22,616	8,769	2,024,311
Difference	0	1,136	-1,407	-382	64,022	-15,345	-9,206	38,818
Percent Difference	0	4	-23	-67	3	-40	-51	2
Critical (15%)								
No Action Alternative	0	33,389	10,490	23,702	1,917,913	628,839	55,335	2,669,669
Alternative 3	0	32,561	8,237	20,317	1,971,967	525,396	40,128	2,598,606
Difference	0	-829	-2,253	-3,386	54,055	-103,443	-15,207	-71,063
Percent Difference	0	-2	-21	-14	3	-16	-27	-3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-10. Annual Mortality by All Factors for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	0	170,688	311,789	9,665	3,749	1,753,285	66,626	16,161	37,272	572	2,369,807
Alternative 3	0	171,685	337,315	8,818	3,126	1,789,329	56,543	10,398	28,158	542	2,405,915
Difference	0	997	25,526	-847	-623	36,043	-10,083	-5,762	-9,114	-30	36,108
Percent Difference[3]	0	1	8	-9	-17	2	-15	-36	-24	-5	2
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	0	465,305	829,182	11,452	61	1,487,035	19	5,993	7	71	2,799,124
Alternative 3	0	466,004	856,785	12,146	61	1,484,851	516	2,759	411	126	2,823,658
Difference	0	699	27,603	694	0	-2,184	497	-3,233	404	55	24,535
Percent Difference	0	0	3	6	0	0	2,610	-54	5,866	77	1
Above Normal (12.5%)											
No Action Alternative	0	24,311	338,436	9,179	167	1,810,328	54	1,307	18	84	2,183,885
Alternative 3	0	28,397	470,878	5,619	31	1,838,539	296	2,087	90	125	2,346,062
Difference	0	4,086	132,442	-3,560	-136	28,212	242	779	72	41	162,178
Percent Difference	0	17	39	-39	-82	2	446	60	392	49	7
Below Normal (17.5%)											
No Action Alternative	0	28,022	0	10,701	143	1,884,924	1,766	12,256	4,022	566	1,942,399
Alternative 3	0	28,753	0	10,857	75	1,946,144	823	9,510	1,765	400	1,998,326
Difference	0	731	0	156	-68	61,220	-943	-2,746	-2,257	-167	55,926
Percent Difference	0	3	0	1	-47	3	-53	-22	-56	-29	3
Dry (22.5%)											
No Action Alternative	0	28,946	0	5,999	570	1,894,042	21,850	17,140	16,111	835	1,985,493
Alternative 3	0	30,082	0	4,592	188	1,958,065	11,401	7,860	11,215	909	2,024,311
Difference	0	1,136	0	-1,407	-382	64,022	-10,449	-9,280	-4,896	74	38,818
Percent Difference	0	4	0	-23	-67	3	-48	-54	-30	9	2
Critical (15%)											
No Action Alternative	0	33,389	0	10,490	23,702	1,917,913	409,251	53,656	219,588	1,679	2,669,669
Alternative 3	0	32,561	0	8,237	20,317	1,971,967	357,527	38,720	167,870	1,408	2,598,606
Difference	0	-829	0	-2,253	-3,386	54,055	-51,725	-14,935	-51,719	-272	-71,063
Percent Difference	0	-2	0	-21	-14	3	-13	-28	-24	-16	-3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-11. Annual Potential Production for Late Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	2,813,219
Alternative 5	2,805,566
Difference	-7,653
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	2,692,145
Alternative 5	2,700,194
Difference	8,049
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	2,860,264
Alternative 5	2,829,088
Difference	-31,176
Percent Difference	-1
Below Normal (17.5%)	
No Action Alternative	2,982,412
Alternative 5	2,951,992
Difference	-30,420
Percent Difference	-1
Dry (22.5%)	
No Action Alternative	3,023,892
Alternative 5	3,004,835
Difference	-19,057
Percent Difference	-1
Critical (15%)	
No Action Alternative	2,522,939
Alternative 5	2,544,537
Difference	21,598
Percent Difference	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-2-12. Annual Mortality by Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	492,142	1,757,035	82,787	37,844	120,631
Alternative 5	486,679	1,779,342	78,549	38,177	116,726
Difference	-5,463	22,307	-4,237	333	-3,904
Percent Difference[3]	-1	1	-5	1	-3
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	1,305,939	1,487,095	6,012	78	6,089
Alternative 5	1,284,631	1,490,907	4,027	74	4,101
Difference	-21,308	3,812	-1,985	-4	-1,989
Percent Difference	-2	0	-33	-5	-33
Above Normal (12.5%)					
No Action Alternative	371,926	1,810,494	1,361	103	1,464
Alternative 5	385,985	1,859,656	1,357	82	1,439
Difference	14,059	49,162	-5	-21	-25
Percent Difference	4	3	0	-20	-2
Below Normal (17.5%)					
No Action Alternative	38,722	1,885,067	14,022	4,588	18,610
Alternative 5	39,141	1,943,539	13,998	4,481	18,480
Difference	419	58,471	-23	-107	-130
Percent Difference	1	3	0	-2	-1
Dry (22.5%)					
No Action Alternative	34,945	1,894,612	38,990	16,946	55,936
Alternative 5	34,298	1,930,739	31,905	14,697	46,602
Difference	-647	36,127	-7,085	-2,249	-9,334
Percent Difference	-2	2	-18	-13	-17
Critical (15%)					
No Action Alternative	43,879	1,941,615	462,907	221,268	684,174
Alternative 5	42,394	1,918,694	449,617	227,011	676,628
Difference	-1,485	-22,921	-13,290	5,743	-7,547
Percent Difference	-3	-1	-3	3	-1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-2-13. Annual Mortality by Cause for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	117,312	2,252,495	2,369,807
Alternative 5	115,323	2,267,424	2,382,747
Difference	-1,989	14,929	12,940
Percent Difference[3]	-2	1	1
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	11,538	2,787,586	2,799,124
Alternative 5	11,470	2,768,169	2,779,639
Difference	-68	-19,417	-19,485
Percent Difference	-1	-1	-1
Above Normal (12.5%)			
No Action Alternative	9,419	2,174,466	2,183,885
Alternative 5	9,777	2,237,304	2,247,081
Difference	359	62,838	63,196
Percent Difference	4	3	3
Below Normal (17.5%)			
No Action Alternative	16,631	1,925,768	1,942,399
Alternative 5	16,938	1,984,222	2,001,160
Difference	307	58,454	58,760
Percent Difference	2	3	3
Dry (22.5%)			
No Action Alternative	44,530	1,940,964	1,985,493
Alternative 5	40,257	1,971,382	2,011,639
Difference	-4,273	30,419	26,146
Percent Difference	-10	2	1
Critical (15%)			
No Action Alternative	663,032	2,006,637	2,669,669
Alternative 5	655,672	1,982,044	2,637,716
Difference	-7,360	-24,593	-31,953
Percent Difference	-1	-1	-1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-14. Annual Mortality by Cause and Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	0	482,477	9,665	3,749	1,753,285	103,897	16,733	2,369,807
Alternative 5	0	476,778	9,902	2,705	1,776,637	102,717	14,010	2,382,747
Difference	0	-5,699	236	-1,044	23,351	-1,181	-2,724	12,940
Percent Difference[3]	0	-1	2	-28	1	-1	-16	1
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	0	1,294,487	11,452	61	1,487,035	26	6,063	2,799,124
Alternative 5	0	1,273,245	11,386	61	1,490,847	24	4,077	2,779,639
Difference	0	-21,242	-66	0	3,812	-2	-1,987	-19,485
Percent Difference	0	-2	-1	0	0	-8	-33	-1
Above Normal (12.5%)								
No Action Alternative	0	362,747	9,179	167	1,810,328	73	1,392	2,183,885
Alternative 5	0	376,400	9,586	142	1,859,515	50	1,389	2,247,081
Difference	0	13,653	406	-25	49,187	-23	-2	63,196
Percent Difference	0	4	4	-15	3	-31	0	3
Below Normal (17.5%)								
No Action Alternative	0	28,022	10,701	143	1,884,924	5,787	12,822	1,942,399
Alternative 5	0	28,128	11,014	147	1,943,392	5,777	12,702	2,001,160
Difference	0	106	313	4	58,468	-10	-120	58,760
Percent Difference	0	0	3	3	3	0	-1	3
Dry (22.5%)								
No Action Alternative	0	28,946	5,999	570	1,894,042	37,961	17,975	1,985,493
Alternative 5	0	28,043	6,255	761	1,929,979	33,241	13,361	2,011,639
Difference	0	-903	256	191	35,936	-4,720	-4,614	26,146
Percent Difference	0	-3	4	34	2	-12	-26	1
Critical (15%)								
No Action Alternative	0	33,389	10,490	23,702	1,917,913	628,839	55,335	2,669,669
Alternative 5	0	31,273	11,121	16,469	1,902,225	628,081	48,546	2,637,716
Difference	0	-2,116	631	-7,233	-15,688	-758	-6,789	-31,953
Percent Difference	0	-6	6	-31	-1	0	-12	-1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-15. Annual Mortality by All Factors for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	0	170,688	311,789	9,665	3,749	1,753,285	66,626	16,161	37,272	572	2,369,807
Alternative 5	0	170,227	306,551	9,902	2,705	1,776,637	65,089	13,460	37,628	549	2,382,747
Difference	0	-461	-5,238	236	-1,044	23,351	-1,537	-2,700	356	-23	12,940
Percent Difference[3]	0	0	-2	2	-28	1	-2	-17	1	-4	1
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	0	465,305	829,182	11,452	61	1,487,035	19	5,993	7	71	2,799,124
Alternative 5	0	465,569	807,677	11,386	61	1,490,847	18	4,009	6	68	2,779,639
Difference	0	264	-21,506	-66	0	3,812	-1	-1,984	-1	-3	-19,485
Percent Difference	0	0	-3	-1	0	0	-3	-33	-20	-4	-1
Above Normal (12.5%)											
No Action Alternative	0	24,311	338,436	9,179	167	1,810,328	54	1,307	18	84	2,183,885
Alternative 5	0	23,955	352,445	9,586	142	1,859,515	32	1,325	18	64	2,247,081
Difference	0	-356	14,009	406	-25	49,187	-22	18	-1	-20	63,196
Percent Difference	0	-1	4	4	-15	3	-41	1	-3	-24	3
Below Normal (17.5%)											
No Action Alternative	0	28,022	0	10,701	143	1,884,924	1,766	12,256	4,022	566	1,942,399
Alternative 5	0	28,128	0	11,014	147	1,943,392	1,852	12,147	3,925	556	2,001,160
Difference	0	106	0	313	4	58,468	86	-110	-96	-11	58,760
Percent Difference	0	0	0	3	3	3	5	-1	-2	-2	3
Dry (22.5%)											
No Action Alternative	0	28,946	0	5,999	570	1,894,042	21,850	17,140	16,111	835	1,985,493
Alternative 5	0	28,043	0	6,255	761	1,929,979	19,310	12,595	13,932	766	2,011,639
Difference	0	-903	0	256	191	35,936	-2,540	-4,545	-2,179	-70	26,146
Percent Difference	0	-3	0	4	34	2	-12	-27	-14	-8	1
Critical (15%)											
No Action Alternative	0	33,389	0	10,490	23,702	1,917,913	409,251	53,656	219,588	1,679	2,669,669
Alternative 5	0	31,273	0	11,121	16,469	1,902,225	402,734	46,883	225,348	1,663	2,637,716
Difference	0	-2,116	0	631	-7,233	-15,688	-6,517	-6,773	5,759	-16	-31,953
Percent Difference	0	-6	0	6	-31	-1	-2	-13	3	-1	-1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table C-2-16. Annual Potential Production for Late Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	2,800,061
No Action Alternative	2,813,219
Difference	13,158
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	2,691,035
No Action Alternative	2,692,145
Difference	1,111
Percent Difference	0
Above Normal (12.5%)	
Second Basis of Comparison	2,802,912
No Action Alternative	2,860,264
Difference	57,352
Percent Difference	2
Below Normal (17.5%)	
Second Basis of Comparison	2,930,472
No Action Alternative	2,982,412
Difference	51,940
Percent Difference	2
Dry (22.5%)	
Second Basis of Comparison	2,976,338
No Action Alternative	3,023,892
Difference	47,554
Percent Difference	2
Critical (15%)	
Second Basis of Comparison	2,617,343
No Action Alternative	2,522,939
Difference	-94,404
Percent Difference	-4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table C-2-17. Annual Mortality by Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	513,890	1,802,954	68,169	30,510	98,679
No Action Alternative	492,142	1,757,035	82,787	37,844	120,631
Difference	-21,748	-45,920	14,618	7,334	21,952
Percent Difference[3]	-4	-3	21	24	22
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	1,331,500	1,479,904	4,935	609	5,544
No Action Alternative	1,305,939	1,487,095	6,012	78	6,089
Difference	-25,561	7,191	1,076	-531	545
Percent Difference	-2	0	22	-87	10
Above Normal (12.5%)					
Second Basis of Comparison	482,073	1,869,446	2,387	187	2,573
No Action Alternative	371,926	1,810,494	1,361	103	1,464
Difference	-110,146	-58,952	-1,025	-84	-1,109
Percent Difference	-23	-3	-43	-45	-43
Below Normal (17.5%)					
Second Basis of Comparison	41,496	1,985,382	9,337	3,123	12,460
No Action Alternative	38,722	1,885,067	14,022	4,588	18,610
Difference	-2,774	-100,315	4,685	1,465	6,150
Percent Difference	-7	-5	50	47	49
Dry (22.5%)					
Second Basis of Comparison	34,962	1,979,833	29,461	15,809	45,270
No Action Alternative	34,945	1,894,612	38,990	16,946	55,936
Difference	-17	-85,221	9,529	1,137	10,666
Percent Difference	0	-4	32	7	24
Critical (15%)					
Second Basis of Comparison	38,435	1,969,335	386,693	174,569	561,262
No Action Alternative	43,879	1,941,615	462,907	221,268	684,174
Difference	5,445	-27,720	76,214	46,699	122,912
Percent Difference	14	-1	20	27	22

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table C-2-18. Annual Mortality by Cause for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	100,569	2,314,954	2,415,523
No Action Alternative	117,312	2,252,495	2,369,807
Difference	16,743	-62,459	-45,716
Percent Difference[3]	17	-3	-2
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	13,087	2,803,861	2,816,949
No Action Alternative	11,538	2,787,586	2,799,124
Difference	-1,549	-16,276	-17,825
Percent Difference	-12	-1	-1
Above Normal (12.5%)			
Second Basis of Comparison	9,812	2,344,280	2,354,092
No Action Alternative	9,419	2,174,466	2,183,885
Difference	-393	-169,814	-170,208
Percent Difference	-4	-7	-7
Below Normal (17.5%)			
Second Basis of Comparison	15,158	2,024,180	2,039,338
No Action Alternative	16,631	1,925,768	1,942,399
Difference	1,474	-98,412	-96,938
Percent Difference	10	-5	-5
Dry (22.5%)			
Second Basis of Comparison	40,463	2,019,602	2,060,065
No Action Alternative	44,530	1,940,964	1,985,493
Difference	4,067	-78,638	-74,572
Percent Difference	10	-4	-4
Critical (15%)			
Second Basis of Comparison	555,549	2,013,483	2,569,032
No Action Alternative	663,032	2,006,637	2,669,669
Difference	107,483	-6,846	100,637
Percent Difference	19	0	4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table C-2-19. Annual Mortality by Cause and Life Stage for Late Fall-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)							
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	0	504,586	9,304	3,662	1,799,292	87,603	11,076	2,415,523
No Action Alternative	0	482,477	9,665	3,749	1,753,285	103,897	16,733	2,369,807
Difference	0	-22,110	361	87	-46,006	16,294	5,657	-45,716
Percent Difference[3]	0	-4	4	2	-3	19	51	-2
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	0	1,319,517	11,983	61	1,479,843	1,043	4,501	2,816,949
No Action Alternative	0	1,294,487	11,452	61	1,487,035	26	6,063	2,799,124
Difference	0	-25,030	-531	0	7,192	-1,018	1,563	-17,825
Percent Difference	0	-2	-4	-1	0	-98	35	-1
Above Normal (12.5%)								
Second Basis of Comparison	0	472,813	9,259	147	1,869,299	405	2,168	2,354,092
No Action Alternative	0	362,747	9,179	167	1,810,328	73	1,392	2,183,885
Difference	0	-110,066	-80	19	-58,971	-333	-776	-170,208
Percent Difference	0	-23	-1	13	-3	-82	-36	-7
Below Normal (17.5%)								
Second Basis of Comparison	0	30,282	11,214	62	1,985,320	3,882	8,578	2,039,338
No Action Alternative	0	28,022	10,701	143	1,884,924	5,787	12,822	1,942,399
Difference	0	-2,261	-513	81	-100,396	1,906	4,244	-96,938
Percent Difference	0	-7	-5	131	-5	49	49	-5
Dry (22.5%)								
Second Basis of Comparison	0	30,519	4,444	1,218	1,978,615	34,802	10,468	2,060,065
No Action Alternative	0	28,946	5,999	570	1,894,042	37,961	17,975	1,985,493
Difference	0	-1,573	1,556	-648	-84,573	3,159	7,508	-74,572
Percent Difference	0	-5	35	-53	-4	9	72	-4
Critical (15%)								
Second Basis of Comparison	0	29,837	8,597	22,262	1,947,073	524,689	36,573	2,569,032
No Action Alternative	0	33,389	10,490	23,702	1,917,913	628,839	55,335	2,669,669
Difference	0	3,552	1,893	1,440	-29,160	104,150	18,762	100,637
Percent Difference	0	12	22	6	-1	20	51	4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table C-2-20. Annual Mortality by All Factors for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	0	171,160	333,426	9,304	3,662	1,799,292	57,690	10,479	29,913	597	2,415,523
No Action Alternative	0	170,688	311,789	9,665	3,749	1,753,285	66,626	16,161	37,272	572	2,369,807
Difference	0	-472	-21,637	361	87	-46,006	8,936	5,682	7,359	-25	-45,716
Percent Difference[3]	0	0	-6	4	2	-3	15	54	25	-4	-2
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	0	464,856	854,662	11,983	61	1,479,843	549	4,386	494	114	2,816,949
No Action Alternative	0	465,305	829,182	11,452	61	1,487,035	19	5,993	7	71	2,799,124
Difference	0	449	-25,479	-531	0	7,192	-530	1,606	-488	-43	-17,825
Percent Difference	0	0	-3	-4	-1	0	-97	37	-99	-38	-1
Above Normal (12.5%)											
Second Basis of Comparison	0	27,524	445,289	9,259	147	1,869,299	297	2,089	108	79	2,354,092
No Action Alternative	0	24,311	338,436	9,179	167	1,810,328	54	1,307	18	84	2,183,885
Difference	0	-3,213	-106,853	-80	19	-58,971	-243	-782	-90	6	-170,208
Percent Difference	0	-12	-24	-1	13	-3	-82	-37	-83	7	-7
Below Normal (17.5%)											
Second Basis of Comparison	0	30,282	0	11,214	62	1,985,320	1,247	8,090	2,635	488	2,039,338
No Action Alternative	0	28,022	0	10,701	143	1,884,924	1,766	12,256	4,022	566	1,942,399
Difference	0	-2,261	0	-513	81	-100,396	519	4,166	1,386	79	-96,938
Percent Difference	0	-7	0	-5	131	-5	42	51	53	16	-5
Dry (22.5%)											
Second Basis of Comparison	0	30,519	0	4,444	1,218	1,978,615	19,975	9,486	14,827	982	2,060,065
No Action Alternative	0	28,946	0	5,999	570	1,894,042	21,850	17,140	16,111	835	1,985,493
Difference	0	-1,573	0	1,556	-648	-84,573	1,875	7,654	1,284	-147	-74,572
Percent Difference	0	-5	0	35	-53	-4	9	81	9	-15	-4
Critical (15%)											
Second Basis of Comparison	0	29,837	0	8,597	22,262	1,947,073	351,747	34,946	172,942	1,627	2,569,032
No Action Alternative	0	33,389	0	10,490	23,702	1,917,913	409,251	53,656	219,588	1,679	2,669,669
Difference	0	3,552	0	1,893	1,440	-29,160	57,504	18,710	46,646	52	100,637
Percent Difference	0	12	0	22	6	-1	16	54	27	3	4

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-21. Annual Potential Production for Late Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	2,800,061
Alternative 3	2,812,234
Difference	12,173
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	2,691,035
Alternative 3	2,691,402
Difference	367
Percent Difference	0
Above Normal (12.5%)	
Second Basis of Comparison	2,802,912
Alternative 3	2,810,515
Difference	7,603
Percent Difference	0
Below Normal (17.5%)	
Second Basis of Comparison	2,930,472
Alternative 3	2,961,353
Difference	30,881
Percent Difference	1
Dry (22.5%)	
Second Basis of Comparison	2,976,338
Alternative 3	3,012,660
Difference	36,322
Percent Difference	1
Critical (15%)	
Second Basis of Comparison	2,617,343
Alternative 3	2,600,856
Difference	-16,487
Percent Difference	-1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-2-22. Annual Mortality by Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	513,890	1,802,954	68,169	30,510	98,679
Alternative 3	517,818	1,792,455	66,941	28,700	95,641
Difference	3,928	-10,499	-1,228	-1,811	-3,038
Percent Difference[3]	1	-1	-2	-6	-3
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	1,331,500	1,479,904	4,935	609	5,544
Alternative 3	1,334,935	1,484,912	3,275	536	3,812
Difference	3,434	5,008	-1,660	-72	-1,732
Percent Difference	0	0	-34	-12	-31
Above Normal (12.5%)					
Second Basis of Comparison	482,073	1,869,446	2,387	187	2,573
Alternative 3	504,894	1,838,570	2,383	216	2,598
Difference	22,822	-30,877	-4	29	25
Percent Difference	5	-2	0	15	1
Below Normal (17.5%)					
Second Basis of Comparison	41,496	1,985,382	9,337	3,123	12,460
Alternative 3	39,609	1,946,219	10,333	2,164	12,497
Difference	-1,887	-39,163	996	-959	37
Percent Difference	-5	-2	11	-31	0
Dry (22.5%)					
Second Basis of Comparison	34,962	1,979,833	29,461	15,809	45,270
Alternative 3	34,674	1,958,252	19,261	12,124	31,385
Difference	-288	-21,580	-10,200	-3,685	-13,885
Percent Difference	-1	-1	-35	-23	-31
Critical (15%)					
Second Basis of Comparison	38,435	1,969,335	386,693	174,569	561,262
Alternative 3	40,798	1,992,284	396,247	169,277	565,524
Difference	2,363	22,949	9,554	-5,292	4,262
Percent Difference	6	1	2	-3	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-2-23. Annual Mortality by Cause for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	100,569	2,314,954	2,415,523
Alternative 3	96,645	2,309,269	2,405,915
Difference	-3,924	-5,685	-9,609
Percent Difference[3]	-4	0	0
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	13,087	2,803,861	2,816,949
Alternative 3	13,133	2,810,525	2,823,658
Difference	45	6,664	6,710
Percent Difference	0	0	0
Above Normal (12.5%)			
Second Basis of Comparison	9,812	2,344,280	2,354,092
Alternative 3	6,036	2,340,026	2,346,062
Difference	-3,776	-4,254	-8,030
Percent Difference	-38	0	0
Below Normal (17.5%)			
Second Basis of Comparison	15,158	2,024,180	2,039,338
Alternative 3	13,519	1,984,806	1,998,326
Difference	-1,638	-39,374	-41,012
Percent Difference	-11	-2	-2
Dry (22.5%)			
Second Basis of Comparison	40,463	2,019,602	2,060,065
Alternative 3	27,396	1,996,915	2,024,311
Difference	-13,067	-22,686	-35,754
Percent Difference	-32	-1	-2
Critical (15%)			
Second Basis of Comparison	555,549	2,013,483	2,569,032
Alternative 3	553,950	2,044,656	2,598,606
Difference	-1,599	31,172	29,574
Percent Difference	0	2	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-24. Annual Mortality by Cause and Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)							
	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	0	504,586	9,304	3,662	1,799,292	87,603	11,076	2,415,523
Alternative 3	0	509,000	8,818	3,126	1,789,329	84,700	10,941	2,405,915
Difference	0	4,414	-485	-536	-9,963	-2,903	-136	-9,609
Percent Difference[3]	0	1	-5	-15	-1	-3	-1	0
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	0	1,319,517	11,983	61	1,479,843	1,043	4,501	2,816,949
Alternative 3	0	1,322,789	12,146	61	1,484,851	927	2,885	2,823,658
Difference	0	3,272	162	0	5,008	-117	-1,616	6,710
Percent Difference	0	0	1	0	0	-11	-36	0
Above Normal (12.5%)								
Second Basis of Comparison	0	472,813	9,259	147	1,869,299	405	2,168	2,354,092
Alternative 3	0	499,275	5,619	31	1,838,539	386	2,212	2,346,062
Difference	0	26,462	-3,640	-117	-30,760	-19	44	-8,030
Percent Difference	0	6	-39	-79	-2	-5	2	0
Below Normal (17.5%)								
Second Basis of Comparison	0	30,282	11,214	62	1,985,320	3,882	8,578	2,039,338
Alternative 3	0	28,753	10,857	75	1,946,144	2,588	9,910	1,998,326
Difference	0	-1,530	-357	13	-39,176	-1,294	1,332	-41,012
Percent Difference	0	-5	-3	21	-2	-33	16	-2
Dry (22.5%)								
Second Basis of Comparison	0	30,519	4,444	1,218	1,978,615	34,802	10,468	2,060,065
Alternative 3	0	30,082	4,592	188	1,958,065	22,616	8,769	2,024,311
Difference	0	-437	149	-1,030	-20,551	-12,186	-1,699	-35,754
Percent Difference	0	-1	3	-85	-1	-35	-16	-2
Critical (15%)								
Second Basis of Comparison	0	29,837	8,597	22,262	1,947,073	524,689	36,573	2,569,032
Alternative 3	0	32,561	8,237	20,317	1,971,967	525,396	40,128	2,598,606
Difference	0	2,723	-360	-1,946	24,894	707	3,555	29,574
Percent Difference	0	9	-4	-9	1	0	10	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-25. Annual Mortality by All Factors for Late Fall-Run Chinook Salmon

Analysis Period	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
	Annual Mortality[4] (# of Fish/year)										
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	0	171,160	333,426	9,304	3,662	1,799,292	57,690	10,479	29,913	597	2,415,523
Alternative 3	0	171,685	337,315	8,818	3,126	1,789,329	56,543	10,398	28,158	542	2,405,915
Difference	0	525	3,889	-485	-536	-9,963	-1,147	-80	-1,755	-55	-9,609
Percent Difference[3]	0	0	1	-5	-15	-1	-2	-1	-6	-9	0
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	0	464,856	854,662	11,983	61	1,479,843	549	4,386	494	114	2,816,949
Alternative 3	0	466,004	856,785	12,146	61	1,484,851	516	2,759	411	126	2,823,658
Difference	0	1,149	2,123	162	0	5,008	-33	-1,627	-84	11	6,710
Percent Difference	0	0	0	1	0	0	-6	-37	-17	10	0
Above Normal (12.5%)											
Second Basis of Comparison	0	27,524	445,289	9,259	147	1,869,299	297	2,089	108	79	2,354,092
Alternative 3	0	28,397	470,878	5,619	31	1,838,539	296	2,087	90	125	2,346,062
Difference	0	873	25,589	-3,640	-117	-30,760	-1	-3	-18	47	-8,030
Percent Difference	0	3	6	-39	-79	-2	0	0	-17	60	0
Below Normal (17.5%)											
Second Basis of Comparison	0	30,282	0	11,214	62	1,985,320	1,247	8,090	2,635	488	2,039,338
Alternative 3	0	28,753	0	10,857	75	1,946,144	823	9,510	1,765	400	1,998,326
Difference	0	-1,530	0	-357	13	-39,176	-424	1,420	-871	-88	-41,012
Percent Difference	0	-5	0	-3	21	-2	-34	18	-33	-18	-2
Dry (22.5%)											
Second Basis of Comparison	0	30,519	0	4,444	1,218	1,978,615	19,975	9,486	14,827	982	2,060,065
Alternative 3	0	30,082	0	4,592	188	1,958,065	11,401	7,860	11,215	909	2,024,311
Difference	0	-437	0	149	-1,030	-20,551	-8,574	-1,626	-3,612	-73	-35,754
Percent Difference	0	-1	0	3	-85	-1	-43	-17	-24	-7	-2
Critical (15%)											
Second Basis of Comparison	0	29,837	0	8,597	22,262	1,947,073	351,747	34,946	172,942	1,627	2,569,032
Alternative 3	0	32,561	0	8,237	20,317	1,971,967	357,527	38,720	167,870	1,408	2,598,606
Difference	0	2,723	0	-360	-1,946	24,894	5,780	3,774	-5,072	-219	29,574
Percent Difference	0	9	0	-4	-9	1	2	11	-3	-13	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-26. Annual Potential Production for Late Fall-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	2,800,061
Alternative 5	2,805,566
Difference	5,506
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	2,691,035
Alternative 5	2,700,194
Difference	9,159
Percent Difference	0
Above Normal (12.5%)	
Second Basis of Comparison	2,802,912
Alternative 5	2,829,088
Difference	26,176
Percent Difference	1
Below Normal (17.5%)	
Second Basis of Comparison	2,930,472
Alternative 5	2,951,992
Difference	21,520
Percent Difference	1
Dry (22.5%)	
Second Basis of Comparison	2,976,338
Alternative 5	3,004,835
Difference	28,497
Percent Difference	1
Critical (15%)	
Second Basis of Comparison	2,617,343
Alternative 5	2,544,537
Difference	-72,807
Percent Difference	-3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-2-27. Annual Mortality by Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	513,890	1,802,954	68,169	30,510	98,679
Alternative 5	486,679	1,779,342	78,549	38,177	116,726
Difference	-27,211	-23,612	10,380	7,667	18,047
Percent Difference[3]	-5	-1	15	25	18
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	1,331,500	1,479,904	4,935	609	5,544
Alternative 5	1,284,631	1,490,907	4,027	74	4,101
Difference	-46,869	11,003	-909	-535	-1,443
Percent Difference	-4	1	-18	-88	-26
Above Normal (12.5%)					
Second Basis of Comparison	482,073	1,869,446	2,387	187	2,573
Alternative 5	385,985	1,859,656	1,357	82	1,439
Difference	-96,087	-9,790	-1,030	-105	-1,134
Percent Difference	-20	-1	-43	-56	-44
Below Normal (17.5%)					
Second Basis of Comparison	41,496	1,985,382	9,337	3,123	12,460
Alternative 5	39,141	1,943,539	13,998	4,481	18,480
Difference	-2,355	-41,843	4,662	1,358	6,020
Percent Difference	-6	-2	50	43	48
Dry (22.5%)					
Second Basis of Comparison	34,962	1,979,833	29,461	15,809	45,270
Alternative 5	34,298	1,930,739	31,905	14,697	46,602
Difference	-664	-49,093	2,444	-1,112	1,332
Percent Difference	-2	-2	8	-7	3
Critical (15%)					
Second Basis of Comparison	38,435	1,969,335	386,693	174,569	561,262
Alternative 5	42,394	1,918,694	449,617	227,011	676,628
Difference	3,960	-50,641	62,924	52,442	115,365
Percent Difference	10	-3	16	30	21

1 Based on the 80-year simulation period
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average
4 Mortality values do not include base mortality
5 Eggs mortality includes pre-spawn mortality

Table B-2-28. Annual Mortality by Cause for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	100,569	2,314,954	2,415,523
Alternative 5	115,323	2,267,424	2,382,747
Difference	14,754	-47,530	-32,776
Percent Difference[3]	15	-2	-1
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	13,087	2,803,861	2,816,949
Alternative 5	11,470	2,768,169	2,779,639
Difference	-1,617	-35,692	-37,310
Percent Difference	-12	-1	-1
Above Normal (12.5%)			
Second Basis of Comparison	9,812	2,344,280	2,354,092
Alternative 5	9,777	2,237,304	2,247,081
Difference	-35	-106,977	-107,012
Percent Difference	0	-5	-5
Below Normal (17.5%)			
Second Basis of Comparison	15,158	2,024,180	2,039,338
Alternative 5	16,938	1,984,222	2,001,160
Difference	1,780	-39,958	-38,178
Percent Difference	12	-2	-2
Dry (22.5%)			
Second Basis of Comparison	40,463	2,019,602	2,060,065
Alternative 5	40,257	1,971,382	2,011,639
Difference	-206	-48,219	-48,426
Percent Difference	-1	-2	-2
Critical (15%)			
Second Basis of Comparison	555,549	2,013,483	2,569,032
Alternative 5	655,672	1,982,044	2,637,716
Difference	100,123	-31,439	68,684
Percent Difference	18	-2	3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-29. Annual Mortality by Cause and Life Stage for Late Fall-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	0	504,586	9,304	3,662	1,799,292	87,603	11,076	2,415,523
Alternative 5	0	476,778	9,902	2,705	1,776,637	102,717	14,010	2,382,747
Difference	0	-27,809	598	-958	-22,655	15,114	2,934	-32,776
Percent Difference[3]	0	-6	6	-26	-1	17	26	-1
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	0	1,319,517	11,983	61	1,479,843	1,043	4,501	2,816,949
Alternative 5	0	1,273,245	11,386	61	1,490,847	24	4,077	2,779,639
Difference	0	-46,272	-597	0	11,003	-1,020	-424	-37,310
Percent Difference	0	-4	-5	-1	1	-98	-9	-1
Above Normal (12.5%)								
Second Basis of Comparison	0	472,813	9,259	147	1,869,299	405	2,168	2,354,092
Alternative 5	0	376,400	9,586	142	1,859,515	50	1,389	2,247,081
Difference	0	-96,413	326	-6	-9,784	-355	-779	-107,012
Percent Difference	0	-20	4	-4	-1	-88	-36	-5
Below Normal (17.5%)								
Second Basis of Comparison	0	30,282	11,214	62	1,985,320	3,882	8,578	2,039,338
Alternative 5	0	28,128	11,014	147	1,943,392	5,777	12,702	2,001,160
Difference	0	-2,155	-200	85	-41,928	1,896	4,124	-38,178
Percent Difference	0	-7	-2	137	-2	49	48	-2
Dry (22.5%)								
Second Basis of Comparison	0	30,519	4,444	1,218	1,978,615	34,802	10,468	2,060,065
Alternative 5	0	28,043	6,255	761	1,929,979	33,241	13,361	2,011,639
Difference	0	-2,476	1,812	-457	-48,637	-1,561	2,893	-48,426
Percent Difference	0	-8	41	-38	-2	-4	28	-2
Critical (15%)								
Second Basis of Comparison	0	29,837	8,597	22,262	1,947,073	524,689	36,573	2,569,032
Alternative 5	0	31,273	11,121	16,469	1,902,225	628,081	48,546	2,637,716
Difference	0	1,436	2,524	-5,793	-44,848	103,392	11,973	68,684
Percent Difference	0	5	29	-26	-2	20	33	3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-2-30. Annual Mortality by All Factors for Late Fall-Run Chinook Salmon

Analysis Period	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
	Annual Mortality[4] (# of Fish/year)										
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	0	171,160	333,426	9,304	3,662	1,799,292	57,690	10,479	29,913	597	2,415,523
Alternative 5	0	170,227	306,551	9,902	2,705	1,776,637	65,089	13,460	37,628	549	2,382,747
Difference	0	-933	-26,876	598	-958	-22,655	7,399	2,982	7,715	-48	-32,776
Percent Difference[3]	0	-1	-8	6	-26	-1	13	28	26	-8	-1
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	0	464,856	854,662	11,983	61	1,479,843	549	4,386	494	114	2,816,949
Alternative 5	0	465,569	807,677	11,386	61	1,490,847	18	4,009	6	68	2,779,639
Difference	0	713	-46,985	-597	0	11,003	-531	-378	-489	-46	-37,310
Percent Difference	0	0	-5	-5	-1	1	-97	-9	-99	-40	-1
Above Normal (12.5%)											
Second Basis of Comparison	0	27,524	445,289	9,259	147	1,869,299	297	2,089	108	79	2,354,092
Alternative 5	0	23,955	352,445	9,586	142	1,859,515	32	1,325	18	64	2,247,081
Difference	0	-3,569	-92,844	326	-6	-9,784	-265	-765	-90	-14	-107,012
Percent Difference	0	-13	-21	4	-4	-1	-89	-37	-84	-18	-5
Below Normal (17.5%)											
Second Basis of Comparison	0	30,282	0	11,214	62	1,985,320	1,247	8,090	2,635	488	2,039,338
Alternative 5	0	28,128	0	11,014	147	1,943,392	1,852	12,147	3,925	556	2,001,160
Difference	0	-2,155	0	-200	85	-41,928	605	4,056	1,290	68	-38,178
Percent Difference	0	-7	0	-2	137	-2	49	50	49	14	-2
Dry (22.5%)											
Second Basis of Comparison	0	30,519	0	4,444	1,218	1,978,615	19,975	9,486	14,827	982	2,060,065
Alternative 5	0	28,043	0	6,255	761	1,929,979	19,310	12,595	13,932	766	2,011,639
Difference	0	-2,476	0	1,812	-457	-48,637	-665	3,109	-896	-216	-48,426
Percent Difference	0	-8	0	41	-38	-2	-3	33	-6	-22	-2
Critical (15%)											
Second Basis of Comparison	0	29,837	0	8,597	22,262	1,947,073	351,747	34,946	172,942	1,627	2,569,032
Alternative 5	0	31,273	0	11,121	16,469	1,902,225	402,734	46,883	225,348	1,663	2,637,716
Difference	0	1,436	0	2,524	-5,793	-44,848	50,987	11,937	52,405	36	68,684
Percent Difference	0	5	0	29	-26	-2	14	34	30	2	3

1 Based on the 80-year simulation period

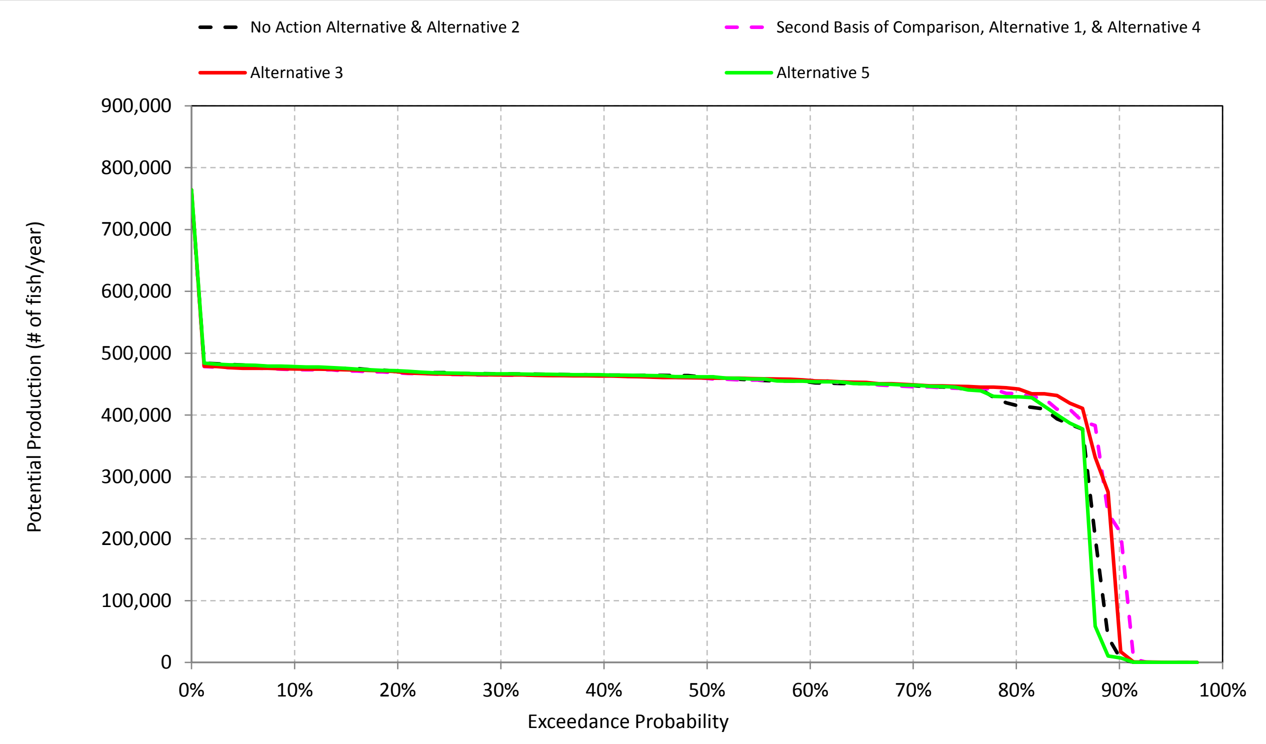
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

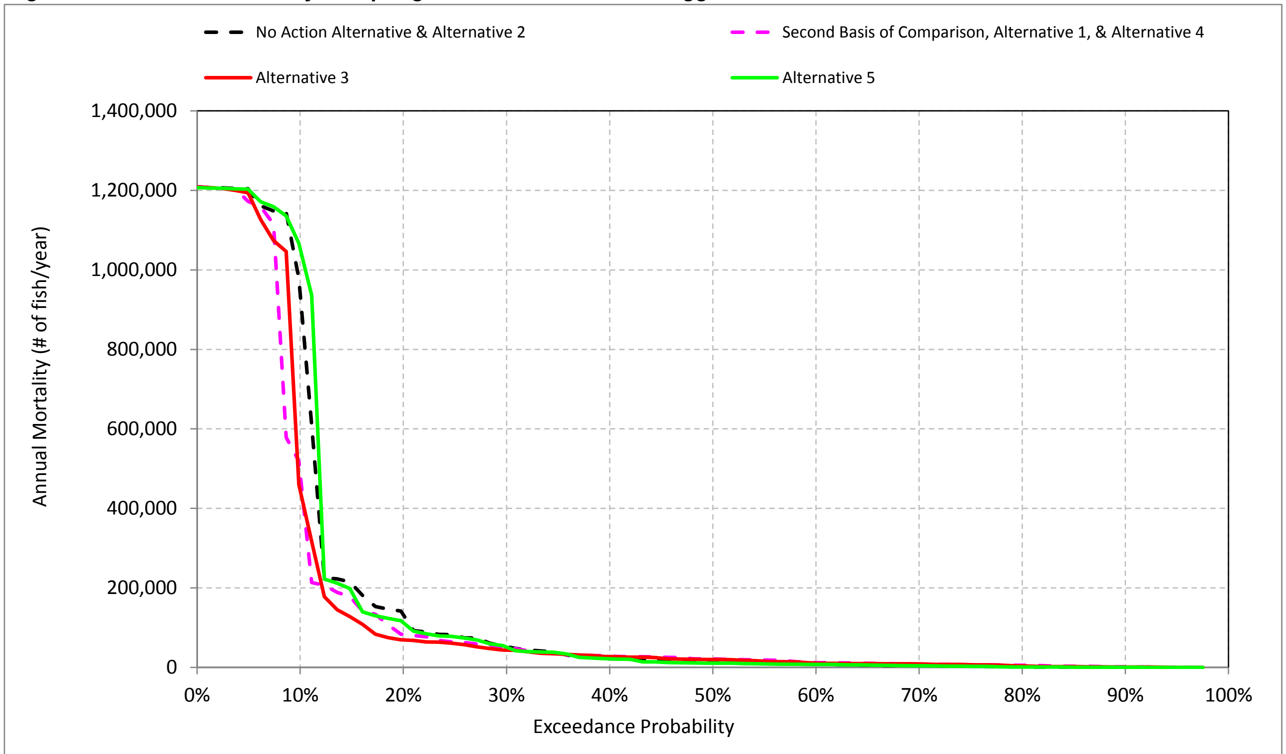
B.3. Spring-Run Chinook Salmon

Figure B-3-1. Annual Potential Production for Spring-Run Chinook Salmon



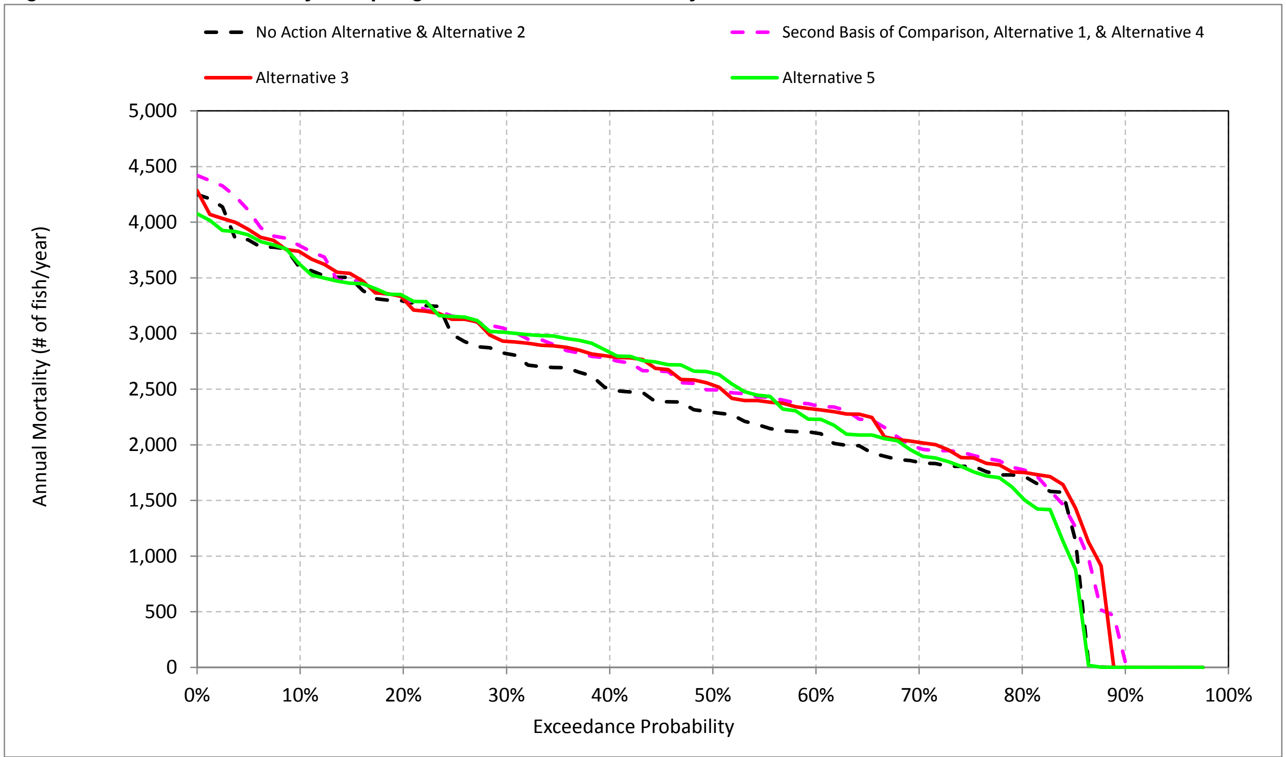
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-2. Annual Mortality for Spring-Run Chinook Salmon - Eggs



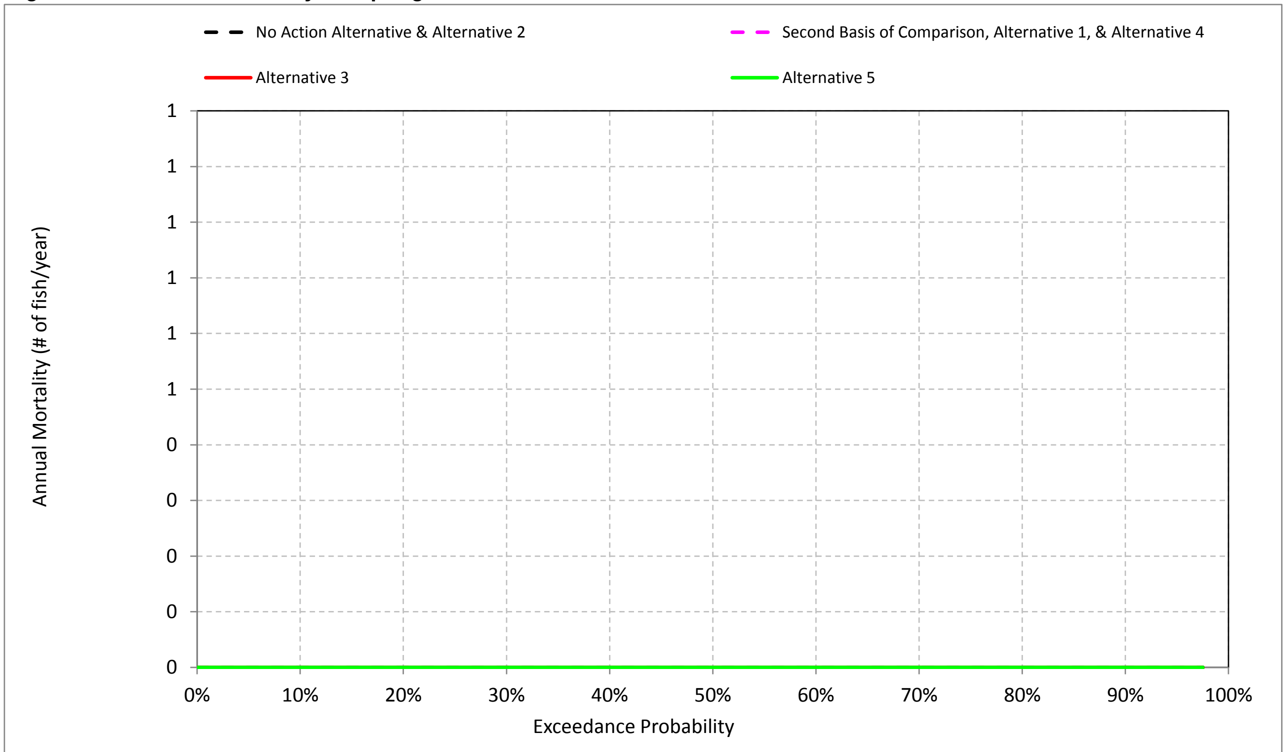
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-3. Annual Mortality for Spring-Run Chinook Salmon - Fry



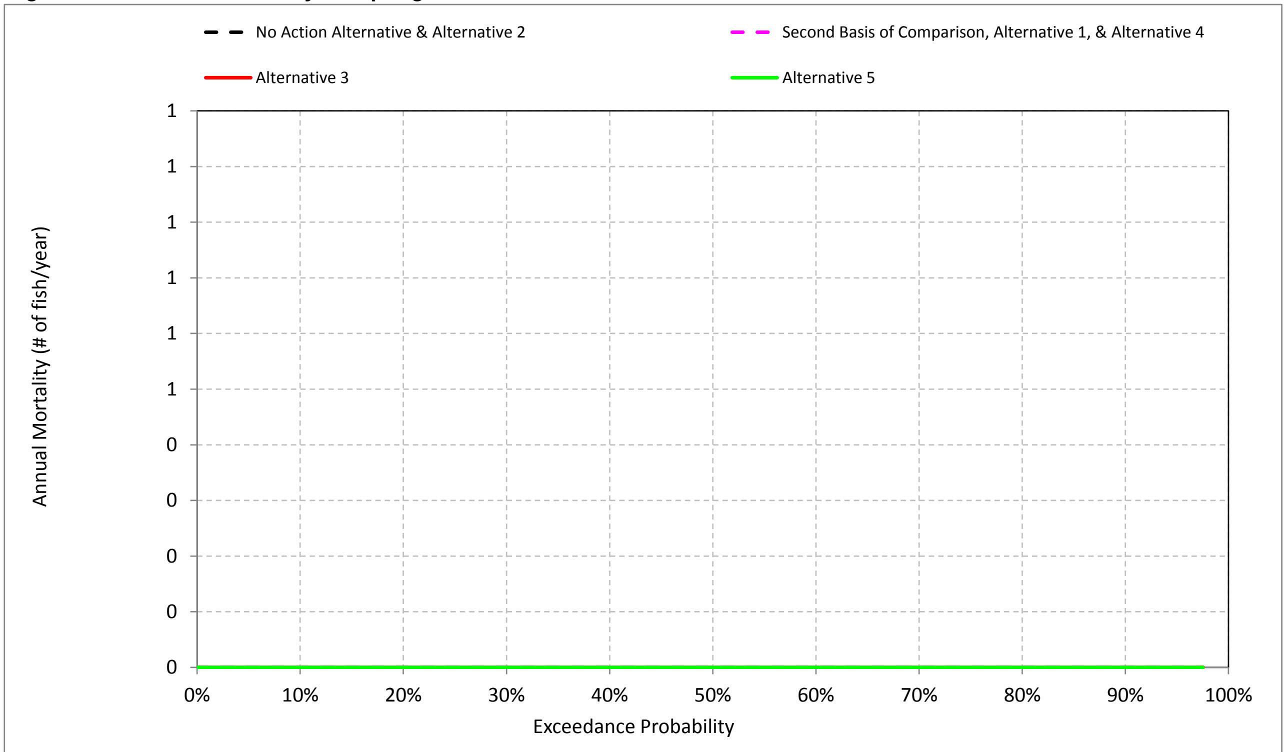
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-4. Annual Mortality for Spring-Run Chinook Salmon - Pre-Smolt



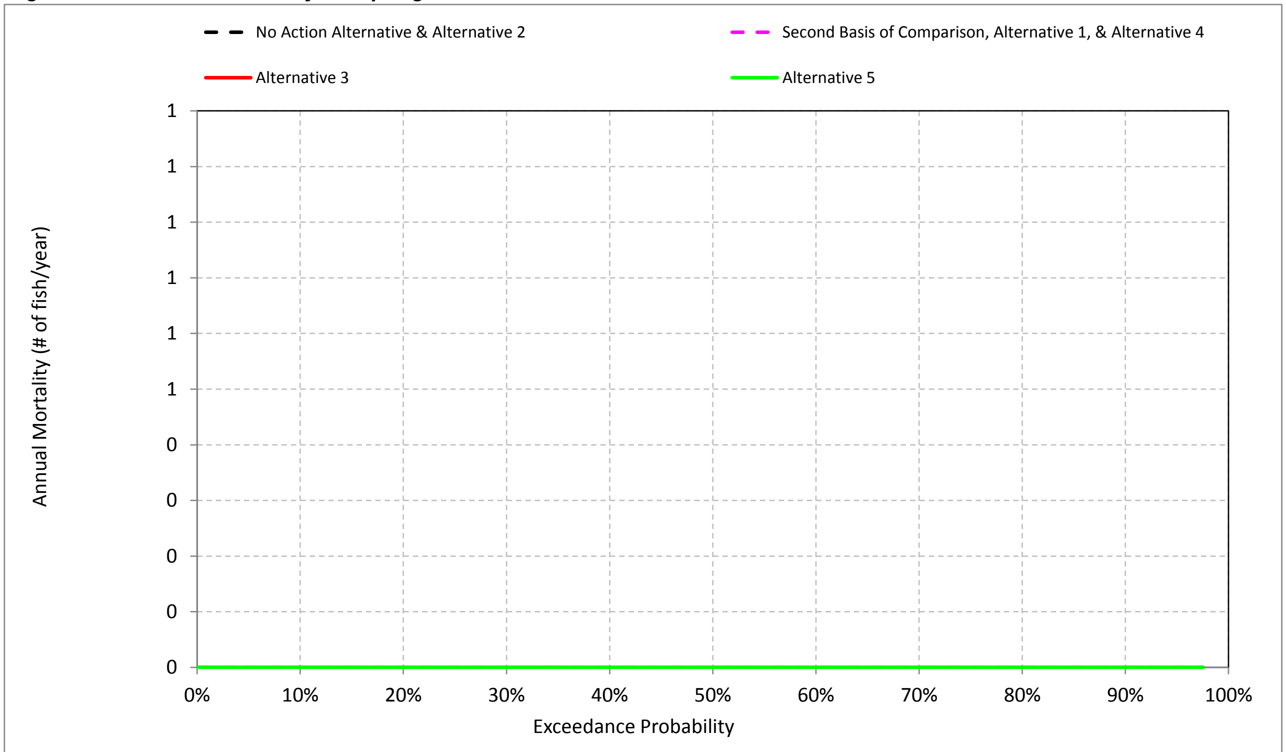
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-5. Annual Mortality for Spring-Run Chinook Salmon - Immature Smolt



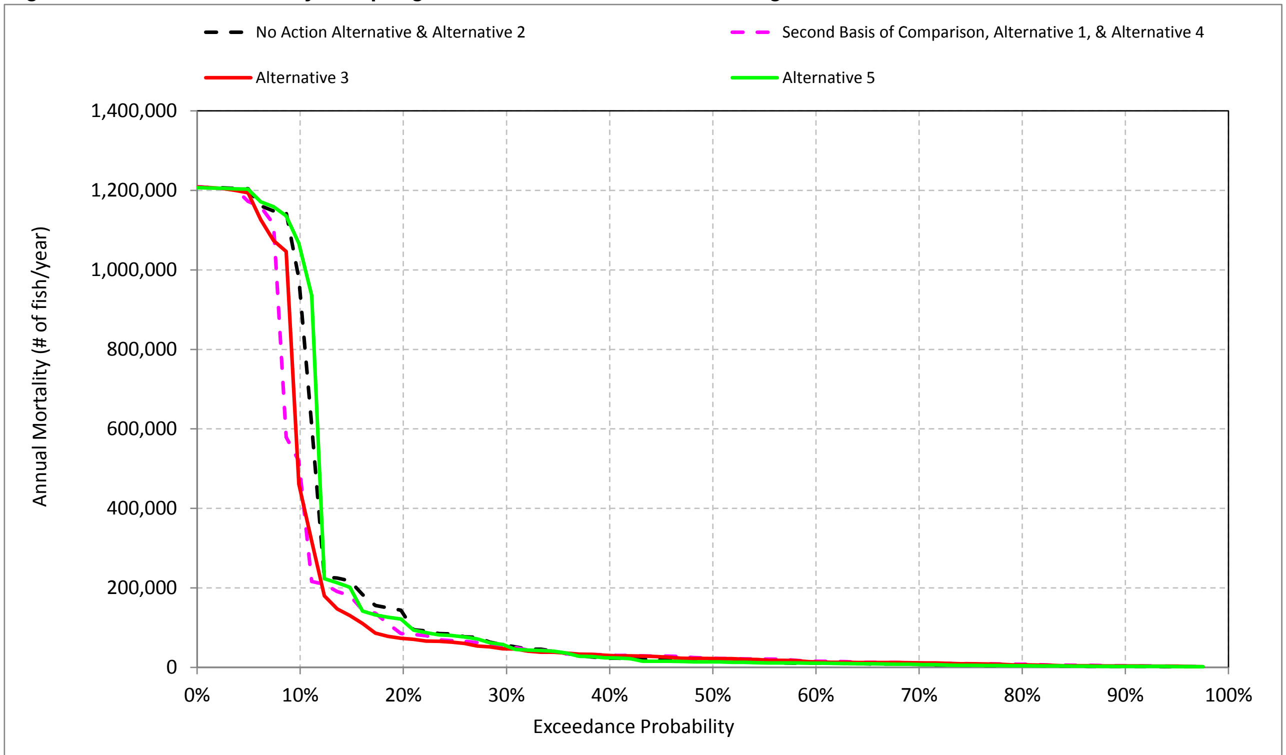
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-6. Annual Mortality for Spring-Run Chinook Salmon - Pre- & Immature Smolts



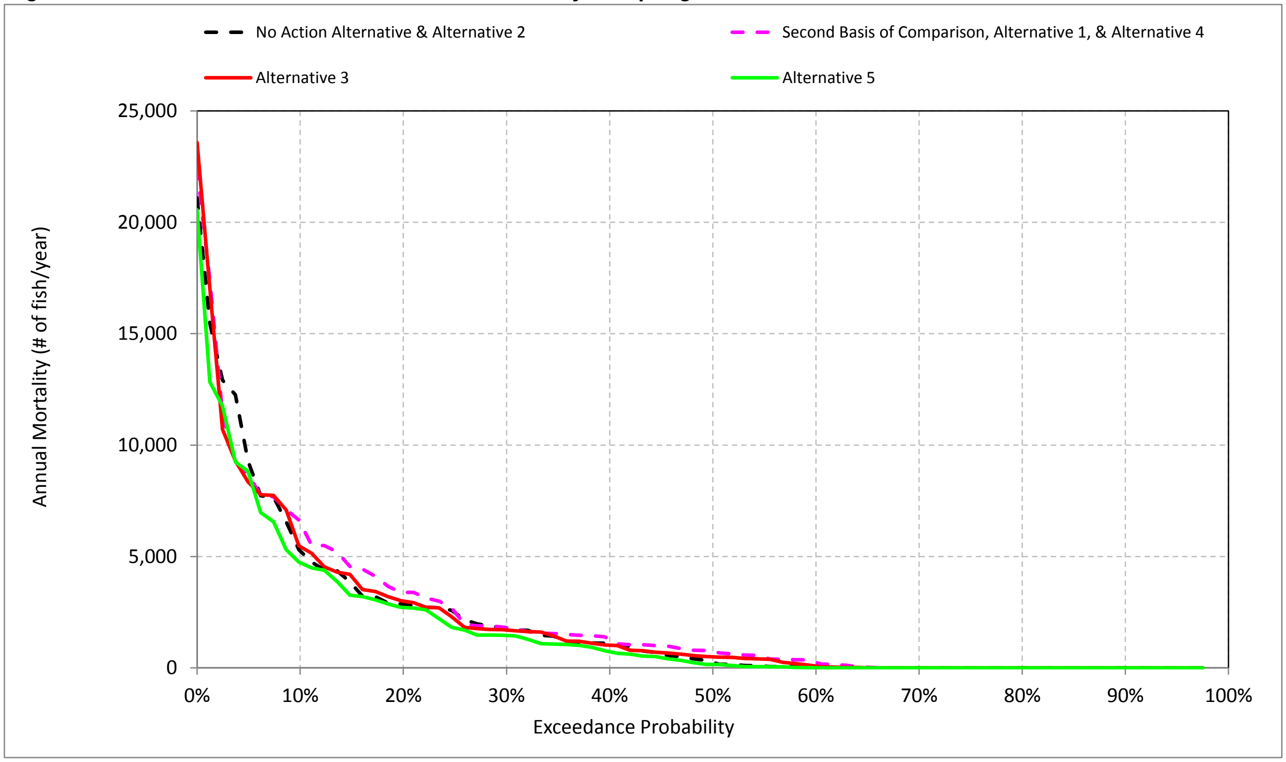
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-7. Annual Mortality for Spring-Run Chinook Salmon - All Lifestages



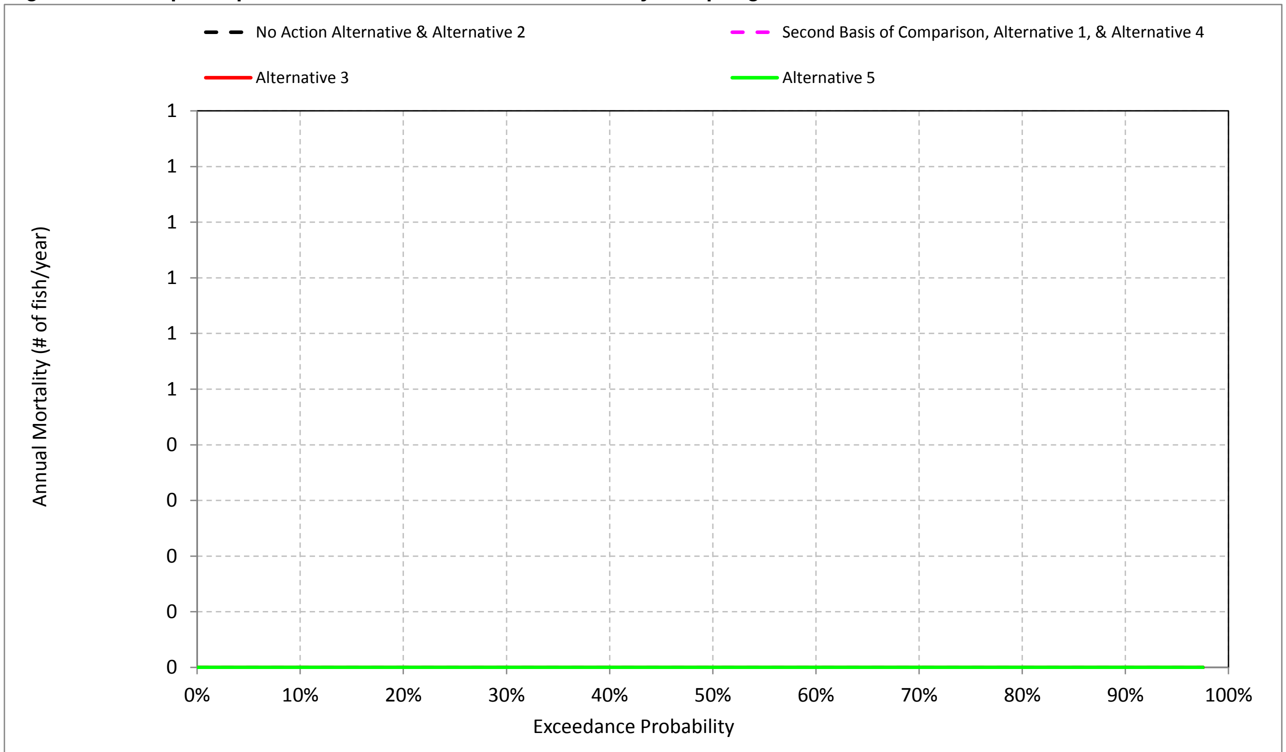
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-8. Incubation - Habitat based Annual Mortality for Spring-Run Chinook Salmon



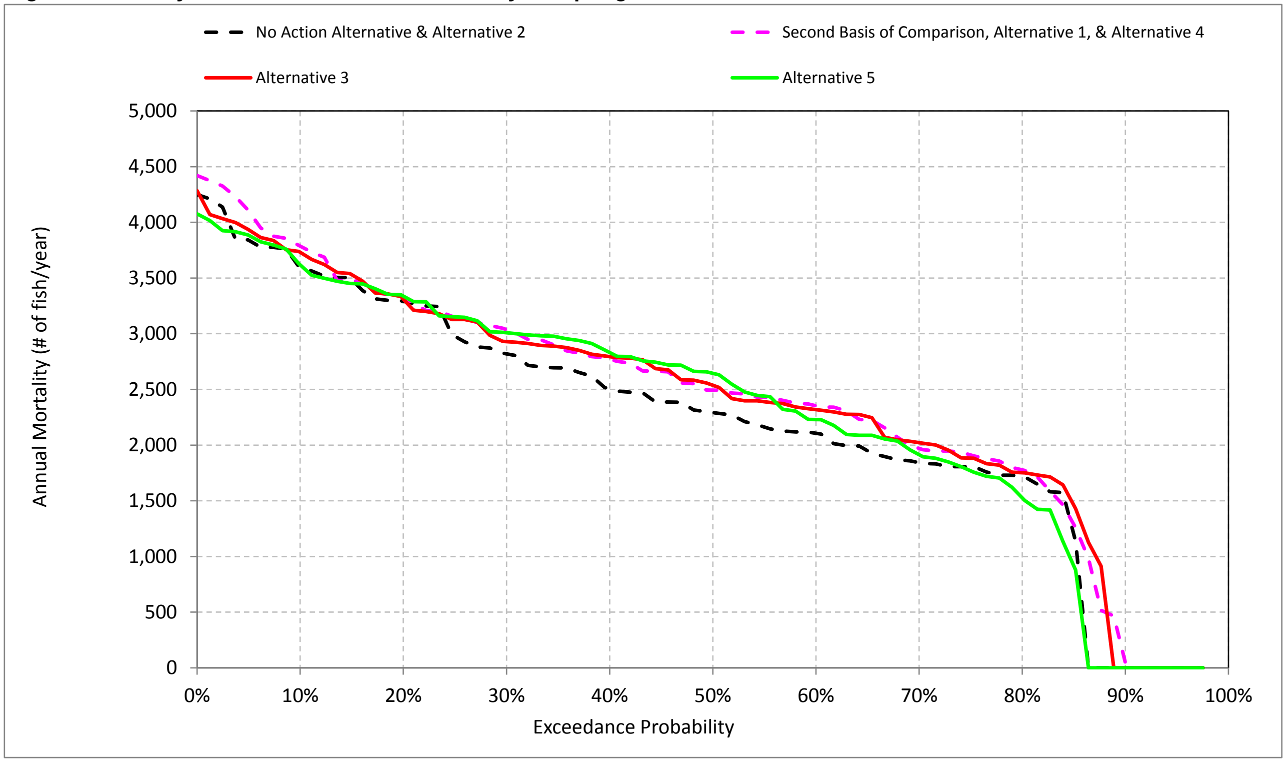
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-9. Super-imposition - Habitat based Annual Mortality for Spring-Run Chinook Salmon



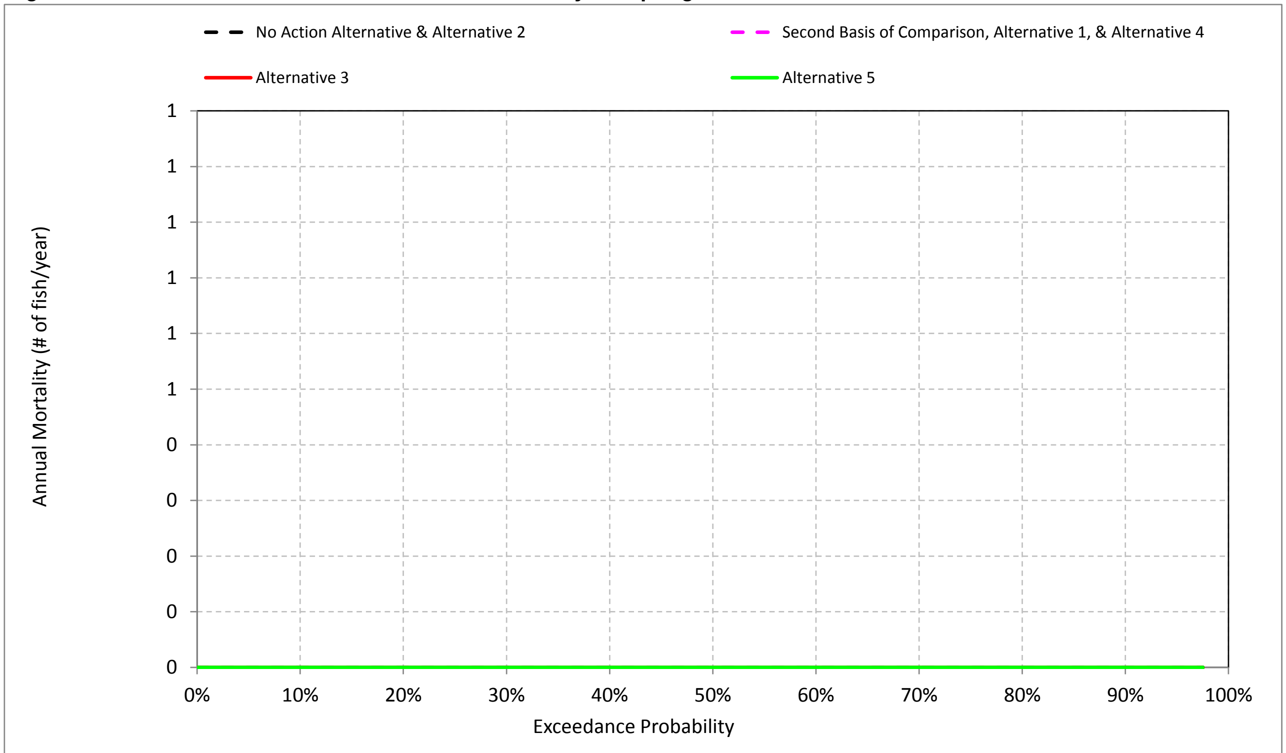
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-10. Fry - Habitat based Annual Mortality for Spring-Run Chinook Salmon



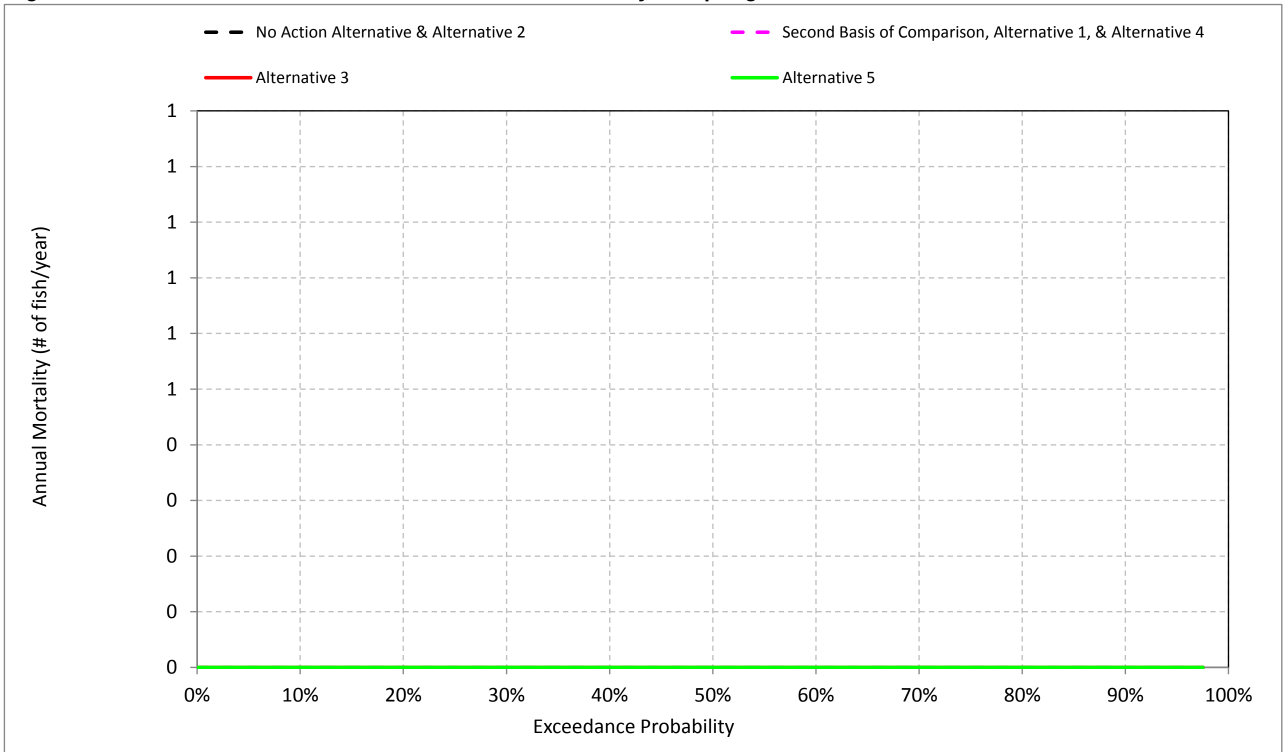
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-11. Pre-smolt - Habitat based Annual Mortality for Spring-Run Chinook Salmon



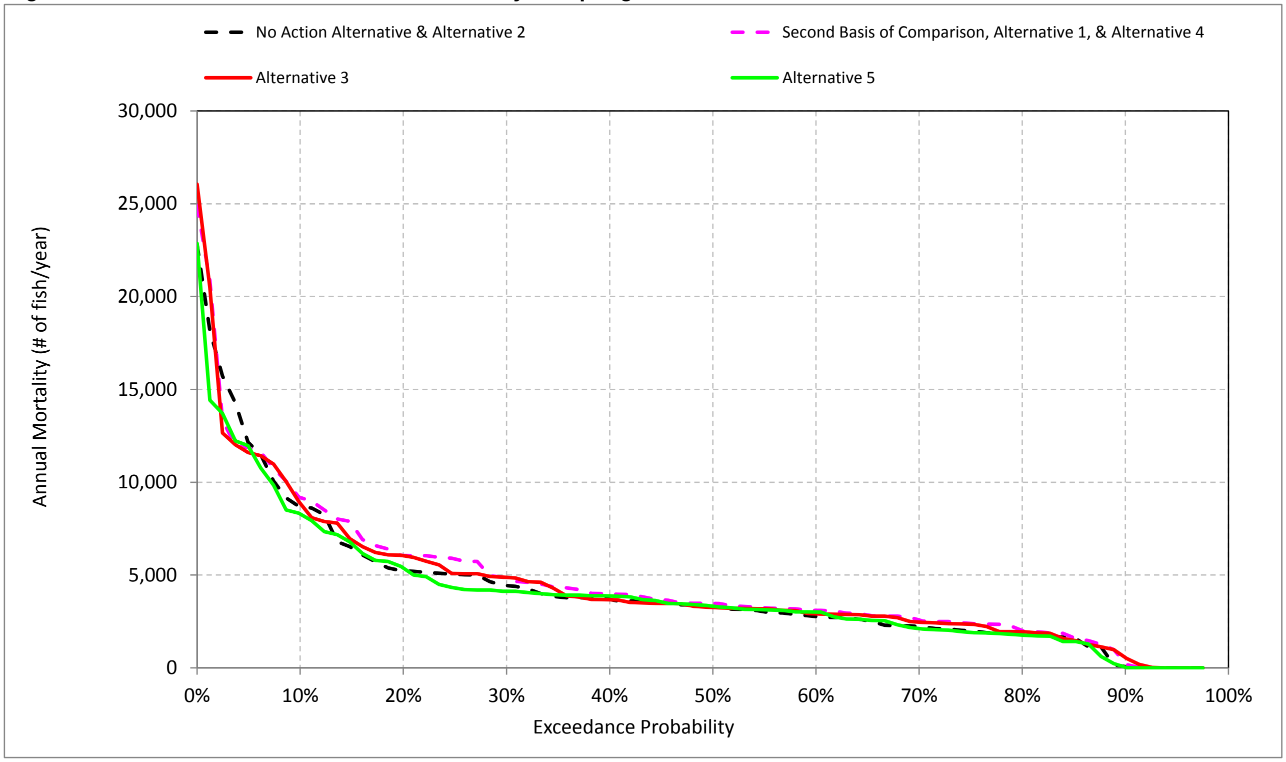
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-12. Immature Smolt - Habitat based Annual Mortality for Spring-Run Chinook Salmon



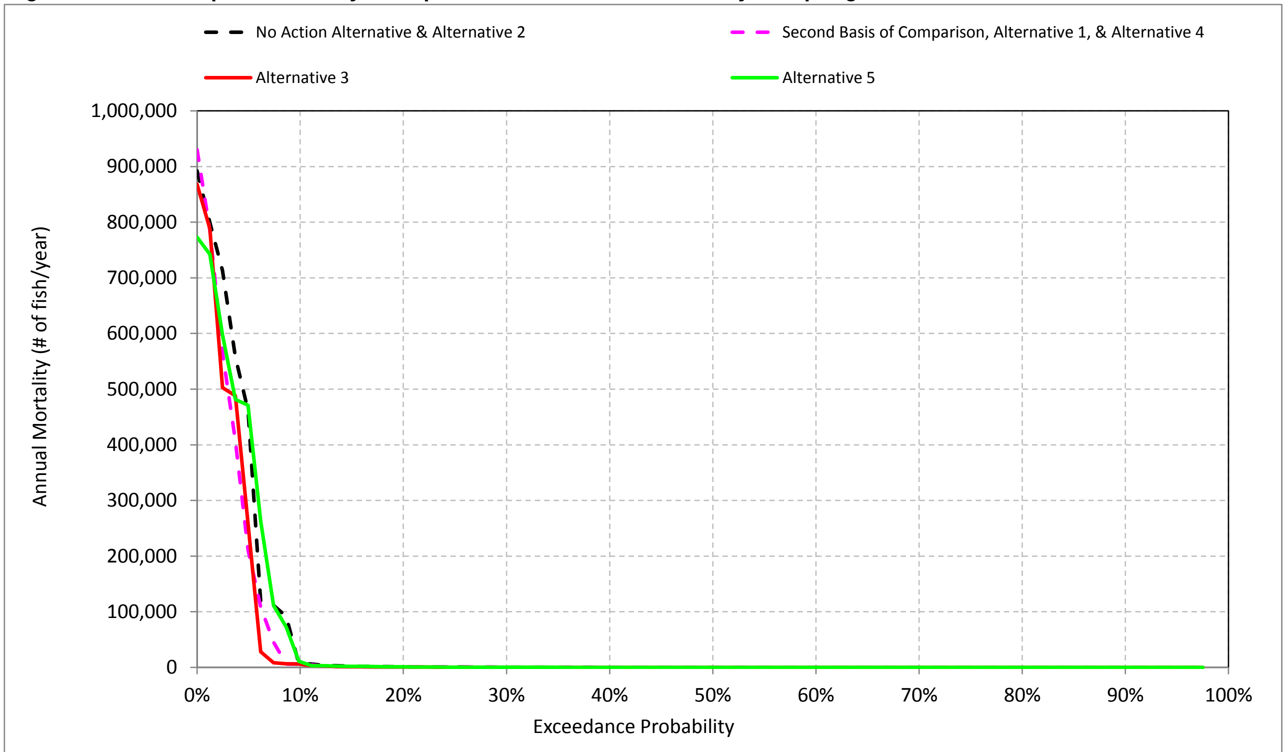
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-13. Total Habitat based Annual Mortality for Spring-Run Chinook Salmon



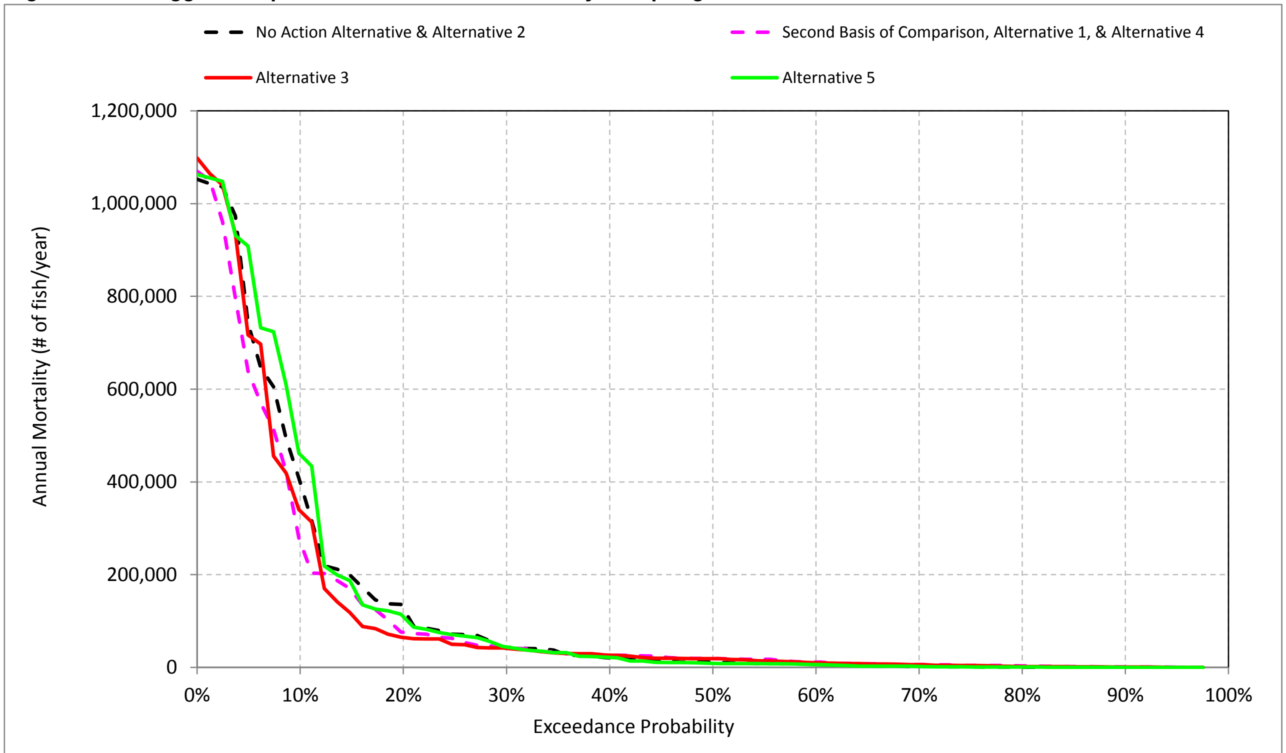
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Spring-Run Chinook Salmon



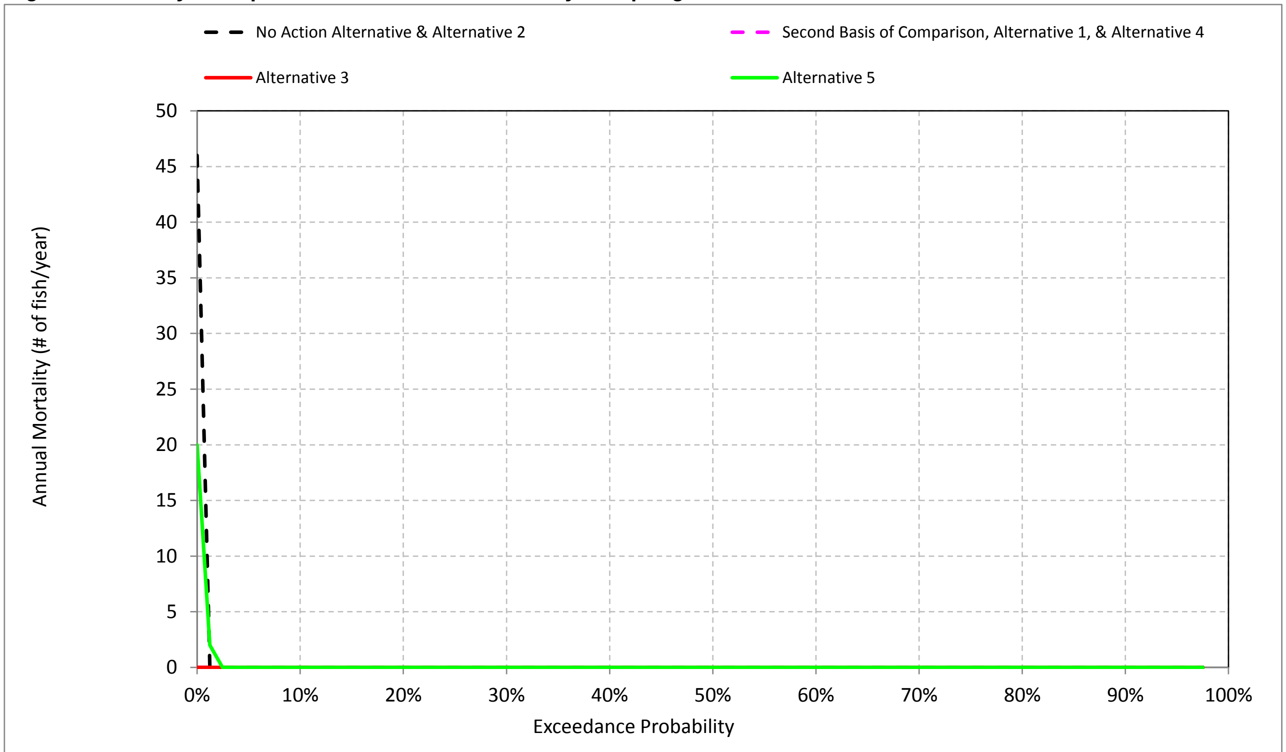
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-15. Eggs - Temperature based Annual Mortality for Spring-Run Chinook Salmon



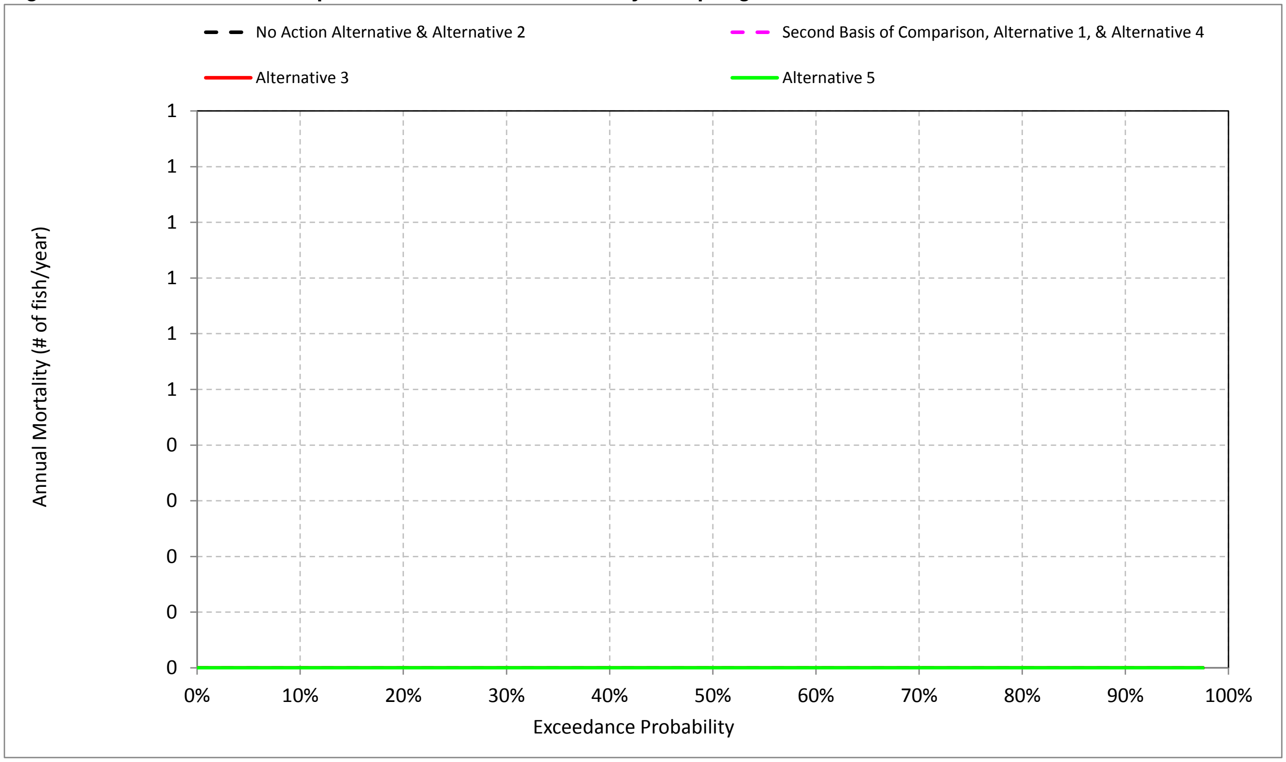
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-16. Fry - Temperature based Annual Mortality for Spring-Run Chinook Salmon



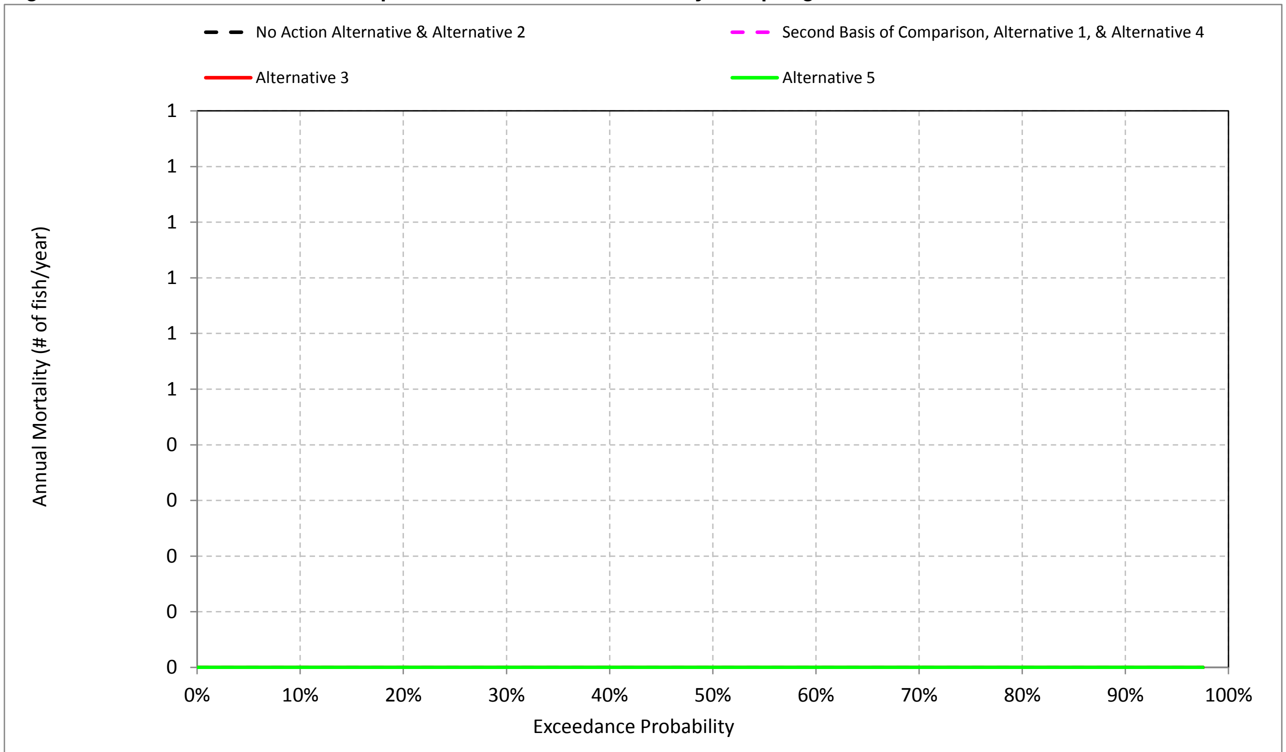
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-17. Pre-smolt - Temperature based Annual Mortality for Spring-Run Chinook Salmon



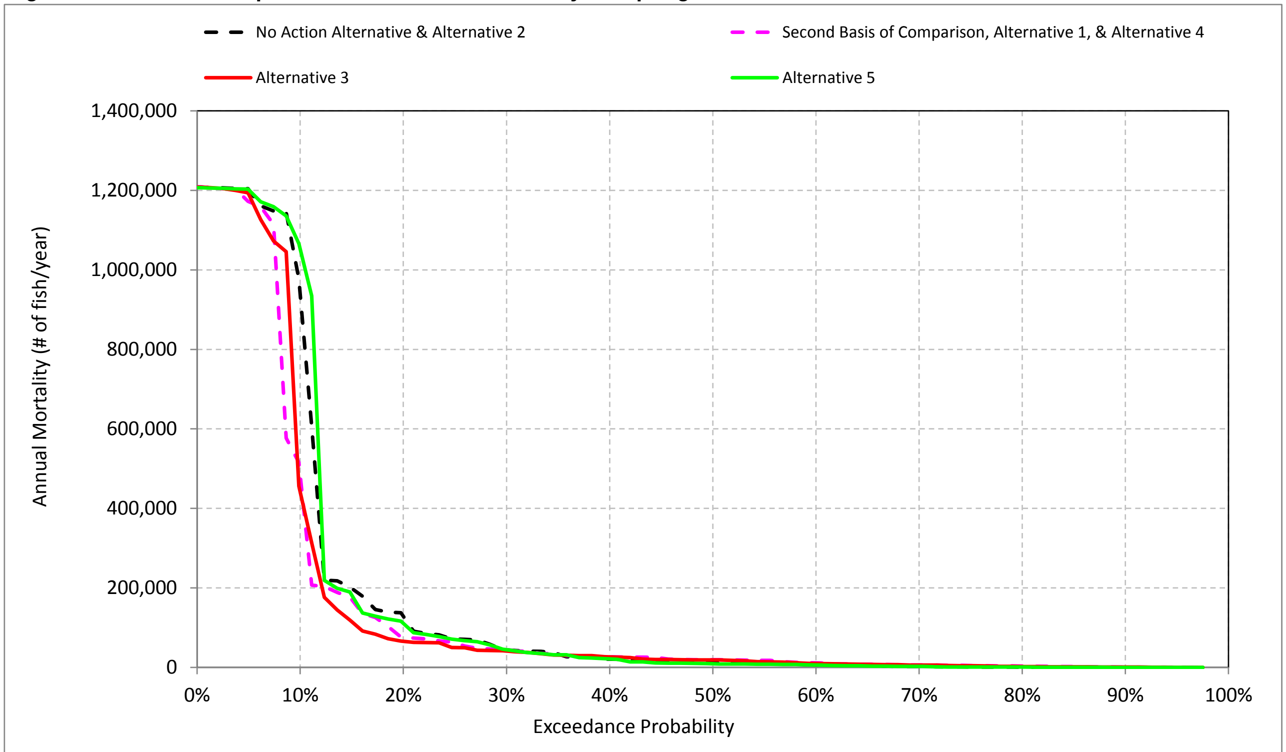
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-18. Immature Smolt - Temperature based Annual Mortality for Spring-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-19. Total Temperature based Annual Mortality for Spring-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-1. Annual Potential Production for Spring-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	402,980
Alternative 1	410,722
Difference	7,742
Percent Difference[3]	2
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	442,676
Alternative 1	449,832
Difference	7,156
Percent Difference	2
Above Normal (12.5%)	
No Action Alternative	362,537
Alternative 1	367,591
Difference	5,054
Percent Difference	1
Below Normal (17.5%)	
No Action Alternative	428,569
Alternative 1	426,491
Difference	-2,078
Percent Difference	0
Dry (22.5%)	
No Action Alternative	405,967
Alternative 1	403,012
Difference	-2,955
Percent Difference	-1
Critical (15%)	
No Action Alternative	316,344
Alternative 1	355,097
Difference	38,753
Percent Difference	12

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-3-2. Annual Mortality by Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	169,230	2,282	0	0	0
Alternative 1	149,155	2,453	0	0	0
Difference	-20,075	171	0	0	0
Percent Difference[3]	-12	7	0	0	0
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	54,929	2,217	0	0	0
Alternative 1	38,874	2,303	0	0	0
Difference	-16,055	86	0	0	0
Percent Difference	-29	4	0	0	0
Above Normal (12.5%)					
No Action Alternative	275,059	1,955	0	0	0
Alternative 1	256,999	2,360	0	0	0
Difference	-18,059	406	0	0	0
Percent Difference	-7	21	0	0	0
Below Normal (17.5%)					
No Action Alternative	108,811	2,619	0	0	0
Alternative 1	110,617	2,763	0	0	0
Difference	1,806	144	0	0	0
Percent Difference	2	5	0	0	0
Dry (22.5%)					
No Action Alternative	170,290	2,608	0	0	0
Alternative 1	175,971	2,682	0	0	0
Difference	5,681	73	0	0	0
Percent Difference	3	3	0	0	0
Critical (15%)					
No Action Alternative	397,589	1,814	0	0	0
Alternative 1	302,962	2,151	0	0	0
Difference	-94,627	337	0	0	0
Percent Difference	-24	19	0	0	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-3-3. Annual Mortality by Cause for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	167,192	4,321	171,512
Alternative 1	146,922	4,686	151,608
Difference	-20,270	366	-19,904
Percent Difference[3]	-12	8	-12
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	53,038	4,108	57,146
Alternative 1	36,709	4,468	41,178
Difference	-16,329	360	-15,969
Percent Difference	-31	9	-28
Above Normal (12.5%)			
No Action Alternative	274,408	2,606	277,013
Alternative 1	256,534	2,826	259,360
Difference	-17,874	221	-17,653
Percent Difference	-7	8	-6
Below Normal (17.5%)			
No Action Alternative	107,177	4,253	111,431
Alternative 1	108,800	4,580	113,380
Difference	1,623	327	1,949
Percent Difference	2	8	2
Dry (22.5%)			
No Action Alternative	167,873	5,025	172,898
Alternative 1	173,420	5,232	178,652
Difference	5,547	207	5,754
Percent Difference	3	4	3
Critical (15%)			
No Action Alternative	394,171	5,232	399,403
Alternative 1	299,101	6,012	305,113
Difference	-95,070	780	-94,290
Percent Difference	-24	15	-24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-4. Annual Mortality by Cause and Life Stage for Spring-Run Chinook Salmon

Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
	Annual Mortality[4] (# of Fish/year)							
Long-term								
Full Simulation Period[1]								
No Action Alternative	47,267	2,039	119,924	1	2,282	0	0	171,512
Alternative 1	38,621	2,233	108,301	0	2,453	0	0	151,608
Difference	-8,646	194	-11,623	-1	172	0	0	-19,904
Percent Difference[3]	-18	10	-10	-100	8	0	0	-12
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	340	1,893	52,697	2	2,215	0	0	57,146
Alternative 1	260	2,165	36,450	0	2,303	0	0	41,178
Difference	-80	272	-16,247	-2	88	0	0	-15,969
Percent Difference	-24	14	-31	-100	4	0	0	-28
Above Normal (12.5%)								
No Action Alternative	151,449	651	122,959	0	1,955	0	0	277,013
Alternative 1	99,868	466	156,666	0	2,360	0	0	259,360
Difference	-51,581	-185	33,707	0	406	0	0	-17,653
Percent Difference	-34	-28	27	0	21	0	0	-6
Below Normal (17.5%)								
No Action Alternative	63,840	1,634	43,337	0	2,619	0	0	111,431
Alternative 1	66,585	1,818	42,215	0	2,763	0	0	113,380
Difference	2,744	183	-1,122	0	144	0	0	1,949
Percent Difference	4	11	-3	0	5	0	0	2
Dry (22.5%)								
No Action Alternative	37,718	2,417	130,155	0	2,608	0	0	172,898
Alternative 1	34,417	2,551	139,003	0	2,682	0	0	178,652
Difference	-3,301	134	8,847	0	73	0	0	5,754
Percent Difference	-9	6	7	0	3	0	0	3
Critical (15%)								
No Action Alternative	57,112	3,419	337,059	0	1,814	0	0	399,403
Alternative 1	44,378	3,862	254,723	0	2,151	0	0	305,113
Difference	-12,734	443	-82,336	0	337	0	0	-94,290
Percent Difference	-22	13	-24	0	19	0	0	-24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-5. Annual Mortality by All Factors for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	47,267	2,039	0	119,924	1	2,282	0	0	0	0	171,512
Alternative 1	38,621	2,233	0	108,301	0	2,453	0	0	0	0	151,608
Difference	-8,646	194	0	-11,623	-1	172	0	0	0	0	-19,904
Percent Difference[3]	-18	10	0	-10	-100	8	0	0	0	0	-12
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	340	1,893	0	52,697	2	2,215	0	0	0	0	57,146
Alternative 1	260	2,165	0	36,450	0	2,303	0	0	0	0	41,178
Difference	-80	272	0	-16,247	-2	88	0	0	0	0	-15,969
Percent Difference	-24	14	0	-31	-100	4	0	0	0	0	-28
Above Normal (12.5%)											
No Action Alternative	151,449	651	0	122,959	0	1,955	0	0	0	0	277,013
Alternative 1	99,868	466	0	156,666	0	2,360	0	0	0	0	259,360
Difference	-51,581	-185	0	33,707	0	406	0	0	0	0	-17,653
Percent Difference	-34	-28	0	27	0	21	0	0	0	0	-6
Below Normal (17.5%)											
No Action Alternative	63,840	1,634	0	43,337	0	2,619	0	0	0	0	111,431
Alternative 1	66,585	1,818	0	42,215	0	2,763	0	0	0	0	113,380
Difference	2,744	183	0	-1,122	0	144	0	0	0	0	1,949
Percent Difference	4	11	0	-3	0	5	0	0	0	0	2
Dry (22.5%)											
No Action Alternative	37,718	2,417	0	130,155	0	2,608	0	0	0	0	172,898
Alternative 1	34,417	2,551	0	139,003	0	2,682	0	0	0	0	178,652
Difference	-3,301	134	0	8,847	0	73	0	0	0	0	5,754
Percent Difference	-9	6	0	7	0	3	0	0	0	0	3
Critical (15%)											
No Action Alternative	57,112	3,419	0	337,059	0	1,814	0	0	0	0	399,403
Alternative 1	44,378	3,862	0	254,723	0	2,151	0	0	0	0	305,113
Difference	-12,734	443	0	-82,336	0	337	0	0	0	0	-94,290
Percent Difference	-22	13	0	-24	0	19	0	0	0	0	-24

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-6. Annual Potential Production for Spring-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	402,980
Alternative 3	409,813
Difference	6,832
Percent Difference[3]	2
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	442,676
Alternative 3	453,743
Difference	11,067
Percent Difference	2
Above Normal (12.5%)	
No Action Alternative	362,537
Alternative 3	368,403
Difference	5,866
Percent Difference	2
Below Normal (17.5%)	
No Action Alternative	428,569
Alternative 3	427,631
Difference	-938
Percent Difference	0
Dry (22.5%)	
No Action Alternative	405,967
Alternative 3	410,542
Difference	4,575
Percent Difference	1
Critical (15%)	
No Action Alternative	316,344
Alternative 3	327,260
Difference	10,915
Percent Difference	3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-3-7. Annual Mortality by Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	169,230	2,282	0	0	0
Alternative 3	150,290	2,435	0	0	0
Difference	-18,940	153	0	0	0
Percent Difference[3]	-11	7	0	0	0
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	54,929	2,217	0	0	0
Alternative 3	29,787	2,271	0	0	0
Difference	-25,142	54	0	0	0
Percent Difference	-46	2	0	0	0
Above Normal (12.5%)					
No Action Alternative	275,059	1,955	0	0	0
Alternative 3	257,573	2,190	0	0	0
Difference	-17,485	236	0	0	0
Percent Difference	-6	12	0	0	0
Below Normal (17.5%)					
No Action Alternative	108,811	2,619	0	0	0
Alternative 3	107,671	2,858	0	0	0
Difference	-1,140	239	0	0	0
Percent Difference	-1	9	0	0	0
Dry (22.5%)					
No Action Alternative	170,290	2,608	0	0	0
Alternative 3	156,331	2,731	0	0	0
Difference	-13,959	123	0	0	0
Percent Difference	-8	5	0	0	0
Critical (15%)					
No Action Alternative	397,589	1,814	0	0	0
Alternative 3	362,639	2,060	0	0	0
Difference	-34,950	247	0	0	0
Percent Difference	-9	14	0	0	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-3-8. Annual Mortality by Cause for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	167,192	4,321	171,512
Alternative 3	148,223	4,502	152,726
Difference	-18,968	182	-18,786
Percent Difference[3]	-11	4	-11
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	53,038	4,108	57,146
Alternative 3	27,591	4,467	32,057
Difference	-25,448	359	-25,089
Percent Difference	-48	9	-44
Above Normal (12.5%)			
No Action Alternative	274,408	2,606	277,013
Alternative 3	257,166	2,597	259,763
Difference	-17,242	-8	-17,250
Percent Difference	-6	0	-6
Below Normal (17.5%)			
No Action Alternative	107,177	4,253	111,431
Alternative 3	105,832	4,697	110,529
Difference	-1,345	444	-901
Percent Difference	-1	10	-1
Dry (22.5%)			
No Action Alternative	167,873	5,025	172,898
Alternative 3	154,048	5,014	159,062
Difference	-13,825	-11	-13,836
Percent Difference	-8	0	-8
Critical (15%)			
No Action Alternative	394,171	5,232	399,403
Alternative 3	359,528	5,172	364,700
Difference	-34,643	-60	-34,703
Percent Difference	-9	-1	-9

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-9. Annual Mortality by Cause and Life Stage for Spring-Run Chinook Salmon

Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
	Annual Mortality[4] (# of Fish/year)							
Long-term								
Full Simulation Period[1]								
No Action Alternative	47,267	2,039	119,924	1	2,282	0	0	171,512
Alternative 3	37,164	2,067	111,060	0	2,435	0	0	152,726
Difference	-10,103	28	-8,864	-1	154	0	0	-18,786
Percent Difference[3]	-21	1	-7	-100	7	0	0	-11
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	340	1,893	52,697	2	2,215	0	0	57,146
Alternative 3	189	2,196	27,402	0	2,271	0	0	32,057
Difference	-151	303	-25,295	-2	56	0	0	-25,089
Percent Difference	-44	16	-48	-100	3	0	0	-44
Above Normal (12.5%)								
No Action Alternative	151,449	651	122,959	0	1,955	0	0	277,013
Alternative 3	104,829	407	152,337	0	2,190	0	0	259,763
Difference	-46,620	-244	29,379	0	236	0	0	-17,250
Percent Difference	-31	-37	24	0	12	0	0	-6
Below Normal (17.5%)								
No Action Alternative	63,840	1,634	43,337	0	2,619	0	0	111,431
Alternative 3	62,085	1,839	43,747	0	2,858	0	0	110,529
Difference	-1,755	205	410	0	239	0	0	-901
Percent Difference	-3	13	1	0	9	0	0	-1
Dry (22.5%)								
No Action Alternative	37,718	2,417	130,155	0	2,608	0	0	172,898
Alternative 3	28,700	2,282	125,348	0	2,731	0	0	159,062
Difference	-9,018	-134	-4,807	0	123	0	0	-13,836
Percent Difference	-24	-6	-4	0	5	0	0	-8
Critical (15%)								
No Action Alternative	57,112	3,419	337,059	0	1,814	0	0	399,403
Alternative 3	44,510	3,112	315,018	0	2,060	0	0	364,700
Difference	-12,602	-307	-22,041	0	247	0	0	-34,703
Percent Difference	-22	-9	-7	0	14	0	0	-9

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-10. Annual Mortality by All Factors for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	47,267	2,039	0	119,924	1	2,282	0	0	0	0	171,512
Alternative 3	37,164	2,067	0	111,060	0	2,435	0	0	0	0	152,726
Difference	-10,103	28	0	-8,864	-1	154	0	0	0	0	-18,786
Percent Difference[3]	-21	1	0	-7	-100	7	0	0	0	0	-11
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	340	1,893	0	52,697	2	2,215	0	0	0	0	57,146
Alternative 3	189	2,196	0	27,402	0	2,271	0	0	0	0	32,057
Difference	-151	303	0	-25,295	-2	56	0	0	0	0	-25,089
Percent Difference	-44	16	0	-48	-100	3	0	0	0	0	-44
Above Normal (12.5%)											
No Action Alternative	151,449	651	0	122,959	0	1,955	0	0	0	0	277,013
Alternative 3	104,829	407	0	152,337	0	2,190	0	0	0	0	259,763
Difference	-46,620	-244	0	29,379	0	236	0	0	0	0	-17,250
Percent Difference	-31	-37	0	24	0	12	0	0	0	0	-6
Below Normal (17.5%)											
No Action Alternative	63,840	1,634	0	43,337	0	2,619	0	0	0	0	111,431
Alternative 3	62,085	1,839	0	43,747	0	2,858	0	0	0	0	110,529
Difference	-1,755	205	0	410	0	239	0	0	0	0	-901
Percent Difference	-3	13	0	1	0	9	0	0	0	0	-1
Dry (22.5%)											
No Action Alternative	37,718	2,417	0	130,155	0	2,608	0	0	0	0	172,898
Alternative 3	28,700	2,282	0	125,348	0	2,731	0	0	0	0	159,062
Difference	-9,018	-134	0	-4,807	0	123	0	0	0	0	-13,836
Percent Difference	-24	-6	0	-4	0	5	0	0	0	0	-8
Critical (15%)											
No Action Alternative	57,112	3,419	0	337,059	0	1,814	0	0	0	0	399,403
Alternative 3	44,510	3,112	0	315,018	0	2,060	0	0	0	0	364,700
Difference	-12,602	-307	0	-22,041	0	247	0	0	0	0	-34,703
Percent Difference	-22	-9	0	-7	0	14	0	0	0	0	-9

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-11. Annual Potential Production for Spring-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	402,980
Alternative 5	401,678
Difference	-1,302
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	442,676
Alternative 5	441,971
Difference	-705
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	362,537
Alternative 5	363,460
Difference	923
Percent Difference	0
Below Normal (17.5%)	
No Action Alternative	428,569
Alternative 5	428,206
Difference	-363
Percent Difference	0
Dry (22.5%)	
No Action Alternative	405,967
Alternative 5	407,290
Difference	1,323
Percent Difference	0
Critical (15%)	
No Action Alternative	316,344
Alternative 5	306,861
Difference	-9,484
Percent Difference	-3

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-3-12. Annual Mortality by Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	169,230	2,282	0	0	0
Alternative 5	171,978	2,371	0	0	0
Difference	2,748	89	0	0	0
Percent Difference[3]	2	4	0	0	0
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	54,929	2,217	0	0	0
Alternative 5	57,192	2,203	0	0	0
Difference	2,263	-14	0	0	0
Percent Difference	4	-1	0	0	0
Above Normal (12.5%)					
No Action Alternative	275,059	1,955	0	0	0
Alternative 5	271,916	1,980	0	0	0
Difference	-3,143	26	0	0	0
Percent Difference	-1	1	0	0	0
Below Normal (17.5%)					
No Action Alternative	108,811	2,619	0	0	0
Alternative 5	108,195	2,925	0	0	0
Difference	-616	306	0	0	0
Percent Difference	-1	12	0	0	0
Dry (22.5%)					
No Action Alternative	170,290	2,608	0	0	0
Alternative 5	166,496	2,666	0	0	0
Difference	-3,794	57	0	0	0
Percent Difference	-2	2	0	0	0
Critical (15%)					
No Action Alternative	397,589	1,814	0	0	0
Alternative 5	420,039	1,972	0	0	0
Difference	22,449	159	0	0	0
Percent Difference	6	9	0	0	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-3-13. Annual Mortality by Cause for Spring-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)		
Analysis Period	**Temperature**	**Flow**	**Total**
	Long-term		
Full Simulation Period[1]			
No Action Alternative	167,192	4,321	171,512
Alternative 5	170,196	4,153	174,349
Difference	3,004	-167	2,837
Percent Difference[3]	2	-4	2
	Water Year Types[2]		
Wet (32.5%)			
No Action Alternative	53,038	4,108	57,146
Alternative 5	55,390	4,005	59,395
Difference	2,351	-103	2,249
Percent Difference	4	-2	4
Above Normal (12.5%)			
No Action Alternative	274,408	2,606	277,013
Alternative 5	271,280	2,616	273,896
Difference	-3,128	11	-3,117
Percent Difference	-1	0	-1
Below Normal (17.5%)			
No Action Alternative	107,177	4,253	111,431
Alternative 5	106,681	4,439	111,120
Difference	-496	186	-310
Percent Difference	0	4	0
Dry (22.5%)			
No Action Alternative	167,873	5,025	172,898
Alternative 5	164,607	4,554	169,161
Difference	-3,266	-471	-3,737
Percent Difference	-2	-9	-2
Critical (15%)			
No Action Alternative	394,171	5,232	399,403
Alternative 5	417,191	4,820	422,011
Difference	23,020	-412	22,608
Percent Difference	6	-8	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-14. Annual Mortality by Cause and Life Stage for Spring-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)							
Analysis Period	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	47,267	2,039	119,924	1	2,282	0	0	171,512
Alternative 5	44,327	1,783	125,868	0	2,371	0	0	174,349
Difference	-2,940	-256	5,944	0	89	0	0	2,837
Percent Difference[3]	-6	-13	5	-52	4	0	0	2
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	340	1,893	52,697	2	2,215	0	0	57,146
Alternative 5	608	1,803	54,781	1	2,203	0	0	59,395
Difference	268	-90	2,084	-1	-13	0	0	2,249
Percent Difference	79	-5	4	-57	-1	0	0	4
Above Normal (12.5%)								
No Action Alternative	151,449	651	122,959	0	1,955	0	0	277,013
Alternative 5	125,685	636	145,595	0	1,980	0	0	273,896
Difference	-25,764	-15	22,636	0	26	0	0	-3,117
Percent Difference	-17	-2	18	0	1	0	0	-1
Below Normal (17.5%)								
No Action Alternative	63,840	1,634	43,337	0	2,619	0	0	111,431
Alternative 5	53,122	1,514	53,559	0	2,925	0	0	111,120
Difference	-10,718	-120	10,222	0	306	0	0	-310
Percent Difference	-17	-7	24	0	12	0	0	0
Dry (22.5%)								
No Action Alternative	37,718	2,417	130,155	0	2,608	0	0	172,898
Alternative 5	37,450	1,889	127,157	0	2,666	0	0	169,161
Difference	-268	-528	-2,998	0	57	0	0	-3,737
Percent Difference	-1	-22	-2	0	2	0	0	-2
Critical (15%)								
No Action Alternative	57,112	3,419	337,059	0	1,814	0	0	399,403
Alternative 5	71,310	2,848	345,881	0	1,972	0	0	422,011
Difference	14,198	-571	8,822	0	158	0	0	22,608
Percent Difference	25	-17	3	0	9	0	0	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-15. Annual Mortality by All Factors for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	47,267	2,039	0	119,924	1	2,282	0	0	0	0	171,512
Alternative 5	44,327	1,783	0	125,868	0	2,371	0	0	0	0	174,349
Difference	-2,940	-256	0	5,944	0	89	0	0	0	0	2,837
Percent Difference[3]	-6	-13	0	5	-52	4	0	0	0	0	2
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	340	1,893	0	52,697	2	2,215	0	0	0	0	57,146
Alternative 5	608	1,803	0	54,781	1	2,203	0	0	0	0	59,395
Difference	268	-90	0	2,084	-1	-13	0	0	0	0	2,249
Percent Difference	79	-5	0	4	-57	-1	0	0	0	0	4
Above Normal (12.5%)											
No Action Alternative	151,449	651	0	122,959	0	1,955	0	0	0	0	277,013
Alternative 5	125,685	636	0	145,595	0	1,980	0	0	0	0	273,896
Difference	-25,764	-15	0	22,636	0	26	0	0	0	0	-3,117
Percent Difference	-17	-2	0	18	0	1	0	0	0	0	-1
Below Normal (17.5%)											
No Action Alternative	63,840	1,634	0	43,337	0	2,619	0	0	0	0	111,431
Alternative 5	53,122	1,514	0	53,559	0	2,925	0	0	0	0	111,120
Difference	-10,718	-120	0	10,222	0	306	0	0	0	0	-310
Percent Difference	-17	-7	0	24	0	12	0	0	0	0	0
Dry (22.5%)											
No Action Alternative	37,718	2,417	0	130,155	0	2,608	0	0	0	0	172,898
Alternative 5	37,450	1,889	0	127,157	0	2,666	0	0	0	0	169,161
Difference	-268	-528	0	-2,998	0	57	0	0	0	0	-3,737
Percent Difference	-1	-22	0	-2	0	2	0	0	0	0	-2
Critical (15%)											
No Action Alternative	57,112	3,419	0	337,059	0	1,814	0	0	0	0	399,403
Alternative 5	71,310	2,848	0	345,881	0	1,972	0	0	0	0	422,011
Difference	14,198	-571	0	8,822	0	158	0	0	0	0	22,608
Percent Difference	25	-17	0	3	0	9	0	0	0	0	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-16. Annual Potential Production for Spring-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	410,722
No Action Alternative	402,980
Difference	-7,742
Percent Difference[3]	-2
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	449,832
No Action Alternative	442,676
Difference	-7,156
Percent Difference	-2
Above Normal (12.5%)	
Second Basis of Comparison	367,591
No Action Alternative	362,537
Difference	-5,054
Percent Difference	-1
Below Normal (17.5%)	
Second Basis of Comparison	426,491
No Action Alternative	428,569
Difference	2,078
Percent Difference	0
Dry (22.5%)	
Second Basis of Comparison	403,012
No Action Alternative	405,967
Difference	2,955
Percent Difference	1
Critical (15%)	
Second Basis of Comparison	355,097
No Action Alternative	316,344
Difference	-38,753
Percent Difference	-11

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-3-17. Annual Mortality by Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	149,155	2,453	0	0	0
No Action Alternative	169,230	2,282	0	0	0
Difference	20,075	-171	0	0	0
Percent Difference[3]	13	-7	0	0	0
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	38,874	2,303	0	0	0
No Action Alternative	54,929	2,217	0	0	0
Difference	16,055	-86	0	0	0
Percent Difference	41	-4	0	0	0
Above Normal (12.5%)					
Second Basis of Comparison	256,999	2,360	0	0	0
No Action Alternative	275,059	1,955	0	0	0
Difference	18,059	-406	0	0	0
Percent Difference	7	-17	0	0	0
Below Normal (17.5%)					
Second Basis of Comparison	110,617	2,763	0	0	0
No Action Alternative	108,811	2,619	0	0	0
Difference	-1,806	-144	0	0	0
Percent Difference	-2	-5	0	0	0
Dry (22.5%)					
Second Basis of Comparison	175,971	2,682	0	0	0
No Action Alternative	170,290	2,608	0	0	0
Difference	-5,681	-73	0	0	0
Percent Difference	-3	-3	0	0	0
Critical (15%)					
Second Basis of Comparison	302,962	2,151	0	0	0
No Action Alternative	397,589	1,814	0	0	0
Difference	94,627	-337	0	0	0
Percent Difference	31	-16	0	0	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-3-18. Annual Mortality by Cause for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	146,922	4,686	151,608
No Action Alternative	167,192	4,321	171,512
Difference	20,270	-366	19,904
Percent Difference[3]	14	-8	13
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	36,709	4,468	41,178
No Action Alternative	53,038	4,108	57,146
Difference	16,329	-360	15,969
Percent Difference	44	-8	39
Above Normal (12.5%)			
Second Basis of Comparison	256,534	2,826	259,360
No Action Alternative	274,408	2,606	277,013
Difference	17,874	-221	17,653
Percent Difference	7	-8	7
Below Normal (17.5%)			
Second Basis of Comparison	108,800	4,580	113,380
No Action Alternative	107,177	4,253	111,431
Difference	-1,623	-327	-1,949
Percent Difference	-1	-7	-2
Dry (22.5%)			
Second Basis of Comparison	173,420	5,232	178,652
No Action Alternative	167,873	5,025	172,898
Difference	-5,547	-207	-5,754
Percent Difference	-3	-4	-3
Critical (15%)			
Second Basis of Comparison	299,101	6,012	305,113
No Action Alternative	394,171	5,232	399,403
Difference	95,070	-780	94,290
Percent Difference	32	-13	31

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-19. Annual Mortality by Cause and Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	38,621	2,233	108,301	0	2,453	0	0	151,608
No Action Alternative	47,267	2,039	119,924	1	2,282	0	0	171,512
Difference	8,646	-194	11,623	1	-172	0	0	19,904
Percent Difference[3]	22	-9	11	0	-7	0	0	13
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	260	2,165	36,450	0	2,303	0	0	41,178
No Action Alternative	340	1,893	52,697	2	2,215	0	0	57,146
Difference	80	-272	16,247	2	-88	0	0	15,969
Percent Difference	31	-13	45	0	-4	0	0	39
Above Normal (12.5%)								
Second Basis of Comparison	99,868	466	156,666	0	2,360	0	0	259,360
No Action Alternative	151,449	651	122,959	0	1,955	0	0	277,013
Difference	51,581	185	-33,707	0	-406	0	0	17,653
Percent Difference	52	40	-22	0	-17	0	0	7
Below Normal (17.5%)								
Second Basis of Comparison	66,585	1,818	42,215	0	2,763	0	0	113,380
No Action Alternative	63,840	1,634	43,337	0	2,619	0	0	111,431
Difference	-2,744	-183	1,122	0	-144	0	0	-1,949
Percent Difference	-4	-10	3	0	-5	0	0	-2
Dry (22.5%)								
Second Basis of Comparison	34,417	2,551	139,003	0	2,682	0	0	178,652
No Action Alternative	37,718	2,417	130,155	0	2,608	0	0	172,898
Difference	3,301	-134	-8,847	0	-73	0	0	-5,754
Percent Difference	10	-5	-6	0	-3	0	0	-3
Critical (15%)								
Second Basis of Comparison	44,378	3,862	254,723	0	2,151	0	0	305,113
No Action Alternative	57,112	3,419	337,059	0	1,814	0	0	399,403
Difference	12,734	-443	82,336	0	-337	0	0	94,290
Percent Difference	29	-11	32	0	-16	0	0	31

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-20. Annual Mortality by All Factors for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	38,621	2,233	0	108,301	0	2,453	0	0	0	0	151,608
No Action Alternative	47,267	2,039	0	119,924	1	2,282	0	0	0	0	171,512
Difference	8,646	-194	0	11,623	1	-172	0	0	0	0	19,904
Percent Difference[3]	22	-9	0	11	0	-7	0	0	0	0	13
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	260	2,165	0	36,450	0	2,303	0	0	0	0	41,178
No Action Alternative	340	1,893	0	52,697	2	2,215	0	0	0	0	57,146
Difference	80	-272	0	16,247	2	-88	0	0	0	0	15,969
Percent Difference	31	-13	0	45	0	-4	0	0	0	0	39
Above Normal (12.5%)											
Second Basis of Comparison	99,868	466	0	156,666	0	2,360	0	0	0	0	259,360
No Action Alternative	151,449	651	0	122,959	0	1,955	0	0	0	0	277,013
Difference	51,581	185	0	-33,707	0	-406	0	0	0	0	17,653
Percent Difference	52	40	0	-22	0	-17	0	0	0	0	7
Below Normal (17.5%)											
Second Basis of Comparison	66,585	1,818	0	42,215	0	2,763	0	0	0	0	113,380
No Action Alternative	63,840	1,634	0	43,337	0	2,619	0	0	0	0	111,431
Difference	-2,744	-183	0	1,122	0	-144	0	0	0	0	-1,949
Percent Difference	-4	-10	0	3	0	-5	0	0	0	0	-2
Dry (22.5%)											
Second Basis of Comparison	34,417	2,551	0	139,003	0	2,682	0	0	0	0	178,652
No Action Alternative	37,718	2,417	0	130,155	0	2,608	0	0	0	0	172,898
Difference	3,301	-134	0	-8,847	0	-73	0	0	0	0	-5,754
Percent Difference	10	-5	0	-6	0	-3	0	0	0	0	-3
Critical (15%)											
Second Basis of Comparison	44,378	3,862	0	254,723	0	2,151	0	0	0	0	305,113
No Action Alternative	57,112	3,419	0	337,059	0	1,814	0	0	0	0	399,403
Difference	12,734	-443	0	82,336	0	-337	0	0	0	0	94,290
Percent Difference	29	-11	0	32	0	-16	0	0	0	0	31

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-21. Annual Potential Production for Spring-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	410,722
Alternative 3	409,813
Difference	-909
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	449,832
Alternative 3	453,743
Difference	3,911
Percent Difference	1
Above Normal (12.5%)	
Second Basis of Comparison	367,591
Alternative 3	368,403
Difference	812
Percent Difference	0
Below Normal (17.5%)	
Second Basis of Comparison	426,491
Alternative 3	427,631
Difference	1,140
Percent Difference	0
Dry (22.5%)	
Second Basis of Comparison	403,012
Alternative 3	410,542
Difference	7,530
Percent Difference	2
Critical (15%)	
Second Basis of Comparison	355,097
Alternative 3	327,260
Difference	-27,838
Percent Difference	-8

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-3-22. Annual Mortality by Life Stage for Spring-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)				
Analysis Period	Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	149,155	2,453	0	0	0
Alternative 3	150,290	2,435	0	0	0
Difference	1,135	-18	0	0	0
Percent Difference[3]	1	-1	0	0	0
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	38,874	2,303	0	0	0
Alternative 3	29,787	2,271	0	0	0
Difference	-9,087	-33	0	0	0
Percent Difference	-23	-1	0	0	0
Above Normal (12.5%)					
Second Basis of Comparison	256,999	2,360	0	0	0
Alternative 3	257,573	2,190	0	0	0
Difference	574	-170	0	0	0
Percent Difference	0	-7	0	0	0
Below Normal (17.5%)					
Second Basis of Comparison	110,617	2,763	0	0	0
Alternative 3	107,671	2,858	0	0	0
Difference	-2,946	95	0	0	0
Percent Difference	-3	3	0	0	0
Dry (22.5%)					
Second Basis of Comparison	175,971	2,682	0	0	0
Alternative 3	156,331	2,731	0	0	0
Difference	-19,640	50	0	0	0
Percent Difference	-11	2	0	0	0
Critical (15%)					
Second Basis of Comparison	302,962	2,151	0	0	0
Alternative 3	362,639	2,060	0	0	0
Difference	59,677	-90	0	0	0
Percent Difference	20	-4	0	0	0

1 Based on the 80-year simulation period
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average
4 Mortality values do not include base mortality
5 Eggs mortality includes pre-spawn mortality

Table B-3-23. Annual Mortality by Cause for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	146,922	4,686	151,608
Alternative 3	148,223	4,502	152,726
Difference	1,302	-184	1,118
Percent Difference[3]	1	-4	1
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	36,709	4,468	41,178
Alternative 3	27,591	4,467	32,057
Difference	-9,119	-1	-9,120
Percent Difference	-25	0	-22
Above Normal (12.5%)			
Second Basis of Comparison	256,534	2,826	259,360
Alternative 3	257,166	2,597	259,763
Difference	632	-229	404
Percent Difference	0	-8	0
Below Normal (17.5%)			
Second Basis of Comparison	108,800	4,580	113,380
Alternative 3	105,832	4,697	110,529
Difference	-2,968	117	-2,851
Percent Difference	-3	3	-3
Dry (22.5%)			
Second Basis of Comparison	173,420	5,232	178,652
Alternative 3	154,048	5,014	159,062
Difference	-19,372	-219	-19,590
Percent Difference	-11	-4	-11
Critical (15%)			
Second Basis of Comparison	299,101	6,012	305,113
Alternative 3	359,528	5,172	364,700
Difference	60,427	-840	59,587
Percent Difference	20	-14	20

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-24. Annual Mortality by Cause and Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	38,621	2,233	108,301	0	2,453	0	0	151,608
Alternative 3	37,164	2,067	111,060	0	2,435	0	0	152,726
Difference	-1,457	-166	2,759	0	-18	0	0	1,118
Percent Difference[3]	-4	-7	3	0	-1	0	0	1
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	260	2,165	36,450	0	2,303	0	0	41,178
Alternative 3	189	2,196	27,402	0	2,271	0	0	32,057
Difference	-71	31	-9,047	0	-33	0	0	-9,120
Percent Difference	-27	1	-25	0	-1	0	0	-22
Above Normal (12.5%)								
Second Basis of Comparison	99,868	466	156,666	0	2,360	0	0	259,360
Alternative 3	104,829	407	152,337	0	2,190	0	0	259,763
Difference	4,961	-59	-4,329	0	-170	0	0	404
Percent Difference	5	-13	-3	0	-7	0	0	0
Below Normal (17.5%)								
Second Basis of Comparison	66,585	1,818	42,215	0	2,763	0	0	113,380
Alternative 3	62,085	1,839	43,747	0	2,858	0	0	110,529
Difference	-4,500	22	1,532	0	95	0	0	-2,851
Percent Difference	-7	1	4	0	3	0	0	-3
Dry (22.5%)								
Second Basis of Comparison	34,417	2,551	139,003	0	2,682	0	0	178,652
Alternative 3	28,700	2,282	125,348	0	2,731	0	0	159,062
Difference	-5,717	-269	-13,654	0	50	0	0	-19,590
Percent Difference	-17	-11	-10	0	2	0	0	-11
Critical (15%)								
Second Basis of Comparison	44,378	3,862	254,723	0	2,151	0	0	305,113
Alternative 3	44,510	3,112	315,018	0	2,060	0	0	364,700
Difference	132	-750	60,295	0	-90	0	0	59,587
Percent Difference	0	-19	24	0	-4	0	0	20

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-25. Annual Mortality by All Factors for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	38,621	2,233	0	108,301	0	2,453	0	0	0	0	151,608
Alternative 3	37,164	2,067	0	111,060	0	2,435	0	0	0	0	152,726
Difference	-1,457	-166	0	2,759	0	-18	0	0	0	0	1,118
Percent Difference[3]	-4	-7	0	3	0	-1	0	0	0	0	1
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	260	2,165	0	36,450	0	2,303	0	0	0	0	41,178
Alternative 3	189	2,196	0	27,402	0	2,271	0	0	0	0	32,057
Difference	-71	31	0	-9,047	0	-33	0	0	0	0	-9,120
Percent Difference	-27	1	0	-25	0	-1	0	0	0	0	-22
Above Normal (12.5%)											
Second Basis of Comparison	99,868	466	0	156,666	0	2,360	0	0	0	0	259,360
Alternative 3	104,829	407	0	152,337	0	2,190	0	0	0	0	259,763
Difference	4,961	-59	0	-4,329	0	-170	0	0	0	0	404
Percent Difference	5	-13	0	-3	0	-7	0	0	0	0	0
Below Normal (17.5%)											
Second Basis of Comparison	66,585	1,818	0	42,215	0	2,763	0	0	0	0	113,380
Alternative 3	62,085	1,839	0	43,747	0	2,858	0	0	0	0	110,529
Difference	-4,500	22	0	1,532	0	95	0	0	0	0	-2,851
Percent Difference	-7	1	0	4	0	3	0	0	0	0	-3
Dry (22.5%)											
Second Basis of Comparison	34,417	2,551	0	139,003	0	2,682	0	0	0	0	178,652
Alternative 3	28,700	2,282	0	125,348	0	2,731	0	0	0	0	159,062
Difference	-5,717	-269	0	-13,654	0	50	0	0	0	0	-19,590
Percent Difference	-17	-11	0	-10	0	2	0	0	0	0	-11
Critical (15%)											
Second Basis of Comparison	44,378	3,862	0	254,723	0	2,151	0	0	0	0	305,113
Alternative 3	44,510	3,112	0	315,018	0	2,060	0	0	0	0	364,700
Difference	132	-750	0	60,295	0	-90	0	0	0	0	59,587
Percent Difference	0	-19	0	24	0	-4	0	0	0	0	20

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-26. Annual Potential Production for Spring-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	410,722
Alternative 5	401,678
Difference	-9,044
Percent Difference[3]	-2
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	449,832
Alternative 5	441,971
Difference	-7,862
Percent Difference	-2
Above Normal (12.5%)	
Second Basis of Comparison	367,591
Alternative 5	363,460
Difference	-4,131
Percent Difference	-1
Below Normal (17.5%)	
Second Basis of Comparison	426,491
Alternative 5	428,206
Difference	1,716
Percent Difference	0
Dry (22.5%)	
Second Basis of Comparison	403,012
Alternative 5	407,290
Difference	4,278
Percent Difference	1
Critical (15%)	
Second Basis of Comparison	355,097
Alternative 5	306,861
Difference	-48,237
Percent Difference	-14

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-3-27. Annual Mortality by Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	149,155	2,453	0	0	0
Alternative 5	171,978	2,371	0	0	0
Difference	22,823	-82	0	0	0
Percent Difference[3]	15	-3	0	0	0
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	38,874	2,303	0	0	0
Alternative 5	57,192	2,203	0	0	0
Difference	18,318	-100	0	0	0
Percent Difference	47	-4	0	0	0
Above Normal (12.5%)					
Second Basis of Comparison	256,999	2,360	0	0	0
Alternative 5	271,916	1,980	0	0	0
Difference	14,917	-380	0	0	0
Percent Difference	6	-16	0	0	0
Below Normal (17.5%)					
Second Basis of Comparison	110,617	2,763	0	0	0
Alternative 5	108,195	2,925	0	0	0
Difference	-2,422	163	0	0	0
Percent Difference	-2	6	0	0	0
Dry (22.5%)					
Second Basis of Comparison	175,971	2,682	0	0	0
Alternative 5	166,496	2,666	0	0	0
Difference	-9,475	-16	0	0	0
Percent Difference	-5	-1	0	0	0
Critical (15%)					
Second Basis of Comparison	302,962	2,151	0	0	0
Alternative 5	420,039	1,972	0	0	0
Difference	117,076	-179	0	0	0
Percent Difference	39	-8	0	0	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-3-28. Annual Mortality by Cause for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	146,922	4,686	151,608
Alternative 5	170,196	4,153	174,349
Difference	23,274	-533	22,742
Percent Difference[3]	16	-11	15
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	36,709	4,468	41,178
Alternative 5	55,390	4,005	59,395
Difference	18,680	-463	18,217
Percent Difference	51	-10	44
Above Normal (12.5%)			
Second Basis of Comparison	256,534	2,826	259,360
Alternative 5	271,280	2,616	273,896
Difference	14,746	-210	14,536
Percent Difference	6	-7	6
Below Normal (17.5%)			
Second Basis of Comparison	108,800	4,580	113,380
Alternative 5	106,681	4,439	111,120
Difference	-2,119	-141	-2,260
Percent Difference	-2	-3	-2
Dry (22.5%)			
Second Basis of Comparison	173,420	5,232	178,652
Alternative 5	164,607	4,554	169,161
Difference	-8,813	-678	-9,491
Percent Difference	-5	-13	-5
Critical (15%)			
Second Basis of Comparison	299,101	6,012	305,113
Alternative 5	417,191	4,820	422,011
Difference	118,090	-1,192	116,898
Percent Difference	39	-20	38

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-29. Annual Mortality by Cause and Life Stage for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	38,621	2,233	108,301	0	2,453	0	0	151,608
Alternative 5	44,327	1,783	125,868	0	2,371	0	0	174,349
Difference	5,706	-450	17,567	0	-82	0	0	22,742
Percent Difference[3]	15	-20	16	0	-3	0	0	15
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	260	2,165	36,450	0	2,303	0	0	41,178
Alternative 5	608	1,803	54,781	1	2,203	0	0	59,395
Difference	348	-362	18,331	1	-101	0	0	18,217
Percent Difference	134	-17	50	0	-4	0	0	44
Above Normal (12.5%)								
Second Basis of Comparison	99,868	466	156,666	0	2,360	0	0	259,360
Alternative 5	125,685	636	145,595	0	1,980	0	0	273,896
Difference	25,817	171	-11,071	0	-380	0	0	14,536
Percent Difference	26	37	-7	0	-16	0	0	6
Below Normal (17.5%)								
Second Basis of Comparison	66,585	1,818	42,215	0	2,763	0	0	113,380
Alternative 5	53,122	1,514	53,559	0	2,925	0	0	111,120
Difference	-13,463	-303	11,344	0	163	0	0	-2,260
Percent Difference	-20	-17	27	0	6	0	0	-2
Dry (22.5%)								
Second Basis of Comparison	34,417	2,551	139,003	0	2,682	0	0	178,652
Alternative 5	37,450	1,889	127,157	0	2,666	0	0	169,161
Difference	3,033	-662	-11,845	0	-16	0	0	-9,491
Percent Difference	9	-26	-9	0	-1	0	0	-5
Critical (15%)								
Second Basis of Comparison	44,378	3,862	254,723	0	2,151	0	0	305,113
Alternative 5	71,310	2,848	345,881	0	1,972	0	0	422,011
Difference	26,932	-1,013	91,158	0	-179	0	0	116,898
Percent Difference	61	-26	36	0	-8	0	0	38

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-3-30. Annual Mortality by All Factors for Spring-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	38,621	2,233	0	108,301	0	2,453	0	0	0	0	151,608
Alternative 5	44,327	1,783	0	125,868	0	2,371	0	0	0	0	174,349
Difference	5,706	-450	0	17,567	0	-82	0	0	0	0	22,742
Percent Difference[3]	15	-20	0	16	0	-3	0	0	0	0	15
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	260	2,165	0	36,450	0	2,303	0	0	0	0	41,178
Alternative 5	608	1,803	0	54,781	1	2,203	0	0	0	0	59,395
Difference	348	-362	0	18,331	1	-101	0	0	0	0	18,217
Percent Difference	134	-17	0	50	0	-4	0	0	0	0	44
Above Normal (12.5%)											
Second Basis of Comparison	99,868	466	0	156,666	0	2,360	0	0	0	0	259,360
Alternative 5	125,685	636	0	145,595	0	1,980	0	0	0	0	273,896
Difference	25,817	171	0	-11,071	0	-380	0	0	0	0	14,536
Percent Difference	26	37	0	-7	0	-16	0	0	0	0	6
Below Normal (17.5%)											
Second Basis of Comparison	66,585	1,818	0	42,215	0	2,763	0	0	0	0	113,380
Alternative 5	53,122	1,514	0	53,559	0	2,925	0	0	0	0	111,120
Difference	-13,463	-303	0	11,344	0	163	0	0	0	0	-2,260
Percent Difference	-20	-17	0	27	0	6	0	0	0	0	-2
Dry (22.5%)											
Second Basis of Comparison	34,417	2,551	0	139,003	0	2,682	0	0	0	0	178,652
Alternative 5	37,450	1,889	0	127,157	0	2,666	0	0	0	0	169,161
Difference	3,033	-662	0	-11,845	0	-16	0	0	0	0	-9,491
Percent Difference	9	-26	0	-9	0	-1	0	0	0	0	-5
Critical (15%)											
Second Basis of Comparison	44,378	3,862	0	254,723	0	2,151	0	0	0	0	305,113
Alternative 5	71,310	2,848	0	345,881	0	1,972	0	0	0	0	422,011
Difference	26,932	-1,013	0	91,158	0	-179	0	0	0	0	116,898
Percent Difference	61	-26	0	36	0	-8	0	0	0	0	38

1 Based on the 80-year simulation period

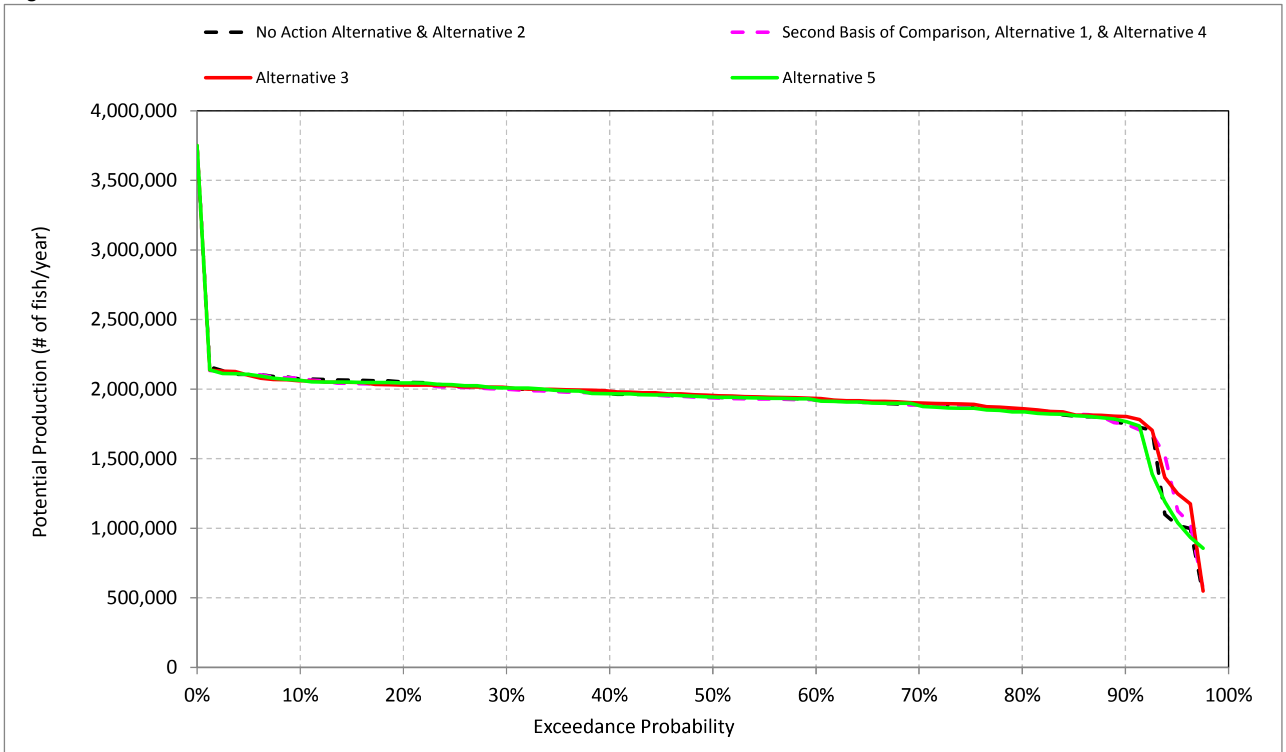
2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

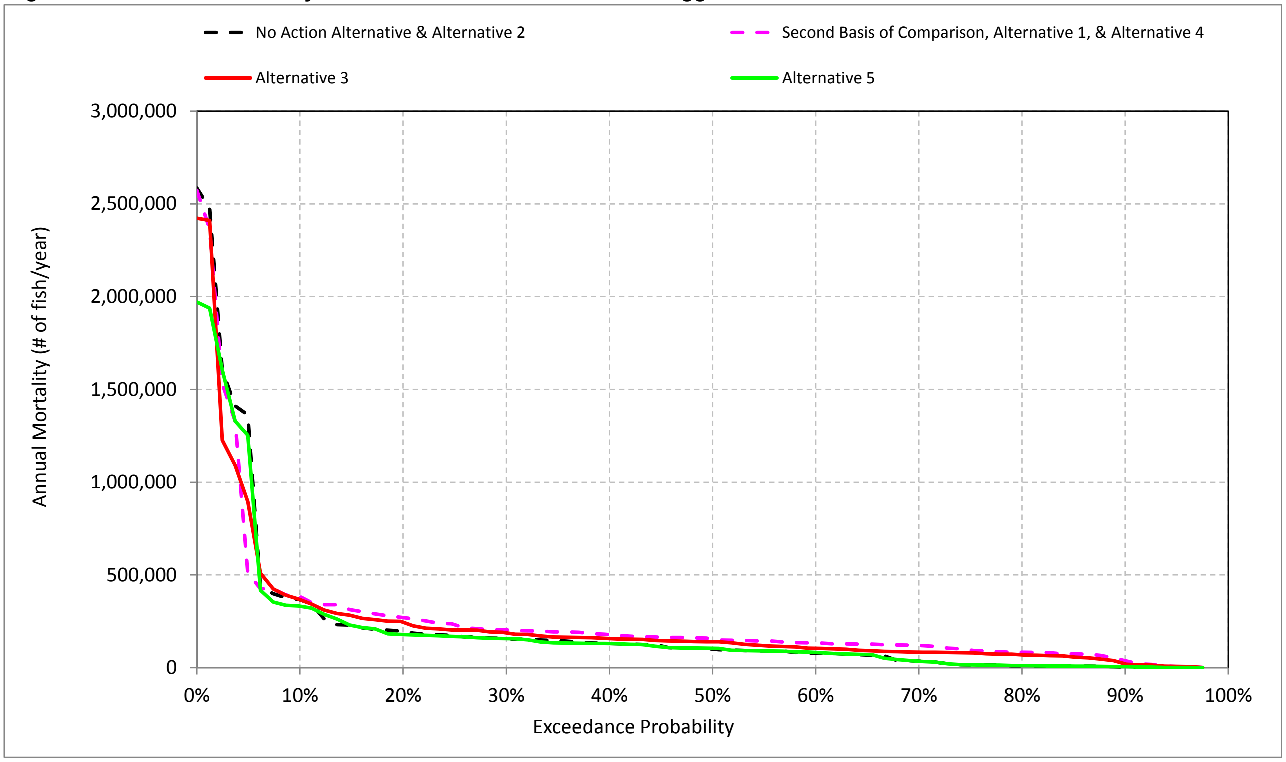
B.4. Winter-Run Chinook Salmon

Figure B-4-1. Annual Potential Production for Winter-Run Chinook Salmon



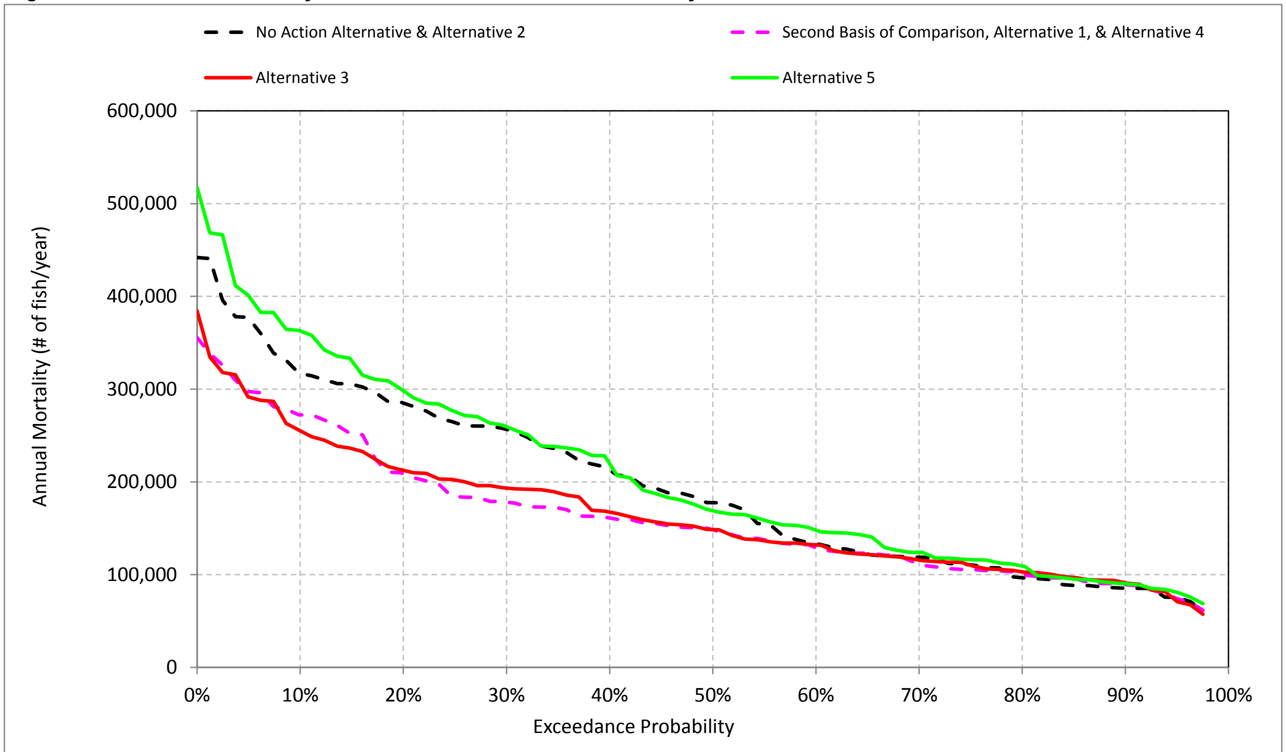
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-2. Annual Mortality for Winter-Run Chinook Salmon - Eggs



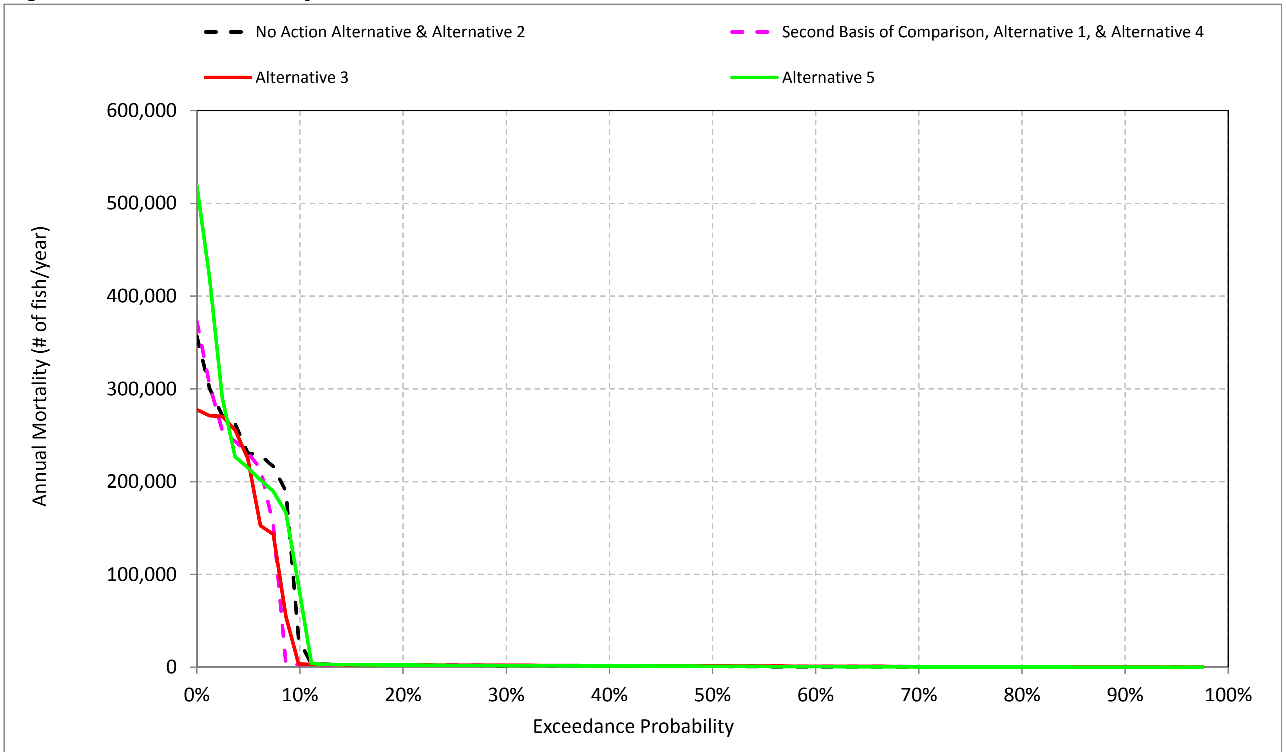
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-3. Annual Mortality for Winter-Run Chinook Salmon - Fry



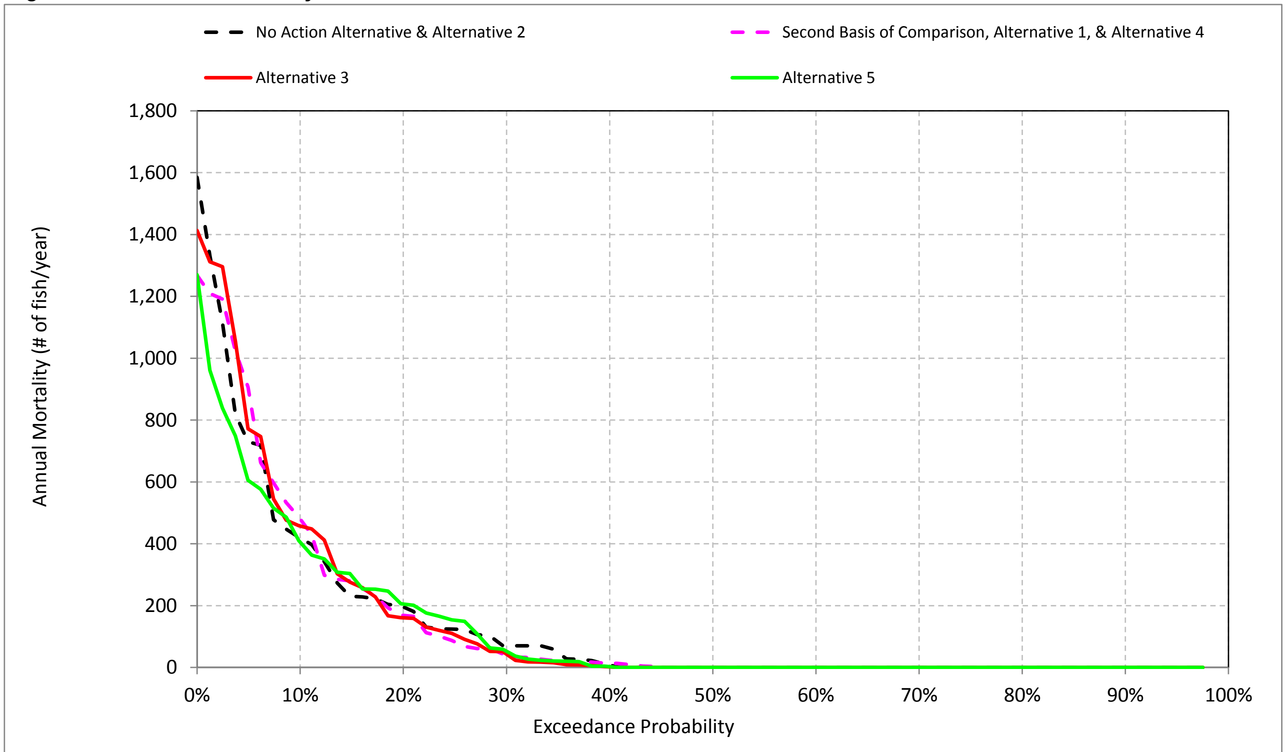
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-4. Annual Mortality for Winter-Run Chinook Salmon - Pre-Smolt



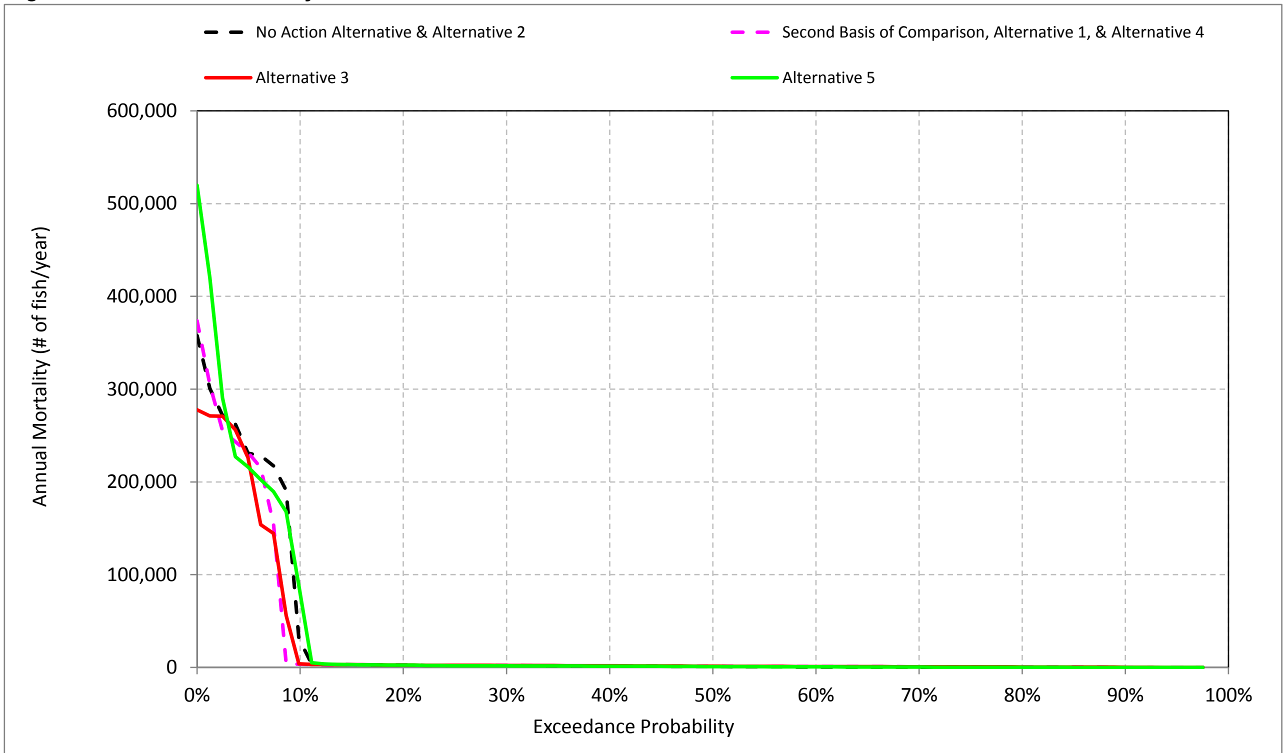
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-5. Annual Mortality for Winter-Run Chinook Salmon - Immature Smolt



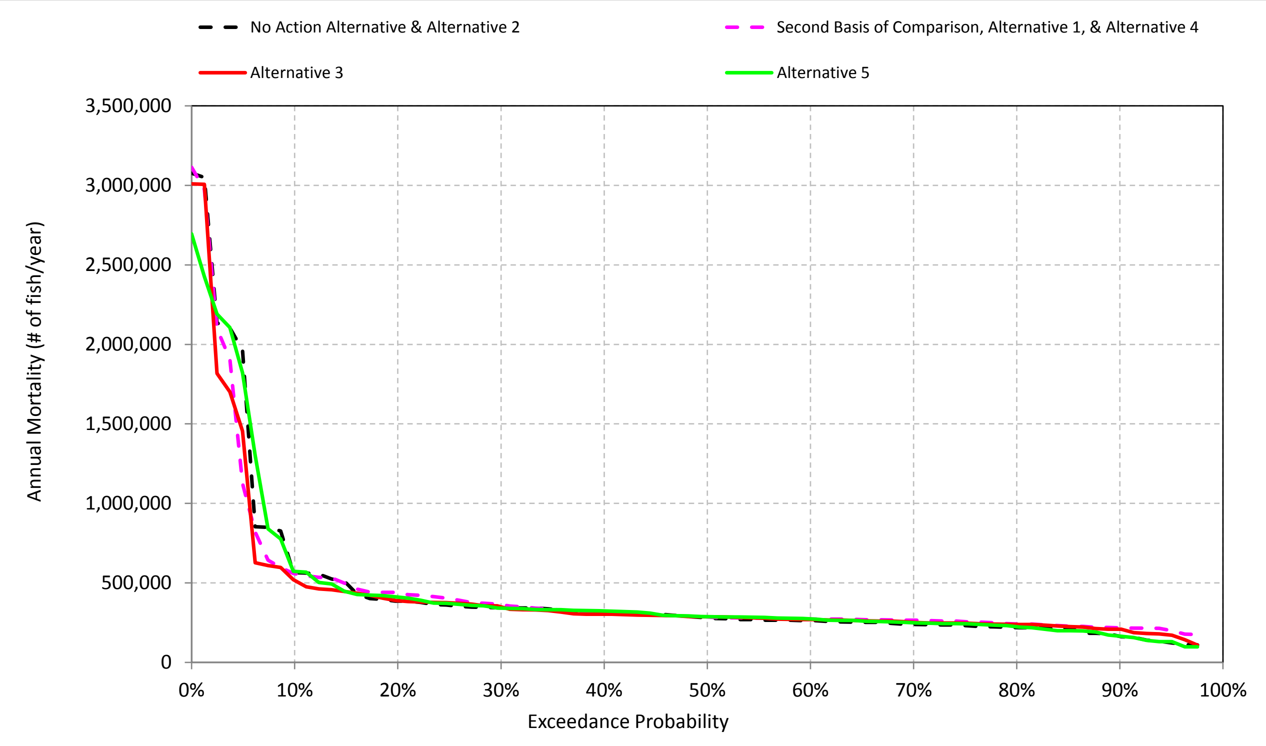
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-6. Annual Mortality for Winter-Run Chinook Salmon - Pre- & Immature Smolts



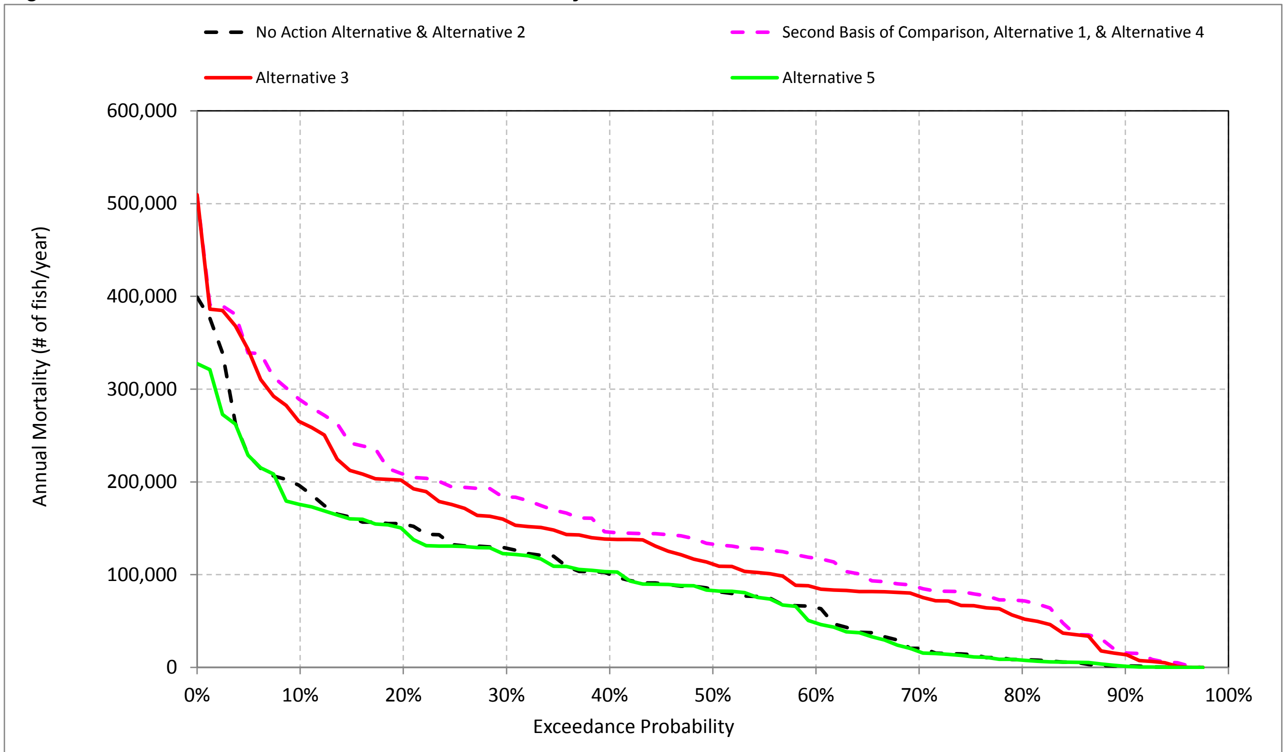
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-7. Annual Mortality for Winter-Run Chinook Salmon - All Lifestages



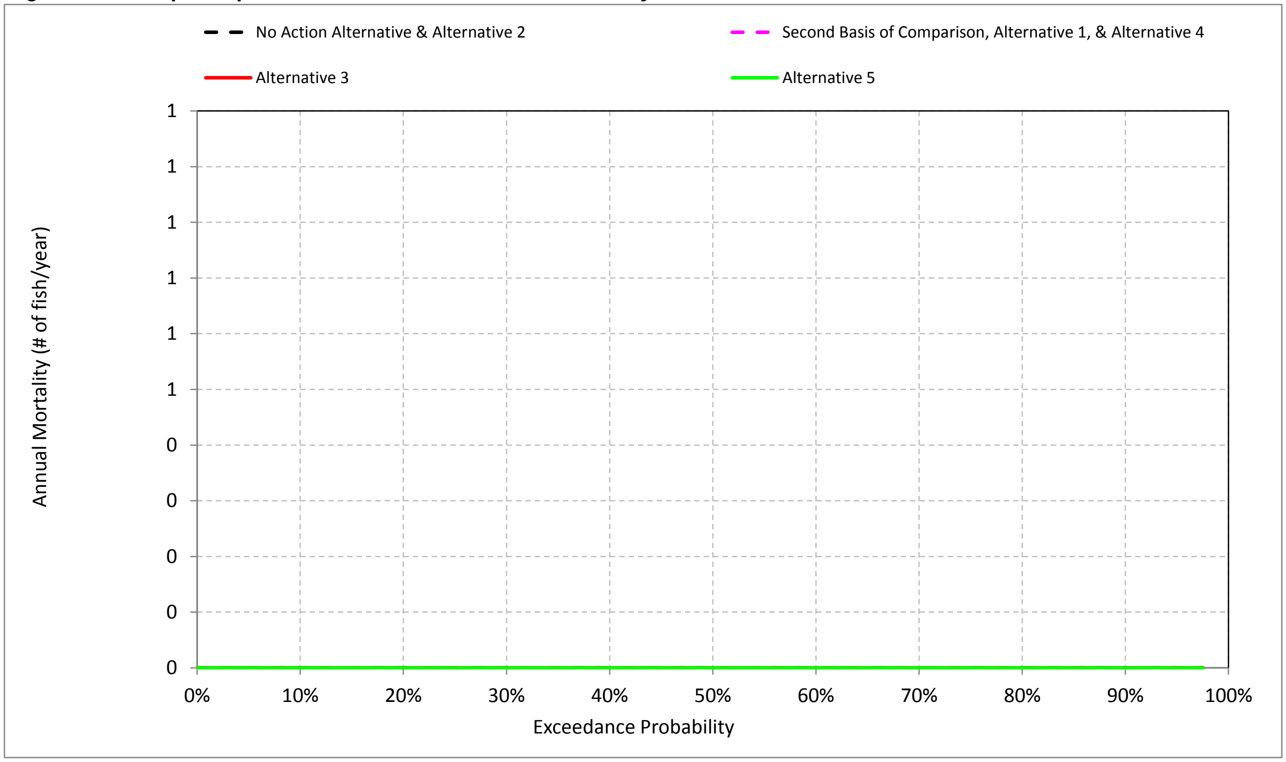
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-8. Incubation - Habitat based Annual Mortality for Winter-Run Chinook Salmon



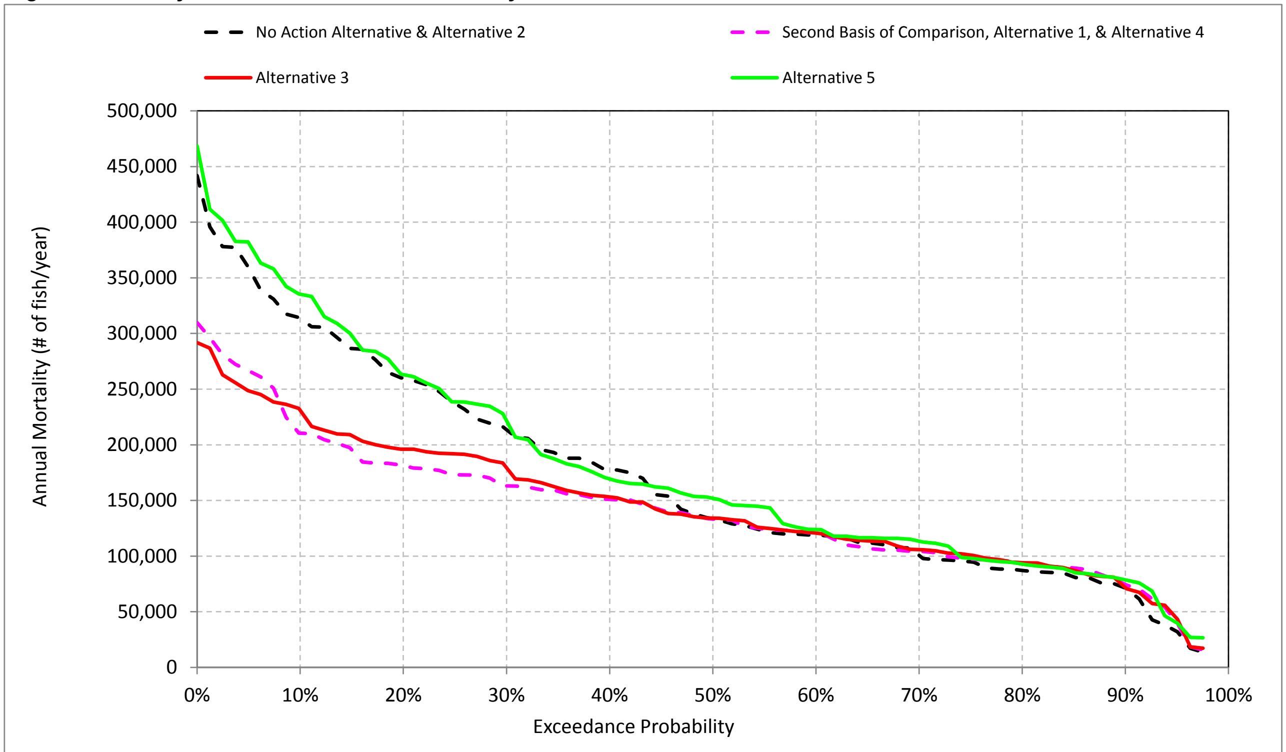
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-9. Super-imposition - Habitat based Annual Mortality for Winter-Run Chinook Salmon



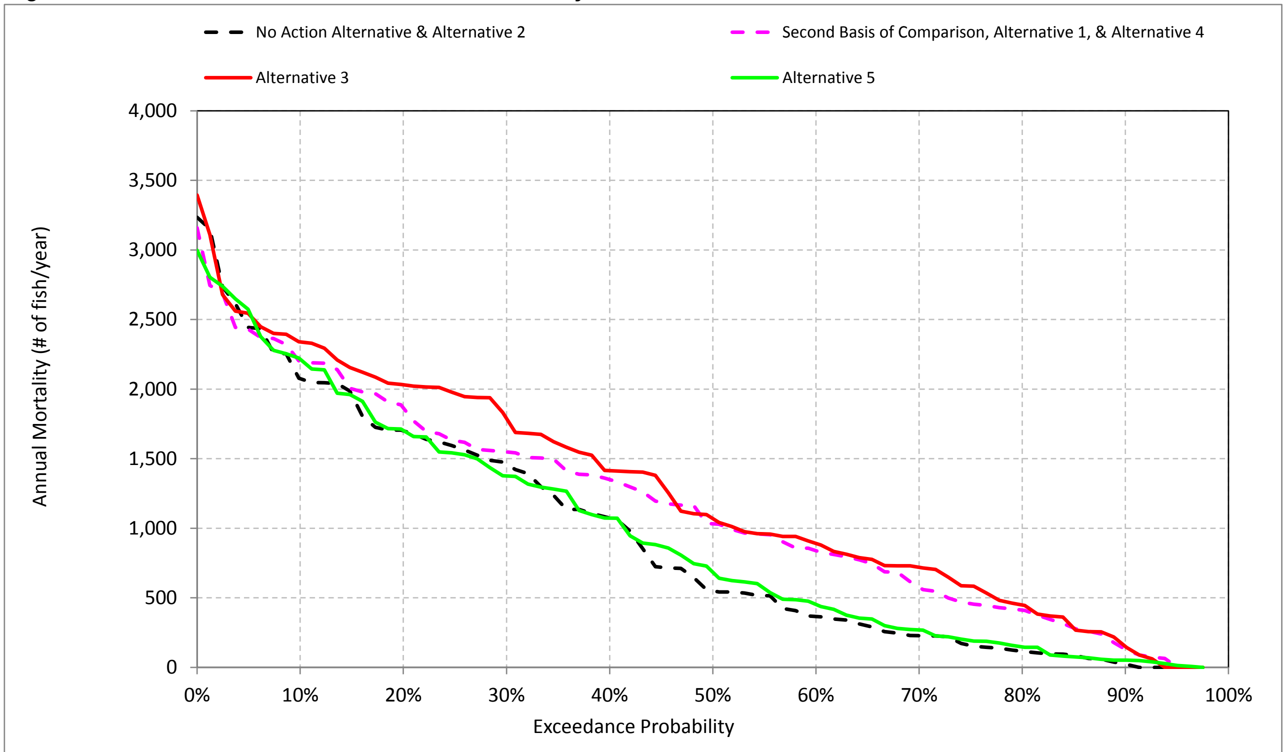
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-10. Fry - Habitat based Annual Mortality for Winter-Run Chinook Salmon



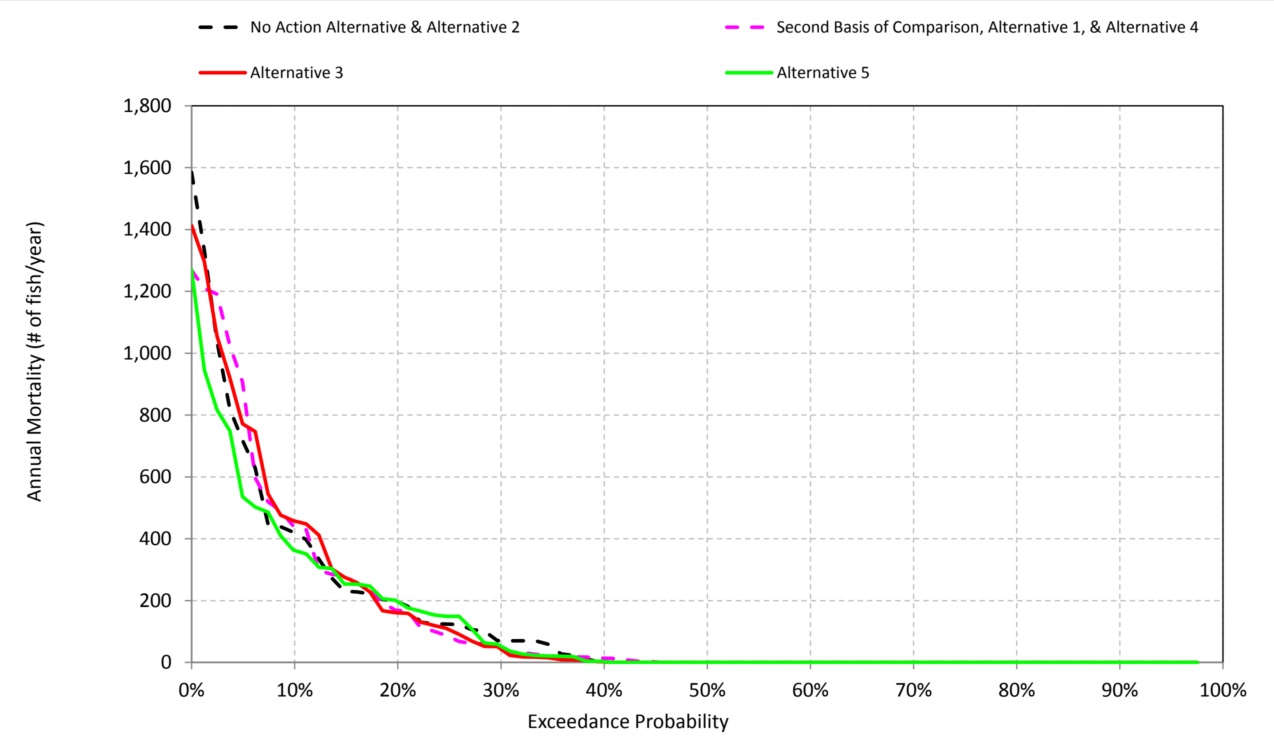
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-11. Pre-smolt - Habitat based Annual Mortality for Winter-Run Chinook Salmon



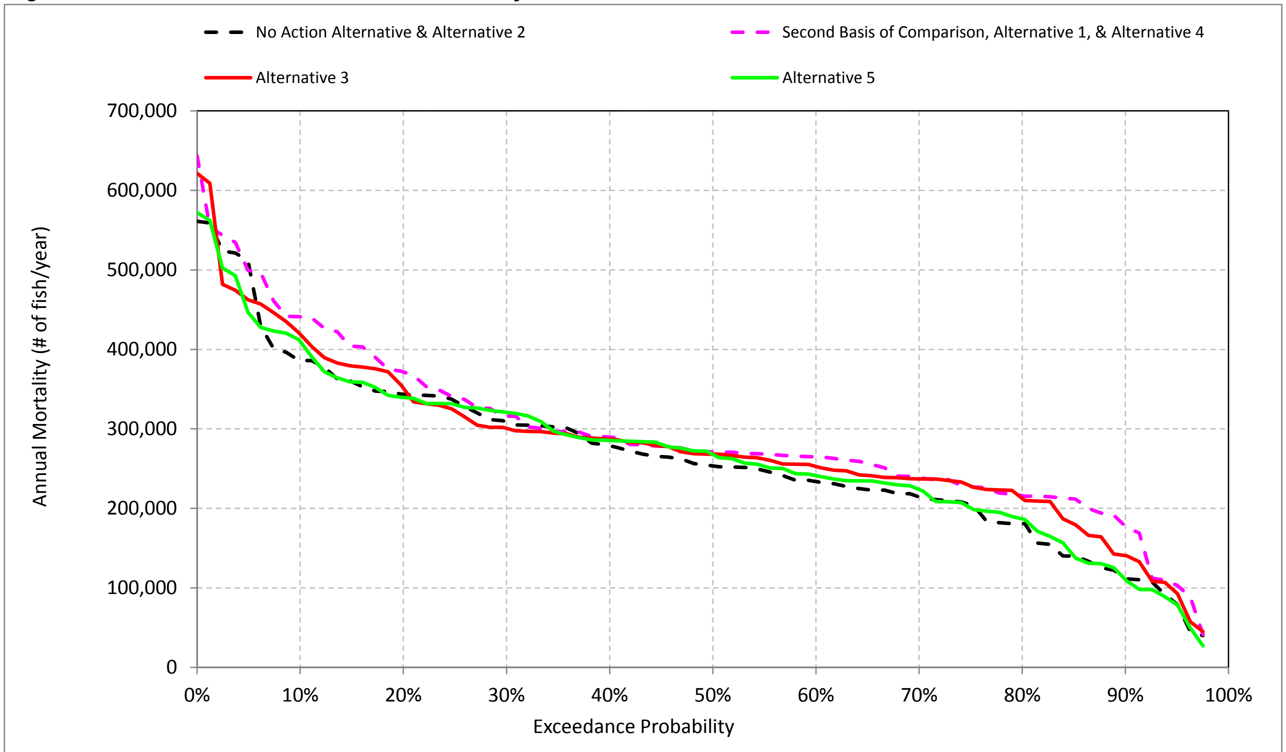
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-12. Immature Smolt - Habitat based Annual Mortality for Winter-Run Chinook Salmon



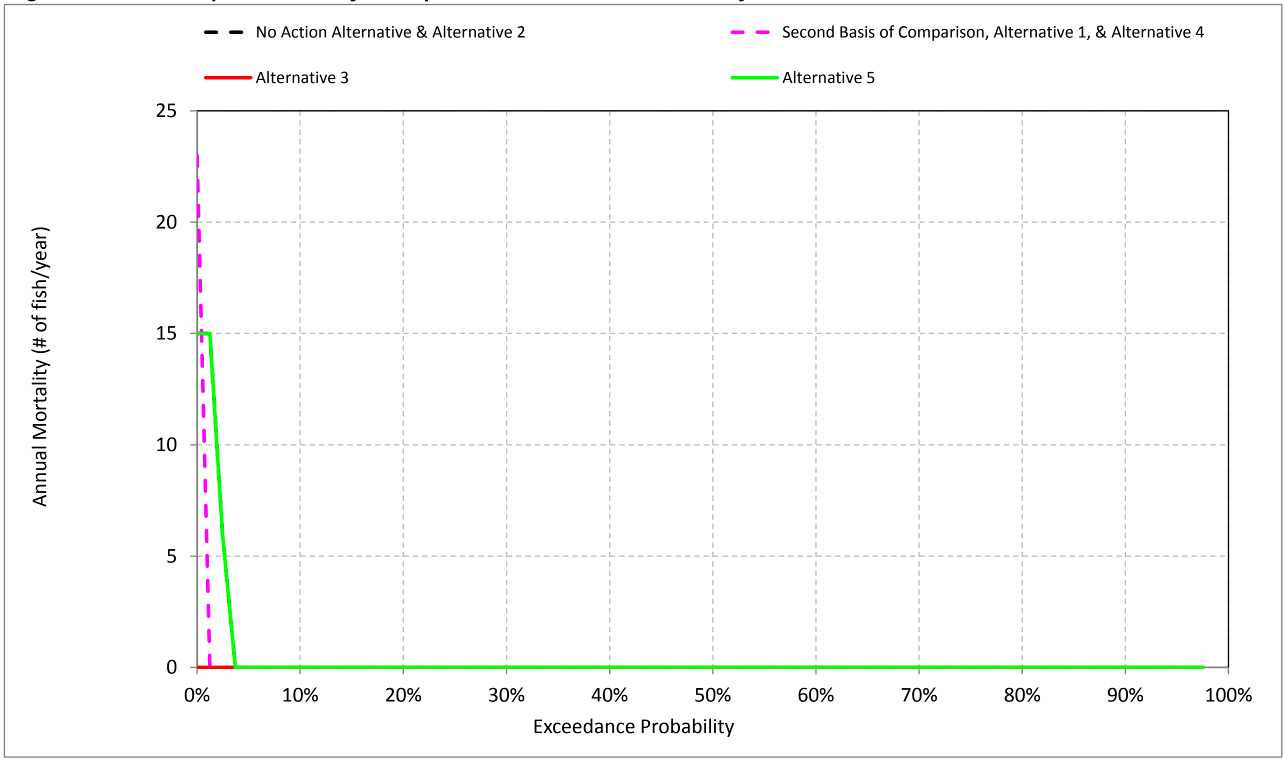
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-13. Total Habitat based Annual Mortality for Winter-Run Chinook Salmon



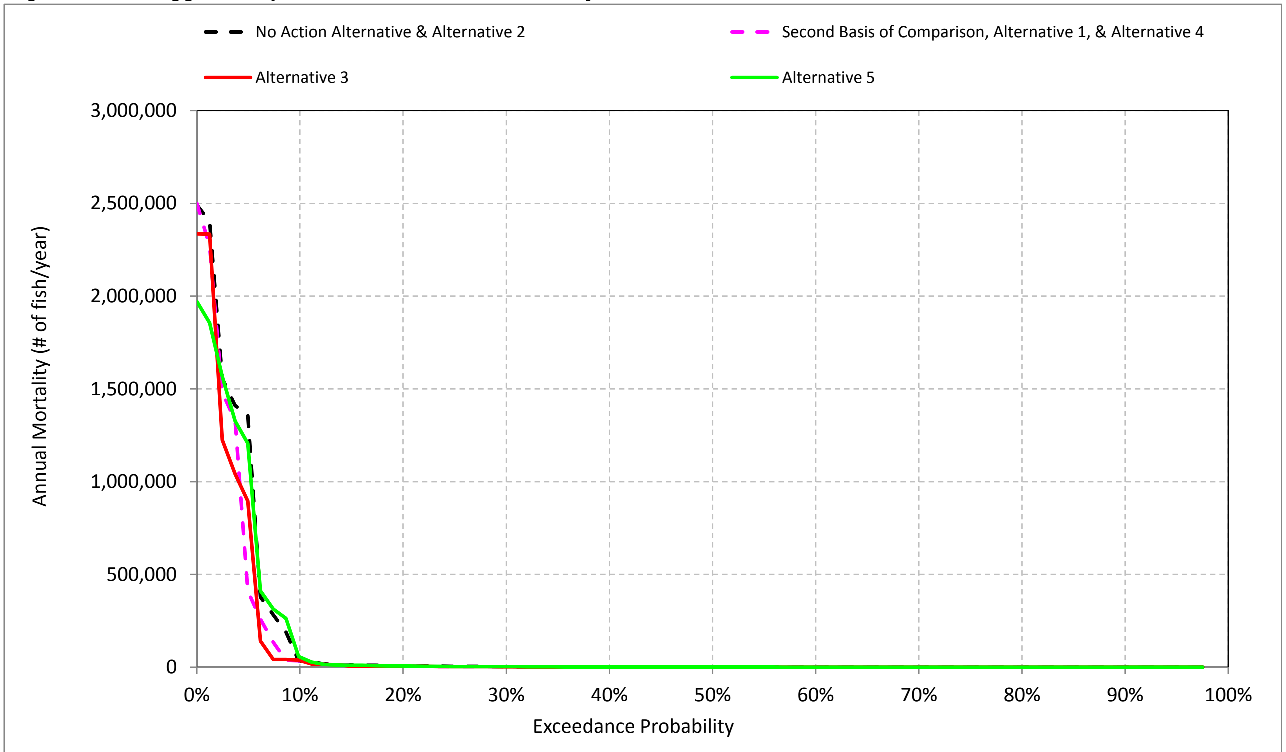
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-14. Pre-Spawn Mortality - Temperature based Annual Mortality for Winter-Run Chinook Salmon



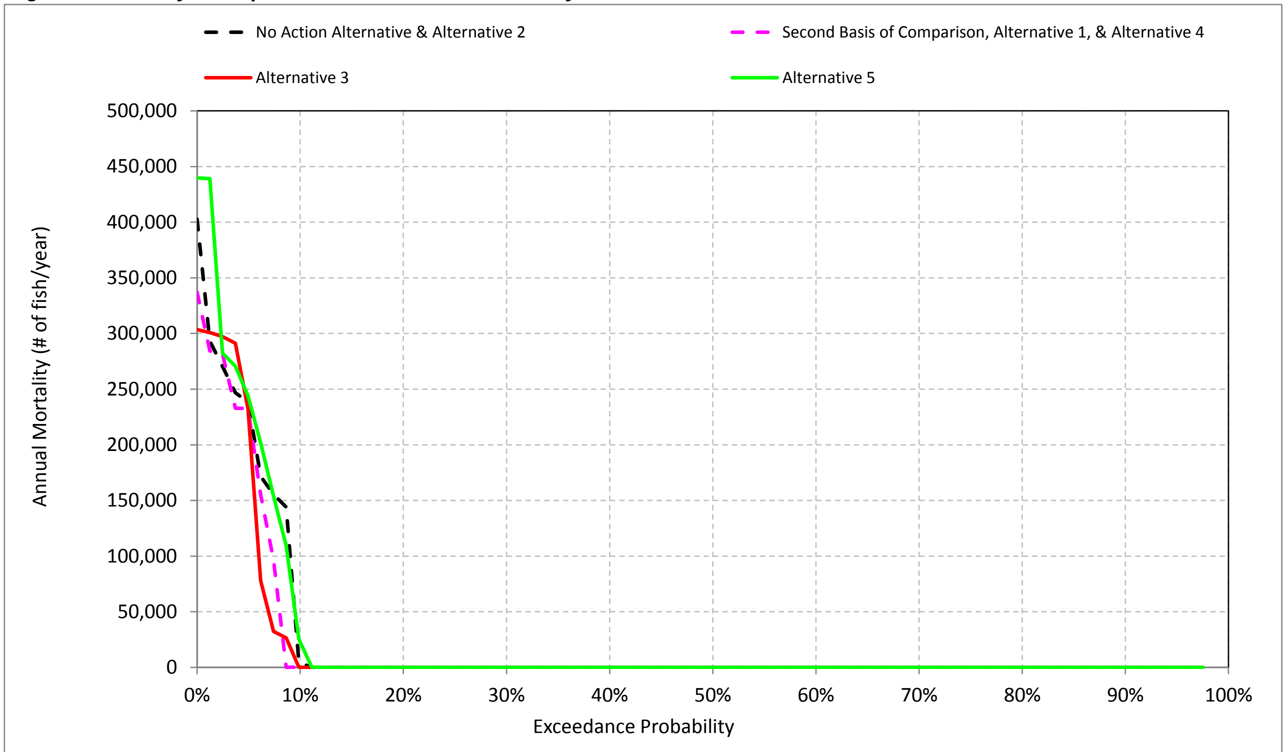
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-15. Eggs - Temperature based Annual Mortality for Winter-Run Chinook Salmon



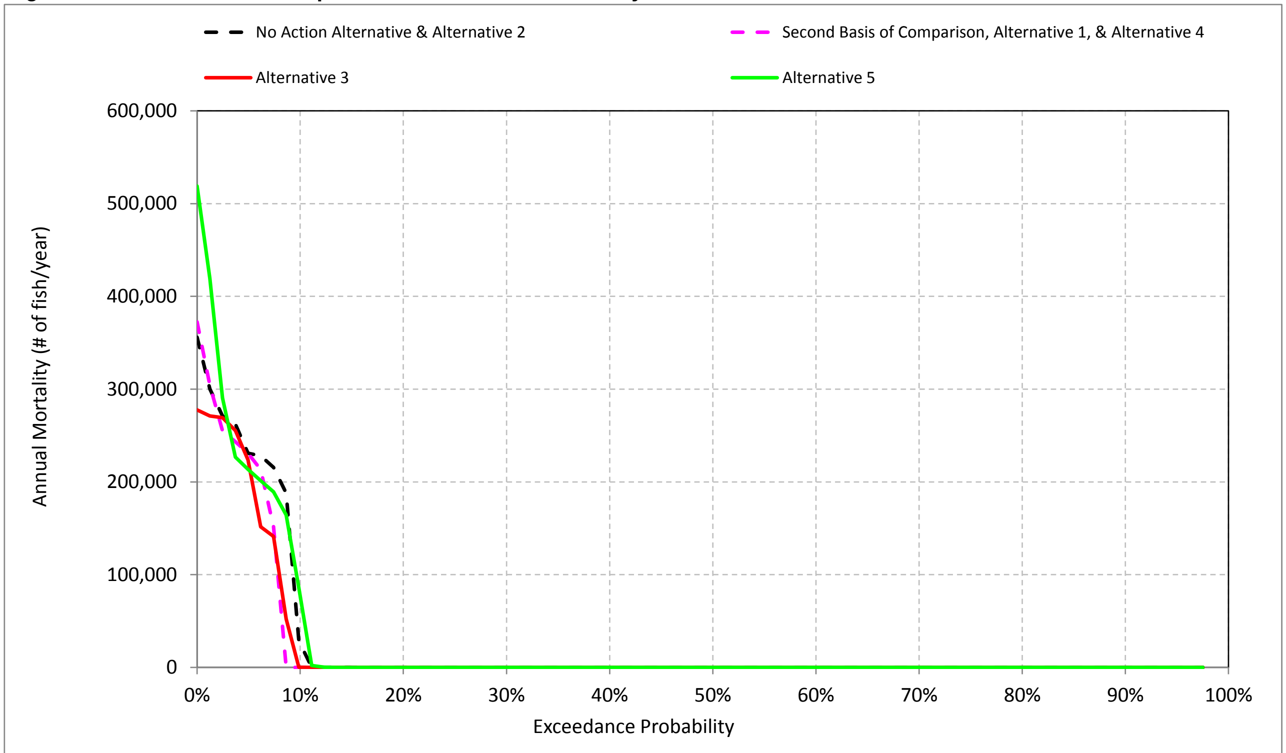
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-16. Fry - Temperature based Annual Mortality for Winter-Run Chinook Salmon



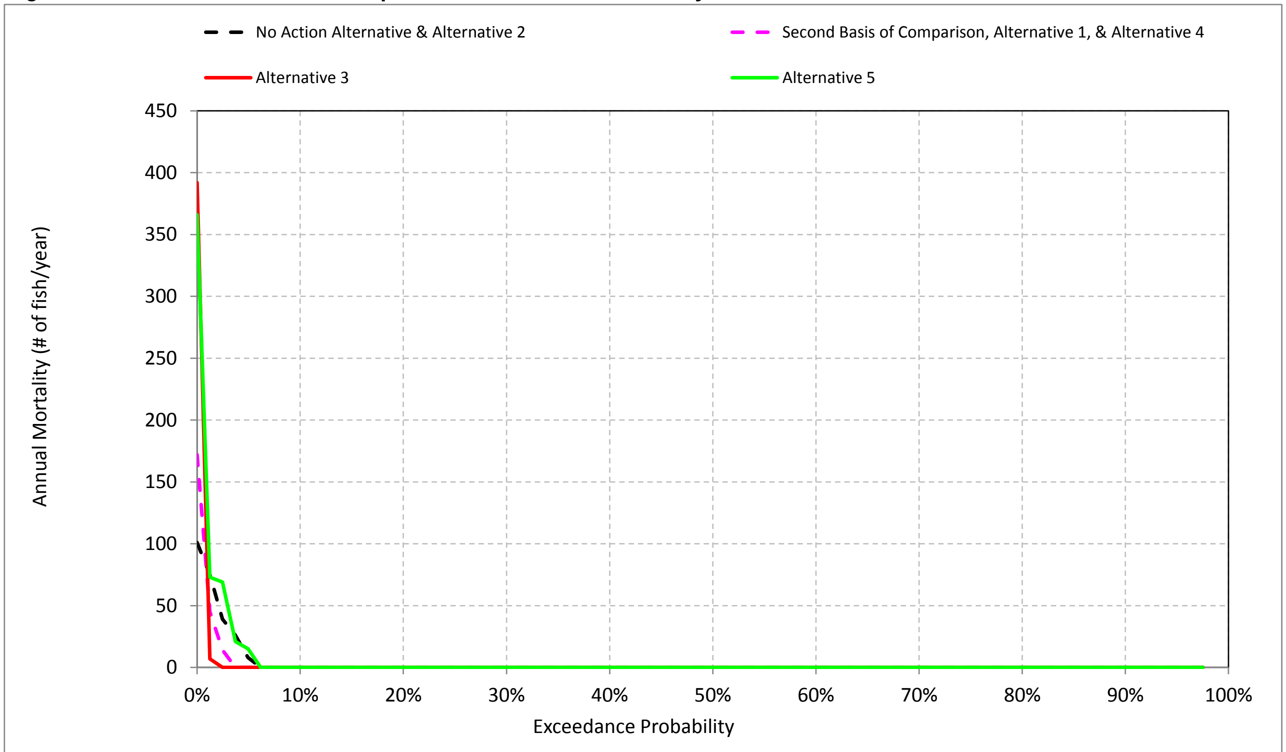
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-17. Pre-smolt - Temperature based Annual Mortality for Winter-Run Chinook Salmon



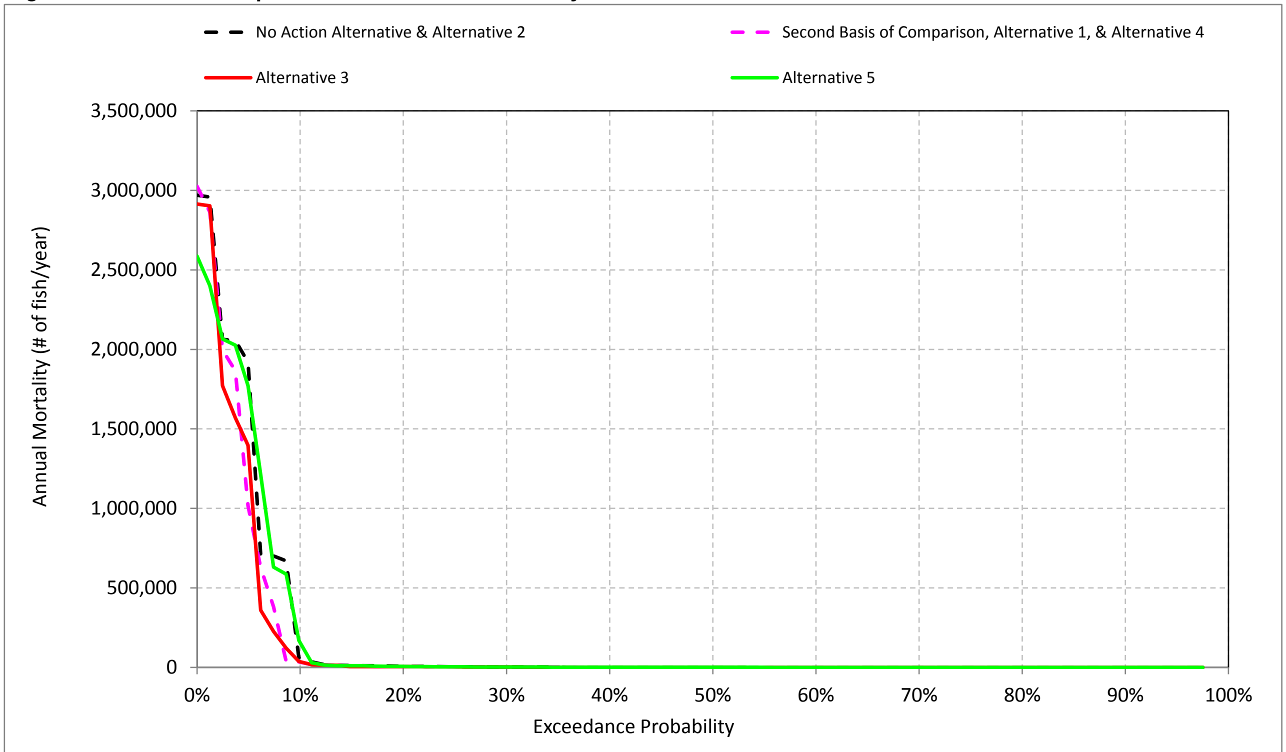
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-18. Immature Smolt - Temperature based Annual Mortality for Winter-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-19. Total Temperature based Annual Mortality for Winter-Run Chinook Salmon



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-1. Annual Potential Production for Winter-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	1,883,893
Alternative 1	1,885,400
Difference	1,507
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	1,952,705
Alternative 1	1,930,740
Difference	-21,965
Percent Difference	-1
Above Normal (12.5%)	
No Action Alternative	1,707,717
Alternative 1	1,746,928
Difference	39,211
Percent Difference	2
Below Normal (17.5%)	
No Action Alternative	1,863,415
Alternative 1	1,847,619
Difference	-15,795
Percent Difference	-1
Dry (22.5%)	
No Action Alternative	1,883,395
Alternative 1	1,894,107
Difference	10,712
Percent Difference	1
Critical (15%)	
No Action Alternative	1,906,250
Alternative 1	1,933,573
Difference	27,323
Percent Difference	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-4-2. Annual Mortality by Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	222,517	196,405	26,961	138	27,099
Alternative 1	259,052	162,983	23,312	137	23,449
Difference	36,535	-33,421	-3,649	-2	-3,650
Percent Difference[3]	16	-17	-14	-1	-13
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	90,910	197,835	1,943	54	1,997
Alternative 1	155,104	176,315	1,060	47	1,107
Difference	64,194	-21,520	-883	-7	-890
Percent Difference	71	-11	-45	-13	-45
Above Normal (12.5%)					
No Action Alternative	469,585	220,960	53,686	94	53,779
Alternative 1	438,691	167,899	63,706	103	63,808
Difference	-30,894	-53,061	10,020	9	10,029
Percent Difference	-7	-24	19	9	19
Below Normal (17.5%)					
No Action Alternative	275,022	176,292	19,822	61	19,884
Alternative 1	337,945	142,925	18,481	41	18,522
Difference	62,922	-33,367	-1,341	-21	-1,362
Percent Difference	23	-19	-7	-34	-7
Dry (22.5%)					
No Action Alternative	209,708	215,896	24,076	139	24,215
Alternative 1	240,069	172,393	22,611	143	22,755
Difference	30,361	-43,503	-1,465	4	-1,460
Percent Difference	14	-20	-6	3	-6
Critical (15%)					
No Action Alternative	259,734	167,072	71,553	447	72,000
Alternative 1	271,006	139,289	44,553	461	45,014
Difference	11,272	-27,783	-27,000	14	-26,985
Percent Difference	4	-17	-38	3	-37

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-4-3. Annual Mortality by Cause for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	178,654	267,367	446,021
Alternative 1	149,945	295,539	445,484
Difference	-28,708	28,172	-537
Percent Difference[3]	-16	11	0
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	3,522	287,219	290,741
Alternative 1	1,273	331,252	332,525
Difference	-2,249	44,034	41,785
Percent Difference	-64	15	14
Above Normal (12.5%)			
No Action Alternative	504,624	239,700	744,324
Alternative 1	388,548	281,850	670,398
Difference	-116,076	42,150	-73,926
Percent Difference	-23	18	-10
Below Normal (17.5%)			
No Action Alternative	212,903	258,295	471,198
Alternative 1	218,115	281,277	499,391
Difference	5,212	22,981	28,193
Percent Difference	2	9	6
Dry (22.5%)			
No Action Alternative	155,797	294,022	449,819
Alternative 1	134,348	300,869	435,217
Difference	-21,449	6,847	-14,602
Percent Difference	-14	2	-3
Critical (15%)			
No Action Alternative	280,793	218,012	498,805
Alternative 1	217,099	238,210	455,309
Difference	-63,694	20,198	-43,496
Percent Difference	-23	9	-9

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-4. Annual Mortality by Cause and Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)							
	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	0	93,980	128,537	24,093	172,312	26,023	1,076	446,021
Alternative 1	0	151,512	107,540	20,257	142,726	22,149	1,300	445,484
Difference	0	57,532	-20,997	-3,836	-29,585	-3,875	225	-537
Percent Difference[3]	-36	61	-16	-16	-17	-15	21	0
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	0	88,673	2,236	182	197,652	1,103	893	290,741
Alternative 1	0	153,836	1,268	3	176,312	3	1,104	332,525
Difference	0	65,163	-969	-180	-21,340	-1,101	211	41,784
Percent Difference	0	73	-43	-98	-11	-100	24	14
Above Normal (12.5%)								
No Action Alternative	0	83,031	386,554	64,945	156,015	53,125	654	744,324
Alternative 1	0	169,913	268,778	56,974	110,925	62,797	1,012	670,398
Difference	0	86,882	-117,776	-7,972	-45,090	9,671	358	-73,926
Percent Difference	0	105	-30	-12	-29	18	55	-10
Below Normal (17.5%)								
No Action Alternative	0	101,792	173,231	20,940	155,352	18,732	1,152	471,198
Alternative 1	0	157,331	180,614	20,113	122,812	17,388	1,134	499,391
Difference	0	55,539	7,383	-827	-32,540	-1,344	-18	28,193
Percent Difference	0	55	4	-4	-21	-7	-2	6
Dry (22.5%)								
No Action Alternative	2	100,064	109,642	23,024	192,872	23,129	1,086	449,819
Alternative 1	1	148,149	91,919	21,162	151,231	21,266	1,488	435,217
Difference	0	48,085	-17,723	-1,862	-41,641	-1,863	402	-14,602
Percent Difference	-23	48	-16	-8	-22	-8	37	-3
Critical (15%)								
No Action Alternative	1	96,360	163,373	47,138	119,933	70,281	1,719	498,805
Alternative 1	0	129,397	141,609	32,354	106,935	43,136	1,878	455,309
Difference	-1	33,037	-21,764	-14,784	-12,999	-27,145	160	-43,496
Percent Difference	-100	34	-13	-31	-11	-39	9	-9

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-5. Annual Mortality by All Factors for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	0	93,980	0	128,537	24,093	172,312	26,020	941	3	135	446,021
Alternative 1	0	151,512	0	107,540	20,257	142,726	22,146	1,167	3	134	445,484
Difference	0	57,532	0	-20,997	-3,836	-29,585	-3,875	226	0	-1	-537
Percent Difference[3]	-36	61	0	-16	-16	-17	-15	24	-7	-1	0
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	0	88,673	0	2,236	182	197,652	1,101	842	3	51	290,741
Alternative 1	0	153,836	0	1,268	3	176,312	3	1,057	0	47	332,525
Difference	0	65,163	0	-969	-180	-21,340	-1,098	215	-3	-4	41,784
Percent Difference	0	73	0	-43	-98	-11	-100	26	-100	-8	14
Above Normal (12.5%)											
No Action Alternative	0	83,031	0	386,554	64,945	156,015	53,122	564	3	90	744,324
Alternative 1	0	169,913	0	268,778	56,974	110,925	62,779	926	17	85	670,398
Difference	0	86,882	0	-117,776	-7,972	-45,090	9,658	363	14	-5	-73,926
Percent Difference	0	105	0	-30	-12	-29	18	64	406	-6	-10
Below Normal (17.5%)											
No Action Alternative	0	101,792	0	173,231	20,940	155,352	18,732	1,091	0	61	471,198
Alternative 1	0	157,331	0	180,614	20,113	122,812	17,388	1,093	0	41	499,391
Difference	0	55,539	0	7,383	-827	-32,540	-1,344	3	0	-21	28,193
Percent Difference	0	55	0	4	-4	-21	-7	0	0	-34	6
Dry (22.5%)											
No Action Alternative	2	100,064	0	109,642	23,024	192,872	23,129	947	0	139	449,819
Alternative 1	1	148,149	0	91,919	21,162	151,231	21,264	1,348	3	141	435,217
Difference	0	48,085	0	-17,723	-1,862	-41,641	-1,865	401	3	2	-14,602
Percent Difference	-23	48	0	-16	-8	-22	-8	42	0	1	-3
Critical (15%)											
No Action Alternative	1	96,360	0	163,373	47,138	119,933	70,269	1,283	12	435	498,805
Alternative 1	0	129,397	0	141,609	32,354	106,935	43,135	1,418	1	460	455,309
Difference	-1	33,037	0	-21,764	-14,784	-12,999	-27,135	135	-11	25	-43,496
Percent Difference	-100	34	0	-13	-31	-11	-39	11	-90	6	-9

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-6. Annual Potential Production for Winter-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	1,883,893
Alternative 3	1,897,120
Difference	13,227
Percent Difference[3]	1
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	1,952,705
Alternative 3	1,944,614
Difference	-8,091
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	1,707,717
Alternative 3	1,752,903
Difference	45,186
Percent Difference	3
Below Normal (17.5%)	
No Action Alternative	1,863,415
Alternative 3	1,840,343
Difference	-23,072
Percent Difference	-1
Dry (22.5%)	
No Action Alternative	1,883,395
Alternative 3	1,919,466
Difference	36,071
Percent Difference	2
Critical (15%)	
No Action Alternative	1,906,250
Alternative 3	1,947,116
Difference	40,866
Percent Difference	2

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-4-7. Annual Mortality by Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	222,517	196,405	26,961	138	27,099
Alternative 3	237,813	165,266	21,803	140	21,943
Difference	15,296	-31,139	-5,158	2	-5,156
Percent Difference[3]	7	-16	-19	1	-19
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	90,910	197,835	1,943	54	1,997
Alternative 3	131,631	174,265	1,188	34	1,222
Difference	40,721	-23,569	-755	-20	-774
Percent Difference	45	-12	-39	-37	-39
Above Normal (12.5%)					
No Action Alternative	469,585	220,960	53,686	94	53,779
Alternative 3	443,487	166,295	54,841	70	54,912
Difference	-26,098	-54,664	1,156	-23	1,133
Percent Difference	-6	-25	2	-25	2
Below Normal (17.5%)					
No Action Alternative	275,022	176,292	19,822	61	19,884
Alternative 3	324,721	159,309	20,994	55	21,049
Difference	49,699	-16,983	1,172	-6	1,166
Percent Difference	18	-10	6	-10	6
Dry (22.5%)					
No Action Alternative	209,708	215,896	24,076	139	24,215
Alternative 3	207,993	170,244	16,866	166	17,032
Difference	-1,715	-45,653	-7,210	27	-7,183
Percent Difference	-1	-21	-30	19	-30
Critical (15%)					
No Action Alternative	259,734	167,072	71,553	447	72,000
Alternative 3	239,816	144,393	47,286	490	47,776
Difference	-19,918	-22,679	-24,267	43	-24,224
Percent Difference	-8	-14	-34	10	-34

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-4-8. Annual Mortality by Cause for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	178,654	267,367	446,021
Alternative 3	142,827	282,195	425,022
Difference	-35,827	14,828	-20,999
Percent Difference[3]	-20	6	-5
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	3,522	287,219	290,741
Alternative 3	1,126	305,992	307,118
Difference	-2,396	18,773	16,377
Percent Difference	-68	7	6
Above Normal (12.5%)			
No Action Alternative	504,624	239,700	744,324
Alternative 3	430,489	234,205	664,694
Difference	-74,135	-5,495	-79,630
Percent Difference	-15	-2	-11
Below Normal (17.5%)			
No Action Alternative	212,903	258,295	471,198
Alternative 3	210,138	294,942	505,080
Difference	-2,765	36,647	33,882
Percent Difference	-1	14	7
Dry (22.5%)			
No Action Alternative	155,797	294,022	449,819
Alternative 3	95,635	299,633	395,268
Difference	-60,162	5,611	-54,551
Percent Difference	-39	2	-12
Critical (15%)			
No Action Alternative	280,793	218,012	498,805
Alternative 3	202,386	229,599	431,984
Difference	-78,407	11,587	-66,821
Percent Difference	-28	5	-13

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-9. Annual Mortality by Cause and Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)							
	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	0	93,980	128,537	24,093	172,312	26,023	1,076	446,021
Alternative 3	0	135,049	102,763	19,523	145,743	20,541	1,402	425,022
Difference	0	41,070	-25,774	-4,571	-26,568	-5,482	326	-20,999
Percent Difference[3]	-100	44	-20	-19	-15	-21	30	-5
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	0	88,673	2,236	182	197,652	1,103	893	290,741
Alternative 3	0	130,505	1,126	1	174,265	0	1,222	307,118
Difference	0	41,832	-1,111	-181	-23,388	-1,103	329	16,377
Percent Difference	0	47	-50	-100	-12	-100	37	6
Above Normal (12.5%)								
No Action Alternative	0	83,031	386,554	64,945	156,015	53,125	654	744,324
Alternative 3	0	119,969	323,517	52,929	113,366	54,043	869	664,694
Difference	0	36,938	-63,037	-12,016	-42,648	917	215	-79,630
Percent Difference	0	44	-16	-19	-27	2	33	-11
Below Normal (17.5%)								
No Action Alternative	0	101,792	173,231	20,940	155,352	18,732	1,152	471,198
Alternative 3	0	155,899	168,822	21,483	137,826	19,833	1,217	505,080
Difference	0	54,108	-4,409	542	-17,525	1,101	65	33,882
Percent Difference	0	53	-3	3	-11	6	6	7
Dry (22.5%)								
No Action Alternative	2	100,064	109,642	23,024	192,872	23,129	1,086	449,819
Alternative 3	0	146,046	61,947	18,345	151,898	15,343	1,689	395,268
Difference	-2	45,982	-47,695	-4,679	-40,974	-7,786	603	-54,551
Percent Difference	-100	46	-44	-20	-21	-34	55	-12
Critical (15%)								
No Action Alternative	1	96,360	163,373	47,138	119,933	70,281	1,719	498,805
Alternative 3	0	116,643	123,172	33,460	110,932	45,753	2,023	431,984
Difference	-1	20,283	-40,201	-13,678	-9,001	-24,528	305	-66,821
Percent Difference	-100	21	-25	-29	-8	-35	18	-13

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-10. Annual Mortality by All Factors for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	0	93,980	0	128,537	24,093	172,312	26,020	941	3	135	446,021
Alternative 3	0	135,049	0	102,763	19,523	145,743	20,536	1,267	5	135	425,022
Difference	0	41,070	0	-25,774	-4,571	-26,568	-5,484	326	2	0	-20,999
Percent Difference[3]	-100	44	0	-20	-19	-15	-21	35	60	0	-5
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	0	88,673	0	2,236	182	197,652	1,101	842	3	51	290,741
Alternative 3	0	130,505	0	1,126	1	174,265	0	1,188	0	34	307,118
Difference	0	41,832	0	-1,111	-181	-23,388	-1,101	346	-3	-17	16,377
Percent Difference	0	47	0	-50	-100	-12	-100	41	-100	-33	6
Above Normal (12.5%)											
No Action Alternative	0	83,031	0	386,554	64,945	156,015	53,122	564	3	90	744,324
Alternative 3	0	119,969	0	323,517	52,929	113,366	54,043	799	0	70	664,694
Difference	0	36,938	0	-63,037	-12,016	-42,648	921	235	-3	-20	-79,630
Percent Difference	0	44	0	-16	-19	-27	2	42	-100	-22	-11
Below Normal (17.5%)											
No Action Alternative	0	101,792	0	173,231	20,940	155,352	18,732	1,091	0	61	471,198
Alternative 3	0	155,899	0	168,822	21,483	137,826	19,832	1,162	1	54	505,080
Difference	0	54,108	0	-4,409	542	-17,525	1,100	72	1	-7	33,882
Percent Difference	0	53	0	-3	3	-11	6	7	0	-11	7
Dry (22.5%)											
No Action Alternative	2	100,064	0	109,642	23,024	192,872	23,129	947	0	139	449,819
Alternative 3	0	146,046	0	61,947	18,345	151,898	15,343	1,523	0	166	395,268
Difference	-2	45,982	0	-47,695	-4,679	-40,974	-7,786	576	0	27	-54,551
Percent Difference	-100	46	0	-44	-20	-21	-34	61	0	19	-12
Critical (15%)											
No Action Alternative	1	96,360	0	163,373	47,138	119,933	70,269	1,283	12	435	498,805
Alternative 3	0	116,643	0	123,172	33,460	110,932	45,720	1,566	33	457	431,984
Difference	-1	20,283	0	-40,201	-13,678	-9,001	-24,549	283	21	22	-66,821
Percent Difference	-100	21	0	-25	-29	-8	-35	22	180	5	-13

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-11. Annual Potential Production for Winter-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
No Action Alternative	1,883,893
Alternative 5	1,883,178
Difference	-715
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
No Action Alternative	1,952,705
Alternative 5	1,943,241
Difference	-9,464
Percent Difference	0
Above Normal (12.5%)	
No Action Alternative	1,707,717
Alternative 5	1,698,809
Difference	-8,908
Percent Difference	-1
Below Normal (17.5%)	
No Action Alternative	1,863,415
Alternative 5	1,898,667
Difference	35,252
Percent Difference	2
Dry (22.5%)	
No Action Alternative	1,883,395
Alternative 5	1,876,977
Difference	-6,419
Percent Difference	0
Critical (15%)	
No Action Alternative	1,906,250
Alternative 5	1,897,912
Difference	-8,338
Percent Difference	0

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-4-12. Annual Mortality by Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
No Action Alternative	222,517	196,405	26,961	138	27,099
Alternative 5	203,248	207,870	29,865	124	29,989
Difference	-19,269	11,465	2,904	-14	2,890
Percent Difference[3]	-9	6	11	-10	11
Water Year Types[2]					
Wet (32.5%)					
No Action Alternative	90,910	197,835	1,943	54	1,997
Alternative 5	87,970	210,570	4,085	28	4,113
Difference	-2,939	12,735	2,142	-26	2,117
Percent Difference	-3	6	110	-48	106
Above Normal (12.5%)					
No Action Alternative	469,585	220,960	53,686	94	53,779
Alternative 5	464,585	236,533	52,336	89	52,425
Difference	-5,000	15,573	-1,349	-5	-1,354
Percent Difference	-1	7	-3	-5	-3
Below Normal (17.5%)					
No Action Alternative	275,022	176,292	19,822	61	19,884
Alternative 5	191,541	178,323	31,052	108	31,160
Difference	-83,481	2,031	11,229	47	11,276
Percent Difference	-30	1	57	76	57
Dry (22.5%)					
No Action Alternative	209,708	215,896	24,076	139	24,215
Alternative 5	200,255	234,855	20,690	134	20,824
Difference	-9,453	18,959	-3,386	-5	-3,391
Percent Difference	-5	9	-14	-3	-14
Critical (15%)					
No Action Alternative	259,734	167,072	71,553	447	72,000
Alternative 5	253,379	172,126	79,375	365	79,740
Difference	-6,354	5,055	7,822	-82	7,740
Percent Difference	-2	3	11	-18	11

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-4-13. Annual Mortality by Cause for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
No Action Alternative	178,654	267,367	446,021
Alternative 5	170,139	270,968	441,107
Difference	-8,515	3,601	-4,914
Percent Difference[3]	-5	1	-1
Water Year Types[2]			
Wet (32.5%)			
No Action Alternative	3,522	287,219	290,741
Alternative 5	7,569	295,085	302,654
Difference	4,047	7,866	11,913
Percent Difference	115	3	4
Above Normal (12.5%)			
No Action Alternative	504,624	239,700	744,324
Alternative 5	499,928	253,615	753,543
Difference	-4,696	13,915	9,219
Percent Difference	-1	6	1
Below Normal (17.5%)			
No Action Alternative	212,903	258,295	471,198
Alternative 5	149,215	251,809	401,024
Difference	-63,688	-6,486	-70,174
Percent Difference	-30	-3	-15
Dry (22.5%)			
No Action Alternative	155,797	294,022	449,819
Alternative 5	146,764	309,170	455,934
Difference	-9,033	15,148	6,115
Percent Difference	-6	5	1
Critical (15%)			
No Action Alternative	280,793	218,012	498,805
Alternative 5	307,023	198,222	505,246
Difference	26,230	-19,790	6,441
Percent Difference	9	-9	1

1 Based on the 80-year simulation period
not correspond to the biological years in SALMOD.
3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-14. Annual Mortality by Cause and Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
No Action Alternative	0	93,980	128,537	24,093	172,312	26,023	1,076	446,021
Alternative 5	0	89,100	114,147	27,082	180,788	28,909	1,080	441,107
Difference	0	-4,880	-14,389	2,989	8,476	2,886	5	-4,914
Percent Difference[3]	0	-5	-11	12	5	11	0	-1
Water Year Types[2]								
Wet (32.5%)								
No Action Alternative	0	88,673	2,236	182	197,652	1,103	893	290,741
Alternative 5	0	84,683	3,288	977	209,593	3,304	809	302,654
Difference	0	-3,991	1,051	795	11,941	2,201	-84	11,913
Percent Difference	0	-5	47	436	6	199	-9	4
Above Normal (12.5%)								
No Action Alternative	0	83,031	386,554	64,945	156,015	53,125	654	744,324
Alternative 5	0	80,569	384,016	64,143	172,390	51,769	656	753,543
Difference	0	-2,463	-2,538	-802	16,375	-1,356	2	9,219
Percent Difference	0	-3	-1	-1	10	-3	0	1
Below Normal (17.5%)								
No Action Alternative	0	101,792	173,231	20,940	155,352	18,732	1,152	471,198
Alternative 5	0	103,637	87,904	31,368	146,956	29,943	1,216	401,024
Difference	0	1,845	-85,326	10,427	-8,396	11,212	64	-70,174
Percent Difference	0	2	-49	50	-5	60	6	-15
Dry (22.5%)								
No Action Alternative	2	100,064	109,642	23,024	192,872	23,129	1,086	449,819
Alternative 5	2	94,247	106,007	21,110	213,744	19,645	1,179	455,934
Difference	0	-5,817	-3,635	-1,914	20,873	-3,484	93	6,115
Percent Difference	0	-6	-3	-8	11	-15	9	1
Critical (15%)								
No Action Alternative	1	96,360	163,373	47,138	119,933	70,281	1,719	498,805
Alternative 5	1	81,098	172,281	56,716	115,410	78,025	1,715	505,246
Difference	0	-15,262	8,908	9,578	-4,524	7,744	-4	6,441
Percent Difference	0	-16	5	20	-4	11	0	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-15. Annual Mortality by All Factors for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)										
	Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
No Action Alternative	0	93,980	0	128,537	24,093	172,312	26,020	941	3	135	446,021
Alternative 5	0	89,100	0	114,147	27,082	180,788	28,902	963	7	117	441,107
Difference	0	-4,880	0	-14,389	2,989	8,476	2,882	22	4	-18	-4,914
Percent Difference[3]	0	-5	0	-11	12	5	11	2	118	-13	-1
Water Year Types[2]											
Wet (32.5%)											
No Action Alternative	0	88,673	0	2,236	182	197,652	1,101	842	3	51	290,741
Alternative 5	0	84,683	0	3,288	977	209,593	3,302	784	3	26	302,654
Difference	0	-3,991	0	1,051	795	11,941	2,201	-59	0	-25	11,913
Percent Difference	0	-5	0	47	436	6	200	-7	-8	-50	4
Above Normal (12.5%)											
No Action Alternative	0	83,031	0	386,554	64,945	156,015	53,122	564	3	90	744,324
Alternative 5	0	80,569	0	384,016	64,143	172,390	51,732	604	37	52	753,543
Difference	0	-2,463	0	-2,538	-802	16,375	-1,389	40	33	-38	9,219
Percent Difference	0	-3	0	-1	-1	10	-3	7	976	-42	1
Below Normal (17.5%)											
No Action Alternative	0	101,792	0	173,231	20,940	155,352	18,732	1,091	0	61	471,198
Alternative 5	0	103,637	0	87,904	31,368	146,956	29,943	1,108	0	108	401,024
Difference	0	1,845	0	-85,326	10,427	-8,396	11,212	18	0	47	-70,174
Percent Difference	0	2	0	-49	50	-5	60	2	0	76	-15
Dry (22.5%)											
No Action Alternative	2	100,064	0	109,642	23,024	192,872	23,129	947	0	139	449,819
Alternative 5	2	94,247	0	106,007	21,110	213,744	19,645	1,045	0	134	455,934
Difference	0	-5,817	0	-3,635	-1,914	20,873	-3,484	98	0	-5	6,115
Percent Difference	0	-6	0	-3	-8	11	-15	10	0	-3	1
Critical (15%)											
No Action Alternative	1	96,360	0	163,373	47,138	119,933	70,269	1,283	12	435	498,805
Alternative 5	1	81,098	0	172,281	56,716	115,410	78,016	1,359	9	356	505,246
Difference	0	-15,262	0	8,908	9,578	-4,524	7,747	75	-3	-79	6,441
Percent Difference	0	-16	0	5	20	-4	11	6	-22	-18	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-16. Annual Potential Production for Winter-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	1,885,400
No Action Alternative	1,883,893
Difference	-1,507
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	1,930,740
No Action Alternative	1,952,705
Difference	21,965
Percent Difference	1
Above Normal (12.5%)	
Second Basis of Comparison	1,746,928
No Action Alternative	1,707,717
Difference	-39,211
Percent Difference	-2
Below Normal (17.5%)	
Second Basis of Comparison	1,847,619
No Action Alternative	1,863,415
Difference	15,795
Percent Difference	1
Dry (22.5%)	
Second Basis of Comparison	1,894,107
No Action Alternative	1,883,395
Difference	-10,712
Percent Difference	-1
Critical (15%)	
Second Basis of Comparison	1,933,573
No Action Alternative	1,906,250
Difference	-27,323
Percent Difference	-1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-4-17. Annual Mortality by Life Stage for Winter-Run Chinook Salmon

	Annual Mortality[4] (# of Fish/year)				
Analysis Period	Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	259,052	162,983	23,312	137	23,449
No Action Alternative	222,517	196,405	26,961	138	27,099
Difference	-36,535	33,421	3,649	2	3,650
Percent Difference[3]	-14	21	16	1	16
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	155,104	176,315	1,060	47	1,107
No Action Alternative	90,910	197,835	1,943	54	1,997
Difference	-64,194	21,520	883	7	890
Percent Difference	-41	12	83	15	80
Above Normal (12.5%)					
Second Basis of Comparison	438,691	167,899	63,706	103	63,808
No Action Alternative	469,585	220,960	53,686	94	53,779
Difference	30,894	53,061	-10,020	-9	-10,029
Percent Difference	7	32	-16	-8	-16
Below Normal (17.5%)					
Second Basis of Comparison	337,945	142,925	18,481	41	18,522
No Action Alternative	275,022	176,292	19,822	61	19,884
Difference	-62,922	33,367	1,341	21	1,362
Percent Difference	-19	23	7	50	7
Dry (22.5%)					
Second Basis of Comparison	240,069	172,393	22,611	143	22,755
No Action Alternative	209,708	215,896	24,076	139	24,215
Difference	-30,361	43,503	1,465	-4	1,460
Percent Difference	-13	25	6	-3	6
Critical (15%)					
Second Basis of Comparison	271,006	139,289	44,553	461	45,014
No Action Alternative	259,734	167,072	71,553	447	72,000
Difference	-11,272	27,783	27,000	-14	26,985
Percent Difference	-4	20	61	-3	60

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-4-18. Annual Mortality by Cause for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	149,945	295,539	445,484
No Action Alternative	178,654	267,367	446,021
Difference	28,708	-28,172	537
Percent Difference[3]	19	-10	0
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	1,273	331,252	332,525
No Action Alternative	3,522	287,219	290,741
Difference	2,249	-44,034	-41,785
Percent Difference	177	-13	-13
Above Normal (12.5%)			
Second Basis of Comparison	388,548	281,850	670,398
No Action Alternative	504,624	239,700	744,324
Difference	116,076	-42,150	73,926
Percent Difference	30	-15	11
Below Normal (17.5%)			
Second Basis of Comparison	218,115	281,277	499,391
No Action Alternative	212,903	258,295	471,198
Difference	-5,212	-22,981	-28,193
Percent Difference	-2	-8	-6
Dry (22.5%)			
Second Basis of Comparison	134,348	300,869	435,217
No Action Alternative	155,797	294,022	449,819
Difference	21,449	-6,847	14,602
Percent Difference	16	-2	3
Critical (15%)			
Second Basis of Comparison	217,099	238,210	455,309
No Action Alternative	280,793	218,012	498,805
Difference	63,694	-20,198	43,496
Percent Difference	29	-8	10

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-19. Annual Mortality by Cause and Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	0	151,512	107,540	20,257	142,726	22,149	1,300	445,484
No Action Alternative	0	93,980	128,537	24,093	172,312	26,023	1,076	446,021
Difference	0	-57,532	20,997	3,836	29,585	3,875	-225	537
Percent Difference[3]	57	-38	20	19	21	17	-17	0
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	0	153,836	1,268	3	176,312	3	1,104	332,525
No Action Alternative	0	88,673	2,236	182	197,652	1,103	893	290,741
Difference	0	-65,163	969	180	21,340	1,101	-211	-41,784
Percent Difference	0	-42	76	6,482	12	44,038	-19	-13
Above Normal (12.5%)								
Second Basis of Comparison	0	169,913	268,778	56,974	110,925	62,797	1,012	670,398
No Action Alternative	0	83,031	386,554	64,945	156,015	53,125	654	744,324
Difference	0	-86,882	117,776	7,972	45,090	-9,671	-358	73,926
Percent Difference	0	-51	44	14	41	-15	-35	11
Below Normal (17.5%)								
Second Basis of Comparison	0	157,331	180,614	20,113	122,812	17,388	1,134	499,391
No Action Alternative	0	101,792	173,231	20,940	155,352	18,732	1,152	471,198
Difference	0	-55,539	-7,383	827	32,540	1,344	18	-28,193
Percent Difference	0	-35	-4	4	26	8	2	-6
Dry (22.5%)								
Second Basis of Comparison	1	148,149	91,919	21,162	151,231	21,266	1,488	435,217
No Action Alternative	2	100,064	109,642	23,024	192,872	23,129	1,086	449,819
Difference	0	-48,085	17,723	1,862	41,641	1,863	-402	14,602
Percent Difference	30	-32	19	9	28	9	-27	3
Critical (15%)								
Second Basis of Comparison	0	129,397	141,609	32,354	106,935	43,136	1,878	455,309
No Action Alternative	1	96,360	163,373	47,138	119,933	70,281	1,719	498,805
Difference	1	-33,037	21,764	14,784	12,999	27,145	-160	43,496
Percent Difference	0	-26	15	46	12	63	-9	10

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-20. Annual Mortality by All Factors for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	0	151,512	0	107,540	20,257	142,726	22,146	1,167	3	134	445,484
No Action Alternative	0	93,980	0	128,537	24,093	172,312	26,020	941	3	135	446,021
Difference	0	-57,532	0	20,997	3,836	29,585	3,875	-226	0	1	537
Percent Difference[3]	57	-38	0	20	19	21	17	-19	8	1	0
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	0	153,836	0	1,268	3	176,312	3	1,057	0	47	332,525
No Action Alternative	0	88,673	0	2,236	182	197,652	1,101	842	3	51	290,741
Difference	0	-65,163	0	969	180	21,340	1,098	-215	3	4	-41,784
Percent Difference	0	-42	0	76	6,482	12	43,923	-20	0	9	-13
Above Normal (12.5%)											
Second Basis of Comparison	0	169,913	0	268,778	56,974	110,925	62,779	926	17	85	670,398
No Action Alternative	0	83,031	0	386,554	64,945	156,015	53,122	564	3	90	744,324
Difference	0	-86,882	0	117,776	7,972	45,090	-9,658	-363	-14	5	73,926
Percent Difference	0	-51	0	44	14	41	-15	-39	-80	6	11
Below Normal (17.5%)											
Second Basis of Comparison	0	157,331	0	180,614	20,113	122,812	17,388	1,093	0	41	499,391
No Action Alternative	0	101,792	0	173,231	20,940	155,352	18,732	1,091	0	61	471,198
Difference	0	-55,539	0	-7,383	827	32,540	1,344	-3	0	21	-28,193
Percent Difference	0	-35	0	-4	4	26	8	0	0	50	-6
Dry (22.5%)											
Second Basis of Comparison	1	148,149	0	91,919	21,162	151,231	21,264	1,348	3	141	435,217
No Action Alternative	2	100,064	0	109,642	23,024	192,872	23,129	947	0	139	449,819
Difference	0	-48,085	0	17,723	1,862	41,641	1,865	-401	-3	-2	14,602
Percent Difference	30	-32	0	19	9	28	9	-30	-100	-1	3
Critical (15%)											
Second Basis of Comparison	0	129,397	0	141,609	32,354	106,935	43,135	1,418	1	460	455,309
No Action Alternative	1	96,360	0	163,373	47,138	119,933	70,269	1,283	12	435	498,805
Difference	1	-33,037	0	21,764	14,784	12,999	27,135	-135	11	-25	43,496
Percent Difference	0	-26	0	15	46	12	63	-10	900	-5	10

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-21. Annual Potential Production for Winter-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	1,885,400
Alternative 3	1,897,120
Difference	11,720
Percent Difference[3]	1
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	1,930,740
Alternative 3	1,944,614
Difference	13,874
Percent Difference	1
Above Normal (12.5%)	
Second Basis of Comparison	1,746,928
Alternative 3	1,752,903
Difference	5,975
Percent Difference	0
Below Normal (17.5%)	
Second Basis of Comparison	1,847,619
Alternative 3	1,840,343
Difference	-7,277
Percent Difference	0
Dry (22.5%)	
Second Basis of Comparison	1,894,107
Alternative 3	1,919,466
Difference	25,359
Percent Difference	1
Critical (15%)	
Second Basis of Comparison	1,933,573
Alternative 3	1,947,116
Difference	13,543
Percent Difference	1

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-4-22. Annual Mortality by Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	259,052	162,983	23,312	137	23,449
Alternative 3	237,813	165,266	21,803	140	21,943
Difference	-21,239	2,283	-1,509	4	-1,506
Percent Difference[3]	-8	1	-6	3	-6
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	155,104	176,315	1,060	47	1,107
Alternative 3	131,631	174,265	1,188	34	1,222
Difference	-23,473	-2,050	128	-13	116
Percent Difference	-15	-1	12	-28	10
Above Normal (12.5%)					
Second Basis of Comparison	438,691	167,899	63,706	103	63,808
Alternative 3	443,487	166,295	54,841	70	54,912
Difference	4,795	-1,603	-8,864	-32	-8,897
Percent Difference	1	-1	-14	-31	-14
Below Normal (17.5%)					
Second Basis of Comparison	337,945	142,925	18,481	41	18,522
Alternative 3	324,721	159,309	20,994	55	21,049
Difference	-13,223	16,384	2,513	14	2,527
Percent Difference	-4	11	14	35	14
Dry (22.5%)					
Second Basis of Comparison	240,069	172,393	22,611	143	22,755
Alternative 3	207,993	170,244	16,866	166	17,032
Difference	-32,076	-2,150	-5,745	22	-5,723
Percent Difference	-13	-1	-25	16	-25
Critical (15%)					
Second Basis of Comparison	271,006	139,289	44,553	461	45,014
Alternative 3	239,816	144,393	47,286	490	47,776
Difference	-31,190	5,104	2,733	29	2,762
Percent Difference	-12	4	6	6	6

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-4-23. Annual Mortality by Cause for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	149,945	295,539	445,484
Alternative 3	142,827	282,195	425,022
Difference	-7,118	-13,344	-20,462
Percent Difference[3]	-5	-5	-5
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	1,273	331,252	332,525
Alternative 3	1,126	305,992	307,118
Difference	-147	-25,261	-25,407
Percent Difference	-12	-8	-8
Above Normal (12.5%)			
Second Basis of Comparison	388,548	281,850	670,398
Alternative 3	430,489	234,205	664,694
Difference	41,941	-47,645	-5,704
Percent Difference	11	-17	-1
Below Normal (17.5%)			
Second Basis of Comparison	218,115	281,277	499,391
Alternative 3	210,138	294,942	505,080
Difference	-7,977	13,666	5,688
Percent Difference	-4	5	1
Dry (22.5%)			
Second Basis of Comparison	134,348	300,869	435,217
Alternative 3	95,635	299,633	395,268
Difference	-38,713	-1,236	-39,949
Percent Difference	-29	0	-9
Critical (15%)			
Second Basis of Comparison	217,099	238,210	455,309
Alternative 3	202,386	229,599	431,984
Difference	-14,713	-8,612	-23,325
Percent Difference	-7	-4	-5

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-24. Annual Mortality by Cause and Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year)							
	Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	0	151,512	107,540	20,257	142,726	22,149	1,300	445,484
Alternative 3	0	135,049	102,763	19,523	145,743	20,541	1,402	425,022
Difference	0	-16,462	-4,776	-734	3,017	-1,607	102	-20,462
Percent Difference[3]	-100	-11	-4	-4	2	-7	8	-5
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	0	153,836	1,268	3	176,312	3	1,104	332,525
Alternative 3	0	130,505	1,126	1	174,265	0	1,222	307,118
Difference	0	-23,331	-142	-2	-2,048	-3	118	-25,407
Percent Difference	0	-15	-11	-69	-1	-100	11	-8
Above Normal (12.5%)								
Second Basis of Comparison	0	169,913	268,778	56,974	110,925	62,797	1,012	670,398
Alternative 3	0	119,969	323,517	52,929	113,366	54,043	869	664,694
Difference	0	-49,944	54,739	-4,045	2,441	-8,754	-143	-5,704
Percent Difference	0	-29	20	-7	2	-14	-14	-1
Below Normal (17.5%)								
Second Basis of Comparison	0	157,331	180,614	20,113	122,812	17,388	1,134	499,391
Alternative 3	0	155,899	168,822	21,483	137,826	19,833	1,217	505,080
Difference	0	-1,432	-11,792	1,370	15,015	2,445	83	5,688
Percent Difference	0	-1	-7	7	12	14	7	1
Dry (22.5%)								
Second Basis of Comparison	1	148,149	91,919	21,162	151,231	21,266	1,488	435,217
Alternative 3	0	146,046	61,947	18,345	151,898	15,343	1,689	395,268
Difference	-1	-2,103	-29,972	-2,817	667	-5,923	200	-39,949
Percent Difference	-100	-1	-33	-13	0	-28	13	-9
Critical (15%)								
Second Basis of Comparison	0	129,397	141,609	32,354	106,935	43,136	1,878	455,309
Alternative 3	0	116,643	123,172	33,460	110,932	45,753	2,023	431,984
Difference	0	-12,754	-18,436	1,107	3,997	2,617	145	-23,325
Percent Difference	0	-10	-13	3	4	6	8	-5

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-25. Annual Mortality by All Factors for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	0	151,512	0	107,540	20,257	142,726	22,146	1,167	3	134	445,484
Alternative 3	0	135,049	0	102,763	19,523	145,743	20,536	1,267	5	135	425,022
Difference	0	-16,462	0	-4,776	-734	3,017	-1,609	100	2	2	-20,462
Percent Difference[3]	-100	-11	0	-4	-4	2	-7	9	73	1	-5
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	0	153,836	0	1,268	3	176,312	3	1,057	0	47	332,525
Alternative 3	0	130,505	0	1,126	1	174,265	0	1,188	0	34	307,118
Difference	0	-23,331	0	-142	-2	-2,048	-3	131	0	-13	-25,407
Percent Difference	0	-15	0	-11	-69	-1	-100	12	0	-28	-8
Above Normal (12.5%)											
Second Basis of Comparison	0	169,913	0	268,778	56,974	110,925	62,779	926	17	85	670,398
Alternative 3	0	119,969	0	323,517	52,929	113,366	54,043	799	0	70	664,694
Difference	0	-49,944	0	54,739	-4,045	2,441	-8,737	-128	-17	-15	-5,704
Percent Difference	0	-29	0	20	-7	2	-14	-14	-100	-17	-1
Below Normal (17.5%)											
Second Basis of Comparison	0	157,331	0	180,614	20,113	122,812	17,388	1,093	0	41	499,391
Alternative 3	0	155,899	0	168,822	21,483	137,826	19,832	1,162	1	54	505,080
Difference	0	-1,432	0	-11,792	1,370	15,015	2,444	69	1	14	5,688
Percent Difference	0	-1	0	-7	7	12	14	6	0	34	1
Dry (22.5%)											
Second Basis of Comparison	1	148,149	0	91,919	21,162	151,231	21,264	1,348	3	141	435,217
Alternative 3	0	146,046	0	61,947	18,345	151,898	15,343	1,523	0	166	395,268
Difference	-1	-2,103	0	-29,972	-2,817	667	-5,921	176	-3	25	-39,949
Percent Difference	-100	-1	0	-33	-13	0	-28	13	-100	18	-9
Critical (15%)											
Second Basis of Comparison	0	129,397	0	141,609	32,354	106,935	43,135	1,418	1	460	455,309
Alternative 3	0	116,643	0	123,172	33,460	110,932	45,720	1,566	33	457	431,984
Difference	0	-12,754	0	-18,436	1,107	3,997	2,585	148	32	-3	-23,325
Percent Difference	0	-10	0	-13	3	4	6	10	2,700	-1	-5

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-26. Annual Potential Production for Winter-Run Chinook Salmon

Analysis Period	Annual Potential Production (# of Fish/year)
Long-term	
Full Simulation Period[1]	
Second Basis of Comparison	1,885,400
Alternative 5	1,883,178
Difference	-2,222
Percent Difference[3]	0
Water Year Types[2]	
Wet (32.5%)	
Second Basis of Comparison	1,930,740
Alternative 5	1,943,241
Difference	12,501
Percent Difference	1
Above Normal (12.5%)	
Second Basis of Comparison	1,746,928
Alternative 5	1,698,809
Difference	-48,120
Percent Difference	-3
Below Normal (17.5%)	
Second Basis of Comparison	1,847,619
Alternative 5	1,898,667
Difference	51,047
Percent Difference	3
Dry (22.5%)	
Second Basis of Comparison	1,894,107
Alternative 5	1,876,977
Difference	-17,130
Percent Difference	-1
Critical (15%)	
Second Basis of Comparison	1,933,573
Alternative 5	1,897,912
Difference	-35,661
Percent Difference	-2

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the annual average

Table B-4-27. Annual Mortality by Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Eggs	Fry	Pre-Smolt	Immature-Smolt	Juvenile (Pre & Immature Smolt)
Long-term					
Full Simulation Period[1]					
Second Basis of Comparison	259,052	162,983	23,312	137	23,449
Alternative 5	203,248	207,870	29,865	124	29,989
Difference	-55,804	44,886	6,553	-12	6,540
Percent Difference[3]	-22	28	28	-9	28
Water Year Types[2]					
Wet (32.5%)					
Second Basis of Comparison	155,104	176,315	1,060	47	1,107
Alternative 5	87,970	210,570	4,085	28	4,113
Difference	-67,133	34,255	3,025	-19	3,007
Percent Difference	-43	19	285	-40	272
Above Normal (12.5%)					
Second Basis of Comparison	438,691	167,899	63,706	103	63,808
Alternative 5	464,585	236,533	52,336	89	52,425
Difference	25,893	68,634	-11,369	-14	-11,383
Percent Difference	6	41	-18	-13	-18
Below Normal (17.5%)					
Second Basis of Comparison	337,945	142,925	18,481	41	18,522
Alternative 5	191,541	178,323	31,052	108	31,160
Difference	-146,403	35,399	12,571	67	12,638
Percent Difference	-43	25	68	165	68
Dry (22.5%)					
Second Basis of Comparison	240,069	172,393	22,611	143	22,755
Alternative 5	200,255	234,855	20,690	134	20,824
Difference	-39,814	62,462	-1,921	-9	-1,931
Percent Difference	-17	36	-8	-6	-8
Critical (15%)					
Second Basis of Comparison	271,006	139,289	44,553	461	45,014
Alternative 5	253,379	172,126	79,375	365	79,740
Difference	-17,627	32,838	34,822	-96	34,726
Percent Difference	-7	24	78	-21	77

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

5 Eggs mortality includes pre-spawn mortality

Table B-4-28. Annual Mortality by Cause for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Temperature	Flow	Total
Long-term			
Full Simulation Period[1]			
Second Basis of Comparison	149,945	295,539	445,484
Alternative 5	170,139	270,968	441,107
Difference	20,193	-24,571	-4,378
Percent Difference[3]	13	-8	-1
Water Year Types[2]			
Wet (32.5%)			
Second Basis of Comparison	1,273	331,252	332,525
Alternative 5	7,569	295,085	302,654
Difference	6,296	-36,168	-29,872
Percent Difference	495	-11	-9
Above Normal (12.5%)			
Second Basis of Comparison	388,548	281,850	670,398
Alternative 5	499,928	253,615	753,543
Difference	111,380	-28,235	83,145
Percent Difference	29	-10	12
Below Normal (17.5%)			
Second Basis of Comparison	218,115	281,277	499,391
Alternative 5	149,215	251,809	401,024
Difference	-68,900	-29,468	-98,367
Percent Difference	-32	-10	-20
Dry (22.5%)			
Second Basis of Comparison	134,348	300,869	435,217
Alternative 5	146,764	309,170	455,934
Difference	12,416	8,302	20,717
Percent Difference	9	3	5
Critical (15%)			
Second Basis of Comparison	217,099	238,210	455,309
Alternative 5	307,023	198,222	505,246
Difference	89,925	-39,988	49,937
Percent Difference	41	-17	11

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-29. Annual Mortality by Cause and Life Stage for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Eggs Flow	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Juvenile Temperature	Juvenile Habitat	Total
Long-term								
Full Simulation Period[1]								
Second Basis of Comparison	0	151,512	107,540	20,257	142,726	22,149	1,300	445,484
Alternative 5	0	89,100	114,147	27,082	180,788	28,909	1,080	441,107
Difference	0	-62,412	6,608	6,825	38,061	6,761	-220	-4,378
Percent Difference[3]	57	-41	6	34	27	31	-17	-1
Water Year Types[2]								
Wet (32.5%)								
Second Basis of Comparison	0	153,836	1,268	3	176,312	3	1,104	332,525
Alternative 5	0	84,683	3,288	977	209,593	3,304	809	302,654
Difference	0	-69,153	2,020	974	33,281	3,302	-295	-29,872
Percent Difference	0	-45	159	35,183	19	132,074	-27	-9
Above Normal (12.5%)								
Second Basis of Comparison	0	169,913	268,778	56,974	110,925	62,797	1,012	670,398
Alternative 5	0	80,569	384,016	64,143	172,390	51,769	656	753,543
Difference	0	-89,345	115,238	7,169	61,465	-11,028	-355	83,145
Percent Difference	0	-53	43	13	55	-18	-35	12
Below Normal (17.5%)								
Second Basis of Comparison	0	157,331	180,614	20,113	122,812	17,388	1,134	499,391
Alternative 5	0	103,637	87,904	31,368	146,956	29,943	1,216	401,024
Difference	0	-53,694	-92,710	11,254	24,144	12,556	82	-98,367
Percent Difference	0	-34	-51	56	20	72	7	-20
Dry (22.5%)								
Second Basis of Comparison	1	148,149	91,919	21,162	151,231	21,266	1,488	435,217
Alternative 5	2	94,247	106,007	21,110	213,744	19,645	1,179	455,934
Difference	0	-53,902	14,088	-52	62,514	-1,621	-309	20,717
Percent Difference	30	-36	15	0	41	-8	-21	5
Critical (15%)								
Second Basis of Comparison	0	129,397	141,609	32,354	106,935	43,136	1,878	455,309
Alternative 5	1	81,098	172,281	56,716	115,410	78,025	1,715	505,246
Difference	1	-48,299	30,672	24,363	8,475	34,889	-164	49,937
Percent Difference	0	-37	22	75	8	81	-9	11

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Table B-4-30. Annual Mortality by All Factors for Winter-Run Chinook Salmon

Analysis Period	Annual Mortality[4] (# of Fish/year) Pre-Spawn Mortality	Incubation	Super-imposition	Eggs - Temperature	Fry - Temperature	Fry - Habitat	Pre-smolt - Temperature	Pre-smolt - Habitat	Smolt - Temperature	Smolt - Habitat	Total
Long-term											
Full Simulation Period[1]											
Second Basis of Comparison	0	151,512	0	107,540	20,257	142,726	22,146	1,167	3	134	445,484
Alternative 5	0	89,100	0	114,147	27,082	180,788	28,902	963	7	117	441,107
Difference	0	-62,412	0	6,608	6,825	38,061	6,757	-204	4	-16	-4,378
Percent Difference[3]	57	-41	0	6	34	27	31	-17	135	-12	-1
Water Year Types[2]											
Wet (32.5%)											
Second Basis of Comparison	0	153,836	0	1,268	3	176,312	3	1,057	0	47	332,525
Alternative 5	0	84,683	0	3,288	977	209,593	3,302	784	3	26	302,654
Difference	0	-69,153	0	2,020	974	33,281	3,299	-274	3	-21	-29,872
Percent Difference	0	-45	0	159	35,183	19	131,968	-26	0	-45	-9
Above Normal (12.5%)											
Second Basis of Comparison	0	169,913	0	268,778	56,974	110,925	62,779	926	17	85	670,398
Alternative 5	0	80,569	0	384,016	64,143	172,390	51,732	604	37	52	753,543
Difference	0	-89,345	0	115,238	7,169	61,465	-11,047	-322	19	-33	83,145
Percent Difference	0	-53	0	43	13	55	-18	-35	113	-39	12
Below Normal (17.5%)											
Second Basis of Comparison	0	157,331	0	180,614	20,113	122,812	17,388	1,093	0	41	499,391
Alternative 5	0	103,637	0	87,904	31,368	146,956	29,943	1,108	0	108	401,024
Difference	0	-53,694	0	-92,710	11,254	24,144	12,556	15	0	67	-98,367
Percent Difference	0	-34	0	-51	56	20	72	1	0	165	-20
Dry (22.5%)											
Second Basis of Comparison	1	148,149	0	91,919	21,162	151,231	21,264	1,348	3	141	435,217
Alternative 5	2	94,247	0	106,007	21,110	213,744	19,645	1,045	0	134	455,934
Difference	0	-53,902	0	14,088	-52	62,514	-1,619	-303	-3	-7	20,717
Percent Difference	30	-36	0	15	0	41	-8	-22	-100	-5	5
Critical (15%)											
Second Basis of Comparison	0	129,397	0	141,609	32,354	106,935	43,135	1,418	1	460	455,309
Alternative 5	1	81,098	0	172,281	56,716	115,410	78,016	1,359	9	356	505,246
Difference	1	-48,299	0	30,672	24,363	8,475	34,881	-60	8	-104	49,937
Percent Difference	0	-37	0	22	75	8	81	-4	679	-23	11

1 Based on the 80-year simulation period

2 As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB 1995). Water years may not correspond to the biological years in SALMOD.

3 Relative difference of the Annual average

4 Mortality values do not include base mortality

Appendix 9E

Weighted Useable Area Analysis

This appendix provides information about the methods and assumptions used for the Remanded Biological Opinions on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis. It is organized in the following sections:

- Section 9E.1.1: Methodology
  - The fish and aquatic resources impacts analysis used weighted useable area (WUA) as a metric for evaluating changes in physical habitat related to flow. This section describes the overall analytical approach and assumptions. The following species are analyzed in this appendix:
    - Clear Creek Spring-run Chinook Salmon
    - Clear Creek Fall-run Chinook Salmon
    - Clear Creek Steelhead/Rainbow Trout
    - Sacramento River Fall-run Chinook Salmon
    - Sacramento River Late-Fall-run Chinook Salmon
    - Sacramento River Winter-run Chinook Salmon
    - Sacramento River Steelhead/Rainbow Trout
    - Lower Feather River Fall-run Chinook Salmon
    - Lower Feather River Steelhead
    - Lower American River Fall-run Chinook Salmon
    - Lower American River Steelhead
- Section 9E.1.2: Assumptions
  - This section provides a brief description of the assumptions for the WUA analysis for simulations of the No Action Alternative, Second Basis of Comparison, and other alternatives.
- Section 9E.2: Weighted Useable Area-Discharge Relationships
  - This section presents the WUA-discharge relationships that served as the basis for evaluating changes in habitat related to flow.
- Section 9E.3: Results
  - This section presents the WUA values generated for each water body, species, and life stage evaluated.

9E.1 Methodology and Assumptions

9E.1.1 Methodology

To compare the operational flow regime and evaluate the potential effects on habitat for anadromous species inhabiting streams, the relationships between streamflow and habitat availability were determined for each life stage of these species in the rivers in which flows may be altered by CVP and SWP operations.

Several studies have been conducted using the models and techniques contained within the Instream Flow Incremental Methodology (IFIM) to establish these relationships in streams within the study area. The analytic variable provided by the IFIM is total habitat, in units of WUA, for each life stage (fry, juvenile, and spawning) of each evaluation species (or race as applied to Chinook Salmon). Habitat (WUA) incorporates both macro- and microhabitat features. Macrohabitat features include changes in flow, and microhabitat features include the hydraulic and structural conditions (depth, velocity, substrate, or cover) affected by flow, which define the actual living space of the organisms. The total habitat available to a species/life stage at any streamflow is the area of overlap between available microhabitat and macrohabitat conditions. Because the combination of depths, velocities, and substrates preferred by species and life stages varies, WUA values at a given flow differ substantially for the species and life stages evaluated.

WUA-flow relationships have been developed for only some of the rivers where simulated flows were available. Therefore, flow-dependent habitat availability was evaluated quantitatively only for Clear Creek and the Sacramento, Feather, and American rivers and was not reported for other rivers evaluated in this EIS. Tables of the spawning habitat-discharge relationships used in the calculations of spawning WUA for these rivers are listed in Section 9E.3. Because the WUA-flow relationships developed by the most recent IFIM studies present WUA values within particular flow ranges at variable steps, the monthly flow for a particular reach often fell between two flows for which there were WUA values. In these cases, the value was determined by linear interpolation between the available WUA values for the flows immediately below and above the target flow. When the target flow was lower than the lowermost flow for which a WUA value exists, the corresponding WUA value was determined by linear interpolation between a flow of zero and the lowermost flow for which a WUA value exists. When the target flow was higher than the highest flow for which a WUA value exists, the corresponding WUA value was determined by assuming the WUA value for the highest flow.

WUA tables are available for three segments of Clear Creek: the Upper Alluvial Segment (Whiskeytown Dam to Camp Bridge); Canyon Segment (Camp Bridge to Clear Creek Road Bridge); and Lower Alluvial Segment (Clear Creek Road Bridge to Sacramento River). Spring-run Chinook Salmon spawn in the upper two segments, fall-run Chinook Salmon spawn in the lower segment, and Steelhead/Rainbow Trout spawn in all three segments. Spring-run Chinook Salmon and Steelhead fry and juveniles rear in all three segments, while fall-run Chinook Salmon rear in the lower segment. The relationships between WUA and flow in all of these segments for each of these species and life stages are based upon the flow released below Whiskeytown Dam and are described in USFWS (2007, 2011a, 2011b, 2013). For this analysis, if the WUA values for a species and life stage were in the upper section only, the upper two segments were combined for an upper Clear Creek total WUA value at each flow. The same approach was done for the lower segment. If the species and life stage spanned the entire Clear Creek, WUA values were combined for the three segments to provide an estimate of the total WUA available at each flow.

WUA tables are available for two segments of the Sacramento River: Keswick Dam to Battle Creek and Battle Creek to Deer Creek. Spring-run and fall-run Chinook Salmon and Steelhead spawn only in the upper segment; fry and juveniles rear in both segments. Each of these segments have multiple reaches identified and for which WUA was calculated (USFWS 2005a, 2005b, 2006). For this analysis, WUA estimates in each reach between Keswick Dam and Battle Creek were combined into an estimate of the total amount of habitat available in that river segment. Similarly, WUA estimates for reaches between Battle Creek and Deer Creek were combined into an estimate of the total amount of WUA available in that river segment.

For the American River, WUA estimates were available only for fall-run Chinook Salmon and Steelhead spawning. USFWS (2003) identified five reaches between Sailor Bar (River Mile [RM] 22.1) and Rossmoor (RM 16.6). The relationships between WUA and flow in all of these reaches was based upon the flow released below Nimbus Dam. For this analysis, WUA estimates within the five reaches were combined into an estimate of the total WUA in the American River at a given flow released from Nimbus Dam.

For the Feather River, WUA estimates are available for spring-run and fall-run Chinook Salmon and Steelhead spawning in two reaches: the low-flow channel from the fish barrier dam (RM 67) to the Thermalito Afterbay outlet (RM 59) and the lower Feather River high-flow channel from the Thermalito Afterbay outlet to Honcut Creek (RM 44). The relationship between WUA and flow in these reaches for each of these species is described in DWR (2004). The WUA-flow relationships developed by DWR (2004) are based upon the merging of IFIM data collected by DWR in 1992 and reviewed by DWR (2002), with new depth, velocity, substrate, and cover data collected along supplemental Physical Habitat Simulation System (PHABSIM) cross-section transects in 2002 and 2003. For this analysis, WUA estimates within the two reaches were kept separate, and estimates of WUA in each reach were based upon the different flows in each reach.

WUA values were calculated and presented only on a monthly time-step, and not as seasonal or annual values. WUA values based on the monthly CalSim II flows were prepared for detailed evaluation of the alternatives. Monthly WUA values are presented as the average total WUA in each river segment, for the entire 82-year simulation period and the average total WUA in each of five water year types for each alternative. Differences between the alternatives and the two bases of comparison (No Action Alternative and Second Basis of Comparison) were used to identify the effects of each alternative on habitat availability (WUA) for each species and life stage in each river. These comparisons were made only for the months in which the species and life stage were anticipated to be present in each river.

The ability to estimate WUA values is limited because of the monthly time-step of the CalSim II results. The monthly time-step is most limiting during the fall through spring seasons, when flows vary significantly on a daily basis because of hydrologic conditions. Hydrologic variability in the runoff and tributary flows cause significant variability of flows in the areas of interest for the WUA computations. During the periods of low flows, regulated flows from reservoir releases dampen the impact of daily variability of flows on WUA estimates. Monthly time-step simulation results do not capture the daily variability or change in variability between alternative operations. Nonetheless, these estimates provide an indication of the habitat differences among the alternative operational scenarios evaluated.

9E.1.2 Assumptions

Assumptions for the WUA analysis for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5 were developed with the surface water modeling tools and are described in Appendix 5A, Section B.

The following CalSim II model simulations were performed as the basis of evaluating the impacts of No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for simulation purposes, considered the same as Second Basis of Comparison.
- Alternative 5

Alternatives 1 and 4 modeling assumptions are the same as the Second Basis of Comparison, and Alternative 2 modeling assumptions are the same as the No Action Alternative; therefore, the assumptions for Alternatives 1, 2, and 4 are not discussed separately in this document.

Assumptions for each of these alternatives are reflected to monthly CalSim II flows that are used in the WUA analysis described in this section. The WUA area-discharge relationships described below pertain to all alternatives.

The WUA analysis starts with use of the monthly CalSim II model to project CVP and SWP water deliveries. Because this regional model uses monthly time steps to simulate requirements that change weekly or change through observations, it was determined that changes in the model of 5 percent or less were related to the uncertainties in the model processing. Therefore, reductions of 5 percent or less in this comparative WUA analysis are considered to be not substantially different, or “similar.”

9E.2 Weighted Useable Area-Discharge Relationships

The WUA-discharge relationships (WUA curves) used for the analysis are presented at the end of this appendix by river reach and species. The “total” column represents the relationship that was used to calculate the WUA for each species and life-stage. Adjustments were made to the WUA relationship by adding a minimum and a maximum value at the first and last row of each table to make the interpolation scheme function.

9E.3 Results

The results of the WUA analysis are presented in the tables listed below. The tables show monthly WUA in acres for each river reach and fish species (as described in Section 9E.1.1) with monthly exceedance probabilities and long-term and water year type averages over the 82-year CalSim II simulation period. The tables also present the incremental difference in WUA for each alternative as compared to the No Action Alternative and the Second Basis of Comparison.

The results are presented in the following tables at the end of this appendix:

- C.1. Upper Clear Creek Spring-run Spawning WUA
- C.2. Total Clear Creek Spring-run Fry Rearing WUA
- C.3. Total Clear Creek Spring-run Juvenile Rearing WUA
- C.4. Lower Clear Creek Fall-run Spawning WUA
- C.5. Lower Clear Creek Fall-run Fry Rearing WUA
- C.6. Lower Clear Creek Fall-run Juvenile Rearing WUA
- C.7. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA
- C.8. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA
- C.9. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA
- C.10. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA
- C.11. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA
- C.12. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA
- C.13. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA

- C.14. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA
- C.15. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA
- C.16. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA
- C.17. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA
- C.18. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA
- C.19. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA
- C.20. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA
- C.21. Feather River Low Flow Channel Steelhead Spawning WUA
- C.22. Feather River below Thermalito Steelhead Spawning WUA
- C.23. Feather River Low Flow Channel Fall-run Spawning WUA
- C.24. Feather River below Thermalito Fall-run Spawning WUA
- C.25. American River below Nimbus Fall-run Spawning WUA
- C.26. American River below Nimbus Steelhead Spawning WUA

9E.4 References

DWR (California Department of Water Resources). 2002. *Phase 1: Evaluation of project effects on instream flows and fish habitat*. Draft Report, SP-F16. Oroville Facilities Relicensing FERC Project No. 2100.

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USFWS (U.S. Fish and Wildlife Service). 2003. *Comparison of PHABSIM and 2-D Modeling of habitat for steelhead and fall-run Chinook Salmon spawning in the lower American River*.

_____. 2005a. *Flow-habitat relationships for fall-run Chinook Salmon spawning in the Sacramento River between Battle Creek and Clear Creek.*

_____. 2005b. *Flow-habitat relationships for Chinook Salmon rearing in the Sacramento River between Keswick Dam and Battle Creek.*

_____. 2006. *Relationships between flow fluctuations and redd dewatering and juvenile stranding for Chinook Salmon and steelhead in the Sacramento River between Keswick Dam and Battle Creek.*

_____. 2007. *Flow-habitat relationships for spring Chinook Salmon and steelhead/Rainbow Trout spawning in Clear Creek between Whiskeytown Dam and Clear Creek Road*.

_____. 2011a. *Flow-habitat relationships for fall-run Chinook Salmon and steelhead/Rainbow Trout spawning in Clear Creek between Clear Creek Road and the Sacramento River*.

_____. 2011b. *Flow-habitat relationships for spring-run Chinook Salmon and steelhead/Rainbow Trout rearing in Clear Creek between Whiskeytown Dam and Clear Creek Road*.

_____. 2013. *Flow-habitat relationships for spring-run and fall-run Chinook Salmon and steelhead/Rainbow Trout rearing in Clear Creek between Clear Creek Road and the Sacramento River*.

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Table 9E.B.1 Clear Creek Spring-Run WUA Curves

	WUA (square feet)		
Flow (cfs)	**Upper Clear Creek Spring-run Spawning**	**Total Clear Creek Spring-run Fry Rearing**	**Total Clear Creek Spring-run Juvenile Rearing**
0	0	0	0
50	1,737	305,087	181,084
75	3,319	300,786	231,295
100	4,986	302,878	276,361
125	6,504	308,988	316,822
150	7,948	310,298	353,767
175	9,486	314,688	391,364
200	10,739	318,856	421,350
225	11,905	330,375	447,973
250	13,020	338,441	473,325
275	14,067	355,645	495,004
300	15,078	369,849	515,631
350	16,876	381,099	552,011
400	18,463	389,480	583,890
450	19,744	407,051	605,088
500	20,726	420,617	635,094
550	21,379	438,624	653,678
600	22,034	463,029	662,533
650	22,581	470,058	676,055
700	22,855	471,109	686,271
750	22,924	476,652	693,625
800	23,039	480,913	699,399
850	22,953	497,147	701,810
900	23,012	510,275	703,629
99,999	23,012	510,275	703,629

Table 9E.B.2 Clear Creek Fall-run WUA Curves

	WUA (square feet)		
Flow (cfs)	Lower Clear Creek Fall-run Spawning	Lower Clear Creek Fall-run Fry Rearing	Lower Clear Creek Fall-run Juvenile Rearing
0	0	0	0
50	78,145	536,166	224,915
75	107,008	528,779	248,454
100	130,194	515,513	267,634
125	151,079	501,845	283,272
150	168,950	490,718	296,863
175	185,871	478,203	308,968
200	197,705	470,453	318,200
225	206,377	463,637	325,414
250	212,410	458,051	330,224
275	216,026	454,405	334,768
300	217,880	450,992	337,862
350	217,553	444,511	338,627
400	213,538	440,975	334,869
450	207,615	438,123	315,866
500	199,662	425,804	315,769
550	191,877	418,842	304,825
600	184,133	417,735	284,289
650	176,448	410,118	273,178
700	169,132	404,258	263,294
750	162,105	400,288	253,609
800	155,008	393,976	242,998
850	148,934	390,482	234,032
900	143,371	389,928	226,215
99,999	143,371	389,928	226,215

Table 9E.B.3 Clear Creek Steelhead/Rainbow Trout WUA Curves

	WUA (square feet)		
Flow (cfs)	Total Clear Creek Steelhead/Rainbow Trout Spawning	Total Clear Creek Steelhead/Rainbow Trout Fry Rearing	Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing
0	0	0	0
50	14,700	224,356	181,084
75	22,837	222,351	231,295
100	29,787	214,949	276,361
125	36,338	211,348	316,822
150	42,328	209,184	353,767
175	48,149	206,849	391,364
200	52,420	203,238	421,350
225	55,867	208,995	447,973
250	58,528	209,322	473,325
275	60,424	212,115	495,004
300	61,871	220,851	515,631
350	63,255	228,833	552,011
400	63,412	230,063	583,890
450	62,622	241,496	605,088
500	60,877	246,000	635,094
550	58,758	251,634	653,678
600	56,675	261,221	662,533
650	54,518	268,887	676,055
700	52,169	270,618	686,271
750	49,738	271,310	693,625
800	47,369	271,035	699,399
850	45,171	274,512	701,810
900	43,337	275,489	703,629
99,999	43,337	275,489	703,629

Table 9E.B.4 Sacramento River Fall-run WUA Curves

	WUA (square feet)			
Flow (cfs)	Battle Creek to Deer Creek Fall-run Spawning	Keswick to Battle Creek Fall-run Spawning	Keswick to Battle Creek Fall-run Fry Rearing	Keswick to Battle Creek Fall-run Juvenile Rearing
0	0	0	0	0
3,250	2,432,159	1,073,679	1,871,072	728,233
3,500	2,472,408	1,089,475	1,821,873	715,103
3,750	2,517,107	1,093,650	1,830,154	701,709
4,000	2,548,379	1,089,818	1,798,254	691,339
4,250	2,537,270	1,084,494	1,750,173	688,865
4,500	2,572,156	1,074,099	1,690,021	681,467
4,750	2,617,635	1,057,966	1,617,681	668,630
5,000	2,607,065	1,036,730	1,542,592	654,220
5,250	2,619,093	1,017,272	1,478,235	640,414
5,500	2,610,395	994,119	1,419,447	627,375
6,000	2,578,633	942,777	1,328,088	604,811
6,500	2,504,604	891,555	1,279,831	582,950
7,000	2,438,632	837,998	1,235,057	556,427
7,500	2,372,848	784,594	1,164,277	532,183
8,000	2,285,308	731,498	1,120,681	507,090
9,000	2,106,590	643,378	1,091,836	464,272
10,000	1,948,099	555,487	1,092,181	428,954
11,000	1,712,607	474,731	1,085,512	403,177
12,000	1,483,279	408,952	1,101,042	379,516
13,000	1,269,818	346,840	1,118,019	370,163
14,000	1,094,316	301,374	1,142,898	358,085
15,000	952,887	269,303	1,167,580	347,450
17,000	749,112	222,822	1,220,225	361,817
19,000	630,753	185,045	1,222,740	369,470
21,000	526,365	163,408	1,264,409	362,192
23,000	462,509	141,757	1,270,854	366,577
25,000	421,614	130,345	1,282,882	372,986
27,000	382,837	132,036	1,305,362	378,114
29,000	340,721	119,187	1,295,423	361,772
31,000	298,265	103,856	1,311,020	378,338
99,999	298,265	103,856	1,311,020	378,338

Table 9E.B.5 Sacramento River Late-Fall-run WUA Curves

	WUA (square feet)		
Flow (cfs)	Keswick to Battle Creek Late-Fall-run Spawning	Keswick to Battle Creek Late-Fall-run Fry Rearing	Keswick to Battle Creek Late-Fall-run Juvenile Rearing
0	0	0	0
3,250	1,357,068	1,757,540	659,077
3,500	1,378,274	1,718,590	648,446
3,750	1,378,912	1,740,549	637,005
4,000	1,370,262	1,721,404	628,277
4,250	1,359,143	1,680,035	627,744
4,500	1,342,482	1,629,936	620,092
4,750	1,320,680	1,571,143	608,977
5,000	1,295,212	1,502,665	596,274
5,250	1,271,113	1,437,972	583,959
5,500	1,243,776	1,376,346	572,860
6,000	1,181,069	1,261,669	554,054
6,500	1,122,270	1,203,340	536,133
7,000	1,065,218	1,147,957	513,493
7,500	1,012,511	1,076,669	490,854
8,000	962,228	1,032,614	471,581
9,000	881,467	996,279	433,927
10,000	808,457	1,001,320	402,178
11,000	775,199	996,976	379,536
12,000	662,349	1,032,176	359,783
13,000	591,015	1,066,055	351,167
14,000	536,623	1,113,975	340,209
15,000	490,838	1,157,098	332,332
17,000	416,672	1,168,615	350,563
19,000	343,307	1,080,514	360,158
21,000	290,800	1,116,739	355,202
23,000	236,295	1,127,194	361,149
25,000	202,402	1,134,116	369,272
27,000	185,740	1,225,596	376,024
29,000	164,178	1,262,909	363,757
31,000	140,077	1,244,123	382,314
99,999	140,077	1,244,123	382,314

Table 9E.B.6 Sacramento River Winter-run WUA Curves

	WUA (square feet)		
Flow (cfs)	Keswick to Battle Creek Winter-run Spawning	Keswick to Battle Creek Winter-run Fry Rearing	Keswick to Battle Creek Winter-run Juvenile Rearing
0	0	0	0
3,250	1,125,187	782,341	334,216
3,500	1,177,489	778,889	335,588
3,750	1,218,972	791,817	333,961
4,000	1,254,492	797,410	333,396
4,250	1,289,068	799,911	333,004
4,500	1,320,041	798,463	333,189
4,750	1,347,509	790,977	330,335
5,000	1,370,744	775,409	325,718
5,250	1,384,194	764,319	321,756
5,500	1,398,590	755,564	319,393
6,000	1,410,564	715,517	318,494
6,500	1,415,012	727,585	318,071
7,000	1,406,770	716,784	314,041
7,500	1,389,451	690,283	311,007
8,000	1,367,448	672,429	308,046
9,000	1,321,815	644,819	296,094
10,000	1,283,522	666,210	283,771
11,000	1,198,399	701,228	277,165
12,000	1,103,552	753,835	275,603
13,000	1,004,918	797,594	270,537
14,000	915,365	869,871	268,431
15,000	825,757	948,339	274,828
17,000	684,413	1,001,423	314,963
19,000	565,235	917,104	344,970
21,000	475,366	918,518	343,611
23,000	406,166	935,828	352,009
25,000	353,236	968,252	364,822
27,000	327,296	1,073,445	379,054
29,000	312,014	1,164,262	382,682
31,000	302,328	1,168,539	408,157
99,999	302,328	1,168,539	408,157

Table 9E.B.7 Sacramento River Steelhead/Rainbow Trout WUA Curves

	WUA (square feet)
Flow (cfs)	Keswick to Battle Creek Steelhead Spawning
0	0
3,250	271,412
3,500	278,641
3,750	281,518
4,000	281,229
4,250	280,488
4,500	282,045
4,750	282,780
5,000	283,534
5,250	285,728
5,500	288,401
6,000	289,884
6,500	289,103
7,000	284,623
7,500	276,950
8,000	268,176
9,000	251,698
10,000	232,933
11,000	210,724
12,000	189,312
13,000	167,383
14,000	146,119
15,000	126,295
17,000	93,806
19,000	70,820
21,000	58,872
23,000	46,682
25,000	44,177
27,000	41,301
29,000	35,380
31,000	32,295
99,999	32,295

Table 9E.B.8 Lower Feather River Fall-Run WUA Curves

	WUA (square feet)	
Flow (cfs)	Low Flow Channel Fall-run Spawning	Below Thermalito Fall-run Fry Rearing
0	0	0
150	3,460,980	20,780,100
200	5,903,400	26,322,670
250	8,565,240	30,204,290
300	11,197,250	32,691,770
350	13,691,620	33,679,540
400	15,979,160	34,378,390
450	18,011,420	34,878,890
500	19,778,950	35,137,160
550	21,271,740	35,198,090
600	22,472,430	35,058,990
650	23,416,740	34,748,930
700	24,090,230	34,278,830
750	24,525,810	32,571,050
800	24,736,140	30,408,820
850	24,741,090	28,051,660
900	24,567,120	25,750,770
950	24,248,470	23,704,410
1,000	23,821,070	21,947,580
1,100	22,655,140	20,471,850
1,200	21,237,340	19,214,760
1,300	19,662,700	18,140,940
1,400	18,012,660	17,155,790
1,500	16,416,190	16,256,150
1,600	14,861,290	15,441,510
1,800	12,004,900	14,676,420
2,000	9,588,350	13,960,600
2,250	7,178,580	13,282,640
2,500	5,454,150	12,622,640
2,750	4,264,050	11,366,810
3,000	3,523,410	10,224,170
99,999	3,523,410	10,224,170

Table 9E.B.9 Lower Feather River Steelhead WUA Curves

	WUA (square feet)	
Flow (cfs)	Low Flow Channel Steelhead Spawning	Below Thermalito Steelhead Fry Rearing
0	0	0
150	757,810	10,852,180
200	846,400	12,808,710
250	884,980	12,663,550
300	919,660	11,745,270
350	971,890	11,191,230
400	1,031,790	10,678,780
450	1,075,030	10,170,320
500	1,092,780	9,623,500
550	1,084,020	9,023,130
600	1,067,460	8,424,520
650	1,044,300	7,847,810
700	1,031,830	7,313,430
750	1,013,030	6,209,280
800	989,930	5,428,120
850	966,920	4,806,330
900	939,150	4,264,650
950	897,040	3,780,190
1,000	841,560	3,445,820
1,100	718,450	3,251,770
1,200	591,180	3,142,870
1,300	474,000	3,037,770
1,400	378,050	2,936,170
1,500	300,270	2,788,390
1,600	238,510	2,636,030
1,800	154,680	2,464,440
2,000	100,720	2,256,520
2,250	124,360	2,051,450
2,500	171,570	1,851,590
2,750	215,650	1,523,520
3,000	237,410	1,243,430
99,999	237,410	1,243,430

Table 9E.B.10 Lower American River Fall-run WUA Curves

	WUA (square feet)
	Sailor Bar to Rossmoor
Flow (cfs)	Fall-run Spawning
0	0
1,000	761,361
1,200	817,031
1,400	853,047
1,600	871,959
1,800	877,804
2,000	881,528
2,200	881,905
2,400	866,405
2,600	840,949
2,800	810,552
3,000	779,982
3,400	745,172
3,800	672,903
4,200	607,384
4,600	542,402
5,000	494,912
5,400	455,893
5,800	431,125
6,200	395,906
6,600	369,760
7,000	346,898
7,400	324,186
7,800	305,059
8,200	289,010
8,600	272,509
9,000	258,849
9,400	249,130
9,800	245,933
10,400	225,180
11,000	210,972
99,999	210,972

Table 9E.B.11 Lower American River Steelhead WUA Curves

Flow (cfs)	WUA (square feet) Sailor Bar to Rossmoor Fall-run Spawning
0	0
1,000	244,184
1,200	259,200
1,400	271,081
1,600	275,989
1,800	282,068
2,000	285,223
2,200	285,665
2,400	280,536
2,600	273,113
2,800	264,182
3,000	257,478
3,400	242,542
3,800	223,125
4,200	204,398
4,600	186,065
5,000	173,712
5,400	163,188
5,800	149,814
6,200	135,625
6,600	126,901
7,000	118,107
7,400	108,736
7,800	101,952
8,200	95,945
8,600	89,863
9,000	85,313
9,400	80,198
9,800	82,740
10,400	75,103
11,000	70,711
99,999	70,711

C.1. Upper Clear Creek Spring-run Spawning WUA

Table C-1-1. Upper Clear Creek Spring-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 1

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	0
20%	0
30%	0
40%	0
50%	0
60%	0
70%	0
80%	0
90%	0
Long Term	
Full Simulation Period[b]	0
Water Year Types[c]	
Wet (32%)	0
Above Normal (16%)	0
Below Normal (13%)	0
Dry (24%)	0
Critical (15%)	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-2. Upper Clear Creek Spring-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 3

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	0
20%	0
30%	0
40%	0
50%	0
60%	0
70%	0
80%	0
90%	0
Long Term	
Full Simulation Period[b]	0
Water Year Types[c]	
Wet (32%)	0
Above Normal (16%)	0
Below Normal (13%)	0
Dry (24%)	0
Critical (15%)	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-3. Upper Clear Creek Spring-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 5

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	0
20%	0
30%	0
40%	0
50%	0
60%	0
70%	0
80%	0
90%	0
Long Term	
Full Simulation Period[b]	0
Water Year Types[c]	
Wet (32%)	0
Above Normal (16%)	0
Below Normal (13%)	0
Dry (24%)	0
Critical (15%)	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-4. Upper Clear Creek Spring-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

No Action Alternative

Statistic	Monthly WUA (Feet2) Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Sep
Probability of Exceedance[a]	
10%	0
20%	0
30%	0
40%	0
50%	0
60%	0
70%	0
80%	0
90%	0
Long Term	
Full Simulation Period[b]	0
Water Year Types[c]	
Wet (32%)	0
Above Normal (16%)	0
Below Normal (13%)	0
Dry (24%)	0
Critical (15%)	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-5. Upper Clear Creek Spring-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 3

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)
	Sep
Probability of Exceedance[a]	
10%	0
20%	0
30%	0
40%	0
50%	0
60%	0
70%	0
80%	0
90%	0
Long Term	
Full Simulation Period[b]	0
Water Year Types[c]	
Wet (32%)	0
Above Normal (16%)	0
Below Normal (13%)	0
Dry (24%)	0
Critical (15%)	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-1-6. Upper Clear Creek Spring-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 5

Statistic	Monthly WUA (Feet2) Sep
Probability of Exceedance[a]	
10%	7,948
20%	7,948
30%	7,948
40%	7,948
50%	7,948
60%	7,948
70%	7,948
80%	7,948
90%	7,948
Long Term	
Full Simulation Period[b]	7,797
Water Year Types[c]	
Wet (32%)	7,948
Above Normal (16%)	7,948
Below Normal (13%)	7,948
Dry (24%)	7,948
Critical (15%)	6,913

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Sep
Probability of Exceedance[a]	
10%	0
20%	0
30%	0
40%	0
50%	0
60%	0
70%	0
80%	0
90%	0
Long Term	
Full Simulation Period[b]	0
Water Year Types[c]	
Wet (32%)	0
Above Normal (16%)	0
Below Normal (13%)	0
Dry (24%)	0
Critical (15%)	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

1 ## C.2. Total Clear Creek Spring-run Fry Rearing WUA

Table C-2-1. Total Clear Creek Spring-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 1

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-2. Total Clear Creek Spring-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-3. Total Clear Creek Spring-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 5

Statistic	Monthly WUA (Feet2) Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-4. Total Clear Creek Spring-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-5. Total Clear Creek Spring-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 3

Statistic	Monthly WUA (Feet2) Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-2-6. Total Clear Creek Spring-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	318,856	318,856	318,856	318,856	318,856
20%	318,856	318,856	318,856	318,856	318,856
30%	318,856	318,856	318,856	318,856	318,856
40%	318,856	318,856	318,856	318,856	318,856
50%	318,856	318,856	318,856	318,856	318,856
60%	318,856	318,856	318,856	318,856	318,856
70%	318,856	318,856	318,856	318,856	318,856
80%	318,856	318,856	318,856	318,856	318,856
90%	310,298	310,298	310,298	310,298	310,298
Long Term					
Full Simulation Period[b]	316,885	317,096	321,973	322,078	319,743
Water Year Types[c]					
Wet (32%)	318,856	318,856	333,581	333,581	326,218
Above Normal (16%)	316,216	316,881	317,539	318,198	318,198
Below Normal (13%)	318,078	318,078	318,078	318,078	318,078
Dry (24%)	316,284	316,717	317,144	317,144	317,144
Critical (15%)	313,246	313,246	313,246	313,246	313,246

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.3 Total Clear Creek Spring-run Juvenile Rearing WUA

Table C-3-1. Total Clear Creek Spring-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	497,000	421,350	249,321	249,321
20%	421,350	497,000	421,350	249,321	249,321
30%	421,350	497,000	421,350	249,321	249,321
40%	421,350	497,000	421,350	249,321	249,321
50%	421,350	497,000	421,350	249,321	249,321
60%	421,350	497,000	421,350	249,321	249,321
70%	421,350	497,000	421,350	249,321	249,321
80%	421,350	497,000	353,767	249,321	249,321
90%	353,767	460,240	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	484,633	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	497,000	421,350	249,321	249,321
Above Normal (16%)	416,151	497,000	421,350	249,321	249,321
Below Normal (13%)	415,206	493,658	409,062	249,321	249,321
Dry (24%)	407,833	487,810	397,696	249,321	249,321
Critical (15%)	375,476	430,869	289,769	249,321	249,321

Alternative 1

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	421,350	421,350	249,321	249,321
20%	421,350	421,350	421,350	249,321	249,321
30%	421,350	421,350	421,350	249,321	249,321
40%	421,350	421,350	421,350	249,321	249,321
50%	421,350	421,350	421,350	249,321	249,321
60%	421,350	421,350	421,350	249,321	249,321
70%	421,350	421,350	421,350	249,321	249,321
80%	421,350	421,350	353,767	249,321	249,321
90%	353,767	353,767	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	410,516	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	421,350	421,350	249,321	249,321
Above Normal (16%)	416,151	421,350	421,350	249,321	249,321
Below Normal (13%)	415,206	415,206	409,062	249,321	249,321
Dry (24%)	407,833	407,833	397,696	249,321	249,321
Critical (15%)	375,476	375,476	289,769	249,321	249,321

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	0	-75,650	0	0	0
20%	0	-75,650	0	0	0
30%	0	-75,650	0	0	0
40%	0	-75,650	0	0	0
50%	0	-75,650	0	0	0
60%	0	-75,650	0	0	0
70%	0	-75,650	0	0	0
80%	0	-75,650	0	0	0
90%	0	-106,473	0	0	0
Long Term					
Full Simulation Period[b]	0	-74,117	0	0	0
Water Year Types[c]					
Wet (32%)	0	-75,650	0	0	0
Above Normal (16%)	0	-75,650	0	0	0
Below Normal (13%)	0	-78,452	0	0	0
Dry (24%)	0	-79,977	0	0	0
Critical (15%)	0	-55,393	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-2. Total Clear Creek Spring-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	497,000	421,350	249,321	249,321
20%	421,350	497,000	421,350	249,321	249,321
30%	421,350	497,000	421,350	249,321	249,321
40%	421,350	497,000	421,350	249,321	249,321
50%	421,350	497,000	421,350	249,321	249,321
60%	421,350	497,000	421,350	249,321	249,321
70%	421,350	497,000	421,350	249,321	249,321
80%	421,350	497,000	353,767	249,321	249,321
90%	353,767	460,240	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	484,633	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	497,000	421,350	249,321	249,321
Above Normal (16%)	416,151	497,000	421,350	249,321	249,321
Below Normal (13%)	415,206	493,658	409,062	249,321	249,321
Dry (24%)	407,833	487,810	397,696	249,321	249,321
Critical (15%)	375,476	430,869	289,769	249,321	249,321

Alternative 3

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	421,350	421,350	249,321	249,321
20%	421,350	421,350	421,350	249,321	249,321
30%	421,350	421,350	421,350	249,321	249,321
40%	421,350	421,350	421,350	249,321	249,321
50%	421,350	421,350	421,350	249,321	249,321
60%	421,350	421,350	421,350	249,321	249,321
70%	421,350	421,350	421,350	249,321	249,321
80%	421,350	421,350	353,767	249,321	249,321
90%	353,767	353,767	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	410,516	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	421,350	421,350	249,321	249,321
Above Normal (16%)	416,151	421,350	421,350	249,321	249,321
Below Normal (13%)	415,206	415,206	409,062	249,321	249,321
Dry (24%)	407,833	407,833	397,696	249,321	249,321
Critical (15%)	375,476	375,476	289,769	249,321	249,321

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	0	-75,650	0	0	0
20%	0	-75,650	0	0	0
30%	0	-75,650	0	0	0
40%	0	-75,650	0	0	0
50%	0	-75,650	0	0	0
60%	0	-75,650	0	0	0
70%	0	-75,650	0	0	0
80%	0	-75,650	0	0	0
90%	0	-106,473	0	0	0
Long Term					
Full Simulation Period[b]	0	-74,117	0	0	0
Water Year Types[c]					
Wet (32%)	0	-75,650	0	0	0
Above Normal (16%)	0	-75,650	0	0	0
Below Normal (13%)	0	-78,452	0	0	0
Dry (24%)	0	-79,977	0	0	0
Critical (15%)	0	-55,393	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-3. Total Clear Creek Spring-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	497,000	421,350	249,321	249,321
20%	421,350	497,000	421,350	249,321	249,321
30%	421,350	497,000	421,350	249,321	249,321
40%	421,350	497,000	421,350	249,321	249,321
50%	421,350	497,000	421,350	249,321	249,321
60%	421,350	497,000	421,350	249,321	249,321
70%	421,350	497,000	421,350	249,321	249,321
80%	421,350	497,000	353,767	249,321	249,321
90%	353,767	460,240	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	484,633	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	497,000	421,350	249,321	249,321
Above Normal (16%)	416,151	497,000	421,350	249,321	249,321
Below Normal (13%)	415,206	493,658	409,062	249,321	249,321
Dry (24%)	407,833	487,810	397,696	249,321	249,321
Critical (15%)	375,476	430,869	289,769	249,321	249,321

Alternative 5

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	497,000	421,350	249,321	249,321
20%	421,350	497,000	421,350	249,321	249,321
30%	421,350	497,000	421,350	249,321	249,321
40%	421,350	497,000	421,350	249,321	249,321
50%	421,350	497,000	421,350	249,321	249,321
60%	421,350	497,000	421,350	249,321	249,321
70%	421,350	497,000	421,350	249,321	249,321
80%	421,350	497,000	353,767	249,321	249,321
90%	353,767	460,240	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	484,633	394,677	249,321	249,354
Water Year Types[c]					
Wet (32%)	421,350	497,000	421,350	249,321	249,321
Above Normal (16%)	416,151	497,000	421,350	249,321	249,321
Below Normal (13%)	415,206	493,658	409,062	249,321	249,321
Dry (24%)	407,833	487,810	397,696	249,321	249,321
Critical (15%)	375,476	430,869	289,769	249,321	249,542

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	32
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	221

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-4. Total Clear Creek Spring-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	421,350	421,350	249,321	249,321
20%	421,350	421,350	421,350	249,321	249,321
30%	421,350	421,350	421,350	249,321	249,321
40%	421,350	421,350	421,350	249,321	249,321
50%	421,350	421,350	421,350	249,321	249,321
60%	421,350	421,350	421,350	249,321	249,321
70%	421,350	421,350	421,350	249,321	249,321
80%	421,350	421,350	353,767	249,321	249,321
90%	353,767	353,767	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	410,516	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	421,350	421,350	249,321	249,321
Above Normal (16%)	416,151	421,350	421,350	249,321	249,321
Below Normal (13%)	415,206	415,206	409,062	249,321	249,321
Dry (24%)	407,833	407,833	397,696	249,321	249,321
Critical (15%)	375,476	375,476	289,769	249,321	249,321

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	497,000	421,350	249,321	249,321
20%	421,350	497,000	421,350	249,321	249,321
30%	421,350	497,000	421,350	249,321	249,321
40%	421,350	497,000	421,350	249,321	249,321
50%	421,350	497,000	421,350	249,321	249,321
60%	421,350	497,000	421,350	249,321	249,321
70%	421,350	497,000	421,350	249,321	249,321
80%	421,350	497,000	353,767	249,321	249,321
90%	353,767	460,240	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	484,633	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	497,000	421,350	249,321	249,321
Above Normal (16%)	416,151	497,000	421,350	249,321	249,321
Below Normal (13%)	415,206	493,658	409,062	249,321	249,321
Dry (24%)	407,833	487,810	397,696	249,321	249,321
Critical (15%)	375,476	430,869	289,769	249,321	249,321

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	0	75,650	0	0	0
20%	0	75,650	0	0	0
30%	0	75,650	0	0	0
40%	0	75,650	0	0	0
50%	0	75,650	0	0	0
60%	0	75,650	0	0	0
70%	0	75,650	0	0	0
80%	0	75,650	0	0	0
90%	0	106,473	0	0	0
Long Term					
Full Simulation Period[b]	0	74,117	0	0	0
Water Year Types[c]					
Wet (32%)	0	75,650	0	0	0
Above Normal (16%)	0	75,650	0	0	0
Below Normal (13%)	0	78,452	0	0	0
Dry (24%)	0	79,977	0	0	0
Critical (15%)	0	55,393	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-5. Total Clear Creek Spring-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	421,350	421,350	249,321	249,321
20%	421,350	421,350	421,350	249,321	249,321
30%	421,350	421,350	421,350	249,321	249,321
40%	421,350	421,350	421,350	249,321	249,321
50%	421,350	421,350	421,350	249,321	249,321
60%	421,350	421,350	421,350	249,321	249,321
70%	421,350	421,350	421,350	249,321	249,321
80%	421,350	421,350	353,767	249,321	249,321
90%	353,767	353,767	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	410,516	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	421,350	421,350	249,321	249,321
Above Normal (16%)	416,151	421,350	421,350	249,321	249,321
Below Normal (13%)	415,206	415,206	409,062	249,321	249,321
Dry (24%)	407,833	407,833	397,696	249,321	249,321
Critical (15%)	375,476	375,476	289,769	249,321	249,321

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	421,350	421,350	249,321	249,321
20%	421,350	421,350	421,350	249,321	249,321
30%	421,350	421,350	421,350	249,321	249,321
40%	421,350	421,350	421,350	249,321	249,321
50%	421,350	421,350	421,350	249,321	249,321
60%	421,350	421,350	421,350	249,321	249,321
70%	421,350	421,350	421,350	249,321	249,321
80%	421,350	421,350	353,767	249,321	249,321
90%	353,767	353,767	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	410,516	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	421,350	421,350	249,321	249,321
Above Normal (16%)	416,151	421,350	421,350	249,321	249,321
Below Normal (13%)	415,206	415,206	409,062	249,321	249,321
Dry (24%)	407,833	407,833	397,696	249,321	249,321
Critical (15%)	375,476	375,476	289,769	249,321	249,321

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-3-6. Total Clear Creek Spring-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	421,350	421,350	249,321	249,321
20%	421,350	421,350	421,350	249,321	249,321
30%	421,350	421,350	421,350	249,321	249,321
40%	421,350	421,350	421,350	249,321	249,321
50%	421,350	421,350	421,350	249,321	249,321
60%	421,350	421,350	421,350	249,321	249,321
70%	421,350	421,350	421,350	249,321	249,321
80%	421,350	421,350	353,767	249,321	249,321
90%	353,767	353,767	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	410,516	394,677	249,321	249,321
Water Year Types[c]					
Wet (32%)	421,350	421,350	421,350	249,321	249,321
Above Normal (16%)	416,151	421,350	421,350	249,321	249,321
Below Normal (13%)	415,206	415,206	409,062	249,321	249,321
Dry (24%)	407,833	407,833	397,696	249,321	249,321
Critical (15%)	375,476	375,476	289,769	249,321	249,321

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	421,350	497,000	421,350	249,321	249,321
20%	421,350	497,000	421,350	249,321	249,321
30%	421,350	497,000	421,350	249,321	249,321
40%	421,350	497,000	421,350	249,321	249,321
50%	421,350	497,000	421,350	249,321	249,321
60%	421,350	497,000	421,350	249,321	249,321
70%	421,350	497,000	421,350	249,321	249,321
80%	421,350	497,000	353,767	249,321	249,321
90%	353,767	460,240	353,767	249,321	249,321
Long Term					
Full Simulation Period[b]	409,692	484,633	394,677	249,321	249,354
Water Year Types[c]					
Wet (32%)	421,350	497,000	421,350	249,321	249,321
Above Normal (16%)	416,151	497,000	421,350	249,321	249,321
Below Normal (13%)	415,206	493,658	409,062	249,321	249,321
Dry (24%)	407,833	487,810	397,696	249,321	249,321
Critical (15%)	375,476	430,869	289,769	249,321	249,542

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	0	75,650	0	0	0
20%	0	75,650	0	0	0
30%	0	75,650	0	0	0
40%	0	75,650	0	0	0
50%	0	75,650	0	0	0
60%	0	75,650	0	0	0
70%	0	75,650	0	0	0
80%	0	75,650	0	0	0
90%	0	106,473	0	0	0
Long Term					
Full Simulation Period[b]	0	74,117	0	0	32
Water Year Types[c]					
Wet (32%)	0	75,650	0	0	0
Above Normal (16%)	0	75,650	0	0	0
Below Normal (13%)	0	78,452	0	0	0
Dry (24%)	0	79,977	0	0	0
Critical (15%)	0	55,393	0	0	221

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.4. Lower Clear Creek Fall-run Spawning WUA

Table C-4-1. Lower Clear Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	186,712	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	177,529	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 1

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,739	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	181,738	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	0	0	0
20%	0	0	0
30%	0	0	0
40%	0	0	0
50%	0	0	0
60%	0	0	0
70%	0	0	0
80%	0	0	0
90%	0	0	0
Long Term			
Full Simulation Period[b]	1,027	0	0
Water Year Types[c]			
Wet (32%)	0	0	0
Above Normal (16%)	0	0	0
Below Normal (13%)	0	0	0
Dry (24%)	4,210	0	0
Critical (15%)	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-2. Lower Clear Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	186,712	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	177,529	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 3

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,739	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	181,738	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	0	0	0
20%	0	0	0
30%	0	0	0
40%	0	0	0
50%	0	0	0
60%	0	0	0
70%	0	0	0
80%	0	0	0
90%	0	0	0
Long Term			
Full Simulation Period[b]	1,027	0	0
Water Year Types[c]			
Wet (32%)	0	0	0
Above Normal (16%)	0	0	0
Below Normal (13%)	0	0	0
Dry (24%)	4,210	0	0
Critical (15%)	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-3. Lower Clear Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	186,712	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	177,529	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 5

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,547	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	180,953	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	0	0	0
20%	0	0	0
30%	0	0	0
40%	0	0	0
50%	0	0	0
60%	0	0	0
70%	0	0	0
80%	0	0	0
90%	0	0	0
Long Term			
Full Simulation Period[b]	835	0	0
Water Year Types[c]			
Wet (32%)	0	0	0
Above Normal (16%)	0	0	0
Below Normal (13%)	0	0	0
Dry (24%)	3,424	0	0
Critical (15%)	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-4. Lower Clear Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,739	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	181,738	187,131	190,516
Critical (15%)	173,364	177,702	177,702

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	186,712	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	177,529	187,131	190,516
Critical (15%)	173,364	177,702	177,702

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	0	0	0
20%	0	0	0
30%	0	0	0
40%	0	0	0
50%	0	0	0
60%	0	0	0
70%	0	0	0
80%	0	0	0
90%	0	0	0
Long Term			
Full Simulation Period[b]	-1,027	0	0
Water Year Types[c]			
Wet (32%)	0	0	0
Above Normal (16%)	0	0	0
Below Normal (13%)	0	0	0
Dry (24%)	-4,210	0	0
Critical (15%)	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-5. Lower Clear Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)		
Statistic	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,739	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	181,738	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 3

	Monthly WUA (Feet2)		
Statistic	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,739	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	181,738	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 3 minus Second Basis of Comparison

	Monthly WUA (Feet2)		
Statistic	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	0	0	0
20%	0	0	0
30%	0	0	0
40%	0	0	0
50%	0	0	0
60%	0	0	0
70%	0	0	0
80%	0	0	0
90%	0	0	0
Long Term			
Full Simulation Period[b]	0	0	0
Water Year Types[c]			
Wet (32%)	0	0	0
Above Normal (16%)	0	0	0
Below Normal (13%)	0	0	0
Dry (24%)	0	0	0
Critical (15%)	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-4-6. Lower Clear Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,739	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	181,738	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 5

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	197,705	197,705	197,705
20%	197,705	197,705	197,705
30%	197,705	197,705	197,705
40%	197,705	197,705	197,705
50%	197,705	197,705	197,705
60%	197,705	197,705	197,705
70%	197,705	197,705	197,705
80%	197,705	197,705	197,705
90%	168,950	168,950	168,950
Long Term			
Full Simulation Period[b]	187,547	189,970	191,622
Water Year Types[c]			
Wet (32%)	197,705	197,705	197,705
Above Normal (16%)	184,084	185,860	191,069
Below Normal (13%)	195,091	195,091	195,091
Dry (24%)	180,953	187,131	190,516
Critical (15%)	173,364	177,702	177,702

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	0	0	0
20%	0	0	0
30%	0	0	0
40%	0	0	0
50%	0	0	0
60%	0	0	0
70%	0	0	0
80%	0	0	0
90%	0	0	0
Long Term			
Full Simulation Period[b]	-192	0	0
Water Year Types[c]			
Wet (32%)	0	0	0
Above Normal (16%)	0	0	0
Below Normal (13%)	0	0	0
Dry (24%)	-786	0	0
Critical (15%)	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.5. Lower Clear Creek Fall-run Fry Rearing WUA

Table C-5-1. Lower Clear Creek Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)			
Statistic	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 1

	Monthly WUA (Feet2)			
Statistic	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 1 minus No Action Alternative

	Monthly WUA (Feet2)			
Statistic	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-2. Lower Clear Creek Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 3

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-3. Lower Clear Creek Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 5

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-4. Lower Clear Creek Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-5. Lower Clear Creek Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 3

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-5-6. Lower Clear Creek Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 5

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	490,718	490,718	490,718	490,718
20%	470,453	470,453	470,453	470,453
30%	470,453	470,453	470,453	470,453
40%	470,453	470,453	470,453	470,453
50%	470,453	470,453	470,453	470,453
60%	470,453	470,453	470,453	470,453
70%	470,453	470,453	470,453	470,453
80%	470,453	470,453	470,453	470,453
90%	470,453	470,453	470,453	470,453
Long Term				
Full Simulation Period[b]	472,251	472,004	472,986	473,968
Water Year Types[c]				
Wet (32%)	464,259	464,259	467,356	470,453
Above Normal (16%)	473,571	472,012	472,012	472,012
Below Normal (13%)	472,295	472,295	472,295	472,295
Dry (24%)	474,506	474,506	474,506	474,506
Critical (15%)	484,341	484,341	484,341	484,341

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.6. Lower Clear Creek Fall-run Juvenile Rearing WUA

Table C-6-1. Lower Clear Creek Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	335,067	318,200	256,126	256,126	296,863
20%	335,067	318,200	256,126	256,126	296,863
30%	335,067	318,200	256,126	256,126	296,863
40%	335,067	318,200	256,126	256,126	296,863
50%	335,067	318,200	256,126	256,126	296,863
60%	335,067	318,200	256,126	256,126	296,863
70%	335,067	318,200	256,126	256,126	296,863
80%	335,067	296,863	256,126	256,126	296,863
90%	327,741	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	332,168	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	335,067	318,200	256,126	256,126	296,863
Above Normal (16%)	335,067	318,200	256,126	256,126	296,863
Below Normal (13%)	334,401	314,321	256,126	256,126	296,863
Dry (24%)	333,236	310,732	256,126	256,126	296,863
Critical (15%)	318,916	271,483	256,126	256,126	284,872

Alternative 1

Statistic	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	318,200	318,200	256,126	256,126	296,863
20%	318,200	318,200	256,126	256,126	296,863
30%	318,200	318,200	256,126	256,126	296,863
40%	318,200	318,200	256,126	256,126	296,863
50%	318,200	318,200	256,126	256,126	296,863
60%	318,200	318,200	256,126	256,126	296,863
70%	318,200	318,200	256,126	256,126	296,863
80%	318,200	296,863	256,126	256,126	296,863
90%	296,863	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	314,721	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	318,200	318,200	256,126	256,126	296,863
Above Normal (16%)	318,200	318,200	256,126	256,126	296,863
Below Normal (13%)	316,260	314,321	256,126	256,126	296,863
Dry (24%)	313,933	310,732	256,126	256,126	296,863
Critical (15%)	303,318	271,483	256,126	256,126	284,872

Alternative 1 minus No Action Alternative

Statistic	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	-16,867	0	0	0	0
20%	-16,867	0	0	0	0
30%	-16,867	0	0	0	0
40%	-16,867	0	0	0	0
50%	-16,867	0	0	0	0
60%	-16,867	0	0	0	0
70%	-16,867	0	0	0	0
80%	-16,867	0	0	0	0
90%	-30,878	0	0	0	0
Long Term					
Full Simulation Period[b]	-17,447	0	0	0	0
Water Year Types[c]					
Wet (32%)	-16,867	0	0	0	0
Above Normal (16%)	-16,867	0	0	0	0
Below Normal (13%)	-18,141	0	0	0	0
Dry (24%)	-19,303	0	0	0	0
Critical (15%)	-15,598	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-2. Lower Clear Creek Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	335,067	318,200	256,126	256,126	296,863
20%	335,067	318,200	256,126	256,126	296,863
30%	335,067	318,200	256,126	256,126	296,863
40%	335,067	318,200	256,126	256,126	296,863
50%	335,067	318,200	256,126	256,126	296,863
60%	335,067	318,200	256,126	256,126	296,863
70%	335,067	318,200	256,126	256,126	296,863
80%	335,067	296,863	256,126	256,126	296,863
90%	327,741	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	332,168	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	335,067	318,200	256,126	256,126	296,863
Above Normal (16%)	335,067	318,200	256,126	256,126	296,863
Below Normal (13%)	334,401	314,321	256,126	256,126	296,863
Dry (24%)	333,236	310,732	256,126	256,126	296,863
Critical (15%)	318,916	271,483	256,126	256,126	284,872

Alternative 3

Statistic	Monthly WUA (Feet2)				
	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	318,200	318,200	256,126	256,126	296,863
20%	318,200	318,200	256,126	256,126	296,863
30%	318,200	318,200	256,126	256,126	296,863
40%	318,200	318,200	256,126	256,126	296,863
50%	318,200	318,200	256,126	256,126	296,863
60%	318,200	318,200	256,126	256,126	296,863
70%	318,200	318,200	256,126	256,126	296,863
80%	318,200	296,863	256,126	256,126	296,863
90%	296,863	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	314,721	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	318,200	318,200	256,126	256,126	296,863
Above Normal (16%)	318,200	318,200	256,126	256,126	296,863
Below Normal (13%)	316,260	314,321	256,126	256,126	296,863
Dry (24%)	313,933	310,732	256,126	256,126	296,863
Critical (15%)	303,318	271,483	256,126	256,126	284,872

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	-16,867	0	0	0	0
20%	-16,867	0	0	0	0
30%	-16,867	0	0	0	0
40%	-16,867	0	0	0	0
50%	-16,867	0	0	0	0
60%	-16,867	0	0	0	0
70%	-16,867	0	0	0	0
80%	-16,867	0	0	0	0
90%	-30,878	0	0	0	0
Long Term					
Full Simulation Period[b]	-17,447	0	0	0	0
Water Year Types[c]					
Wet (32%)	-16,867	0	0	0	0
Above Normal (16%)	-16,867	0	0	0	0
Below Normal (13%)	-18,141	0	0	0	0
Dry (24%)	-19,303	0	0	0	0
Critical (15%)	-15,598	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-3. Lower Clear Creek Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	335,067	318,200	256,126	256,126	296,863
20%	335,067	318,200	256,126	256,126	296,863
30%	335,067	318,200	256,126	256,126	296,863
40%	335,067	318,200	256,126	256,126	296,863
50%	335,067	318,200	256,126	256,126	296,863
60%	335,067	318,200	256,126	256,126	296,863
70%	335,067	318,200	256,126	256,126	296,863
80%	335,067	296,863	256,126	256,126	296,863
90%	327,741	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	332,168	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	335,067	318,200	256,126	256,126	296,863
Above Normal (16%)	335,067	318,200	256,126	256,126	296,863
Below Normal (13%)	334,401	314,321	256,126	256,126	296,863
Dry (24%)	333,236	310,732	256,126	256,126	296,863
Critical (15%)	318,916	271,483	256,126	256,126	284,872

Alternative 5

Statistic	Monthly WUA (Feet2) May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	335,067	318,200	256,126	256,126	296,863
20%	335,067	318,200	256,126	256,126	296,863
30%	335,067	318,200	256,126	256,126	296,863
40%	335,067	318,200	256,126	256,126	296,863
50%	335,067	318,200	256,126	256,126	296,863
60%	335,067	318,200	256,126	256,126	296,863
70%	335,067	318,200	256,126	256,126	296,863
80%	335,067	296,863	256,126	256,126	296,863
90%	327,741	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	332,168	309,022	256,126	256,140	295,108
Water Year Types[c]					
Wet (32%)	335,067	318,200	256,126	256,126	296,863
Above Normal (16%)	335,067	318,200	256,126	256,126	296,863
Below Normal (13%)	334,401	314,321	256,126	256,126	296,863
Dry (24%)	333,236	310,732	256,126	256,126	296,863
Critical (15%)	318,916	271,483	256,126	256,220	284,872

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	14	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	94	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-4. Lower Clear Creek Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	318,200	318,200	256,126	256,126	296,863
20%	318,200	318,200	256,126	256,126	296,863
30%	318,200	318,200	256,126	256,126	296,863
40%	318,200	318,200	256,126	256,126	296,863
50%	318,200	318,200	256,126	256,126	296,863
60%	318,200	318,200	256,126	256,126	296,863
70%	318,200	318,200	256,126	256,126	296,863
80%	318,200	296,863	256,126	256,126	296,863
90%	296,863	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	314,721	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	318,200	318,200	256,126	256,126	296,863
Above Normal (16%)	318,200	318,200	256,126	256,126	296,863
Below Normal (13%)	316,260	314,321	256,126	256,126	296,863
Dry (24%)	313,933	310,732	256,126	256,126	296,863
Critical (15%)	303,318	271,483	256,126	256,126	284,872

No Action Alternative

Statistic	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	335,067	318,200	256,126	256,126	296,863
20%	335,067	318,200	256,126	256,126	296,863
30%	335,067	318,200	256,126	256,126	296,863
40%	335,067	318,200	256,126	256,126	296,863
50%	335,067	318,200	256,126	256,126	296,863
60%	335,067	318,200	256,126	256,126	296,863
70%	335,067	318,200	256,126	256,126	296,863
80%	335,067	296,863	256,126	256,126	296,863
90%	327,741	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	332,168	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	335,067	318,200	256,126	256,126	296,863
Above Normal (16%)	335,067	318,200	256,126	256,126	296,863
Below Normal (13%)	334,401	314,321	256,126	256,126	296,863
Dry (24%)	333,236	310,732	256,126	256,126	296,863
Critical (15%)	318,916	271,483	256,126	256,126	284,872

No Action Alternative minus Second Basis of Comparison

Statistic	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	16,867	0	0	0	0
20%	16,867	0	0	0	0
30%	16,867	0	0	0	0
40%	16,867	0	0	0	0
50%	16,867	0	0	0	0
60%	16,867	0	0	0	0
70%	16,867	0	0	0	0
80%	16,867	0	0	0	0
90%	30,878	0	0	0	0
Long Term					
Full Simulation Period[b]	17,447	0	0	0	0
Water Year Types[c]					
Wet (32%)	16,867	0	0	0	0
Above Normal (16%)	16,867	0	0	0	0
Below Normal (13%)	18,141	0	0	0	0
Dry (24%)	19,303	0	0	0	0
Critical (15%)	15,598	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-5. Lower Clear Creek Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	318,200	318,200	256,126	256,126	296,863
20%	318,200	318,200	256,126	256,126	296,863
30%	318,200	318,200	256,126	256,126	296,863
40%	318,200	318,200	256,126	256,126	296,863
50%	318,200	318,200	256,126	256,126	296,863
60%	318,200	318,200	256,126	256,126	296,863
70%	318,200	318,200	256,126	256,126	296,863
80%	318,200	296,863	256,126	256,126	296,863
90%	296,863	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	314,721	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	318,200	318,200	256,126	256,126	296,863
Above Normal (16%)	318,200	318,200	256,126	256,126	296,863
Below Normal (13%)	316,260	314,321	256,126	256,126	296,863
Dry (24%)	313,933	310,732	256,126	256,126	296,863
Critical (15%)	303,318	271,483	256,126	256,126	284,872

Alternative 3

	Monthly WUA (Feet2)				
Statistic	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	318,200	318,200	256,126	256,126	296,863
20%	318,200	318,200	256,126	256,126	296,863
30%	318,200	318,200	256,126	256,126	296,863
40%	318,200	318,200	256,126	256,126	296,863
50%	318,200	318,200	256,126	256,126	296,863
60%	318,200	318,200	256,126	256,126	296,863
70%	318,200	318,200	256,126	256,126	296,863
80%	318,200	296,863	256,126	256,126	296,863
90%	296,863	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	314,721	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	318,200	318,200	256,126	256,126	296,863
Above Normal (16%)	318,200	318,200	256,126	256,126	296,863
Below Normal (13%)	316,260	314,321	256,126	256,126	296,863
Dry (24%)	313,933	310,732	256,126	256,126	296,863
Critical (15%)	303,318	271,483	256,126	256,126	284,872

Alternative 3 minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-6-6. Lower Clear Creek Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	318,200	318,200	256,126	256,126	296,863
20%	318,200	318,200	256,126	256,126	296,863
30%	318,200	318,200	256,126	256,126	296,863
40%	318,200	318,200	256,126	256,126	296,863
50%	318,200	318,200	256,126	256,126	296,863
60%	318,200	318,200	256,126	256,126	296,863
70%	318,200	318,200	256,126	256,126	296,863
80%	318,200	296,863	256,126	256,126	296,863
90%	296,863	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	314,721	309,022	256,126	256,126	295,108
Water Year Types[c]					
Wet (32%)	318,200	318,200	256,126	256,126	296,863
Above Normal (16%)	318,200	318,200	256,126	256,126	296,863
Below Normal (13%)	316,260	314,321	256,126	256,126	296,863
Dry (24%)	313,933	310,732	256,126	256,126	296,863
Critical (15%)	303,318	271,483	256,126	256,126	284,872

Alternative 5

	Monthly WUA (Feet2)				
Statistic	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	335,067	318,200	256,126	256,126	296,863
20%	335,067	318,200	256,126	256,126	296,863
30%	335,067	318,200	256,126	256,126	296,863
40%	335,067	318,200	256,126	256,126	296,863
50%	335,067	318,200	256,126	256,126	296,863
60%	335,067	318,200	256,126	256,126	296,863
70%	335,067	318,200	256,126	256,126	296,863
80%	335,067	296,863	256,126	256,126	296,863
90%	327,741	296,863	256,126	256,126	296,863
Long Term					
Full Simulation Period[b]	332,168	309,022	256,126	256,140	295,108
Water Year Types[c]					
Wet (32%)	335,067	318,200	256,126	256,126	296,863
Above Normal (16%)	335,067	318,200	256,126	256,126	296,863
Below Normal (13%)	334,401	314,321	256,126	256,126	296,863
Dry (24%)	333,236	310,732	256,126	256,126	296,863
Critical (15%)	318,916	271,483	256,126	256,220	284,872

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]					
10%	16,867	0	0	0	0
20%	16,867	0	0	0	0
30%	16,867	0	0	0	0
40%	16,867	0	0	0	0
50%	16,867	0	0	0	0
60%	16,867	0	0	0	0
70%	16,867	0	0	0	0
80%	16,867	0	0	0	0
90%	30,878	0	0	0	0
Long Term					
Full Simulation Period[b]	17,447	0	0	14	0
Water Year Types[c]					
Wet (32%)	16,867	0	0	0	0
Above Normal (16%)	16,867	0	0	0	0
Below Normal (13%)	18,141	0	0	0	0
Dry (24%)	19,303	0	0	0	0
Critical (15%)	15,598	0	0	94	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.7. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA

Table C-7-1. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 1

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-2. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-3. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-4. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-5. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-7-6. Total Clear Creek Steelhead/Rainbow Trout Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	87,297	87,297	87,297	87,297	87,297
20%	87,297	87,297	87,297	87,297	87,297
30%	87,297	87,297	87,297	87,297	87,297
40%	87,297	87,297	87,297	87,297	87,297
50%	87,297	87,297	87,297	87,297	87,297
60%	87,297	87,297	87,297	87,297	87,297
70%	87,297	87,297	87,297	87,297	87,297
80%	87,297	87,297	87,297	87,297	87,297
90%	73,006	73,006	73,006	73,006	73,006
Long Term					
Full Simulation Period[b]	84,256	83,874	84,048	84,414	84,779
Water Year Types[c]					
Wet (32%)	87,297	84,991	84,991	86,144	87,297
Above Normal (16%)	83,999	85,098	86,198	86,198	86,198
Below Normal (13%)	85,998	85,998	85,998	85,998	85,998
Dry (24%)	83,724	84,439	84,439	84,439	84,439
Critical (15%)	77,237	77,237	77,237	77,237	77,237

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.8. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA

Table C-8-1. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	212,960	209,184
20%	203,238	203,238	203,238	212,960	209,184
30%	203,238	203,238	203,238	212,960	203,238
40%	203,238	203,238	203,238	212,960	203,238
50%	203,238	203,238	203,238	212,960	203,238
60%	203,238	203,238	203,238	212,960	203,238
70%	203,238	203,238	203,238	212,960	203,238
80%	203,238	203,238	203,238	212,960	203,238
90%	203,238	203,238	203,238	209,153	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	212,118	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	212,960	203,238
Above Normal (16%)	203,695	203,695	203,695	212,960	203,238
Below Normal (13%)	203,779	203,779	203,779	212,614	204,319
Dry (24%)	204,427	204,427	204,427	212,009	205,319
Critical (15%)	207,187	207,187	207,187	209,104	215,493

Alternative 1

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	209,184	209,184
20%	203,238	203,238	203,238	203,238	209,184
30%	203,238	203,238	203,238	203,238	203,238
40%	203,238	203,238	203,238	203,238	203,238
50%	203,238	203,238	203,238	203,238	203,238
60%	203,238	203,238	203,238	203,238	203,238
70%	203,238	203,238	203,238	203,238	203,238
80%	203,238	203,238	203,238	203,238	203,238
90%	203,238	203,238	203,238	203,238	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	204,178	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	203,238	203,238
Above Normal (16%)	203,695	203,695	203,695	203,238	203,238
Below Normal (13%)	203,779	203,779	203,779	203,779	204,319
Dry (24%)	204,427	204,427	204,427	204,427	205,319
Critical (15%)	207,187	207,187	207,187	207,187	215,493

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	0	0	0	-3,776	0
20%	0	0	0	-9,722	0
30%	0	0	0	-9,722	0
40%	0	0	0	-9,722	0
50%	0	0	0	-9,722	0
60%	0	0	0	-9,722	0
70%	0	0	0	-9,722	0
80%	0	0	0	-9,722	0
90%	0	0	0	-5,915	0
Long Term					
Full Simulation Period[b]	0	0	0	-7,939	0
Water Year Types[c]					
Wet (32%)	0	0	0	-9,722	0
Above Normal (16%)	0	0	0	-9,722	0
Below Normal (13%)	0	0	0	-8,836	0
Dry (24%)	0	0	0	-7,581	0
Critical (15%)	0	0	0	-1,917	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-2. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	212,960	209,184
20%	203,238	203,238	203,238	212,960	209,184
30%	203,238	203,238	203,238	212,960	203,238
40%	203,238	203,238	203,238	212,960	203,238
50%	203,238	203,238	203,238	212,960	203,238
60%	203,238	203,238	203,238	212,960	203,238
70%	203,238	203,238	203,238	212,960	203,238
80%	203,238	203,238	203,238	212,960	203,238
90%	203,238	203,238	203,238	209,153	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	212,118	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	212,960	203,238
Above Normal (16%)	203,695	203,695	203,695	212,960	203,238
Below Normal (13%)	203,779	203,779	203,779	212,614	204,319
Dry (24%)	204,427	204,427	204,427	212,009	205,319
Critical (15%)	207,187	207,187	207,187	209,104	215,493

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	209,184	209,184
20%	203,238	203,238	203,238	203,238	209,184
30%	203,238	203,238	203,238	203,238	203,238
40%	203,238	203,238	203,238	203,238	203,238
50%	203,238	203,238	203,238	203,238	203,238
60%	203,238	203,238	203,238	203,238	203,238
70%	203,238	203,238	203,238	203,238	203,238
80%	203,238	203,238	203,238	203,238	203,238
90%	203,238	203,238	203,238	203,238	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	204,178	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	203,238	203,238
Above Normal (16%)	203,695	203,695	203,695	203,238	203,238
Below Normal (13%)	203,779	203,779	203,779	203,779	204,319
Dry (24%)	204,427	204,427	204,427	204,427	205,319
Critical (15%)	207,187	207,187	207,187	207,187	215,493

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	0	0	0	-3,776	0
20%	0	0	0	-9,722	0
30%	0	0	0	-9,722	0
40%	0	0	0	-9,722	0
50%	0	0	0	-9,722	0
60%	0	0	0	-9,722	0
70%	0	0	0	-9,722	0
80%	0	0	0	-9,722	0
90%	0	0	0	-5,915	0
Long Term					
Full Simulation Period[b]	0	0	0	-7,939	0
Water Year Types[c]					
Wet (32%)	0	0	0	-9,722	0
Above Normal (16%)	0	0	0	-9,722	0
Below Normal (13%)	0	0	0	-8,836	0
Dry (24%)	0	0	0	-7,581	0
Critical (15%)	0	0	0	-1,917	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-3. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	212,960	209,184
20%	203,238	203,238	203,238	212,960	209,184
30%	203,238	203,238	203,238	212,960	203,238
40%	203,238	203,238	203,238	212,960	203,238
50%	203,238	203,238	203,238	212,960	203,238
60%	203,238	203,238	203,238	212,960	203,238
70%	203,238	203,238	203,238	212,960	203,238
80%	203,238	203,238	203,238	212,960	203,238
90%	203,238	203,238	203,238	209,153	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	212,118	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	212,960	203,238
Above Normal (16%)	203,695	203,695	203,695	212,960	203,238
Below Normal (13%)	203,779	203,779	203,779	212,614	204,319
Dry (24%)	204,427	204,427	204,427	212,009	205,319
Critical (15%)	207,187	207,187	207,187	209,104	215,493

Alternative 5

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	212,960	209,184
20%	203,238	203,238	203,238	212,960	209,184
30%	203,238	203,238	203,238	212,960	203,238
40%	203,238	203,238	203,238	212,960	203,238
50%	203,238	203,238	203,238	212,960	203,238
60%	203,238	203,238	203,238	212,960	203,238
70%	203,238	203,238	203,238	212,960	203,238
80%	203,238	203,238	203,238	212,960	203,238
90%	203,238	203,238	203,238	209,153	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	212,118	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	212,960	203,238
Above Normal (16%)	203,695	203,695	203,695	212,960	203,238
Below Normal (13%)	203,779	203,779	203,779	212,614	204,319
Dry (24%)	204,427	204,427	204,427	212,009	205,319
Critical (15%)	207,187	207,187	207,187	209,104	215,493

Alternative 5 minus No Action Alternative

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-4. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	209,184	209,184
20%	203,238	203,238	203,238	203,238	209,184
30%	203,238	203,238	203,238	203,238	203,238
40%	203,238	203,238	203,238	203,238	203,238
50%	203,238	203,238	203,238	203,238	203,238
60%	203,238	203,238	203,238	203,238	203,238
70%	203,238	203,238	203,238	203,238	203,238
80%	203,238	203,238	203,238	203,238	203,238
90%	203,238	203,238	203,238	203,238	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	204,178	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	203,238	203,238
Above Normal (16%)	203,695	203,695	203,695	203,238	203,238
Below Normal (13%)	203,779	203,779	203,779	203,779	204,319
Dry (24%)	204,427	204,427	204,427	204,427	205,319
Critical (15%)	207,187	207,187	207,187	207,187	215,493

No Action Alternative

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	212,960	209,184
20%	203,238	203,238	203,238	212,960	209,184
30%	203,238	203,238	203,238	212,960	203,238
40%	203,238	203,238	203,238	212,960	203,238
50%	203,238	203,238	203,238	212,960	203,238
60%	203,238	203,238	203,238	212,960	203,238
70%	203,238	203,238	203,238	212,960	203,238
80%	203,238	203,238	203,238	212,960	203,238
90%	203,238	203,238	203,238	209,153	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	212,118	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	212,960	203,238
Above Normal (16%)	203,695	203,695	203,695	212,960	203,238
Below Normal (13%)	203,779	203,779	203,779	212,614	204,319
Dry (24%)	204,427	204,427	204,427	212,009	205,319
Critical (15%)	207,187	207,187	207,187	209,104	215,493

No Action Alternative minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	0	0	0	3,776	0
20%	0	0	0	9,722	0
30%	0	0	0	9,722	0
40%	0	0	0	9,722	0
50%	0	0	0	9,722	0
60%	0	0	0	9,722	0
70%	0	0	0	9,722	0
80%	0	0	0	9,722	0
90%	0	0	0	5,915	0
Long Term					
Full Simulation Period[b]	0	0	0	7,939	0
Water Year Types[c]					
Wet (32%)	0	0	0	9,722	0
Above Normal (16%)	0	0	0	9,722	0
Below Normal (13%)	0	0	0	8,836	0
Dry (24%)	0	0	0	7,581	0
Critical (15%)	0	0	0	1,917	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-5. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	209,184	209,184
20%	203,238	203,238	203,238	203,238	209,184
30%	203,238	203,238	203,238	203,238	203,238
40%	203,238	203,238	203,238	203,238	203,238
50%	203,238	203,238	203,238	203,238	203,238
60%	203,238	203,238	203,238	203,238	203,238
70%	203,238	203,238	203,238	203,238	203,238
80%	203,238	203,238	203,238	203,238	203,238
90%	203,238	203,238	203,238	203,238	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	204,178	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	203,238	203,238
Above Normal (16%)	203,695	203,695	203,695	203,238	203,238
Below Normal (13%)	203,779	203,779	203,779	203,779	204,319
Dry (24%)	204,427	204,427	204,427	204,427	205,319
Critical (15%)	207,187	207,187	207,187	207,187	215,493

Alternative 3

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	209,184	209,184
20%	203,238	203,238	203,238	203,238	209,184
30%	203,238	203,238	203,238	203,238	203,238
40%	203,238	203,238	203,238	203,238	203,238
50%	203,238	203,238	203,238	203,238	203,238
60%	203,238	203,238	203,238	203,238	203,238
70%	203,238	203,238	203,238	203,238	203,238
80%	203,238	203,238	203,238	203,238	203,238
90%	203,238	203,238	203,238	203,238	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	204,178	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	203,238	203,238
Above Normal (16%)	203,695	203,695	203,695	203,238	203,238
Below Normal (13%)	203,779	203,779	203,779	203,779	204,319
Dry (24%)	204,427	204,427	204,427	204,427	205,319
Critical (15%)	207,187	207,187	207,187	207,187	215,493

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-8-6. Total Clear Creek Steelhead/Rainbow Trout Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	209,184	209,184
20%	203,238	203,238	203,238	203,238	209,184
30%	203,238	203,238	203,238	203,238	203,238
40%	203,238	203,238	203,238	203,238	203,238
50%	203,238	203,238	203,238	203,238	203,238
60%	203,238	203,238	203,238	203,238	203,238
70%	203,238	203,238	203,238	203,238	203,238
80%	203,238	203,238	203,238	203,238	203,238
90%	203,238	203,238	203,238	203,238	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	204,178	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	203,238	203,238
Above Normal (16%)	203,695	203,695	203,695	203,238	203,238
Below Normal (13%)	203,779	203,779	203,779	203,779	204,319
Dry (24%)	204,427	204,427	204,427	204,427	205,319
Critical (15%)	207,187	207,187	207,187	207,187	215,493

Alternative 5

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	209,184	209,184	209,184	212,960	209,184
20%	203,238	203,238	203,238	212,960	209,184
30%	203,238	203,238	203,238	212,960	203,238
40%	203,238	203,238	203,238	212,960	203,238
50%	203,238	203,238	203,238	212,960	203,238
60%	203,238	203,238	203,238	212,960	203,238
70%	203,238	203,238	203,238	212,960	203,238
80%	203,238	203,238	203,238	212,960	203,238
90%	203,238	203,238	203,238	209,153	203,238
Long Term					
Full Simulation Period[b]	206,013	205,132	204,251	212,118	205,684
Water Year Types[c]					
Wet (32%)	208,796	206,017	203,238	212,960	203,238
Above Normal (16%)	203,695	203,695	203,695	212,960	203,238
Below Normal (13%)	203,779	203,779	203,779	212,614	204,319
Dry (24%)	204,427	204,427	204,427	212,009	205,319
Critical (15%)	207,187	207,187	207,187	209,104	215,493

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	0	0	0	3,776	0
20%	0	0	0	9,722	0
30%	0	0	0	9,722	0
40%	0	0	0	9,722	0
50%	0	0	0	9,722	0
60%	0	0	0	9,722	0
70%	0	0	0	9,722	0
80%	0	0	0	9,722	0
90%	0	0	0	5,915	0
Long Term					
Full Simulation Period[b]	0	0	0	7,939	0
Water Year Types[c]					
Wet (32%)	0	0	0	9,722	0
Above Normal (16%)	0	0	0	9,722	0
Below Normal (13%)	0	0	0	8,836	0
Dry (24%)	0	0	0	7,581	0
Critical (15%)	0	0	0	1,917	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.9. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA

Table C-9-1. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	397,531	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	378,132	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 1

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	399,868	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	387,712	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	0	0	0	0	0	0
20%	0	0	0	0	0	0
30%	0	0	0	0	0	0
40%	0	0	0	0	0	0
50%	0	0	0	0	0	0
60%	0	0	0	0	0	0
70%	0	0	0	0	0	0
80%	0	0	0	0	0	0
90%	0	0	0	0	0	0
Long Term						
Full Simulation Period[b]	0	0	0	2,337	0	0
Water Year Types[c]						
Wet (32%)	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0
Dry (24%)	0	0	0	9,580	0	0
Critical (15%)	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-2. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	397,531	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	378,132	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 3

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	399,868	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	387,712	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	0	0	0	0	0	0
20%	0	0	0	0	0	0
30%	0	0	0	0	0	0
40%	0	0	0	0	0	0
50%	0	0	0	0	0	0
60%	0	0	0	0	0	0
70%	0	0	0	0	0	0
80%	0	0	0	0	0	0
90%	0	0	0	0	0	0
Long Term						
Full Simulation Period[b]	0	0	0	2,337	0	0
Water Year Types[c]						
Wet (32%)	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0
Dry (24%)	0	0	0	9,580	0	0
Critical (15%)	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-3. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	397,531	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	378,132	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 5

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,354	349,555	399,466	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	386,066	397,829	404,454
Critical (15%)	249,321	249,542	324,987	367,536	375,476	375,476

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	0	0	0	0	0	0
20%	0	0	0	0	0	0
30%	0	0	0	0	0	0
40%	0	0	0	0	0	0
50%	0	0	0	0	0	0
60%	0	0	0	0	0	0
70%	0	0	0	0	0	0
80%	0	0	0	0	0	0
90%	0	0	0	0	0	0
Long Term						
Full Simulation Period[b]	0	32	0	1,935	0	0
Water Year Types[c]						
Wet (32%)	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0
Dry (24%)	0	0	0	7,934	0	0
Critical (15%)	0	221	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-4. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	399,868	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	387,712	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

No Action Alternative

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	397,531	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	378,132	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

No Action Alternative minus Second Basis of Comparison

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	0	0	0	0	0	0
20%	0	0	0	0	0	0
30%	0	0	0	0	0	0
40%	0	0	0	0	0	0
50%	0	0	0	0	0	0
60%	0	0	0	0	0	0
70%	0	0	0	0	0	0
80%	0	0	0	0	0	0
90%	0	0	0	0	0	0
Long Term						
Full Simulation Period[b]	0	0	0	-2,337	0	0
Water Year Types[c]						
Wet (32%)	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0
Dry (24%)	0	0	0	-9,580	0	0
Critical (15%)	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-5. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	399,868	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	387,712	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 3

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	399,868	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	387,712	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 3 minus Second Basis of Comparison

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	0	0	0	0	0	0
20%	0	0	0	0	0	0
30%	0	0	0	0	0	0
40%	0	0	0	0	0	0
50%	0	0	0	0	0	0
60%	0	0	0	0	0	0
70%	0	0	0	0	0	0
80%	0	0	0	0	0	0
90%	0	0	0	0	0	0
Long Term						
Full Simulation Period[b]	0	0	0	0	0	0
Water Year Types[c]						
Wet (32%)	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-9-6. Total Clear Creek Steelhead/Rainbow Trout Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,321	349,555	399,868	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	387,712	397,829	404,454
Critical (15%)	249,321	249,321	324,987	367,536	375,476	375,476

Alternative 5

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	249,321	249,321	353,767	421,350	421,350	421,350
20%	249,321	249,321	353,767	421,350	421,350	421,350
30%	249,321	249,321	353,767	421,350	421,350	421,350
40%	249,321	249,321	353,767	421,350	421,350	421,350
50%	249,321	249,321	353,767	421,350	421,350	421,350
60%	249,321	249,321	353,767	421,350	421,350	421,350
70%	249,321	249,321	353,767	421,350	421,350	421,350
80%	249,321	249,321	353,767	421,350	421,350	421,350
90%	249,321	249,321	353,767	353,767	353,767	353,767
Long Term						
Full Simulation Period[b]	249,321	249,354	349,555	399,466	403,987	407,219
Water Year Types[c]						
Wet (32%)	249,321	249,321	353,767	421,350	421,350	421,350
Above Normal (16%)	249,321	249,321	353,767	392,471	395,561	405,754
Below Normal (13%)	249,321	249,321	353,767	415,206	415,206	415,206
Dry (24%)	249,321	249,321	353,767	386,066	397,829	404,454
Critical (15%)	249,321	249,542	324,987	367,536	375,476	375,476

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)					
Statistic	Jul	Aug	Sep	Oct	Nov	Dec
Probability of Exceedance[a]						
10%	0	0	0	0	0	0
20%	0	0	0	0	0	0
30%	0	0	0	0	0	0
40%	0	0	0	0	0	0
50%	0	0	0	0	0	0
60%	0	0	0	0	0	0
70%	0	0	0	0	0	0
80%	0	0	0	0	0	0
90%	0	0	0	0	0	0
Long Term						
Full Simulation Period[b]	0	32	0	-401	0	0
Water Year Types[c]						
Wet (32%)	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0
Dry (24%)	0	0	0	-1,646	0	0
Critical (15%)	0	221	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.10. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA

Table C-10-1. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,611,760	2,611,057	2,612,631	2,612,797
20%	2,600,910	2,599,556	2,544,749	2,589,528
30%	2,581,802	2,577,781	2,470,196	2,545,194
40%	2,559,436	2,524,364	2,399,009	2,498,496
50%	2,464,136	2,469,472	2,240,547	2,431,325
60%	2,074,148	2,362,473	1,937,765	2,177,929
70%	1,759,375	2,239,138	1,726,837	1,647,019
80%	1,312,640	2,159,758	1,469,982	752,125
90%	948,053	2,004,975	1,274,759	401,738
Long Term				
Full Simulation Period[b]	2,061,189	2,370,068	2,033,170	1,914,685
Water Year Types[c]				
Wet (32%)	1,244,507	2,256,115	1,749,171	1,088,491
Above Normal (16%)	2,031,473	2,386,839	1,953,380	1,797,287
Below Normal (13%)	2,534,356	2,340,807	2,010,650	2,442,865
Dry (24%)	2,568,048	2,429,377	2,212,340	2,452,807
Critical (15%)	2,584,359	2,526,770	2,456,964	2,450,916

Alternative 1

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,606,453	2,610,923	2,613,004	2,615,120
20%	2,598,686	2,607,118	2,590,324	2,606,353
30%	2,590,641	2,590,380	2,540,705	2,581,186
40%	2,581,703	2,552,232	2,522,164	2,523,587
50%	2,568,920	2,488,692	2,471,020	2,429,050
60%	2,544,110	2,423,341	2,415,878	2,114,265
70%	2,511,568	2,198,680	2,348,647	1,522,077
80%	2,468,817	2,149,445	2,135,419	649,981
90%	2,037,416	2,077,807	1,651,010	310,774
Long Term				
Full Simulation Period[b]	2,453,532	2,391,156	2,277,239	1,889,000
Water Year Types[c]				
Wet (32%)	2,263,522	2,319,171	2,072,824	1,004,115
Above Normal (16%)	2,482,326	2,412,105	2,220,931	1,815,000
Below Normal (13%)	2,557,385	2,339,463	2,208,996	2,424,318
Dry (24%)	2,557,171	2,404,188	2,483,729	2,453,917
Critical (15%)	2,566,099	2,550,090	2,499,547	2,454,183

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	-5,308	-134	373	2,323
20%	-2,224	7,563	45,576	16,826
30%	8,839	12,598	70,509	35,992
40%	22,267	27,867	123,154	25,091
50%	104,785	19,220	230,473	-2,275
60%	469,961	60,867	478,112	-63,664
70%	752,193	-40,458	621,810	-124,942
80%	1,156,177	-10,312	665,437	-102,144
90%	1,089,363	72,832	376,251	-90,964
Long Term				
Full Simulation Period[b]	392,343	21,088	244,070	-25,685
Water Year Types[c]				
Wet (32%)	1,019,014	63,056	323,653	-84,376
Above Normal (16%)	450,853	25,266	267,551	17,713
Below Normal (13%)	23,029	-1,344	198,346	-18,548
Dry (24%)	-10,877	-25,189	271,389	1,110
Critical (15%)	-18,261	23,320	42,583	3,267

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-2. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,611,760	2,611,057	2,612,631	2,612,797
20%	2,600,910	2,599,556	2,544,749	2,589,528
30%	2,581,802	2,577,781	2,470,196	2,545,194
40%	2,559,436	2,524,364	2,399,009	2,498,496
50%	2,464,136	2,469,472	2,240,547	2,431,325
60%	2,074,148	2,362,473	1,937,765	2,177,929
70%	1,759,375	2,239,138	1,726,837	1,647,019
80%	1,312,640	2,159,758	1,469,982	752,125
90%	948,053	2,004,975	1,274,759	401,738
Long Term				
Full Simulation Period[b]	2,061,189	2,370,068	2,033,170	1,914,685
Water Year Types[c]				
Wet (32%)	1,244,507	2,256,115	1,749,171	1,088,491
Above Normal (16%)	2,031,473	2,386,839	1,953,380	1,797,287
Below Normal (13%)	2,534,356	2,340,807	2,010,650	2,442,865
Dry (24%)	2,568,048	2,429,377	2,212,340	2,452,807
Critical (15%)	2,584,359	2,526,770	2,456,964	2,450,916

Alternative 3

Statistic	Monthly WUA (Feet2) Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,610,761	2,611,696	2,613,329	2,615,189
20%	2,605,860	2,608,507	2,597,800	2,597,011
30%	2,594,432	2,590,731	2,559,776	2,574,680
40%	2,575,290	2,563,650	2,536,506	2,498,042
50%	2,560,249	2,498,190	2,464,905	2,429,136
60%	2,516,696	2,350,599	2,425,645	2,114,277
70%	2,467,821	2,244,905	2,344,898	1,689,342
80%	2,260,206	2,149,050	2,185,503	596,021
90%	2,071,507	2,050,347	1,540,280	310,571
Long Term				
Full Simulation Period[b]	2,418,831	2,385,202	2,288,411	1,894,223
Water Year Types[c]				
Wet (32%)	2,233,398	2,330,886	2,080,687	1,020,249
Above Normal (16%)	2,488,512	2,398,918	2,211,994	1,836,432
Below Normal (13%)	2,328,080	2,356,349	2,250,946	2,425,247
Dry (24%)	2,574,770	2,356,076	2,477,850	2,440,175
Critical (15%)	2,568,402	2,563,018	2,539,877	2,453,750

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	-999	639	699	2,392
20%	4,950	8,952	53,051	7,483
30%	12,630	12,949	89,580	29,487
40%	15,854	39,286	137,497	-453
50%	96,114	28,718	224,358	-2,189
60%	442,548	-11,874	487,880	-63,652
70%	708,446	5,767	618,060	42,322
80%	947,565	-10,708	715,521	-156,104
90%	1,123,455	45,372	265,521	-91,166
Long Term				
Full Simulation Period[b]	357,641	15,134	255,241	-20,462
Water Year Types[c]				
Wet (32%)	988,891	74,771	331,515	-68,242
Above Normal (16%)	457,039	12,079	258,615	39,145
Below Normal (13%)	-206,276	15,542	240,296	-17,618
Dry (24%)	6,722	-73,301	265,510	-12,632
Critical (15%)	-15,957	36,248	82,913	2,835

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-3. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)			
Statistic	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,611,760	2,611,057	2,612,631	2,612,797
20%	2,600,910	2,599,556	2,544,749	2,589,528
30%	2,581,802	2,577,781	2,470,196	2,545,194
40%	2,559,436	2,524,364	2,399,009	2,498,496
50%	2,464,136	2,469,472	2,240,547	2,431,325
60%	2,074,148	2,362,473	1,937,765	2,177,929
70%	1,759,375	2,239,138	1,726,837	1,647,019
80%	1,312,640	2,159,758	1,469,982	752,125
90%	948,053	2,004,975	1,274,759	401,738
Long Term				
Full Simulation Period[b]	2,061,189	2,370,068	2,033,170	1,914,685
Water Year Types[c]				
Wet (32%)	1,244,507	2,256,115	1,749,171	1,088,491
Above Normal (16%)	2,031,473	2,386,839	1,953,380	1,797,287
Below Normal (13%)	2,534,356	2,340,807	2,010,650	2,442,865
Dry (24%)	2,568,048	2,429,377	2,212,340	2,452,807
Critical (15%)	2,584,359	2,526,770	2,456,964	2,450,916

Alternative 5

	Monthly WUA (Feet2)			
Statistic	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,611,931	2,609,252	2,613,648	2,612,701
20%	2,607,848	2,599,478	2,548,586	2,589,573
30%	2,589,521	2,577,154	2,472,212	2,546,403
40%	2,572,950	2,530,355	2,394,587	2,508,878
50%	2,473,102	2,466,248	2,237,779	2,430,966
60%	2,098,873	2,353,753	1,900,885	2,177,965
70%	1,776,211	2,248,644	1,721,923	1,646,356
80%	1,312,108	2,161,981	1,478,431	755,029
90%	949,948	1,989,000	1,277,028	418,307
Long Term				
Full Simulation Period[b]	2,068,256	2,374,403	2,031,675	1,916,401
Water Year Types[c]				
Wet (32%)	1,250,456	2,271,658	1,734,787	1,088,118
Above Normal (16%)	2,047,769	2,375,225	1,958,032	1,796,068
Below Normal (13%)	2,524,203	2,343,624	2,012,371	2,447,206
Dry (24%)	2,581,652	2,435,460	2,217,886	2,454,150
Critical (15%)	2,588,738	2,522,580	2,462,055	2,458,554

Alternative 5 minus No Action Alternative

	Monthly WUA (Feet2)			
Statistic	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	170	**-1,805**	1,018	**-96**
20%	6,938	**-78**	3,837	45
30%	7,719	**-628**	2,015	1,209
40%	13,515	5,991	**-4,422**	10,383
50%	8,966	**-3,224**	**-2,768**	**-359**
60%	24,725	**-8,721**	**-36,881**	36
70%	16,836	9,506	**-4,914**	**-664**
80%	**-532**	2,223	8,449	2,904
90%	1,896	**-15,974**	2,268	16,570
Long Term				
Full Simulation Period[b]	7,066	4,335	**-1,495**	1,716
Water Year Types[c]				
Wet (32%)	5,949	15,543	**-14,384**	**-373**
Above Normal (16%)	16,296	**-11,614**	4,652	**-1,220**
Below Normal (13%)	**-10,153**	2,817	1,721	4,341
Dry (24%)	13,604	6,083	5,547	1,343
Critical (15%)	4,379	**-4,190**	5,091	7,638

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-4. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,606,453	2,610,923	2,613,004	2,615,120
20%	2,598,686	2,607,118	2,590,324	2,606,353
30%	2,590,641	2,590,380	2,540,705	2,581,186
40%	2,581,703	2,552,232	2,522,164	2,523,587
50%	2,568,920	2,488,692	2,471,020	2,429,050
60%	2,544,110	2,423,341	2,415,878	2,114,265
70%	2,511,568	2,198,680	2,348,647	1,522,077
80%	2,468,817	2,149,445	2,135,419	649,981
90%	2,037,416	2,077,807	1,651,010	310,774
Long Term				
Full Simulation Period[b]	2,453,532	2,391,156	2,277,239	1,889,000
Water Year Types[c]				
Wet (32%)	2,263,522	2,319,171	2,072,824	1,004,115
Above Normal (16%)	2,482,326	2,412,105	2,220,931	1,815,000
Below Normal (13%)	2,557,385	2,339,463	2,208,996	2,424,318
Dry (24%)	2,557,171	2,404,188	2,483,729	2,453,917
Critical (15%)	2,566,099	2,550,090	2,499,547	2,454,183

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,611,760	2,611,057	2,612,631	2,612,797
20%	2,600,910	2,599,556	2,544,749	2,589,528
30%	2,581,802	2,577,781	2,470,196	2,545,194
40%	2,559,436	2,524,364	2,399,009	2,498,496
50%	2,464,136	2,469,472	2,240,547	2,431,325
60%	2,074,148	2,362,473	1,937,765	2,177,929
70%	1,759,375	2,239,138	1,726,837	1,647,019
80%	1,312,640	2,159,758	1,469,982	752,125
90%	948,053	2,004,975	1,274,759	401,738
Long Term				
Full Simulation Period[b]	2,061,189	2,370,068	2,033,170	1,914,685
Water Year Types[c]				
Wet (32%)	1,244,507	2,256,115	1,749,171	1,088,491
Above Normal (16%)	2,031,473	2,386,839	1,953,380	1,797,287
Below Normal (13%)	2,534,356	2,340,807	2,010,650	2,442,865
Dry (24%)	2,568,048	2,429,377	2,212,340	2,452,807
Critical (15%)	2,584,359	2,526,770	2,456,964	2,450,916

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	5,308	134	-373	-2,323
20%	2,224	-7,563	-45,576	-16,826
30%	-8,839	-12,598	-70,509	-35,992
40%	-22,267	-27,867	-123,154	-25,091
50%	-104,785	-19,220	-230,473	2,275
60%	-469,961	-60,867	-478,112	63,664
70%	-752,193	40,458	-621,810	124,942
80%	-1,156,177	10,312	-665,437	102,144
90%	-1,089,363	-72,832	-376,251	90,964
Long Term				
Full Simulation Period[b]	-392,343	-21,088	-244,070	25,685
Water Year Types[c]				
Wet (32%)	-1,019,014	-63,056	-323,653	84,376
Above Normal (16%)	-450,853	-25,266	-267,551	-17,713
Below Normal (13%)	-23,029	1,344	-198,346	18,548
Dry (24%)	10,877	25,189	-271,389	-1,110
Critical (15%)	18,261	-23,320	-42,583	-3,267

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-5. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,606,453	2,610,923	2,613,004	2,615,120
20%	2,598,686	2,607,118	2,590,324	2,606,353
30%	2,590,641	2,590,380	2,540,705	2,581,186
40%	2,581,703	2,552,232	2,522,164	2,523,587
50%	2,568,920	2,488,692	2,471,020	2,429,050
60%	2,544,110	2,423,341	2,415,878	2,114,265
70%	2,511,568	2,198,680	2,348,647	1,522,077
80%	2,468,817	2,149,445	2,135,419	649,981
90%	2,037,416	2,077,807	1,651,010	310,774
Long Term				
Full Simulation Period[b]	2,453,532	2,391,156	2,277,239	1,889,000
Water Year Types[c]				
Wet (32%)	2,263,522	2,319,171	2,072,824	1,004,115
Above Normal (16%)	2,482,326	2,412,105	2,220,931	1,815,000
Below Normal (13%)	2,557,385	2,339,463	2,208,996	2,424,318
Dry (24%)	2,557,171	2,404,188	2,483,729	2,453,917
Critical (15%)	2,566,099	2,550,090	2,499,547	2,454,183

Alternative 3

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,610,761	2,611,696	2,613,329	2,615,189
20%	2,605,860	2,608,507	2,597,800	2,597,011
30%	2,594,432	2,590,731	2,559,776	2,574,680
40%	2,575,290	2,563,650	2,536,506	2,498,042
50%	2,560,249	2,498,190	2,464,905	2,429,136
60%	2,516,696	2,350,599	2,425,645	2,114,277
70%	2,467,821	2,244,905	2,344,898	1,689,342
80%	2,260,206	2,149,050	2,185,503	596,021
90%	2,071,507	2,050,347	1,540,280	310,571
Long Term				
Full Simulation Period[b]	2,418,831	2,385,202	2,288,411	1,894,223
Water Year Types[c]				
Wet (32%)	2,233,398	2,330,886	2,080,687	1,020,249
Above Normal (16%)	2,488,512	2,398,918	2,211,994	1,836,432
Below Normal (13%)	2,328,080	2,356,349	2,250,946	2,425,247
Dry (24%)	2,574,770	2,356,076	2,477,850	2,440,175
Critical (15%)	2,568,402	2,563,018	2,539,877	2,453,750

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	4,308	773	326	69
20%	7,174	1,389	7,475	-9,343
30%	3,791	351	19,071	-6,505
40%	-6,413	11,418	14,343	-25,545
50%	-8,671	9,498	-6,115	86
60%	-27,413	-72,742	9,768	12
70%	-43,748	46,225	-3,750	167,265
80%	-208,611	-395	50,083	-53,960
90%	34,091	-27,459	-110,730	-202
Long Term				
Full Simulation Period[b]	-34,702	-5,954	11,172	5,223
Water Year Types[c]				
Wet (32%)	-30,124	11,715	7,863	16,134
Above Normal (16%)	6,186	-13,187	-8,936	21,431
Below Normal (13%)	-229,305	16,886	41,950	930
Dry (24%)	17,599	-48,112	-5,880	-13,742
Critical (15%)	2,304	12,928	40,330	-433

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-10-6. Sacramento River Battle Creek to Deer Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,606,453	2,610,923	2,613,004	2,615,120
20%	2,598,686	2,607,118	2,590,324	2,606,353
30%	2,590,641	2,590,380	2,540,705	2,581,186
40%	2,581,703	2,552,232	2,522,164	2,523,587
50%	2,568,920	2,488,692	2,471,020	2,429,050
60%	2,544,110	2,423,341	2,415,878	2,114,265
70%	2,511,568	2,198,680	2,348,647	1,522,077
80%	2,468,817	2,149,445	2,135,419	649,981
90%	2,037,416	2,077,807	1,651,010	310,774
Long Term				
Full Simulation Period[b]	2,453,532	2,391,156	2,277,239	1,889,000
Water Year Types[c]				
Wet (32%)	2,263,522	2,319,171	2,072,824	1,004,115
Above Normal (16%)	2,482,326	2,412,105	2,220,931	1,815,000
Below Normal (13%)	2,557,385	2,339,463	2,208,996	2,424,318
Dry (24%)	2,557,171	2,404,188	2,483,729	2,453,917
Critical (15%)	2,566,099	2,550,090	2,499,547	2,454,183

Alternative 5

Statistic	Monthly WUA (Feet2) Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	2,611,931	2,609,252	2,613,648	2,612,701
20%	2,607,848	2,599,478	2,548,586	2,589,573
30%	2,589,521	2,577,154	2,472,212	2,546,403
40%	2,572,950	2,530,355	2,394,587	2,508,878
50%	2,473,102	2,466,248	2,237,779	2,430,966
60%	2,098,873	2,353,753	1,900,885	2,177,965
70%	1,776,211	2,248,644	1,721,923	1,646,356
80%	1,312,108	2,161,981	1,478,431	755,029
90%	949,948	1,989,000	1,277,028	418,307
Long Term				
Full Simulation Period[b]	2,068,256	2,374,403	2,031,675	1,916,401
Water Year Types[c]				
Wet (32%)	1,250,456	2,271,658	1,734,787	1,088,118
Above Normal (16%)	2,047,769	2,375,225	1,958,032	1,796,068
Below Normal (13%)	2,524,203	2,343,624	2,012,371	2,447,206
Dry (24%)	2,581,652	2,435,460	2,217,886	2,454,150
Critical (15%)	2,588,738	2,522,580	2,462,055	2,458,554

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	5,478	-1,672	645	-2,419
20%	9,162	-7,640	-41,738	-16,781
30%	-1,120	-13,226	-68,493	-34,783
40%	-8,753	-21,877	-127,576	-14,709
50%	-95,819	-22,444	-233,241	1,916
60%	-445,236	-69,588	-514,993	63,700
70%	-735,357	49,964	-626,724	124,278
80%	-1,156,709	12,535	-656,989	105,048
90%	-1,087,468	-88,806	-373,982	107,534
Long Term				
Full Simulation Period[b]	-385,276	-16,752	-245,564	27,401
Water Year Types[c]				
Wet (32%)	-1,013,066	-47,514	-338,037	84,003
Above Normal (16%)	-434,557	-36,880	-262,899	-18,933
Below Normal (13%)	-33,182	4,162	-196,625	22,889
Dry (24%)	24,481	31,272	-265,843	233
Critical (15%)	22,640	-27,510	-37,492	4,371

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.11. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA

Table C-11-1. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,074,933	1,071,766	1,084,531	1,090,813
20%	1,068,693	1,055,003	1,083,385	1,086,203
30%	1,059,032	1,028,294	1,064,343	1,084,597
40%	1,022,534	981,340	1,028,071	1,084,031
50%	946,852	935,007	938,966	1,083,095
60%	679,708	857,031	826,749	1,071,937
70%	547,205	804,100	693,902	994,128
80%	415,717	737,992	541,879	612,062
90%	288,927	684,923	443,183	241,531
Long Term				
Full Simulation Period[b]	775,472	901,077	838,248	894,774
Water Year Types[c]				
Wet (32%)	397,164	848,767	756,753	608,821
Above Normal (16%)	676,556	915,921	815,092	869,943
Below Normal (13%)	999,599	866,710	827,549	1,077,935
Dry (24%)	1,041,977	916,695	874,647	1,074,316
Critical (15%)	1,052,675	1,003,809	989,051	1,074,106

Alternative 1

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,075,063	1,084,537	1,088,587	1,090,562
20%	1,070,202	1,070,164	1,084,595	1,086,381
30%	1,061,602	1,039,011	1,077,634	1,085,311
40%	1,024,656	1,007,580	1,069,954	1,084,228
50%	1,010,066	958,002	1,034,898	1,082,736
60%	984,835	915,882	1,006,817	1,073,877
70%	955,282	792,903	963,392	922,017
80%	921,879	736,193	853,474	440,476
90%	666,878	689,992	766,031	176,647
Long Term				
Full Simulation Period[b]	954,392	915,813	964,036	870,201
Water Year Types[c]				
Wet (32%)	838,409	885,485	919,516	516,092
Above Normal (16%)	946,747	928,105	929,572	906,878
Below Normal (13%)	1,002,301	871,146	939,385	1,070,070
Dry (24%)	1,033,166	906,014	1,025,717	1,076,055
Critical (15%)	1,038,764	1,025,479	1,017,627	1,071,403

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	130	12,771	4,056	-250
20%	1,509	15,160	1,210	178
30%	2,570	10,717	13,292	714
40%	2,122	26,240	41,883	197
50%	63,215	22,995	95,932	-360
60%	305,127	58,852	180,068	1,940
70%	408,077	-11,197	269,489	-72,111
80%	506,162	-1,800	311,594	-171,587
90%	377,950	5,069	322,847	-64,884
Long Term				
Full Simulation Period[b]	178,920	14,735	125,788	-24,573
Water Year Types[c]				
Wet (32%)	441,244	36,718	162,763	-92,729
Above Normal (16%)	270,191	12,185	114,481	36,935
Below Normal (13%)	2,702	4,436	111,836	-7,866
Dry (24%)	-8,811	-10,681	151,070	1,738
Critical (15%)	-13,911	21,670	28,576	-2,703

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-2. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,074,933	1,071,766	1,084,531	1,090,813
20%	1,068,693	1,055,003	1,083,385	1,086,203
30%	1,059,032	1,028,294	1,064,343	1,084,597
40%	1,022,534	981,340	1,028,071	1,084,031
50%	946,852	935,007	938,966	1,083,095
60%	679,708	857,031	826,749	1,071,937
70%	547,205	804,100	693,902	994,128
80%	415,717	737,992	541,879	612,062
90%	288,927	684,923	443,183	241,531
Long Term				
Full Simulation Period[b]	775,472	901,077	838,248	894,774
Water Year Types[c]				
Wet (32%)	397,164	848,767	756,753	608,821
Above Normal (16%)	676,556	915,921	815,092	869,943
Below Normal (13%)	999,599	866,710	827,549	1,077,935
Dry (24%)	1,041,977	916,695	874,647	1,074,316
Critical (15%)	1,052,675	1,003,809	989,051	1,074,106

Alternative 3

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,075,087	1,078,796	1,086,362	1,091,106
20%	1,067,969	1,062,764	1,084,474	1,086,289
30%	1,050,075	1,033,900	1,079,992	1,084,965
40%	1,029,594	1,007,376	1,071,104	1,084,236
50%	999,853	962,210	1,045,663	1,082,321
60%	967,954	884,014	1,018,409	1,065,798
70%	928,132	807,938	964,944	940,990
80%	806,964	724,973	895,430	431,219
90%	691,766	684,537	763,489	175,746
Long Term				
Full Simulation Period[b]	932,453	909,513	970,527	869,416
Water Year Types[c]				
Wet (32%)	818,164	890,447	924,853	519,907
Above Normal (16%)	949,036	918,229	919,388	904,151
Below Normal (13%)	870,415	880,602	965,796	1,070,366
Dry (24%)	1,041,141	878,291	1,022,832	1,070,050
Critical (15%)	1,037,833	1,019,916	1,042,050	1,070,462

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	154	7,030	1,830	293
20%	-724	7,761	1,089	86
30%	-8,957	5,606	15,649	369
40%	7,061	26,036	43,033	205
50%	53,001	27,203	106,698	-775
60%	288,246	26,983	191,660	-6,139
70%	380,927	3,838	271,041	-53,138
80%	391,247	-13,019	353,551	-180,843
90%	402,839	-387	320,305	-65,785
Long Term				
Full Simulation Period[b]	156,980	8,435	132,279	-25,359
Water Year Types[c]				
Wet (32%)	421,000	41,680	168,100	-88,914
Above Normal (16%)	272,480	2,309	104,297	34,209
Below Normal (13%)	-129,184	13,892	138,247	-7,570
Dry (24%)	-837	-38,405	148,185	-4,267
Critical (15%)	-14,842	16,108	52,999	-3,645

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-3. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,074,933	1,071,766	1,084,531	1,090,813
20%	1,068,693	1,055,003	1,083,385	1,086,203
30%	1,059,032	1,028,294	1,064,343	1,084,597
40%	1,022,534	981,340	1,028,071	1,084,031
50%	946,852	935,007	938,966	1,083,095
60%	679,708	857,031	826,749	1,071,937
70%	547,205	804,100	693,902	994,128
80%	415,717	737,992	541,879	612,062
90%	288,927	684,923	443,183	241,531
Long Term				
Full Simulation Period[b]	775,472	901,077	838,248	894,774
Water Year Types[c]				
Wet (32%)	397,164	848,767	756,753	608,821
Above Normal (16%)	676,556	915,921	815,092	869,943
Below Normal (13%)	999,599	866,710	827,549	1,077,935
Dry (24%)	1,041,977	916,695	874,647	1,074,316
Critical (15%)	1,052,675	1,003,809	989,051	1,074,106

Alternative 5

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,072,916	1,069,935	1,086,073	1,090,825
20%	1,063,291	1,041,299	1,083,662	1,086,256
30%	1,039,438	1,024,636	1,068,169	1,084,652
40%	1,010,234	979,947	1,037,490	1,084,126
50%	961,558	933,945	943,760	1,083,444
60%	699,800	865,331	813,216	1,074,982
70%	551,004	814,714	677,917	1,002,473
80%	430,718	753,181	543,537	619,534
90%	289,670	673,982	444,992	248,783
Long Term				
Full Simulation Period[b]	774,734	901,062	838,739	895,619
Water Year Types[c]				
Wet (32%)	398,505	855,599	750,331	609,125
Above Normal (16%)	686,295	908,103	821,298	866,608
Below Normal (13%)	987,463	868,779	828,188	1,079,389
Dry (24%)	1,043,490	919,730	879,326	1,075,557
Critical (15%)	1,042,779	990,417	991,210	1,079,429

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	-2,018	-1,831	1,542	12
20%	-5,402	-13,704	278	53
30%	-19,594	-3,658	3,826	56
40%	-12,300	-1,393	9,419	94
50%	14,707	-1,062	4,794	349
60%	20,092	8,300	-13,534	3,046
70%	3,799	10,614	-15,985	8,345
80%	15,001	15,189	1,658	7,472
90%	743	-10,942	1,809	7,252
Long Term				
Full Simulation Period[b]	-738	-15	490	844
Water Year Types[c]				
Wet (32%)	1,341	6,832	-6,422	304
Above Normal (16%)	9,739	-7,817	6,206	-3,335
Below Normal (13%)	-12,137	2,069	638	1,454
Dry (24%)	1,513	3,035	4,679	1,240
Critical (15%)	-9,896	-13,392	2,159	5,322

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-4. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,075,063	1,084,537	1,088,587	1,090,562
20%	1,070,202	1,070,164	1,084,595	1,086,381
30%	1,061,602	1,039,011	1,077,634	1,085,311
40%	1,024,656	1,007,580	1,069,954	1,084,228
50%	1,010,066	958,002	1,034,898	1,082,736
60%	984,835	915,882	1,006,817	1,073,877
70%	955,282	792,903	963,392	922,017
80%	921,879	736,193	853,474	440,476
90%	666,878	689,992	766,031	176,647
Long Term				
Full Simulation Period[b]	954,392	915,813	964,036	870,201
Water Year Types[c]				
Wet (32%)	838,409	885,485	919,516	516,092
Above Normal (16%)	946,747	928,105	929,572	906,878
Below Normal (13%)	1,002,301	871,146	939,385	1,070,070
Dry (24%)	1,033,166	906,014	1,025,717	1,076,055
Critical (15%)	1,038,764	1,025,479	1,017,627	1,071,403

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,074,933	1,071,766	1,084,531	1,090,813
20%	1,068,693	1,055,003	1,083,385	1,086,203
30%	1,059,032	1,028,294	1,064,343	1,084,597
40%	1,022,534	981,340	1,028,071	1,084,031
50%	946,852	935,007	938,966	1,083,095
60%	679,708	857,031	826,749	1,071,937
70%	547,205	804,100	693,902	994,128
80%	415,717	737,992	541,879	612,062
90%	288,927	684,923	443,183	241,531
Long Term				
Full Simulation Period[b]	775,472	901,077	838,248	894,774
Water Year Types[c]				
Wet (32%)	397,164	848,767	756,753	608,821
Above Normal (16%)	676,556	915,921	815,092	869,943
Below Normal (13%)	999,599	866,710	827,549	1,077,935
Dry (24%)	1,041,977	916,695	874,647	1,074,316
Critical (15%)	1,052,675	1,003,809	989,051	1,074,106

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	-130	-12,771	-4,056	250
20%	-1,509	-15,160	-1,210	-178
30%	-2,570	-10,717	-13,292	-714
40%	-2,122	-26,240	-41,883	-197
50%	-63,215	-22,995	-95,932	360
60%	-305,127	-58,852	-180,068	-1,940
70%	-408,077	11,197	-269,489	72,111
80%	-506,162	1,800	-311,594	171,587
90%	-377,950	-5,069	-322,847	64,884
Long Term				
Full Simulation Period[b]	-178,920	-14,735	-125,788	24,573
Water Year Types[c]				
Wet (32%)	-441,244	-36,718	-162,763	92,729
Above Normal (16%)	-270,191	-12,185	-114,481	-36,935
Below Normal (13%)	-2,702	-4,436	-111,836	7,866
Dry (24%)	8,811	10,681	-151,070	-1,738
Critical (15%)	13,911	-21,670	-28,576	2,703

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-5. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,075,063	1,084,537	1,088,587	1,090,562
20%	1,070,202	1,070,164	1,084,595	1,086,381
30%	1,061,602	1,039,011	1,077,634	1,085,311
40%	1,024,656	1,007,580	1,069,954	1,084,228
50%	1,010,066	958,002	1,034,898	1,082,736
60%	984,835	915,882	1,006,817	1,073,877
70%	955,282	792,903	963,392	922,017
80%	921,879	736,193	853,474	440,476
90%	666,878	689,992	766,031	176,647
Long Term				
Full Simulation Period[b]	954,392	915,813	964,036	870,201
Water Year Types[c]				
Wet (32%)	838,409	885,485	919,516	516,092
Above Normal (16%)	946,747	928,105	929,572	906,878
Below Normal (13%)	1,002,301	871,146	939,385	1,070,070
Dry (24%)	1,033,166	906,014	1,025,717	1,076,055
Critical (15%)	1,038,764	1,025,479	1,017,627	1,071,403

Alternative 3

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,075,087	1,078,796	1,086,362	1,091,106
20%	1,067,969	1,062,764	1,084,474	1,086,289
30%	1,050,075	1,033,900	1,079,992	1,084,965
40%	1,029,594	1,007,376	1,071,104	1,084,236
50%	999,853	962,210	1,045,663	1,082,321
60%	967,954	884,014	1,018,409	1,065,798
70%	928,132	807,938	964,944	940,990
80%	806,964	724,973	895,430	431,219
90%	691,766	684,537	763,489	175,746
Long Term				
Full Simulation Period[b]	932,453	909,513	970,527	869,416
Water Year Types[c]				
Wet (32%)	818,164	890,447	924,853	519,907
Above Normal (16%)	949,036	918,229	919,388	904,151
Below Normal (13%)	870,415	880,602	965,796	1,070,366
Dry (24%)	1,041,141	878,291	1,022,832	1,070,050
Critical (15%)	1,037,833	1,019,916	1,042,050	1,070,462

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	24	-5,741	-2,226	543
20%	-2,233	-7,399	-121	-92
30%	-11,527	-5,111	2,358	-346
40%	4,938	-204	1,150	8
50%	-10,214	4,208	10,766	-415
60%	-16,881	-31,869	11,592	-8,079
70%	-27,150	15,035	1,552	18,973
80%	-114,915	-11,219	41,957	-9,256
90%	24,889	-5,456	-2,542	-901
Long Term				
Full Simulation Period[b]	-21,939	-6,300	6,491	-785
Water Year Types[c]				
Wet (32%)	-20,245	4,962	5,337	3,815
Above Normal (16%)	2,289	-9,876	-10,184	-2,726
Below Normal (13%)	-131,886	9,456	26,412	296
Dry (24%)	7,974	-27,724	-2,885	-6,005
Critical (15%)	-931	-5,562	24,423	-942

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-11-6. Sacramento River Keswick to Battle Creek Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,075,063	1,084,537	1,088,587	1,090,562
20%	1,070,202	1,070,164	1,084,595	1,086,381
30%	1,061,602	1,039,011	1,077,634	1,085,311
40%	1,024,656	1,007,580	1,069,954	1,084,228
50%	1,010,066	958,002	1,034,898	1,082,736
60%	984,835	915,882	1,006,817	1,073,877
70%	955,282	792,903	963,392	922,017
80%	921,879	736,193	853,474	440,476
90%	666,878	689,992	766,031	176,647
Long Term				
Full Simulation Period[b]	954,392	915,813	964,036	870,201
Water Year Types[c]				
Wet (32%)	838,409	885,485	919,516	516,092
Above Normal (16%)	946,747	928,105	929,572	906,878
Below Normal (13%)	1,002,301	871,146	939,385	1,070,070
Dry (24%)	1,033,166	906,014	1,025,717	1,076,055
Critical (15%)	1,038,764	1,025,479	1,017,627	1,071,403

Alternative 5

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	1,072,916	1,069,935	1,086,073	1,090,825
20%	1,063,291	1,041,299	1,083,662	1,086,256
30%	1,039,438	1,024,636	1,068,169	1,084,652
40%	1,010,234	979,947	1,037,490	1,084,126
50%	961,558	933,945	943,760	1,083,444
60%	699,800	865,331	813,216	1,074,982
70%	551,004	814,714	677,917	1,002,473
80%	430,718	753,181	543,537	619,534
90%	289,670	673,982	444,992	248,783
Long Term				
Full Simulation Period[b]	774,734	901,062	838,739	895,619
Water Year Types[c]				
Wet (32%)	398,505	855,599	750,331	609,125
Above Normal (16%)	686,295	908,103	821,298	866,608
Below Normal (13%)	987,463	868,779	828,188	1,079,389
Dry (24%)	1,043,490	919,730	879,326	1,075,557
Critical (15%)	1,042,779	990,417	991,210	1,079,429

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)			
	Sep	Oct	Nov	Dec
Probability of Exceedance[a]				
10%	-2,148	-14,602	-2,514	263
20%	-6,911	-28,864	-932	-125
30%	-22,164	-14,375	-9,466	-659
40%	-14,422	-27,632	-32,464	-103
50%	-48,508	-24,057	-91,137	708
60%	-285,035	-50,552	-193,602	1,106
70%	-404,278	21,811	-285,474	80,456
80%	-491,161	16,989	-309,936	179,059
90%	-377,207	-16,011	-321,039	72,135
Long Term				
Full Simulation Period[b]	-179,658	-14,750	-125,297	25,418
Water Year Types[c]				
Wet (32%)	-439,904	-29,886	-169,185	93,034
Above Normal (16%)	-260,452	-20,002	-108,275	-40,270
Below Normal (13%)	-14,839	-2,367	-111,197	9,320
Dry (24%)	10,324	13,715	-146,391	-498
Critical (15%)	4,015	-35,062	-26,417	8,026

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.12. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA

Table C-12-1. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,999	1,837,941	1,839,149	1,846,924
20%	1,833,589	1,834,217	1,834,343	1,839,318
30%	1,811,962	1,829,031	1,830,698	1,834,085
40%	1,775,420	1,812,257	1,811,473	1,810,269
50%	1,766,469	1,745,795	1,661,674	1,743,299
60%	1,688,348	1,645,492	1,530,919	1,653,325
70%	1,428,559	1,311,020	1,311,020	1,311,020
80%	1,276,856	1,231,975	1,281,326	1,225,664
90%	1,183,556	1,108,337	1,220,578	1,108,003
Long Term				
Full Simulation Period[b]	1,602,491	1,590,612	1,571,611	1,583,807
Water Year Types[c]				
Wet (32%)	1,383,273	1,344,092	1,371,660	1,330,653
Above Normal (16%)	1,538,908	1,472,333	1,441,339	1,466,921
Below Normal (13%)	1,738,904	1,759,324	1,574,595	1,732,096
Dry (24%)	1,747,973	1,757,216	1,787,039	1,758,763
Critical (15%)	1,778,828	1,820,551	1,784,184	1,831,408

Alternative 1

Statistic	Monthly WUA (Feet2)			
	Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,447	1,837,875	1,839,315	1,846,944
20%	1,827,387	1,834,682	1,834,204	1,839,665
30%	1,810,323	1,829,615	1,828,499	1,833,002
40%	1,775,114	1,793,817	1,802,530	1,808,892
50%	1,760,438	1,706,232	1,673,635	1,704,154
60%	1,696,983	1,581,030	1,439,494	1,640,408
70%	1,311,416	1,303,986	1,311,020	1,300,764
80%	1,268,338	1,215,295	1,277,051	1,220,621
90%	1,177,260	1,104,493	1,197,414	1,116,350
Long Term				
Full Simulation Period[b]	1,597,909	1,557,190	1,564,976	1,570,429
Water Year Types[c]				
Wet (32%)	1,343,276	1,326,407	1,351,949	1,330,942
Above Normal (16%)	1,591,617	1,433,555	1,399,937	1,427,190
Below Normal (13%)	1,726,938	1,645,079	1,574,016	1,664,987
Dry (24%)	1,758,414	1,744,848	1,786,756	1,768,554
Critical (15%)	1,770,645	1,797,825	1,827,406	1,827,605

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)			
	Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	-552	-66	166	20
20%	-6,202	465	-139	347
30%	-1,639	584	-2,198	-1,083
40%	-306	-18,440	-8,942	-1,378
50%	-6,031	-39,563	11,961	-39,146
60%	8,635	-64,462	-91,424	-12,917
70%	-117,143	-7,034	0	-10,256
80%	-8,518	-16,680	-4,275	-5,044
90%	-6,295	-3,845	-23,163	8,348
Long Term				
Full Simulation Period[b]	-4,582	-33,423	-6,635	-13,378
Water Year Types[c]				
Wet (32%)	-39,998	-17,685	-19,712	289
Above Normal (16%)	52,708	-38,777	-41,402	-39,731
Below Normal (13%)	-11,966	-114,245	-580	-67,110
Dry (24%)	10,442	-12,368	-283	9,791
Critical (15%)	-8,182	-22,725	43,222	-3,803

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-2. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,999	1,837,941	1,839,149	1,846,924
20%	1,833,589	1,834,217	1,834,343	1,839,318
30%	1,811,962	1,829,031	1,830,698	1,834,085
40%	1,775,420	1,812,257	1,811,473	1,810,269
50%	1,766,469	1,745,795	1,661,674	1,743,299
60%	1,688,348	1,645,492	1,530,919	1,653,325
70%	1,428,559	1,311,020	1,311,020	1,311,020
80%	1,276,856	1,231,975	1,281,326	1,225,664
90%	1,183,556	1,108,337	1,220,578	1,108,003
Long Term				
Full Simulation Period[b]	1,602,491	1,590,612	1,571,611	1,583,807
Water Year Types[c]				
Wet (32%)	1,383,273	1,344,092	1,371,660	1,330,653
Above Normal (16%)	1,538,908	1,472,333	1,441,339	1,466,921
Below Normal (13%)	1,738,904	1,759,324	1,574,595	1,732,096
Dry (24%)	1,747,973	1,757,216	1,787,039	1,758,763
Critical (15%)	1,778,828	1,820,551	1,784,184	1,831,408

Alternative 3

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,835,974	1,838,496	1,838,677	1,847,188
20%	1,827,096	1,835,518	1,834,419	1,838,711
30%	1,811,574	1,830,317	1,830,254	1,833,185
40%	1,771,154	1,809,580	1,810,678	1,807,068
50%	1,749,945	1,736,821	1,661,344	1,704,256
60%	1,658,354	1,646,633	1,371,780	1,640,456
70%	1,328,034	1,304,031	1,311,020	1,303,088
80%	1,277,735	1,219,419	1,268,292	1,219,321
90%	1,177,261	1,107,001	1,197,406	1,116,168
Long Term				
Full Simulation Period[b]	1,592,203	1,566,772	1,562,546	1,569,754
Water Year Types[c]				
Wet (32%)	1,351,062	1,328,270	1,352,032	1,330,949
Above Normal (16%)	1,581,549	1,447,056	1,402,862	1,430,399
Below Normal (13%)	1,728,987	1,645,383	1,558,479	1,666,917
Dry (24%)	1,731,786	1,757,650	1,807,936	1,764,199
Critical (15%)	1,768,194	1,823,029	1,786,396	1,824,995

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	-1,025	555	-471	264
20%	-6,493	1,300	76	-607
30%	-388	1,286	-444	-900
40%	-4,266	-2,678	-795	-3,201
50%	-16,523	-8,973	-330	-39,043
60%	-29,994	1,141	-159,138	-12,869
70%	-100,525	-6,989	0	-7,932
80%	879	-12,556	-13,034	-6,344
90%	-6,294	-1,337	-23,172	8,165
Long Term				
Full Simulation Period[b]	-10,288	-23,840	-9,065	-14,052
Water Year Types[c]				
Wet (32%)	-32,211	-15,822	-19,628	296
Above Normal (16%)	42,641	-25,276	-38,477	-36,522
Below Normal (13%)	-9,917	-113,941	-16,116	-65,180
Dry (24%)	-16,187	434	20,897	5,436
Critical (15%)	-10,633	2,478	2,213	-6,413

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-3. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,999	1,837,941	1,839,149	1,846,924
20%	1,833,589	1,834,217	1,834,343	1,839,318
30%	1,811,962	1,829,031	1,830,698	1,834,085
40%	1,775,420	1,812,257	1,811,473	1,810,269
50%	1,766,469	1,745,795	1,661,674	1,743,299
60%	1,688,348	1,645,492	1,530,919	1,653,325
70%	1,428,559	1,311,020	1,311,020	1,311,020
80%	1,276,856	1,231,975	1,281,326	1,225,664
90%	1,183,556	1,108,337	1,220,578	1,108,003
Long Term				
Full Simulation Period[b]	1,602,491	1,590,612	1,571,611	1,583,807
Water Year Types[c]				
Wet (32%)	1,383,273	1,344,092	1,371,660	1,330,653
Above Normal (16%)	1,538,908	1,472,333	1,441,339	1,466,921
Below Normal (13%)	1,738,904	1,759,324	1,574,595	1,732,096
Dry (24%)	1,747,973	1,757,216	1,787,039	1,758,763
Critical (15%)	1,778,828	1,820,551	1,784,184	1,831,408

Alternative 5

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,851	1,838,528	1,838,896	1,846,979
20%	1,833,450	1,835,214	1,834,287	1,839,223
30%	1,812,009	1,830,011	1,830,667	1,834,028
40%	1,775,411	1,812,246	1,811,477	1,807,903
50%	1,766,497	1,745,670	1,661,720	1,743,296
60%	1,710,072	1,644,449	1,530,819	1,653,261
70%	1,449,504	1,311,020	1,311,020	1,311,020
80%	1,276,577	1,231,973	1,281,994	1,225,655
90%	1,173,452	1,108,309	1,220,576	1,110,017
Long Term				
Full Simulation Period[b]	1,605,661	1,587,990	1,571,817	1,583,496
Water Year Types[c]				
Wet (32%)	1,380,619	1,336,209	1,371,609	1,330,958
Above Normal (16%)	1,538,892	1,471,480	1,442,129	1,467,204
Below Normal (13%)	1,746,586	1,757,180	1,577,508	1,730,196
Dry (24%)	1,753,959	1,757,185	1,785,705	1,758,133
Critical (15%)	1,789,243	1,822,654	1,784,399	1,831,107

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	-148	587	-253	55
20%	-139	997	-56	-96
30%	47	980	-31	-57
40%	-9	-12	4	-2,366
50%	28	-124	46	-3
60%	21,724	-1,043	-99	-64
70%	20,945	0	0	0
80%	-279	-2	668	-9
90%	-10,103	-28	-2	2,015
Long Term				
Full Simulation Period[b]	3,170	-2,622	206	-311
Water Year Types[c]				
Wet (32%)	-2,655	-7,883	-51	305
Above Normal (16%)	-16	-853	790	283
Below Normal (13%)	7,682	-2,144	2,912	-1,900
Dry (24%)	5,986	-31	-1,334	-631
Critical (15%)	10,415	2,103	216	-301

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-4. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,447	1,837,875	1,839,315	1,846,944
20%	1,827,387	1,834,682	1,834,204	1,839,665
30%	1,810,323	1,829,615	1,828,499	1,833,002
40%	1,775,114	1,793,817	1,802,530	1,808,892
50%	1,760,438	1,706,232	1,673,635	1,704,154
60%	1,696,983	1,581,030	1,439,494	1,640,408
70%	1,311,416	1,303,986	1,311,020	1,300,764
80%	1,268,338	1,215,295	1,277,051	1,220,621
90%	1,177,260	1,104,493	1,197,414	1,116,350
Long Term				
Full Simulation Period[b]	1,597,909	1,557,190	1,564,976	1,570,429
Water Year Types[c]				
Wet (32%)	1,343,276	1,326,407	1,351,949	1,330,942
Above Normal (16%)	1,591,617	1,433,555	1,399,937	1,427,190
Below Normal (13%)	1,726,938	1,645,079	1,574,016	1,664,987
Dry (24%)	1,758,414	1,744,848	1,786,756	1,768,554
Critical (15%)	1,770,645	1,797,825	1,827,406	1,827,605

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,999	1,837,941	1,839,149	1,846,924
20%	1,833,589	1,834,217	1,834,343	1,839,318
30%	1,811,962	1,829,031	1,830,698	1,834,085
40%	1,775,420	1,812,257	1,811,473	1,810,269
50%	1,766,469	1,745,795	1,661,674	1,743,299
60%	1,688,348	1,645,492	1,530,919	1,653,325
70%	1,428,559	1,311,020	1,311,020	1,311,020
80%	1,276,856	1,231,975	1,281,326	1,225,664
90%	1,183,556	1,108,337	1,220,578	1,108,003
Long Term				
Full Simulation Period[b]	1,602,491	1,590,612	1,571,611	1,583,807
Water Year Types[c]				
Wet (32%)	1,383,273	1,344,092	1,371,660	1,330,653
Above Normal (16%)	1,538,908	1,472,333	1,441,339	1,466,921
Below Normal (13%)	1,738,904	1,759,324	1,574,595	1,732,096
Dry (24%)	1,747,973	1,757,216	1,787,039	1,758,763
Critical (15%)	1,778,828	1,820,551	1,784,184	1,831,408

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	552	66	-166	-20
20%	6,202	-465	139	-347
30%	1,639	-584	2,198	1,083
40%	306	18,440	8,942	1,378
50%	6,031	39,563	-11,961	39,146
60%	-8,635	64,462	91,424	12,917
70%	117,143	7,034	0	10,256
80%	8,518	16,680	4,275	5,044
90%	6,295	3,845	23,163	-8,348
Long Term				
Full Simulation Period[b]	4,582	33,423	6,635	13,378
Water Year Types[c]				
Wet (32%)	39,998	17,685	19,712	-289
Above Normal (16%)	-52,708	38,777	41,402	39,731
Below Normal (13%)	11,966	114,245	580	67,110
Dry (24%)	-10,442	12,368	283	-9,791
Critical (15%)	8,182	22,725	-43,222	3,803

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-5. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)			
Statistic	Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,447	1,837,875	1,839,315	1,846,944
20%	1,827,387	1,834,682	1,834,204	1,839,665
30%	1,810,323	1,829,615	1,828,499	1,833,002
40%	1,775,114	1,793,817	1,802,530	1,808,892
50%	1,760,438	1,706,232	1,673,635	1,704,154
60%	1,696,983	1,581,030	1,439,494	1,640,408
70%	1,311,416	1,303,986	1,311,020	1,300,764
80%	1,268,338	1,215,295	1,277,051	1,220,621
90%	1,177,260	1,104,493	1,197,414	1,116,350
Long Term				
Full Simulation Period[b]	1,597,909	1,557,190	1,564,976	1,570,429
Water Year Types[c]				
Wet (32%)	1,343,276	1,326,407	1,351,949	1,330,942
Above Normal (16%)	1,591,617	1,433,555	1,399,937	1,427,190
Below Normal (13%)	1,726,938	1,645,079	1,574,016	1,664,987
Dry (24%)	1,758,414	1,744,848	1,786,756	1,768,554
Critical (15%)	1,770,645	1,797,825	1,827,406	1,827,605

Alternative 3

	Monthly WUA (Feet2)			
Statistic	Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,835,974	1,838,496	1,838,677	1,847,188
20%	1,827,096	1,835,518	1,834,419	1,838,711
30%	1,811,574	1,830,317	1,830,254	1,833,185
40%	1,771,154	1,809,580	1,810,678	1,807,068
50%	1,749,945	1,736,821	1,661,344	1,704,256
60%	1,658,354	1,646,633	1,371,780	1,640,456
70%	1,328,034	1,304,031	1,311,020	1,303,088
80%	1,277,735	1,219,419	1,268,292	1,219,321
90%	1,177,261	1,107,001	1,197,406	1,116,168
Long Term				
Full Simulation Period[b]	1,592,203	1,566,772	1,562,546	1,569,754
Water Year Types[c]				
Wet (32%)	1,351,062	1,328,270	1,352,032	1,330,949
Above Normal (16%)	1,581,549	1,447,056	1,402,862	1,430,399
Below Normal (13%)	1,728,987	1,645,383	1,558,479	1,666,917
Dry (24%)	1,731,786	1,757,650	1,807,936	1,764,199
Critical (15%)	1,768,194	1,823,029	1,786,396	1,824,995

Alternative 3 minus Second Basis of Comparison

	Monthly WUA (Feet2)			
Statistic	Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	-473	621	-638	244
20%	-291	836	215	-954
30%	1,250	702	1,754	183
40%	-3,960	15,763	8,148	-1,824
50%	-10,493	30,590	-12,291	103
60%	-38,629	65,603	-67,714	48
70%	16,618	45	0	2,324
80%	9,397	4,123	-8,759	-1,300
90%	1	2,508	-9	-182
Long Term				
Full Simulation Period[b]	-5,706	9,583	-2,429	-674
Water Year Types[c]				
Wet (32%)	7,787	1,863	83	7
Above Normal (16%)	-10,068	13,501	2,926	3,209
Below Normal (13%)	2,049	304	-15,536	1,930
Dry (24%)	-26,629	12,802	21,180	-4,355
Critical (15%)	-2,451	25,203	-41,009	-2,610

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-12-6. Sacramento River Keswick to Battle Creek Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,447	1,837,875	1,839,315	1,846,944
20%	1,827,387	1,834,682	1,834,204	1,839,665
30%	1,810,323	1,829,615	1,828,499	1,833,002
40%	1,775,114	1,793,817	1,802,530	1,808,892
50%	1,760,438	1,706,232	1,673,635	1,704,154
60%	1,696,983	1,581,030	1,439,494	1,640,408
70%	1,311,416	1,303,986	1,311,020	1,300,764
80%	1,268,338	1,215,295	1,277,051	1,220,621
90%	1,177,260	1,104,493	1,197,414	1,116,350
Long Term				
Full Simulation Period[b]	1,597,909	1,557,190	1,564,976	1,570,429
Water Year Types[c]				
Wet (32%)	1,343,276	1,326,407	1,351,949	1,330,942
Above Normal (16%)	1,591,617	1,433,555	1,399,937	1,427,190
Below Normal (13%)	1,726,938	1,645,079	1,574,016	1,664,987
Dry (24%)	1,758,414	1,744,848	1,786,756	1,768,554
Critical (15%)	1,770,645	1,797,825	1,827,406	1,827,605

Alternative 5

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	1,836,851	1,838,528	1,838,896	1,846,979
20%	1,833,450	1,835,214	1,834,287	1,839,223
30%	1,812,009	1,830,011	1,830,667	1,834,028
40%	1,775,411	1,812,246	1,811,477	1,807,903
50%	1,766,497	1,745,670	1,661,720	1,743,296
60%	1,710,072	1,644,449	1,530,819	1,653,261
70%	1,449,504	1,311,020	1,311,020	1,311,020
80%	1,276,577	1,231,973	1,281,994	1,225,655
90%	1,173,452	1,108,309	1,220,576	1,110,017
Long Term				
Full Simulation Period[b]	1,605,661	1,587,990	1,571,817	1,583,496
Water Year Types[c]				
Wet (32%)	1,380,619	1,336,209	1,371,609	1,330,958
Above Normal (16%)	1,538,892	1,471,480	1,442,129	1,467,204
Below Normal (13%)	1,746,586	1,757,180	1,577,508	1,730,196
Dry (24%)	1,753,959	1,757,185	1,785,705	1,758,133
Critical (15%)	1,789,243	1,822,654	1,784,399	1,831,107

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar
Probability of Exceedance[a]				
10%	404	653	-419	35
20%	6,063	532	83	-443
30%	1,686	396	2,168	1,026
40%	297	18,429	8,947	-989
50%	6,058	39,439	-11,915	39,143
60%	13,089	63,418	91,325	12,853
70%	138,088	7,034	0	10,256
80%	8,239	16,678	4,943	5,035
90%	-3,808	3,816	23,161	-6,333
Long Term				
Full Simulation Period[b]	7,752	30,801	6,841	13,067
Water Year Types[c]				
Wet (32%)	37,343	9,802	19,660	16
Above Normal (16%)	-52,724	37,924	42,193	40,014
Below Normal (13%)	19,648	112,101	3,492	65,210
Dry (24%)	-4,456	12,337	-1,051	-10,421
Critical (15%)	18,597	24,829	-43,007	3,502

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.13. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA

Table C-13-1. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Feb	Mar	Apr	May	Jun
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	721,002	723,047	704,910	656,726	503,215
20%	719,853	721,142	687,236	623,601	486,703
30%	719,092	719,722	681,874	608,235	463,339
40%	704,092	706,340	665,514	588,612	450,403
50%	676,464	687,759	638,836	561,216	436,515
60%	649,263	674,942	613,206	535,332	424,050
70%	403,624	520,710	579,902	510,050	407,806
80%	378,338	378,338	534,034	483,122	393,079
90%	369,761	366,811	424,846	452,504	373,036
Long Term					
Full Simulation Period[b]	588,471	605,418	604,728	554,973	438,314
Water Year Types[c]					
Wet (32%)	483,390	472,828	563,680	520,384	451,496
Above Normal (16%)	493,018	563,945	600,103	557,423	418,721
Below Normal (13%)	606,222	681,674	626,387	555,242	423,098
Dry (24%)	707,120	696,237	657,710	577,109	427,979
Critical (15%)	705,534	716,357	590,522	590,121	462,154

Alternative 1

Statistic	Feb	Mar	Apr	May	Jun
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	721,063	723,048	705,169	640,372	502,929
20%	719,735	721,120	687,058	611,377	470,171
30%	718,516	718,835	680,612	590,416	447,187
40%	696,502	704,121	649,616	564,524	429,169
50%	678,597	682,742	623,907	547,394	413,143
60%	629,138	672,572	594,565	523,137	403,158
70%	378,338	492,577	567,452	500,925	384,743
80%	377,835	378,338	508,129	469,407	373,620
90%	366,054	366,217	425,645	436,189	357,375
Long Term					
Full Simulation Period[b]	582,690	598,696	596,103	540,655	423,270
Water Year Types[c]					
Wet (32%)	474,304	473,273	559,043	513,375	446,858
Above Normal (16%)	471,639	540,324	596,319	538,406	401,656
Below Normal (13%)	598,901	650,004	605,370	518,532	403,347
Dry (24%)	706,213	701,479	644,542	561,891	406,785
Critical (15%)	717,100	715,342	586,941	587,088	441,313

Alternative 1 minus No Action Alternative

Statistic	Feb	Mar	Apr	May	Jun
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	61	1	259	-16,354	-286
20%	-119	-22	-178	-12,224	-16,532
30%	-576	-887	-1,262	-17,819	-16,152
40%	-7,591	-2,220	-15,898	-24,088	-21,234
50%	2,132	-5,017	-14,929	-13,822	-23,372
60%	-20,125	-2,370	-18,641	-12,195	-20,891
70%	-25,286	-28,133	-12,450	-9,125	-23,063
80%	-503	0	-25,905	-13,715	-19,459
90%	-3,707	-594	800	-16,315	-15,661
Long Term					
Full Simulation Period[b]	-5,781	-6,722	-8,625	-14,317	-15,045
Water Year Types[c]					
Wet (32%)	-9,087	445	-4,636	-7,009	-4,637
Above Normal (16%)	-21,378	-23,622	-3,783	-19,018	-17,065
Below Normal (13%)	-7,322	-31,670	-21,017	-36,710	-19,752
Dry (24%)	-907	5,242	-13,168	-15,217	-21,194
Critical (15%)	11,566	-1,015	-3,581	-3,033	-20,841

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-2. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	721,002	723,047	704,910	656,726	503,215
20%	719,853	721,142	687,236	623,601	486,703
30%	719,092	719,722	681,874	608,235	463,339
40%	704,092	706,340	665,514	588,612	450,403
50%	676,464	687,759	638,836	561,216	436,515
60%	649,263	674,942	613,206	535,332	424,050
70%	403,624	520,710	579,902	510,050	407,806
80%	378,338	378,338	534,034	483,122	393,079
90%	369,761	366,811	424,846	452,504	373,036
Long Term					
Full Simulation Period[b]	588,471	605,418	604,728	554,973	438,314
Water Year Types[c]					
Wet (32%)	483,390	472,828	563,680	520,384	451,496
Above Normal (16%)	493,018	563,945	600,103	557,423	418,721
Below Normal (13%)	606,222	681,674	626,387	555,242	423,098
Dry (24%)	707,120	696,237	657,710	577,109	427,979
Critical (15%)	705,534	716,357	590,522	590,121	462,154

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	720,931	723,052	705,097	638,154	503,036
20%	720,012	720,868	686,689	612,642	464,683
30%	718,976	718,827	680,616	590,012	445,085
40%	704,178	705,730	661,611	567,192	426,581
50%	676,409	682,755	631,006	548,611	417,077
60%	594,319	672,581	605,289	523,893	407,338
70%	378,338	492,690	569,762	490,963	388,230
80%	377,886	378,338	512,407	468,735	372,196
90%	366,801	366,241	425,840	434,899	362,608
Long Term					
Full Simulation Period[b]	583,588	598,451	599,703	540,668	424,375
Water Year Types[c]					
Wet (32%)	474,326	473,279	559,940	513,071	443,730
Above Normal (16%)	480,224	541,195	599,079	535,276	405,415
Below Normal (13%)	597,108	650,754	609,199	520,182	407,747
Dry (24%)	711,737	699,462	651,809	563,157	408,518
Critical (15%)	706,325	715,389	590,988	587,598	444,648

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	-71	4	186	-18,572	-178
20%	159	-274	-547	-10,959	-22,020
30%	-116	-895	-1,258	-18,224	-18,253
40%	86	-610	-3,902	-21,420	-23,822
50%	-56	-5,004	-7,830	-12,605	-19,438
60%	-54,944	-2,361	-7,917	-11,439	-16,711
70%	-25,286	-28,020	-10,140	-19,087	-19,576
80%	-452	0	-21,627	-14,387	-20,882
90%	-2,959	-570	994	-17,605	-10,428
Long Term					
Full Simulation Period[b]	-4,883	-6,967	-5,025	-14,305	-13,939
Water Year Types[c]					
Wet (32%)	-9,065	451	-3,740	-7,313	-7,765
Above Normal (16%)	-12,794	-22,750	-1,024	-22,147	-13,306
Below Normal (13%)	-9,114	-30,920	-17,187	-35,060	-15,351
Dry (24%)	4,617	3,225	-5,901	-13,952	-19,461
Critical (15%)	792	-968	466	-2,522	-17,506

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-3. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	721,002	723,047	704,910	656,726	503,215
20%	719,853	721,142	687,236	623,601	486,703
30%	719,092	719,722	681,874	608,235	463,339
40%	704,092	706,340	665,514	588,612	450,403
50%	676,464	687,759	638,836	561,216	436,515
60%	649,263	674,942	613,206	535,332	424,050
70%	403,624	520,710	579,902	510,050	407,806
80%	378,338	378,338	534,034	483,122	393,079
90%	369,761	366,811	424,846	452,504	373,036
Long Term					
Full Simulation Period[b]	588,471	605,418	604,728	554,973	438,314
Water Year Types[c]					
Wet (32%)	483,390	472,828	563,680	520,384	451,496
Above Normal (16%)	493,018	563,945	600,103	557,423	418,721
Below Normal (13%)	606,222	681,674	626,387	555,242	423,098
Dry (24%)	707,120	696,237	657,710	577,109	427,979
Critical (15%)	705,534	716,357	590,522	590,121	462,154

Alternative 5

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	720,968	723,037	704,931	655,949	505,143
20%	719,865	721,139	687,047	623,626	487,919
30%	719,082	719,715	681,784	608,786	465,855
40%	704,091	705,722	665,418	593,817	450,304
50%	676,474	687,739	639,188	564,339	442,429
60%	649,239	674,930	613,477	539,091	424,453
70%	405,773	520,685	582,039	518,983	410,505
80%	378,338	378,382	534,323	496,351	391,138
90%	368,085	366,811	425,868	463,149	374,697
Long Term					
Full Simulation Period[b]	588,544	604,926	606,746	561,148	439,824
Water Year Types[c]					
Wet (32%)	483,657	472,669	563,662	520,206	451,712
Above Normal (16%)	493,151	563,710	600,140	561,398	419,184
Below Normal (13%)	606,522	680,363	624,160	557,080	422,316
Dry (24%)	706,776	695,357	662,013	592,096	427,794
Critical (15%)	705,611	716,263	599,179	601,732	472,524

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	-34	-10	21	-776	1,928
20%	12	-3	-189	25	1,216
30%	-10	-7	-91	550	2,517
40%	-1	-618	-96	5,205	-99
50%	9	-20	352	3,123	5,914
60%	-24	-12	271	3,759	403
70%	2,149	-25	2,138	8,933	2,699
80%	0	44	289	13,229	-1,940
90%	-1,676	0	1,022	10,645	1,661
Long Term					
Full Simulation Period[b]	73	-492	2,018	6,175	1,510
Water Year Types[c]					
Wet (32%)	266	-159	-18	-178	217
Above Normal (16%)	133	-235	38	3,975	463
Below Normal (13%)	300	-1,311	-2,227	1,838	-783
Dry (24%)	-344	-880	4,303	14,988	-185
Critical (15%)	78	-95	8,658	11,611	10,370

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-4. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	721,063	723,048	705,169	640,372	502,929
20%	719,735	721,120	687,058	611,377	470,171
30%	718,516	718,835	680,612	590,416	447,187
40%	696,502	704,121	649,616	564,524	429,169
50%	678,597	682,742	623,907	547,394	413,143
60%	629,138	672,572	594,565	523,137	403,158
70%	378,338	492,577	567,452	500,925	384,743
80%	377,835	378,338	508,129	469,407	373,620
90%	366,054	366,217	425,645	436,189	357,375
Long Term					
Full Simulation Period[b]	582,690	598,696	596,103	540,655	423,270
Water Year Types[c]					
Wet (32%)	474,304	473,273	559,043	513,375	446,858
Above Normal (16%)	471,639	540,324	596,319	538,406	401,656
Below Normal (13%)	598,901	650,004	605,370	518,532	403,347
Dry (24%)	706,213	701,479	644,542	561,891	406,785
Critical (15%)	717,100	715,342	586,941	587,088	441,313

No Action Alternative

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	721,002	723,047	704,910	656,726	503,215
20%	719,853	721,142	687,236	623,601	486,703
30%	719,092	719,722	681,874	608,235	463,339
40%	704,092	706,340	665,514	588,612	450,403
50%	676,464	687,759	638,836	561,216	436,515
60%	649,263	674,942	613,206	535,332	424,050
70%	403,624	520,710	579,902	510,050	407,806
80%	378,338	378,338	534,034	483,122	393,079
90%	369,761	366,811	424,846	452,504	373,036
Long Term					
Full Simulation Period[b]	588,471	605,418	604,728	554,973	438,314
Water Year Types[c]					
Wet (32%)	483,390	472,828	563,680	520,384	451,496
Above Normal (16%)	493,018	563,945	600,103	557,423	418,721
Below Normal (13%)	606,222	681,674	626,387	555,242	423,098
Dry (24%)	707,120	696,237	657,710	577,109	427,979
Critical (15%)	705,534	716,357	590,522	590,121	462,154

No Action Alternative minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	-61	-1	-259	16,354	286
20%	119	22	178	12,224	16,532
30%	576	887	1,262	17,819	16,152
40%	7,591	2,220	15,898	24,088	21,234
50%	-2,132	5,017	14,929	13,822	23,372
60%	20,125	2,370	18,641	12,195	20,891
70%	25,286	28,133	12,450	9,125	23,063
80%	503	0	25,905	13,715	19,459
90%	3,707	594	-800	16,315	15,661
Long Term					
Full Simulation Period[b]	5,781	6,722	8,625	14,317	15,045
Water Year Types[c]					
Wet (32%)	9,087	-445	4,636	7,009	4,637
Above Normal (16%)	21,378	23,622	3,783	19,018	17,065
Below Normal (13%)	7,322	31,670	21,017	36,710	19,752
Dry (24%)	907	-5,242	13,168	15,217	21,194
Critical (15%)	-11,566	1,015	3,581	3,033	20,841

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-5. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	721,063	723,048	705,169	640,372	502,929
20%	719,735	721,120	687,058	611,377	470,171
30%	718,516	718,835	680,612	590,416	447,187
40%	696,502	704,121	649,616	564,524	429,169
50%	678,597	682,742	623,907	547,394	413,143
60%	629,138	672,572	594,565	523,137	403,158
70%	378,338	492,577	567,452	500,925	384,743
80%	377,835	378,338	508,129	469,407	373,620
90%	366,054	366,217	425,645	436,189	357,375
Long Term					
Full Simulation Period[b]	582,690	598,696	596,103	540,655	423,270
Water Year Types[c]					
Wet (32%)	474,304	473,273	559,043	513,375	446,858
Above Normal (16%)	471,639	540,324	596,319	538,406	401,656
Below Normal (13%)	598,901	650,004	605,370	518,532	403,347
Dry (24%)	706,213	701,479	644,542	561,891	406,785
Critical (15%)	717,100	715,342	586,941	587,088	441,313

Alternative 3

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	720,931	723,052	705,097	638,154	503,036
20%	720,012	720,868	686,689	612,642	464,683
30%	718,976	718,827	680,616	590,012	445,085
40%	704,178	705,730	661,611	567,192	426,581
50%	676,409	682,755	631,006	548,611	417,077
60%	594,319	672,581	605,289	523,893	407,338
70%	378,338	492,690	569,762	490,963	388,230
80%	377,886	378,338	512,407	468,735	372,196
90%	366,801	366,241	425,840	434,899	362,608
Long Term					
Full Simulation Period[b]	583,588	598,451	599,703	540,668	424,375
Water Year Types[c]					
Wet (32%)	474,326	473,279	559,940	513,071	443,730
Above Normal (16%)	480,224	541,195	599,079	535,276	405,415
Below Normal (13%)	597,108	650,754	609,199	520,182	407,747
Dry (24%)	711,737	699,462	651,809	563,157	408,518
Critical (15%)	706,325	715,389	590,988	587,598	444,648

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	-133	3	-73	-2,218	107
20%	277	-252	-369	1,265	-5,488
30%	460	-8	4	-405	-2,102
40%	7,677	1,609	11,996	2,669	-2,588
50%	-2,188	13	7,099	1,217	3,934
60%	-34,819	9	10,725	755	4,180
70%	0	113	2,310	-9,962	3,487
80%	50	0	4,278	-673	-1,424
90%	748	24	194	-1,290	5,233
Long Term					
Full Simulation Period[b]	898	-244	3,600	12	1,105
Water Year Types[c]					
Wet (32%)	22	6	896	-304	-3,128
Above Normal (16%)	8,584	871	2,760	-3,130	3,759
Below Normal (13%)	-1,793	750	3,829	1,650	4,400
Dry (24%)	5,524	-2,017	7,267	1,266	1,733
Critical (15%)	-10,775	47	4,047	511	3,335

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-13-6. Sacramento River Keswick to Battle Creek Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	721,063	723,048	705,169	640,372	502,929
20%	719,735	721,120	687,058	611,377	470,171
30%	718,516	718,835	680,612	590,416	447,187
40%	696,502	704,121	649,616	564,524	429,169
50%	678,597	682,742	623,907	547,394	413,143
60%	629,138	672,572	594,565	523,137	403,158
70%	378,338	492,577	567,452	500,925	384,743
80%	377,835	378,338	508,129	469,407	373,620
90%	366,054	366,217	425,645	436,189	357,375
Long Term					
Full Simulation Period[b]	582,690	598,696	596,103	540,655	423,270
Water Year Types[c]					
Wet (32%)	474,304	473,273	559,043	513,375	446,858
Above Normal (16%)	471,639	540,324	596,319	538,406	401,656
Below Normal (13%)	598,901	650,004	605,370	518,532	403,347
Dry (24%)	706,213	701,479	644,542	561,891	406,785
Critical (15%)	717,100	715,342	586,941	587,088	441,313

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	720,968	723,037	704,931	655,949	505,143
20%	719,865	721,139	687,047	623,626	487,919
30%	719,082	719,715	681,784	608,786	465,855
40%	704,091	705,722	665,418	593,817	450,304
50%	676,474	687,739	639,188	564,339	442,429
60%	649,239	674,930	613,477	539,091	424,453
70%	405,773	520,685	582,039	518,983	410,505
80%	378,338	378,382	534,323	496,351	391,138
90%	368,085	366,811	425,868	463,149	374,697
Long Term					
Full Simulation Period[b]	588,544	604,926	606,746	561,148	439,824
Water Year Types[c]					
Wet (32%)	483,657	472,669	563,662	520,206	451,712
Above Normal (16%)	493,151	563,710	600,140	561,398	419,184
Below Normal (13%)	606,522	680,363	624,160	557,080	422,316
Dry (24%)	706,776	695,357	662,013	592,096	427,794
Critical (15%)	705,611	716,263	599,179	601,732	472,524

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Feb	Mar	Apr	May	Jun
Probability of Exceedance[a]					
10%	-95	-11	-238	15,578	2,214
20%	130	18	-11	12,249	17,748
30%	566	880	1,171	18,369	18,668
40%	7,589	1,601	15,802	29,293	21,136
50%	-2,123	4,997	15,281	16,945	29,286
60%	20,102	2,358	18,913	15,954	21,294
70%	27,435	28,108	14,587	18,058	25,762
80%	503	44	26,194	26,944	17,518
90%	2,032	594	223	26,960	17,322
Long Term					
Full Simulation Period[b]	5,854	6,230	10,643	20,492	16,554
Water Year Types[c]					
Wet (32%)	9,353	-604	4,619	6,831	4,854
Above Normal (16%)	21,511	23,387	3,821	22,992	17,528
Below Normal (13%)	7,622	30,359	18,789	38,548	18,969
Dry (24%)	563	-6,121	17,472	30,205	21,009
Critical (15%)	-11,489	921	12,238	14,644	31,211

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.14. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA

Table C-14-1. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,663	1,373,957	1,372,279	1,346,058
20%	1,372,806	1,372,775	1,370,795	1,337,697
30%	1,372,163	1,371,576	1,368,337	1,332,370
40%	1,370,292	1,366,802	1,360,528	1,297,903
50%	1,352,214	1,327,455	1,343,695	1,258,711
60%	1,324,170	1,279,438	1,325,362	1,196,191
70%	964,111	749,022	995,339	1,110,692
80%	638,846	274,861	640,963	1,014,507
90%	314,049	142,068	367,831	799,017
Long Term				
Full Simulation Period[b]	1,084,735	995,045	1,093,858	1,151,806
Water Year Types[c]				
Wet (32%)	676,552	657,941	722,415	1,034,793
Above Normal (16%)	1,036,533	682,250	1,039,897	1,163,603
Below Normal (13%)	1,355,326	1,118,267	1,307,502	1,211,646
Dry (24%)	1,326,960	1,358,710	1,331,424	1,270,932
Critical (15%)	1,369,598	1,345,237	1,365,326	1,139,157

Alternative 1

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,346	1,374,047	1,372,103	1,344,717
20%	1,372,566	1,372,876	1,370,644	1,337,615
30%	1,371,579	1,371,382	1,367,225	1,326,824
40%	1,366,483	1,365,862	1,359,858	1,276,557
50%	1,338,877	1,328,598	1,333,196	1,220,222
60%	1,305,047	1,243,778	1,323,396	1,150,743
70%	878,678	587,948	936,580	1,081,824
80%	478,189	274,894	601,043	962,592
90%	308,533	140,818	360,694	801,193
Long Term				
Full Simulation Period[b]	1,040,207	980,783	1,076,918	1,134,536
Water Year Types[c]				
Wet (32%)	622,383	635,847	721,831	1,028,337
Above Normal (16%)	957,428	632,597	976,754	1,155,874
Below Normal (13%)	1,262,254	1,093,689	1,236,238	1,166,335
Dry (24%)	1,321,680	1,359,023	1,342,289	1,243,934
Critical (15%)	1,362,507	1,371,452	1,366,456	1,130,035

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	-316	90	-176	-1,341
20%	-241	101	-150	-83
30%	-584	-195	-1,113	-5,546
40%	-3,810	-941	-670	-21,346
50%	-13,337	1,143	-10,498	-38,490
60%	-19,123	-35,660	-1,965	-45,448
70%	-85,432	-161,074	-58,759	-28,869
80%	-160,657	34	-39,921	-51,915
90%	-5,516	-1,250	-7,137	2,176
Long Term				
Full Simulation Period[b]	-44,527	-14,262	-16,940	-17,270
Water Year Types[c]				
Wet (32%)	-54,169	-22,094	-584	-6,456
Above Normal (16%)	-79,105	-49,653	-63,143	-7,728
Below Normal (13%)	-93,073	-24,579	-71,265	-45,311
Dry (24%)	-5,281	313	10,865	-26,998
Critical (15%)	-7,090	26,215	1,130	-9,122

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-2. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,663	1,373,957	1,372,279	1,346,058
20%	1,372,806	1,372,775	1,370,795	1,337,697
30%	1,372,163	1,371,576	1,368,337	1,332,370
40%	1,370,292	1,366,802	1,360,528	1,297,903
50%	1,352,214	1,327,455	1,343,695	1,258,711
60%	1,324,170	1,279,438	1,325,362	1,196,191
70%	964,111	749,022	995,339	1,110,692
80%	638,846	274,861	640,963	1,014,507
90%	314,049	142,068	367,831	799,017
Long Term				
Full Simulation Period[b]	1,084,735	995,045	1,093,858	1,151,806
Water Year Types[c]				
Wet (32%)	676,552	657,941	722,415	1,034,793
Above Normal (16%)	1,036,533	682,250	1,039,897	1,163,603
Below Normal (13%)	1,355,326	1,118,267	1,307,502	1,211,646
Dry (24%)	1,326,960	1,358,710	1,331,424	1,270,932
Critical (15%)	1,369,598	1,345,237	1,365,326	1,139,157

Alternative 3

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,398	1,373,692	1,372,063	1,341,133
20%	1,372,679	1,372,781	1,371,039	1,337,075
30%	1,371,554	1,371,314	1,366,908	1,326,597
40%	1,369,986	1,367,043	1,356,858	1,293,435
50%	1,349,118	1,326,592	1,333,211	1,246,783
60%	1,324,343	1,155,701	1,323,404	1,179,621
70%	881,165	609,184	936,757	1,087,279
80%	479,877	274,900	601,603	969,688
90%	276,105	140,160	360,554	801,581
Long Term				
Full Simulation Period[b]	1,044,952	981,852	1,074,841	1,141,940
Water Year Types[c]				
Wet (32%)	619,462	635,884	721,838	1,029,376
Above Normal (16%)	978,283	650,283	972,042	1,161,401
Below Normal (13%)	1,263,106	1,094,324	1,235,965	1,173,958
Dry (24%)	1,326,900	1,366,202	1,338,755	1,259,055
Critical (15%)	1,369,183	1,346,970	1,363,491	1,140,203

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	-265	-265	-216	-4,925
20%	-128	6	245	-622
30%	-609	-262	-1,429	-5,772
40%	-307	241	-3,670	-4,468
50%	-3,096	-862	-10,483	-11,929
60%	174	-123,737	-1,958	-16,570
70%	-82,946	-139,838	-58,582	-23,413
80%	-158,969	39	-39,361	-44,819
90%	-37,944	-1,908	-7,278	2,564
Long Term				
Full Simulation Period[b]	-39,783	-13,193	-19,017	-9,866
Water Year Types[c]				
Wet (32%)	-57,089	-22,057	-577	-5,417
Above Normal (16%)	-58,250	-31,966	-67,855	-2,201
Below Normal (13%)	-92,220	-23,944	-71,537	-37,688
Dry (24%)	-61	7,492	7,331	-11,877
Critical (15%)	-414	1,733	-1,836	1,046

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-3. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,663	1,373,957	1,372,279	1,346,058
20%	1,372,806	1,372,775	1,370,795	1,337,697
30%	1,372,163	1,371,576	1,368,337	1,332,370
40%	1,370,292	1,366,802	1,360,528	1,297,903
50%	1,352,214	1,327,455	1,343,695	1,258,711
60%	1,324,170	1,279,438	1,325,362	1,196,191
70%	964,111	749,022	995,339	1,110,692
80%	638,846	274,861	640,963	1,014,507
90%	314,049	142,068	367,831	799,017
Long Term				
Full Simulation Period[b]	1,084,735	995,045	1,093,858	1,151,806
Water Year Types[c]				
Wet (32%)	676,552	657,941	722,415	1,034,793
Above Normal (16%)	1,036,533	682,250	1,039,897	1,163,603
Below Normal (13%)	1,355,326	1,118,267	1,307,502	1,211,646
Dry (24%)	1,326,960	1,358,710	1,331,424	1,270,932
Critical (15%)	1,369,598	1,345,237	1,365,326	1,139,157

Alternative 5

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,367	1,373,971	1,371,990	1,343,268
20%	1,372,688	1,372,784	1,370,189	1,337,510
30%	1,372,016	1,371,595	1,367,918	1,330,377
40%	1,369,960	1,366,769	1,360,447	1,297,745
50%	1,352,205	1,327,439	1,343,705	1,262,326
60%	1,324,011	1,279,403	1,325,352	1,196,249
70%	960,091	754,161	995,298	1,117,718
80%	640,957	274,863	641,024	1,015,128
90%	314,038	143,900	367,825	801,611
Long Term				
Full Simulation Period[b]	1,084,355	994,926	1,092,887	1,155,813
Water Year Types[c]				
Wet (32%)	676,959	658,587	721,912	1,034,767
Above Normal (16%)	1,034,519	682,434	1,038,156	1,163,679
Below Normal (13%)	1,354,300	1,117,011	1,306,596	1,206,288
Dry (24%)	1,326,967	1,357,825	1,329,768	1,280,043
Critical (15%)	1,369,235	1,345,452	1,365,256	1,156,239

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	-295	14	-289	-2,791
20%	-119	9	-606	-187
30%	-147	19	-419	-1,992
40%	-333	-33	-80	-159
50%	-9	-16	10	3,615
60%	-159	-35	-10	58
70%	-4,020	5,139	-41	7,025
80%	2,111	2	60	621
90%	-10	1,832	-7	2,594
Long Term				
Full Simulation Period[b]	-379	-119	-971	4,007
Water Year Types[c]				
Wet (32%)	407	646	-503	-27
Above Normal (16%)	-2,014	185	-1,741	76
Below Normal (13%)	-1,027	-1,257	-906	-5,358
Dry (24%)	6	-886	-1,656	9,111
Critical (15%)	-362	215	-70	17,082

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-4. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,346	1,374,047	1,372,103	1,344,717
20%	1,372,566	1,372,876	1,370,644	1,337,615
30%	1,371,579	1,371,382	1,367,225	1,326,824
40%	1,366,483	1,365,862	1,359,858	1,276,557
50%	1,338,877	1,328,598	1,333,196	1,220,222
60%	1,305,047	1,243,778	1,323,396	1,150,743
70%	878,678	587,948	936,580	1,081,824
80%	478,189	274,894	601,043	962,592
90%	308,533	140,818	360,694	801,193
Long Term				
Full Simulation Period[b]	1,040,207	980,783	1,076,918	1,134,536
Water Year Types[c]				
Wet (32%)	622,383	635,847	721,831	1,028,337
Above Normal (16%)	957,428	632,597	976,754	1,155,874
Below Normal (13%)	1,262,254	1,093,689	1,236,238	1,166,335
Dry (24%)	1,321,680	1,359,023	1,342,289	1,243,934
Critical (15%)	1,362,507	1,371,452	1,366,456	1,130,035

No Action Alternative

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,663	1,373,957	1,372,279	1,346,058
20%	1,372,806	1,372,775	1,370,795	1,337,697
30%	1,372,163	1,371,576	1,368,337	1,332,370
40%	1,370,292	1,366,802	1,360,528	1,297,903
50%	1,352,214	1,327,455	1,343,695	1,258,711
60%	1,324,170	1,279,438	1,325,362	1,196,191
70%	964,111	749,022	995,339	1,110,692
80%	638,846	274,861	640,963	1,014,507
90%	314,049	142,068	367,831	799,017
Long Term				
Full Simulation Period[b]	1,084,735	995,045	1,093,858	1,151,806
Water Year Types[c]				
Wet (32%)	676,552	657,941	722,415	1,034,793
Above Normal (16%)	1,036,533	682,250	1,039,897	1,163,603
Below Normal (13%)	1,355,326	1,118,267	1,307,502	1,211,646
Dry (24%)	1,326,960	1,358,710	1,331,424	1,270,932
Critical (15%)	1,369,598	1,345,237	1,365,326	1,139,157

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	316	-90	176	1,341
20%	241	-101	150	83
30%	584	195	1,113	5,546
40%	3,810	941	670	21,346
50%	13,337	-1,143	10,498	38,490
60%	19,123	35,660	1,965	45,448
70%	85,432	161,074	58,759	28,869
80%	160,657	-34	39,921	51,915
90%	5,516	1,250	7,137	-2,176
Long Term				
Full Simulation Period[b]	44,527	14,262	16,940	17,270
Water Year Types[c]				
Wet (32%)	54,169	22,094	584	6,456
Above Normal (16%)	79,105	49,653	63,143	7,728
Below Normal (13%)	93,073	24,579	71,265	45,311
Dry (24%)	5,281	-313	-10,865	26,998
Critical (15%)	7,090	-26,215	-1,130	9,122

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-5. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,346	1,374,047	1,372,103	1,344,717
20%	1,372,566	1,372,876	1,370,644	1,337,615
30%	1,371,579	1,371,382	1,367,225	1,326,824
40%	1,366,483	1,365,862	1,359,858	1,276,557
50%	1,338,877	1,328,598	1,333,196	1,220,222
60%	1,305,047	1,243,778	1,323,396	1,150,743
70%	878,678	587,948	936,580	1,081,824
80%	478,189	274,894	601,043	962,592
90%	308,533	140,818	360,694	801,193
Long Term				
Full Simulation Period[b]	1,040,207	980,783	1,076,918	1,134,536
Water Year Types[c]				
Wet (32%)	622,383	635,847	721,831	1,028,337
Above Normal (16%)	957,428	632,597	976,754	1,155,874
Below Normal (13%)	1,262,254	1,093,689	1,236,238	1,166,335
Dry (24%)	1,321,680	1,359,023	1,342,289	1,243,934
Critical (15%)	1,362,507	1,371,452	1,366,456	1,130,035

Alternative 3

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,398	1,373,692	1,372,063	1,341,133
20%	1,372,679	1,372,781	1,371,039	1,337,075
30%	1,371,554	1,371,314	1,366,908	1,326,597
40%	1,369,986	1,367,043	1,356,858	1,293,435
50%	1,349,118	1,326,592	1,333,211	1,246,783
60%	1,324,343	1,155,701	1,323,404	1,179,621
70%	881,165	609,184	936,757	1,087,279
80%	479,877	274,900	601,603	969,688
90%	276,105	140,160	360,554	801,581
Long Term				
Full Simulation Period[b]	1,044,952	981,852	1,074,841	1,141,940
Water Year Types[c]				
Wet (32%)	619,462	635,884	721,838	1,029,376
Above Normal (16%)	978,283	650,283	972,042	1,161,401
Below Normal (13%)	1,263,106	1,094,324	1,235,965	1,173,958
Dry (24%)	1,326,900	1,366,202	1,338,755	1,259,055
Critical (15%)	1,369,183	1,346,970	1,363,491	1,140,203

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	51	-355	-41	-3,584
20%	113	-95	395	-540
30%	-25	-67	-317	-227
40%	3,503	1,181	-3,000	16,878
50%	10,241	-2,006	15	26,561
60%	19,297	-88,077	7	28,879
70%	2,487	21,236	177	5,456
80%	1,688	6	560	7,095
90%	-32,428	-659	-140	388
Long Term				
Full Simulation Period[b]	4,745	1,069	-2,077	7,404
Water Year Types[c]				
Wet (32%)	-2,921	37	7	1,040
Above Normal (16%)	20,856	17,686	-4,712	5,527
Below Normal (13%)	852	635	-273	7,623
Dry (24%)	5,220	7,179	-3,534	15,121
Critical (15%)	6,676	-24,482	-2,965	10,168

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-14-6. Sacramento River Keswick to Battle Creek Late-Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,346	1,374,047	1,372,103	1,344,717
20%	1,372,566	1,372,876	1,370,644	1,337,615
30%	1,371,579	1,371,382	1,367,225	1,326,824
40%	1,366,483	1,365,862	1,359,858	1,276,557
50%	1,338,877	1,328,598	1,333,196	1,220,222
60%	1,305,047	1,243,778	1,323,396	1,150,743
70%	878,678	587,948	936,580	1,081,824
80%	478,189	274,894	601,043	962,592
90%	308,533	140,818	360,694	801,193
Long Term				
Full Simulation Period[b]	1,040,207	980,783	1,076,918	1,134,536
Water Year Types[c]				
Wet (32%)	622,383	635,847	721,831	1,028,337
Above Normal (16%)	957,428	632,597	976,754	1,155,874
Below Normal (13%)	1,262,254	1,093,689	1,236,238	1,166,335
Dry (24%)	1,321,680	1,359,023	1,342,289	1,243,934
Critical (15%)	1,362,507	1,371,452	1,366,456	1,130,035

Alternative 5

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	1,373,367	1,373,971	1,371,990	1,343,268
20%	1,372,688	1,372,784	1,370,189	1,337,510
30%	1,372,016	1,371,595	1,367,918	1,330,377
40%	1,369,960	1,366,769	1,360,447	1,297,745
50%	1,352,205	1,327,439	1,343,705	1,262,326
60%	1,324,011	1,279,403	1,325,352	1,196,249
70%	960,091	754,161	995,298	1,117,718
80%	640,957	274,863	641,024	1,015,128
90%	314,038	143,900	367,825	801,611
Long Term				
Full Simulation Period[b]	1,084,355	994,926	1,092,887	1,155,813
Water Year Types[c]				
Wet (32%)	676,959	658,587	721,912	1,034,767
Above Normal (16%)	1,034,519	682,434	1,038,156	1,163,679
Below Normal (13%)	1,354,300	1,117,011	1,306,596	1,206,288
Dry (24%)	1,326,967	1,357,825	1,329,768	1,280,043
Critical (15%)	1,369,235	1,345,452	1,365,256	1,156,239

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jan	Feb	Mar	Apr
Probability of Exceedance[a]				
10%	21	-76	-114	-1,450
20%	122	-92	-455	-105
30%	437	214	693	3,553
40%	3,477	908	589	21,188
50%	13,328	-1,159	10,509	42,105
60%	18,964	35,624	1,956	45,506
70%	81,412	166,213	58,718	35,894
80%	162,768	-31	39,981	52,535
90%	5,505	3,082	7,131	418
Long Term				
Full Simulation Period[b]	44,148	14,143	15,969	21,277
Water Year Types[c]				
Wet (32%)	54,576	22,741	82	6,430
Above Normal (16%)	77,092	49,837	61,402	7,805
Below Normal (13%)	92,046	23,322	70,358	39,953
Dry (24%)	5,287	-1,198	-12,520	36,109
Critical (15%)	6,728	-26,000	-1,200	26,204

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.15. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA

Table C-15-1. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,704,398	1,525,979	1,070,585
20%	1,675,996	1,373,240	1,042,603
30%	1,639,252	1,308,087	1,028,934
40%	1,561,822	1,248,326	1,015,314
50%	1,442,854	1,168,815	998,407
60%	1,314,000	1,103,230	997,255
70%	1,215,575	1,049,304	996,238
80%	1,143,655	1,026,181	995,116
90%	1,001,200	997,289	993,132
Long Term			
Full Simulation Period[b]	1,406,784	1,215,348	1,020,541
Water Year Types[c]			
Wet (32%)	1,362,874	1,143,915	1,016,440
Above Normal (16%)	1,388,023	1,207,032	1,011,268
Below Normal (13%)	1,414,040	1,186,118	1,027,313
Dry (24%)	1,527,772	1,291,345	1,020,786
Critical (15%)	1,313,945	1,279,260	1,032,854

Alternative 1

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,282	1,451,007	1,130,575
20%	1,672,062	1,309,717	1,070,494
30%	1,629,842	1,247,589	1,041,374
40%	1,488,708	1,172,513	1,028,459
50%	1,363,696	1,132,680	1,015,164
60%	1,257,370	1,076,987	997,074
70%	1,185,113	1,029,370	996,393
80%	1,115,017	1,004,746	996,075
90%	999,499	997,466	993,157
Long Term			
Full Simulation Period[b]	1,375,624	1,176,654	1,033,253
Water Year Types[c]			
Wet (32%)	1,345,856	1,131,139	1,016,301
Above Normal (16%)	1,372,136	1,152,491	1,035,900
Below Normal (13%)	1,349,078	1,100,094	1,066,930
Dry (24%)	1,479,128	1,237,536	1,031,327
Critical (15%)	1,295,729	1,270,153	1,039,453

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	-5,116	-74,972	59,990
20%	-3,934	-63,523	27,891
30%	-9,410	-60,498	12,440
40%	-73,114	-75,813	13,146
50%	-79,158	-36,135	16,757
60%	-56,630	-26,243	-181
70%	-30,462	-19,934	154
80%	-28,638	-21,435	959
90%	-1,700	177	25
Long Term			
Full Simulation Period[b]	-31,159	-38,694	12,712
Water Year Types[c]			
Wet (32%)	-17,018	-12,776	-139
Above Normal (16%)	-15,887	-54,541	24,632
Below Normal (13%)	-64,962	-86,024	39,616
Dry (24%)	-48,644	-53,809	10,541
Critical (15%)	-18,216	-9,107	6,600

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-2. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun
Probability of Exceedance[a]			
10%	1,704,398	1,525,979	1,070,585
20%	1,675,996	1,373,240	1,042,603
30%	1,639,252	1,308,087	1,028,934
40%	1,561,822	1,248,326	1,015,314
50%	1,442,854	1,168,815	998,407
60%	1,314,000	1,103,230	997,255
70%	1,215,575	1,049,304	996,238
80%	1,143,655	1,026,181	995,116
90%	1,001,200	997,289	993,132
Long Term			
Full Simulation Period[b]	1,406,784	1,215,348	1,020,541
Water Year Types[c]			
Wet (32%)	1,362,874	1,143,915	1,016,440
Above Normal (16%)	1,388,023	1,207,032	1,011,268
Below Normal (13%)	1,414,040	1,186,118	1,027,313
Dry (24%)	1,527,772	1,291,345	1,020,786
Critical (15%)	1,313,945	1,279,260	1,032,854

Alternative 3

Statistic	Monthly WUA (Feet2) Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,140	1,441,600	1,109,785
20%	1,669,589	1,314,038	1,070,266
30%	1,629,868	1,246,095	1,041,475
40%	1,544,685	1,178,162	1,025,730
50%	1,404,938	1,137,924	1,011,028
60%	1,283,871	1,071,084	996,746
70%	1,191,706	1,030,315	996,309
80%	1,129,631	1,004,945	995,946
90%	999,948	996,701	993,582
Long Term			
Full Simulation Period[b]	1,389,330	1,178,084	1,031,592
Water Year Types[c]			
Wet (32%)	1,349,922	1,131,098	1,018,019
Above Normal (16%)	1,384,080	1,141,651	1,025,863
Below Normal (13%)	1,362,401	1,101,418	1,063,293
Dry (24%)	1,505,255	1,250,013	1,033,157
Critical (15%)	1,311,877	1,269,749	1,035,542

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun
Probability of Exceedance[a]			
10%	-5,258	-84,379	39,200
20%	-6,408	-59,202	27,663
30%	-9,384	-61,992	12,541
40%	-17,137	-70,164	10,416
50%	-37,916	-30,891	12,621
60%	-30,129	-32,147	-509
70%	-23,869	-18,989	71
80%	-14,024	-21,236	830
90%	-1,251	-588	450
Long Term			
Full Simulation Period[b]	-17,454	-37,264	11,052
Water Year Types[c]			
Wet (32%)	-12,953	-12,818	1,579
Above Normal (16%)	-3,943	-65,381	14,595
Below Normal (13%)	-51,639	-84,700	35,980
Dry (24%)	-22,518	-41,332	12,372
Critical (15%)	-2,067	-9,511	2,688

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-3. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,704,398	1,525,979	1,070,585
20%	1,675,996	1,373,240	1,042,603
30%	1,639,252	1,308,087	1,028,934
40%	1,561,822	1,248,326	1,015,314
50%	1,442,854	1,168,815	998,407
60%	1,314,000	1,103,230	997,255
70%	1,215,575	1,049,304	996,238
80%	1,143,655	1,026,181	995,116
90%	1,001,200	997,289	993,132
Long Term			
Full Simulation Period[b]	1,406,784	1,215,348	1,020,541
Water Year Types[c]			
Wet (32%)	1,362,874	1,143,915	1,016,440
Above Normal (16%)	1,388,023	1,207,032	1,011,268
Below Normal (13%)	1,414,040	1,186,118	1,027,313
Dry (24%)	1,527,772	1,291,345	1,020,786
Critical (15%)	1,313,945	1,279,260	1,032,854

Alternative 5

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,450	1,522,613	1,068,763
20%	1,671,627	1,373,318	1,043,471
30%	1,639,255	1,308,808	1,030,261
40%	1,561,402	1,261,851	1,016,778
50%	1,443,429	1,175,321	999,758
60%	1,315,410	1,114,991	997,213
70%	1,222,612	1,072,760	996,224
80%	1,143,865	1,033,746	995,736
90%	1,019,494	1,011,013	993,137
Long Term			
Full Simulation Period[b]	1,409,320	1,225,548	1,020,719
Water Year Types[c]			
Wet (32%)	1,362,798	1,143,533	1,016,438
Above Normal (16%)	1,388,002	1,218,954	1,010,242
Below Normal (13%)	1,402,322	1,186,604	1,024,597
Dry (24%)	1,541,724	1,310,012	1,021,502
Critical (15%)	1,318,954	1,305,318	1,036,482

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	-4,949	-3,366	-1,822
20%	-4,369	78	868
30%	3	721	1,327
40%	-420	13,525	1,464
50%	575	6,506	1,351
60%	1,410	11,760	-42
70%	7,037	23,456	-14
80%	210	7,565	620
90%	18,295	13,724	5
Long Term			
Full Simulation Period[b]	2,537	10,200	178
Water Year Types[c]			
Wet (32%)	-76	-382	-2
Above Normal (16%)	-21	11,922	-1,026
Below Normal (13%)	-11,718	486	-2,717
Dry (24%)	13,952	18,667	716
Critical (15%)	5,010	26,058	3,629

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-4. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,282	1,451,007	1,130,575
20%	1,672,062	1,309,717	1,070,494
30%	1,629,842	1,247,589	1,041,374
40%	1,488,708	1,172,513	1,028,459
50%	1,363,696	1,132,680	1,015,164
60%	1,257,370	1,076,987	997,074
70%	1,185,113	1,029,370	996,393
80%	1,115,017	1,004,746	996,075
90%	999,499	997,466	993,157
Long Term			
Full Simulation Period[b]	1,375,624	1,176,654	1,033,253
Water Year Types[c]			
Wet (32%)	1,345,856	1,131,139	1,016,301
Above Normal (16%)	1,372,136	1,152,491	1,035,900
Below Normal (13%)	1,349,078	1,100,094	1,066,930
Dry (24%)	1,479,128	1,237,536	1,031,327
Critical (15%)	1,295,729	1,270,153	1,039,453

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,704,398	1,525,979	1,070,585
20%	1,675,996	1,373,240	1,042,603
30%	1,639,252	1,308,087	1,028,934
40%	1,561,822	1,248,326	1,015,314
50%	1,442,854	1,168,815	998,407
60%	1,314,000	1,103,230	997,255
70%	1,215,575	1,049,304	996,238
80%	1,143,655	1,026,181	995,116
90%	1,001,200	997,289	993,132
Long Term			
Full Simulation Period[b]	1,406,784	1,215,348	1,020,541
Water Year Types[c]			
Wet (32%)	1,362,874	1,143,915	1,016,440
Above Normal (16%)	1,388,023	1,207,032	1,011,268
Below Normal (13%)	1,414,040	1,186,118	1,027,313
Dry (24%)	1,527,772	1,291,345	1,020,786
Critical (15%)	1,313,945	1,279,260	1,032,854

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)		
	Apr	May	Jun
Probability of Exceedance[a]			
10%	5,116	74,972	-59,990
20%	3,934	63,523	-27,891
30%	9,410	60,498	-12,440
40%	73,114	75,813	-13,146
50%	79,158	36,135	-16,757
60%	56,630	26,243	181
70%	30,462	19,934	-154
80%	28,638	21,435	-959
90%	1,700	-177	-25
Long Term			
Full Simulation Period[b]	31,159	38,694	-12,712
Water Year Types[c]			
Wet (32%)	17,018	12,776	139
Above Normal (16%)	15,887	54,541	-24,632
Below Normal (13%)	64,962	86,024	-39,616
Dry (24%)	48,644	53,809	-10,541
Critical (15%)	18,216	9,107	-6,600

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-5. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)		
Statistic	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,282	1,451,007	1,130,575
20%	1,672,062	1,309,717	1,070,494
30%	1,629,842	1,247,589	1,041,374
40%	1,488,708	1,172,513	1,028,459
50%	1,363,696	1,132,680	1,015,164
60%	1,257,370	1,076,987	997,074
70%	1,185,113	1,029,370	996,393
80%	1,115,017	1,004,746	996,075
90%	999,499	997,466	993,157
Long Term			
Full Simulation Period[b]	1,375,624	1,176,654	1,033,253
Water Year Types[c]			
Wet (32%)	1,345,856	1,131,139	1,016,301
Above Normal (16%)	1,372,136	1,152,491	1,035,900
Below Normal (13%)	1,349,078	1,100,094	1,066,930
Dry (24%)	1,479,128	1,237,536	1,031,327
Critical (15%)	1,295,729	1,270,153	1,039,453

Alternative 3

	Monthly WUA (Feet2)		
Statistic	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,140	1,441,600	1,109,785
20%	1,669,589	1,314,038	1,070,266
30%	1,629,868	1,246,095	1,041,475
40%	1,544,685	1,178,162	1,025,730
50%	1,404,938	1,137,924	1,011,028
60%	1,283,871	1,071,084	996,746
70%	1,191,706	1,030,315	996,309
80%	1,129,631	1,004,945	995,946
90%	999,948	996,701	993,582
Long Term			
Full Simulation Period[b]	1,389,330	1,178,084	1,031,592
Water Year Types[c]			
Wet (32%)	1,349,922	1,131,098	1,018,019
Above Normal (16%)	1,384,080	1,141,651	1,025,863
Below Normal (13%)	1,362,401	1,101,418	1,063,293
Dry (24%)	1,505,255	1,250,013	1,033,157
Critical (15%)	1,311,877	1,269,749	1,035,542

Alternative 3 minus Second Basis of Comparison

	Monthly WUA (Feet2)		
Statistic	Apr	May	Jun
Probability of Exceedance[a]			
10%	-142	-9,407	-20,790
20%	-2,473	4,321	-227
30%	26	-1,494	101
40%	55,977	5,649	-2,729
50%	41,242	5,244	-4,137
60%	26,502	-5,903	-328
70%	6,593	945	-84
80%	14,614	198	-130
90%	449	-765	425
Long Term			
Full Simulation Period[b]	13,705	1,430	-1,660
Water Year Types[c]			
Wet (32%)	4,065	-42	1,718
Above Normal (16%)	11,944	-10,839	-10,038
Below Normal (13%)	13,323	1,324	-3,637
Dry (24%)	26,126	12,477	1,831
Critical (15%)	16,148	-404	-3,911

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-15-6. Sacramento River Keswick to Battle Creek Late-Fall-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)		
Statistic	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,282	1,451,007	1,130,575
20%	1,672,062	1,309,717	1,070,494
30%	1,629,842	1,247,589	1,041,374
40%	1,488,708	1,172,513	1,028,459
50%	1,363,696	1,132,680	1,015,164
60%	1,257,370	1,076,987	997,074
70%	1,185,113	1,029,370	996,393
80%	1,115,017	1,004,746	996,075
90%	999,499	997,466	993,157
Long Term			
Full Simulation Period[b]	1,375,624	1,176,654	1,033,253
Water Year Types[c]			
Wet (32%)	1,345,856	1,131,139	1,016,301
Above Normal (16%)	1,372,136	1,152,491	1,035,900
Below Normal (13%)	1,349,078	1,100,094	1,066,930
Dry (24%)	1,479,128	1,237,536	1,031,327
Critical (15%)	1,295,729	1,270,153	1,039,453

Alternative 5

	Monthly WUA (Feet2)		
Statistic	Apr	May	Jun
Probability of Exceedance[a]			
10%	1,699,450	1,522,613	1,068,763
20%	1,671,627	1,373,318	1,043,471
30%	1,639,255	1,308,808	1,030,261
40%	1,561,402	1,261,851	1,016,778
50%	1,443,429	1,175,321	999,758
60%	1,315,410	1,114,991	997,213
70%	1,222,612	1,072,760	996,224
80%	1,143,865	1,033,746	995,736
90%	1,019,494	1,011,013	993,137
Long Term			
Full Simulation Period[b]	1,409,320	1,225,548	1,020,719
Water Year Types[c]			
Wet (32%)	1,362,798	1,143,533	1,016,438
Above Normal (16%)	1,388,002	1,218,954	1,010,242
Below Normal (13%)	1,402,322	1,186,604	1,024,597
Dry (24%)	1,541,724	1,310,012	1,021,502
Critical (15%)	1,318,954	1,305,318	1,036,482

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)		
Statistic	Apr	May	Jun
Probability of Exceedance[a]			
10%	167	71,607	-61,812
20%	-435	63,601	-27,022
30%	9,413	61,219	-11,113
40%	72,694	89,338	-11,681
50%	79,733	42,641	-15,406
60%	58,040	38,003	139
70%	37,499	43,390	-168
80%	28,848	28,999	-339
90%	19,995	13,547	-20
Long Term			
Full Simulation Period[b]	33,696	48,895	-12,534
Water Year Types[c]			
Wet (32%)	16,942	12,394	137
Above Normal (16%)	15,866	66,463	-25,658
Below Normal (13%)	53,244	86,510	-42,333
Dry (24%)	62,596	72,476	-9,825
Critical (15%)	23,225	35,165	-2,971

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.16. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA

Table C-16-1. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	623,017	640,157	652,600	652,782	653,060	654,821	638,223	598,502	468,287	396,846	487,670	631,203
20%	608,964	627,361	651,728	652,034	652,022	653,160	625,399	569,781	453,799	372,279	457,103	627,109
30%	592,596	617,768	640,097	650,917	651,309	651,873	620,307	557,249	433,121	357,876	449,228	621,851
40%	569,681	591,980	628,239	634,602	638,736	640,153	606,281	540,739	421,483	353,494	434,268	598,046
50%	553,399	550,443	627,600	625,993	615,621	625,590	582,839	516,749	408,991	346,607	419,803	562,368
60%	519,004	504,464	619,625	613,032	591,952	614,289	561,202	494,080	397,738	341,063	410,523	451,247
70%	495,388	451,681	572,193	469,580	388,749	482,898	533,465	474,076	383,427	338,001	399,485	399,889
80%	472,912	397,683	420,509	382,314	381,803	382,314	492,785	450,610	370,909	337,330	393,522	362,028
90%	448,945	369,808	365,251	357,222	365,681	357,245	398,511	423,428	353,672	337,030	378,610	337,148
Long Term												
Full Simulation Period[b]	541,118	524,717	568,224	556,400	543,976	555,952	554,329	511,414	410,786	357,892	426,691	507,331
Water Year Types[c]												
Wet (32%)	518,114	493,252	470,475	445,144	459,091	445,636	520,129	481,798	422,595	356,550	413,504	365,976
Above Normal (16%)	546,717	515,815	556,051	523,083	465,969	519,637	549,977	513,416	393,375	340,830	405,409	450,866
Below Normal (13%)	526,010	516,768	624,530	634,608	555,374	619,378	572,781	511,898	397,461	343,587	402,505	590,171
Dry (24%)	547,318	537,651	630,043	624,925	641,243	632,188	599,317	530,323	401,623	361,894	453,080	615,516
Critical (15%)	588,413	588,267	638,560	647,649	639,843	649,110	541,246	541,457	431,547	385,727	456,509	618,527

Alternative 1

	Monthly WUA (Feet2)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	627,314	641,040	652,512	652,733	653,080	654,822	638,489	584,219	468,041	398,186	484,130	632,785
20%	620,501	627,412	650,227	652,132	651,892	653,142	624,779	559,782	439,150	374,923	454,453	627,463
30%	598,656	624,087	633,954	651,054	650,792	651,205	619,268	542,266	418,605	355,461	442,241	623,230
40%	581,741	618,898	628,284	630,852	632,726	638,835	592,215	519,981	402,312	351,960	422,630	599,655
50%	561,184	593,820	627,200	621,443	617,490	621,027	570,216	504,502	388,150	346,185	408,810	590,877
60%	545,037	579,387	620,586	601,842	574,446	612,216	545,628	484,947	379,372	340,190	396,894	578,960
70%	491,132	561,227	544,145	431,586	382,314	458,197	522,580	466,285	363,895	337,801	388,249	564,451
80%	468,879	516,863	390,190	382,314	373,984	378,237	472,169	438,510	354,203	337,491	372,100	550,661
90%	451,961	480,391	357,486	356,586	355,544	356,789	399,242	408,705	340,207	337,033	357,605	444,323
Long Term												
Full Simulation Period[b]	548,320	574,360	562,186	541,895	539,127	550,228	546,878	499,145	397,563	357,485	416,477	572,650
Water Year Types[c]												
Wet (32%)	535,032	559,211	444,754	432,266	451,323	446,173	515,862	475,686	418,495	358,149	392,771	522,675
Above Normal (16%)	551,560	557,478	571,041	498,137	448,017	499,290	546,681	497,402	378,407	339,460	389,699	564,823
Below Normal (13%)	530,312	559,201	621,306	595,532	549,245	592,090	554,853	480,249	380,126	342,104	383,786	587,659
Dry (24%)	542,744	597,645	631,532	622,456	640,538	636,651	588,089	517,335	383,022	357,543	456,870	610,962
Critical (15%)	599,404	600,561	637,255	643,393	649,778	648,454	538,299	538,867	413,182	389,577	459,496	611,796

Alternative 1 minus No Action Alternative

	Monthly WUA (Feet2)											
Statistic	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**
Probability of Exceedance[a]												
10%	4,297	882	-88	-49	20	1	266	-14,282	-246	1,340	-3,540	1,582
20%	11,537	51	-1,501	98	-130	-19	-620	-10,000	-14,649	2,644	-2,650	353
30%	6,059	6,319	-6,144	137	-517	-668	-1,039	-14,983	-14,516	-2,415	-6,986	1,379
40%	12,061	26,918	45	-3,750	-6,009	-1,318	-14,066	-20,758	-19,171	-1,534	-11,638	1,609
50%	7,784	43,377	-400	-4,549	1,870	-4,563	-12,623	-12,247	-20,842	-422	-10,993	28,510
60%	26,033	74,923	961	-11,190	-17,507	-2,073	-15,574	-9,134	-18,367	-872	-13,630	127,712
70%	-4,256	109,546	-28,048	-37,995	-6,435	-24,700	-10,885	-7,791	-19,532	-200	-11,237	164,561
80%	-4,032	119,180	-30,319	0	-7,820	-4,077	-20,616	-12,101	-16,706	161	-21,422	188,633
90%	3,015	110,584	-7,765	-636	-10,137	-456	732	-14,723	-13,465	3	-21,005	107,175
Long Term												
Full Simulation Period[b]	7,202	49,643	-6,039	-14,505	-4,849	-5,723	-7,450	-12,269	-13,222	-407	-10,214	65,319
Water Year Types[c]												
Wet (32%)	16,918	65,959	-25,721	-12,878	-7,768	538	-4,267	-6,112	-4,100	1,599	-20,733	156,700
Above Normal (16%)	4,844	41,662	14,990	-24,946	-17,952	-20,347	-3,296	-16,014	-14,968	-1,369	-15,711	113,957
Below Normal (13%)	4,302	42,433	-3,223	-39,076	-6,129	-27,288	-17,928	-31,649	-17,335	-1,483	-18,719	-2,512
Dry (24%)	-4,574	59,994	1,490	-2,469	-706	4,463	-11,228	-12,988	-18,600	-4,351	3,790	-4,553
Critical (15%)	10,991	12,294	-1,305	-4,256	9,935	-656	-2,947	-2,590	-18,364	3,850	2,988	-6,731

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

1/0/1900

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	623,017	640,157	652,600	652,782	653,060	654,821	638,223	598,502	468,287	396,846	487,670	631,203
20%	608,964	627,361	651,728	652,034	652,022	653,160	625,399	569,781	453,799	372,279	457,103	627,109
30%	592,596	617,768	640,097	650,917	651,309	651,873	620,307	557,249	433,121	357,876	449,228	621,851
40%	569,681	591,980	628,239	634,602	638,736	640,153	606,281	540,739	421,483	353,494	434,268	598,046
50%	553,399	550,443	627,600	625,993	615,621	625,590	582,839	516,749	408,991	346,607	419,803	562,368
60%	519,004	504,464	619,625	613,032	591,952	614,289	561,202	494,080	397,738	341,063	410,523	451,247
70%	495,388	451,681	572,193	469,580	388,749	482,898	533,465	474,076	383,427	338,001	399,485	399,889
80%	472,912	397,683	420,509	382,314	381,803	382,314	492,785	450,610	370,909	337,330	393,522	362,028
90%	448,945	369,808	365,251	357,222	365,681	357,245	398,511	423,428	353,672	337,030	378,610	337,148
Long Term												
Full Simulation Period[b]	541,118	524,717	568,224	556,400	543,976	555,952	554,329	511,414	410,786	357,892	426,691	507,331
Water Year Types[c]												
Wet (32%)	518,114	493,252	470,475	445,144	459,091	445,636	520,129	481,798	422,595	356,550	413,504	365,976
Above Normal (16%)	546,717	515,815	556,051	523,083	465,969	519,637	549,977	513,416	393,375	340,830	405,409	450,866
Below Normal (13%)	526,010	516,768	624,530	634,608	555,374	619,378	572,781	511,898	397,461	343,587	402,505	590,171
Dry (24%)	547,318	537,651	630,043	624,925	641,243	632,188	599,317	530,323	401,623	361,894	453,080	615,516
Critical (15%)	588,413	588,267	638,560	647,649	639,843	649,110	541,246	541,457	431,547	385,727	456,509	618,527

Alternative 3

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	625,570	641,309	652,444	652,846	652,996	654,825	638,393	582,323	468,123	397,479	466,050	630,200
20%	614,404	627,467	649,812	652,206	652,137	652,932	624,578	560,781	434,276	373,122	454,455	627,070
30%	597,586	625,943	634,879	651,219	651,204	651,079	619,272	541,909	416,710	360,392	433,033	618,125
40%	581,893	619,639	627,956	633,765	638,809	639,429	602,830	522,451	399,977	352,796	422,905	603,775
50%	562,752	599,992	626,357	624,942	615,572	621,038	576,101	505,210	391,599	343,164	416,813	585,102
60%	531,052	584,525	615,117	613,215	545,336	612,223	554,446	485,675	383,022	339,611	399,564	573,021
70%	498,299	559,956	549,776	432,866	382,314	458,297	524,856	457,541	366,856	338,011	390,515	552,754
80%	467,395	534,288	384,267	382,314	381,812	378,234	475,919	437,895	352,898	337,495	382,017	499,503
90%	448,508	479,273	357,580	356,658	355,534	356,793	399,417	407,546	344,014	337,198	371,616	455,756
Long Term												
Full Simulation Period[b]	544,915	577,306	561,379	544,567	539,928	550,052	549,986	499,146	398,468	357,817	417,529	563,464
Water Year Types[c]												
Wet (32%)	536,885	561,677	446,693	432,550	451,342	446,178	516,714	475,365	415,742	357,023	401,044	514,123
Above Normal (16%)	546,233	554,439	569,510	505,602	455,570	500,390	549,068	494,812	381,580	340,437	398,604	565,605
Below Normal (13%)	533,793	569,799	621,726	596,109	547,839	592,724	558,253	481,818	383,782	342,955	392,182	535,271
Dry (24%)	531,911	596,784	626,880	624,926	645,199	634,917	594,273	518,348	384,515	356,723	445,670	612,401
Critical (15%)	592,757	610,361	636,566	648,305	640,551	648,351	541,680	539,247	416,052	393,812	450,085	612,329

Alternative 3 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	2,553	1,152	-156	64	-64	4	170	-16,178	-164	633	-21,620	-1,002
20%	5,440	106	-1,916	172	114	-229	-820	-9,000	-19,522	843	-2,648	-39
30%	4,990	8,175	-5,218	302	-104	-794	-1,035	-15,340	-16,410	2,516	-16,195	-3,727
40%	12,212	27,659	-283	-836	73	-724	-3,452	-18,288	-21,506	-698	-11,363	5,729
50%	9,353	49,549	-1,243	-1,050	-49	-4,552	-6,739	-11,538	-17,392	-3,442	-2,990	22,734
60%	12,048	80,061	-4,508	183	-46,617	-2,065	-6,755	-8,405	-14,716	-1,452	-10,959	121,774
70%	2,911	108,275	-22,416	-36,714	-6,435	-24,601	-8,609	-16,536	-16,570	10	-8,970	152,864
80%	-5,516	136,604	-36,242	0	8	-4,080	-16,866	-12,716	-18,011	165	-11,505	137,475
90%	-437	109,465	-7,671	-564	-10,147	-452	906	-15,882	-9,658	168	-6,995	118,607
Long Term												
Full Simulation Period[b]	3,797	52,589	-6,846	-11,833	-4,048	-5,900	-4,343	-12,268	-12,318	-75	-9,162	56,133
Water Year Types[c]												
Wet (32%)	18,771	68,425	-23,782	-12,594	-7,749	543	-3,416	-6,433	-6,853	473	-12,460	148,147
Above Normal (16%)	-484	38,624	13,459	-17,480	-10,399	-19,246	-909	-18,604	-11,795	-392	-6,806	114,740
Below Normal (13%)	7,782	53,031	-2,804	-38,499	-7,534	-26,654	-14,528	-30,081	-13,679	-632	-10,323	-54,900
Dry (24%)	-15,408	59,133	-3,162	1	3,956	2,729	-5,045	-11,975	-17,108	-5,171	-7,410	-3,115
Critical (15%)	4,343	22,094	-1,994	656	708	-759	434	-2,210	-15,494	8,085	-6,423	-6,199

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-3. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	623,017	640,157	652,600	652,782	653,060	654,821	638,223	598,502	468,287	396,846	487,670	631,203
20%	608,964	627,361	651,728	652,034	652,022	653,160	625,399	569,781	453,799	372,279	457,103	627,109
30%	592,596	617,768	640,097	650,917	651,309	651,873	620,307	557,249	433,121	357,876	449,228	621,851
40%	569,681	591,980	628,239	634,602	638,736	640,153	606,281	540,739	421,483	353,494	434,268	598,046
50%	553,399	550,443	627,600	625,993	615,621	625,590	582,839	516,749	408,991	346,607	419,803	562,368
60%	519,004	504,464	619,625	613,032	591,952	614,289	561,202	494,080	397,738	341,063	410,523	451,247
70%	495,388	451,681	572,193	469,580	388,749	482,898	533,465	474,076	383,427	338,001	399,485	399,889
80%	472,912	397,683	420,509	382,314	381,803	382,314	492,785	450,610	370,909	337,330	393,522	362,028
90%	448,945	369,808	365,251	357,222	365,681	357,245	398,511	423,428	353,672	337,030	378,610	337,148
Long Term												
Full Simulation Period[b]	541,118	524,717	568,224	556,400	543,976	555,952	554,329	511,414	410,786	357,892	426,691	507,331
Water Year Types[c]												
Wet (32%)	518,114	493,252	470,475	445,144	459,091	445,636	520,129	481,798	422,595	356,550	413,504	365,976
Above Normal (16%)	546,717	515,815	556,051	523,083	465,969	519,637	549,977	513,416	393,375	340,830	405,409	450,866
Below Normal (13%)	526,010	516,768	624,530	634,608	555,374	619,378	572,781	511,898	397,461	343,587	402,505	590,171
Dry (24%)	547,318	537,651	630,043	624,925	641,243	632,188	599,317	530,323	401,623	361,894	453,080	615,516
Critical (15%)	588,413	588,267	638,560	647,649	639,843	649,110	541,246	541,457	431,547	385,727	456,509	618,527

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	620,475	641,717	652,600	652,835	653,029	654,812	638,242	597,811	469,943	397,637	481,403	628,192
20%	598,750	627,402	651,696	652,087	652,025	653,157	625,050	569,803	454,857	372,652	460,452	625,345
30%	590,231	619,431	640,161	651,147	651,301	651,867	620,307	557,448	435,336	355,023	438,636	610,336
40%	567,616	596,161	628,238	634,417	638,734	639,419	606,196	544,970	421,396	352,120	430,379	592,010
50%	553,244	552,378	627,602	625,984	615,629	625,541	583,090	519,773	414,306	344,628	418,075	565,852
60%	521,700	498,542	621,940	612,864	591,932	614,278	561,427	497,067	398,085	340,068	406,771	459,908
70%	502,455	444,756	576,604	467,945	390,704	482,875	535,251	481,529	385,813	338,018	396,424	400,984
80%	478,736	398,127	423,206	382,314	381,802	382,314	493,004	462,266	369,315	337,331	390,411	366,650
90%	444,456	372,908	365,159	358,492	365,685	356,925	399,441	432,965	355,162	336,967	376,945	337,332
Long Term												
Full Simulation Period[b]	540,292	525,405	568,602	555,999	544,042	555,548	556,088	516,778	412,130	356,767	423,113	505,820
Water Year Types[c]												
Wet (32%)	520,649	490,652	470,095	444,282	459,333	445,524	520,113	481,634	422,784	356,175	413,293	366,266
Above Normal (16%)	541,815	520,202	555,014	522,790	465,999	519,415	550,010	516,937	393,772	340,687	407,234	454,981
Below Normal (13%)	526,726	517,041	625,551	633,364	555,698	618,370	570,884	513,316	396,783	343,763	407,286	584,279
Dry (24%)	548,341	540,291	630,871	624,919	640,956	631,414	602,959	543,467	401,525	360,680	442,048	613,041
Critical (15%)	580,226	589,196	640,771	648,245	639,916	649,048	548,934	551,446	440,680	380,869	444,538	612,644

Alternative 5 minus No Action Alternative

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	-2,542	1,559	0	53	-30	-9	19	-691	1,656	791	-6,266	-3,011
20%	-10,214	41	-33	53	3	-3	-349	22	1,059	373	3,349	-1,764
30%	-2,365	1,663	64	230	-7	-6	0	200	2,215	-2,853	-10,592	-11,516
40%	-2,065	4,181	-1	-185	-1	-734	-86	4,231	-87	-1,374	-3,889	-6,036
50%	-156	1,935	2	-8	8	-50	251	3,024	5,314	-1,979	-1,729	3,484
60%	2,696	-5,922	2,315	-168	-21	-10	225	2,987	347	-995	-3,752	8,660
70%	7,066	-6,925	4,411	-1,635	1,955	-22	1,786	7,453	2,386	16	-3,061	1,095
80%	5,825	444	2,698	0	-1	0	218	11,656	-1,594	1	-3,111	4,623
90%	-4,490	3,100	-92	1,270	4	-320	931	9,537	1,490	-63	-1,665	184
Long Term												
Full Simulation Period[b]	-826	688	378	-401	65	-403	1,759	5,364	1,345	-1,125	-3,579	-1,511
Water Year Types[c]												
Wet (32%)	2,535	-2,600	-380	-862	242	-112	-16	-163	189	-374	-211	290
Above Normal (16%)	-4,902	4,387	-1,037	-293	30	-222	33	3,521	397	-143	1,825	4,116
Below Normal (13%)	715	273	1,021	-1,244	324	-1,009	-1,897	1,417	-679	176	4,782	-5,892
Dry (24%)	1,022	2,640	828	-6	-288	-773	3,642	13,143	-98	-1,214	-11,032	-2,475
Critical (15%)	-8,187	929	2,211	595	73	-61	7,689	9,989	9,134	-4,858	-11,971	-5,883

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-4. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	627,314	641,040	652,512	652,733	653,080	654,822	638,489	584,219	468,041	398,186	484,130	632,785
20%	620,501	627,412	650,227	652,132	651,892	653,142	624,779	559,782	439,150	374,923	454,453	627,463
30%	598,656	624,087	633,954	651,054	650,792	651,205	619,268	542,266	418,605	355,461	442,241	623,230
40%	581,741	618,898	628,284	630,852	632,726	638,835	592,215	519,981	402,312	351,960	422,630	599,655
50%	561,184	593,820	627,200	621,443	617,490	621,027	570,216	504,502	388,150	346,185	408,810	590,877
60%	545,037	579,387	620,586	601,842	574,446	612,216	545,628	484,947	379,372	340,190	396,894	578,960
70%	491,132	561,227	544,145	431,586	382,314	458,197	522,580	466,285	363,895	337,801	388,249	564,451
80%	468,879	516,863	390,190	382,314	373,984	378,237	472,169	438,510	354,203	337,491	372,100	550,661
90%	451,961	480,391	357,486	356,586	355,544	356,789	399,242	408,705	340,207	337,033	357,605	444,323
Long Term												
Full Simulation Period[b]	548,320	574,360	562,186	541,895	539,127	550,228	546,878	499,145	397,563	357,485	416,477	572,650
Water Year Types[c]												
Wet (32%)	535,032	559,211	444,754	432,266	451,323	446,173	515,862	475,686	418,495	358,149	392,771	522,675
Above Normal (16%)	551,560	557,478	571,041	498,137	448,017	499,290	546,681	497,402	378,407	339,460	389,699	564,823
Below Normal (13%)	530,312	559,201	621,306	595,532	549,245	592,090	554,853	480,249	380,126	342,104	383,786	587,659
Dry (24%)	542,744	597,645	631,532	622,456	640,538	636,651	588,089	517,335	383,022	357,543	456,870	610,962
Critical (15%)	599,404	600,561	637,255	643,393	649,778	648,454	538,299	538,867	413,182	389,577	459,496	611,796

No Action Alternative

	Monthly WUA (Feet2)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	623,017	640,157	652,600	652,782	653,060	654,821	638,223	598,502	468,287	396,846	487,670	631,203
20%	608,964	627,361	651,728	652,034	652,022	653,160	625,399	569,781	453,799	372,279	457,103	627,109
30%	592,596	617,768	640,097	650,917	651,309	651,873	620,307	557,249	433,121	357,876	449,228	621,851
40%	569,681	591,980	628,239	634,602	638,736	640,153	606,281	540,739	421,483	353,494	434,268	598,046
50%	553,399	550,443	627,600	625,993	615,621	625,590	582,839	516,749	408,991	346,607	419,803	562,368
60%	519,004	504,464	619,625	613,032	591,952	614,289	561,202	494,080	397,738	341,063	410,523	451,247
70%	495,388	451,681	572,193	469,580	388,749	482,898	533,465	474,076	383,427	338,001	399,485	399,889
80%	472,912	397,683	420,509	382,314	381,803	382,314	492,785	450,610	370,909	337,330	393,522	362,028
90%	448,945	369,808	365,251	357,222	365,681	357,245	398,511	423,428	353,672	337,030	378,610	337,148
Long Term												
Full Simulation Period[b]	541,118	524,717	568,224	556,400	543,976	555,952	554,329	511,414	410,786	357,892	426,691	507,331
Water Year Types[c]												
Wet (32%)	518,114	493,252	470,475	445,144	459,091	445,636	520,129	481,798	422,595	356,550	413,504	365,976
Above Normal (16%)	546,717	515,815	556,051	523,083	465,969	519,637	549,977	513,416	393,375	340,830	405,409	450,866
Below Normal (13%)	526,010	516,768	624,530	634,608	555,374	619,378	572,781	511,898	397,461	343,587	402,505	590,171
Dry (24%)	547,318	537,651	630,043	624,925	641,243	632,188	599,317	530,323	401,623	361,894	453,080	615,516
Critical (15%)	588,413	588,267	638,560	647,649	639,843	649,110	541,246	541,457	431,547	385,727	456,509	618,527

No Action Alternative minus Second Basis of Comparison

	Monthly WUA (Feet2)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-4,297	-882	88	49	-20	-1	-266	14,282	246	-1,340	3,540	-1,582
20%	-11,537	-51	1,501	-98	130	19	620	10,000	14,649	-2,644	2,650	-353
30%	-6,059	-6,319	6,144	-137	517	668	1,039	14,983	14,516	2,415	6,986	-1,379
40%	-12,061	-26,918	-45	3,750	6,009	1,318	14,066	20,758	19,171	1,534	11,638	-1,609
50%	-7,784	-43,377	400	4,549	-1,870	4,563	12,623	12,247	20,842	422	10,993	-28,510
60%	-26,033	-74,923	-961	11,190	17,507	2,073	15,574	9,134	18,367	872	13,630	-127,712
70%	4,256	-109,546	28,048	37,995	6,435	24,700	10,885	7,791	19,532	200	11,237	-164,561
80%	4,032	-119,180	30,319	0	7,820	4,077	20,616	12,101	16,706	-161	21,422	-188,633
90%	-3,015	-110,584	7,765	636	10,137	456	-732	14,723	13,465	-3	21,005	-107,175
Long Term												
Full Simulation Period[b]	-7,202	-49,643	6,039	14,505	4,849	5,723	7,450	12,269	13,222	407	10,214	-65,319
Water Year Types[c]												
Wet (32%)	-16,918	-65,959	25,721	12,878	7,768	-538	4,267	6,112	4,100	-1,599	20,733	-156,700
Above Normal (16%)	-4,844	-41,662	-14,990	24,946	17,952	20,347	3,296	16,014	14,968	1,369	15,711	-113,957
Below Normal (13%)	-4,302	-42,433	3,223	39,076	6,129	27,288	17,928	31,649	17,335	1,483	18,719	2,512
Dry (24%)	4,574	-59,994	-1,490	2,469	706	-4,463	11,228	12,988	18,600	4,351	-3,790	4,553
Critical (15%)	-10,991	-12,294	1,305	4,256	-9,935	656	2,947	2,590	18,364	-3,850	-2,988	6,731

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-5. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	627,314	641,040	652,512	652,733	653,080	654,822	638,489	584,219	468,041	398,186	484,130	632,785
20%	620,501	627,412	650,227	652,132	651,892	653,142	624,779	559,782	439,150	374,923	454,453	627,463
30%	598,656	624,087	633,954	651,054	650,792	651,205	619,268	542,266	418,605	355,461	442,241	623,230
40%	581,741	618,898	628,284	630,852	632,726	638,835	592,215	519,981	402,312	351,960	422,630	599,655
50%	561,184	593,820	627,200	621,443	617,490	621,027	570,216	504,502	388,150	346,185	408,810	590,877
60%	545,037	579,387	620,586	601,842	574,446	612,216	545,628	484,947	379,372	340,190	396,894	578,960
70%	491,132	561,227	544,145	431,586	382,314	458,197	522,580	466,285	363,895	337,801	388,249	564,451
80%	468,879	516,863	390,190	382,314	373,984	378,237	472,169	438,510	354,203	337,491	372,100	550,661
90%	451,961	480,391	357,486	356,586	355,544	356,789	399,242	408,705	340,207	337,033	357,605	444,323
Long Term												
Full Simulation Period[b]	548,320	574,360	562,186	541,895	539,127	550,228	546,878	499,145	397,563	357,485	416,477	572,650
Water Year Types[c]												
Wet (32%)	535,032	559,211	444,754	432,266	451,323	446,173	515,862	475,686	418,495	358,149	392,771	522,675
Above Normal (16%)	551,560	557,478	571,041	498,137	448,017	499,290	546,681	497,402	378,407	339,460	389,699	564,823
Below Normal (13%)	530,312	559,201	621,306	595,532	549,245	592,090	554,853	480,249	380,126	342,104	383,786	587,659
Dry (24%)	542,744	597,645	631,532	622,456	640,538	636,651	588,089	517,335	383,022	357,543	456,870	610,962
Critical (15%)	599,404	600,561	637,255	643,393	649,778	648,454	538,299	538,867	413,182	389,577	459,496	611,796

Alternative 3

	Monthly WUA (Feet2)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	625,570	641,309	652,444	652,846	652,996	654,825	638,393	582,323	468,123	397,479	466,050	630,200
20%	614,404	627,467	649,812	652,206	652,137	652,932	624,578	560,781	434,276	373,122	454,455	627,070
30%	597,586	625,943	634,879	651,219	651,204	651,079	619,272	541,909	416,710	360,392	433,033	618,125
40%	581,893	619,639	627,956	633,765	638,809	639,429	602,830	522,451	399,977	352,796	422,905	603,775
50%	562,752	599,992	626,357	624,942	615,572	621,038	576,101	505,210	391,599	343,164	416,813	585,102
60%	531,052	584,525	615,117	613,215	545,336	612,223	554,446	485,675	383,022	339,611	399,564	573,021
70%	498,299	559,956	549,776	432,866	382,314	458,297	524,856	457,541	366,856	338,011	390,515	552,754
80%	467,395	534,288	384,267	382,314	381,812	378,234	475,919	437,895	352,898	337,495	382,017	499,503
90%	448,508	479,273	357,580	356,658	355,534	356,793	399,417	407,546	344,014	337,198	371,616	455,756
Long Term												
Full Simulation Period[b]	544,915	577,306	561,379	544,567	539,928	550,052	549,986	499,146	398,468	357,817	417,529	563,464
Water Year Types[c]												
Wet (32%)	536,885	561,677	446,693	432,550	451,342	446,178	516,714	475,365	415,742	357,023	401,044	514,123
Above Normal (16%)	546,233	554,439	569,510	505,602	455,570	500,390	549,068	494,812	381,580	340,437	398,604	565,605
Below Normal (13%)	533,793	569,799	621,726	596,109	547,839	592,724	558,253	481,818	383,782	342,955	392,182	535,271
Dry (24%)	531,911	596,784	626,880	624,926	645,199	634,917	594,273	518,348	384,515	356,723	445,670	612,401
Critical (15%)	592,757	610,361	636,566	648,305	640,551	648,351	541,680	539,247	416,052	393,812	450,085	612,329

Alternative 3 minus Second Basis of Comparison

	Monthly WUA (Feet2)											
Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance[a]												
10%	-1,744	270	-68	113	-84	3	-96	-1,896	82	-707	-18,080	-2,584
20%	-6,097	55	-415	74	244	-210	-201	999	-4,874	-1,801	1	-393
30%	-1,070	1,857	926	165	412	-126	3	-357	-1,894	4,931	-9,208	-5,106
40%	152	741	-328	2,913	6,082	594	10,615	2,470	-2,335	836	275	4,121
50%	1,569	6,173	-843	3,499	-1,919	11	5,885	708	3,450	-3,020	8,003	-5,776
60%	-13,985	5,138	-5,469	11,373	-29,110	8	8,819	728	3,650	-579	2,670	-5,939
70%	7,166	-1,272	5,632	1,280	0	99	2,276	-8,744	2,962	210	2,266	-11,697
80%	-1,484	17,425	-5,923	0	7,828	-3	3,750	-615	-1,305	3	9,918	-51,158
90%	-3,452	-1,118	94	72	-9	4	174	-1,159	3,807	165	14,010	11,433
Long Term												
Full Simulation Period[b]	-3,405	2,946	-807	2,672	801	-177	3,108	1	905	332	1,052	-9,187
Water Year Types[c]												
Wet (32%)	1,853	2,466	1,939	284	19	5	852	-321	-2,753	-1,126	8,273	-8,552
Above Normal (16%)	-5,328	-3,039	-1,531	7,465	7,553	1,101	2,387	-2,590	3,173	977	8,905	782
Below Normal (13%)	3,481	10,597	420	577	-1,405	634	3,400	1,568	3,656	851	8,396	-52,388
Dry (24%)	-10,833	-861	-4,652	2,470	4,662	-1,734	6,184	1,013	1,492	-820	-11,200	1,439
Critical (15%)	-6,648	9,800	-689	4,913	-9,227	-103	3,381	380	2,870	4,235	-9,411	532

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-16-6. Sacramento River Keswick to Battle Creek Late-Fall-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	627,314	641,040	652,512	652,733	653,080	654,822	638,489	584,219	468,041	398,186	484,130	632,785
20%	620,501	627,412	650,227	652,132	651,892	653,142	624,779	559,782	439,150	374,923	454,453	627,463
30%	598,656	624,087	633,954	651,054	650,792	651,205	619,268	542,266	418,605	355,461	442,241	623,230
40%	581,741	618,898	628,284	630,852	632,726	638,835	592,215	519,981	402,312	351,960	422,630	599,655
50%	561,184	593,820	627,200	621,443	617,490	621,027	570,216	504,502	388,150	346,185	408,810	590,877
60%	545,037	579,387	620,586	601,842	574,446	612,216	545,628	484,947	379,372	340,190	396,894	578,960
70%	491,132	561,227	544,145	431,586	382,314	458,197	522,580	466,285	363,895	337,801	388,249	564,451
80%	468,879	516,863	390,190	382,314	373,984	378,237	472,169	438,510	354,203	337,491	372,100	550,661
90%	451,961	480,391	357,486	356,586	355,544	356,789	399,242	408,705	340,207	337,033	357,605	444,323
Long Term												
Full Simulation Period[b]	548,320	574,360	562,186	541,895	539,127	550,228	546,878	499,145	397,563	357,485	416,477	572,650
Water Year Types[c]												
Wet (32%)	535,032	559,211	444,754	432,266	451,323	446,173	515,862	475,686	418,495	358,149	392,771	522,675
Above Normal (16%)	551,560	557,478	571,041	498,137	448,017	499,290	546,681	497,402	378,407	339,460	389,699	564,823
Below Normal (13%)	530,312	559,201	621,306	595,532	549,245	592,090	554,853	480,249	380,126	342,104	383,786	587,659
Dry (24%)	542,744	597,645	631,532	622,456	640,538	636,651	588,089	517,335	383,022	357,543	456,870	610,962
Critical (15%)	599,404	600,561	637,255	643,393	649,778	648,454	538,299	538,867	413,182	389,577	459,496	611,796

Alternative 5

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	620,475	641,717	652,600	652,835	653,029	654,812	638,242	597,811	469,943	397,637	481,403	628,192
20%	598,750	627,402	651,696	652,087	652,025	653,157	625,050	569,803	454,857	372,652	460,452	625,345
30%	590,231	619,431	640,161	651,147	651,301	651,867	620,307	557,448	435,336	355,023	438,636	610,336
40%	567,616	596,161	628,238	634,417	638,734	639,419	606,196	544,970	421,396	352,120	430,379	592,010
50%	553,244	552,378	627,602	625,984	615,629	625,541	583,090	519,773	414,306	344,628	418,075	565,852
60%	521,700	498,542	621,940	612,864	591,932	614,278	561,427	497,067	398,085	340,068	406,771	459,908
70%	502,455	444,756	576,604	467,945	390,704	482,875	535,251	481,529	385,813	338,018	396,424	400,984
80%	478,736	398,127	423,206	382,314	381,802	382,314	493,004	462,266	369,315	337,331	390,411	366,650
90%	444,456	372,908	365,159	358,492	365,685	356,925	399,441	432,965	355,162	336,967	376,945	337,332
Long Term												
Full Simulation Period[b]	540,292	525,405	568,602	555,999	544,042	555,548	556,088	516,778	412,130	356,767	423,113	505,820
Water Year Types[c]												
Wet (32%)	520,649	490,652	470,095	444,282	459,333	445,524	520,113	481,634	422,784	356,175	413,293	366,266
Above Normal (16%)	541,815	520,202	555,014	522,790	465,999	519,415	550,010	516,937	393,772	340,687	407,234	454,981
Below Normal (13%)	526,726	517,041	625,551	633,364	555,698	618,370	570,884	513,316	396,783	343,763	407,286	584,279
Dry (24%)	548,341	540,291	630,871	624,919	640,956	631,414	602,959	543,467	401,525	360,680	442,048	613,041
Critical (15%)	580,226	589,196	640,771	648,245	639,916	649,048	548,934	551,446	440,680	380,869	444,538	612,644

Alternative 5 minus Second Basis of Comparison

Statistic	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Monthly WUA (Feet2)											
Probability of Exceedance[a]												
10%	-6,839	677	87	102	-50	-10	-246	13,591	1,902	-549	-2,727	-4,593
20%	-21,751	-10	1,468	-44	132	15	270	10,021	15,707	-2,271	5,999	-2,118
30%	-8,424	-4,656	6,208	93	509	662	1,039	15,182	16,731	-438	-3,606	-12,894
40%	-14,125	-22,737	-46	3,565	6,008	584	13,981	24,989	19,084	160	7,749	-7,645
50%	-7,940	-41,441	401	4,541	-1,861	4,513	12,874	15,271	26,156	-1,557	9,264	-25,025
60%	-23,336	-80,845	1,354	11,022	17,486	2,063	15,799	12,120	18,713	-122	9,877	-119,052
70%	11,322	-116,471	32,459	36,359	8,390	24,678	12,671	15,244	21,918	217	8,176	-163,466
80%	9,857	-118,736	33,016	0	7,819	4,077	20,835	23,757	15,112	-160	18,312	-184,011
90%	-7,505	-107,483	7,673	1,906	10,141	136	199	24,260	14,955	-66	19,340	-106,991
Long Term												
Full Simulation Period[b]	-8,028	-48,955	6,417	14,104	4,915	5,320	9,209	17,633	14,567	-718	6,635	-66,830
Water Year Types[c]												
Wet (32%)	-14,383	-68,559	25,341	12,016	8,010	-649	4,251	5,948	4,289	-1,974	20,522	-156,410
Above Normal (16%)	-9,745	-37,275	-16,027	24,653	17,982	20,125	3,329	19,535	15,365	1,226	17,536	-109,842
Below Normal (13%)	-3,587	-42,161	4,244	37,832	6,453	26,280	16,031	33,066	16,656	1,659	23,501	-3,380
Dry (24%)	5,597	-57,354	-661	2,463	418	-5,237	14,870	26,132	18,502	3,137	-14,822	2,078
Critical (15%)	-19,178	-11,365	3,516	4,852	-9,862	594	10,635	12,579	27,498	-8,708	-14,959	847

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.17. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA

Table C-17-1. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,913	1,402,880	1,348,779	1,247,288	1,367,607
20%	1,397,234	1,398,995	1,330,501	1,151,512	1,331,580
30%	1,383,804	1,396,483	1,304,899	1,076,028	1,319,609
40%	1,361,660	1,387,544	1,284,770	1,025,646	1,301,422
50%	1,324,052	1,380,781	1,273,387	958,494	1,285,083
60%	1,302,499	1,356,884	1,257,377	910,240	1,273,275
70%	1,285,673	1,337,467	1,200,325	877,392	1,255,269
80%	1,209,817	1,317,403	1,147,542	871,333	1,236,598
90%	1,110,877	1,269,393	1,034,226	869,188	1,177,234
Long Term					
Full Simulation Period[b]	1,279,022	1,347,771	1,228,845	1,007,482	1,270,063
Water Year Types[c]					
Wet (32%)	1,208,241	1,322,121	1,258,600	1,017,390	1,253,869
Above Normal (16%)	1,321,724	1,358,993	1,202,350	899,621	1,252,481
Below Normal (13%)	1,342,980	1,370,832	1,183,951	932,527	1,195,328
Dry (24%)	1,280,462	1,339,410	1,204,846	1,029,261	1,315,141
Critical (15%)	1,325,090	1,383,981	1,274,231	1,135,274	1,317,574

Alternative 1

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,405,324	1,404,630	1,349,285	1,253,699	1,364,744
20%	1,396,981	1,400,993	1,314,712	1,159,614	1,326,667
30%	1,390,559	1,395,902	1,284,018	1,048,761	1,313,107
40%	1,370,422	1,384,675	1,269,628	1,007,144	1,288,359
50%	1,320,969	1,375,661	1,220,534	953,500	1,271,188
60%	1,303,778	1,353,332	1,187,322	903,226	1,249,593
70%	1,289,429	1,326,846	1,111,983	875,530	1,214,612
80%	1,209,970	1,303,044	1,037,608	872,770	1,150,449
90%	1,110,468	1,259,168	900,913	868,689	1,073,928
Long Term					
Full Simulation Period[b]	1,284,304	1,344,150	1,175,993	1,004,101	1,235,735
Water Year Types[c]					
Wet (32%)	1,214,079	1,317,062	1,249,372	1,029,435	1,204,658
Above Normal (16%)	1,323,531	1,352,103	1,124,654	891,173	1,184,894
Below Normal (13%)	1,341,241	1,351,347	1,079,799	913,397	1,120,010
Dry (24%)	1,292,959	1,346,626	1,140,705	1,002,248	1,326,201
Critical (15%)	1,327,342	1,383,498	1,219,615	1,157,785	1,313,449

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,411	1,750	506	6,411	-2,863
20%	-253	1,998	-15,789	8,101	-4,913
30%	6,755	-581	-20,881	-27,267	-6,502
40%	8,763	-2,869	-15,143	-18,502	-13,063
50%	-3,083	-5,120	-52,854	-4,994	-13,894
60%	1,278	-3,552	-70,055	-7,014	-23,681
70%	3,756	-10,621	-88,341	-1,863	-40,658
80%	152	-14,359	-109,934	1,437	-86,150
90%	-409	-10,225	-133,312	-500	-103,306
Long Term					
Full Simulation Period[b]	5,282	-3,621	-52,852	-3,381	-34,328
Water Year Types[c]					
Wet (32%)	5,837	-5,059	-9,228	12,045	-49,211
Above Normal (16%)	1,807	-6,890	-77,696	-8,448	-67,587
Below Normal (13%)	-1,739	-19,485	-104,152	-19,130	-75,318
Dry (24%)	12,497	7,216	-64,141	-27,013	11,060
Critical (15%)	2,253	-483	-54,616	22,511	-4,125

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-2. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,913	1,402,880	1,348,779	1,247,288	1,367,607
20%	1,397,234	1,398,995	1,330,501	1,151,512	1,331,580
30%	1,383,804	1,396,483	1,304,899	1,076,028	1,319,609
40%	1,361,660	1,387,544	1,284,770	1,025,646	1,301,422
50%	1,324,052	1,380,781	1,273,387	958,494	1,285,083
60%	1,302,499	1,356,884	1,257,377	910,240	1,273,275
70%	1,285,673	1,337,467	1,200,325	877,392	1,255,269
80%	1,209,817	1,317,403	1,147,542	871,333	1,236,598
90%	1,110,877	1,269,393	1,034,226	869,188	1,177,234
Long Term					
Full Simulation Period[b]	1,279,022	1,347,771	1,228,845	1,007,482	1,270,063
Water Year Types[c]					
Wet (32%)	1,208,241	1,322,121	1,258,600	1,017,390	1,253,869
Above Normal (16%)	1,321,724	1,358,993	1,202,350	899,621	1,252,481
Below Normal (13%)	1,342,980	1,370,832	1,183,951	932,527	1,195,328
Dry (24%)	1,280,462	1,339,410	1,204,846	1,029,261	1,315,141
Critical (15%)	1,325,090	1,383,981	1,274,231	1,135,274	1,317,574

Alternative 3

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,847	1,404,936	1,349,165	1,248,654	1,347,291
20%	1,397,388	1,401,376	1,309,945	1,153,043	1,327,681
30%	1,387,079	1,394,573	1,282,169	1,089,259	1,301,074
40%	1,355,751	1,386,531	1,265,635	1,017,782	1,290,269
50%	1,324,261	1,375,293	1,231,937	928,638	1,281,086
60%	1,307,204	1,351,627	1,196,594	895,467	1,254,206
70%	1,292,343	1,328,229	1,128,461	877,400	1,221,431
80%	1,209,731	1,303,176	1,024,198	872,846	1,193,903
90%	1,110,594	1,251,007	940,203	870,160	1,145,752
Long Term					
Full Simulation Period[b]	1,282,458	1,343,002	1,182,749	1,005,743	1,251,126
Water Year Types[c]					
Wet (32%)	1,212,391	1,316,850	1,241,020	1,021,763	1,222,330
Above Normal (16%)	1,321,765	1,351,764	1,144,651	897,331	1,223,088
Below Normal (13%)	1,340,244	1,352,936	1,101,790	918,585	1,191,118
Dry (24%)	1,289,949	1,341,107	1,145,755	999,319	1,305,669
Critical (15%)	1,326,234	1,384,222	1,233,635	1,179,081	1,307,994

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	-67	2,057	385	1,366	-20,316
20%	154	2,380	-20,556	1,531	-3,898
30%	3,275	-1,910	-22,730	13,231	-18,535
40%	-5,909	-1,013	-19,135	-7,864	-11,153
50%	210	-5,488	-41,450	-29,856	-3,997
60%	4,704	-5,257	-60,784	-14,773	-19,069
70%	6,671	-9,237	-71,863	8	-33,838
80%	-87	-14,227	-123,344	1,512	-42,696
90%	-283	-18,386	-94,023	972	-31,483
Long Term					
Full Simulation Period[b]	3,436	-4,769	-46,096	-1,739	-18,937
Water Year Types[c]					
Wet (32%)	4,149	-5,271	-17,580	4,373	-31,539
Above Normal (16%)	40	-7,229	-57,699	-2,291	-29,393
Below Normal (13%)	-2,735	-17,895	-82,161	-13,943	-4,210
Dry (24%)	9,487	1,697	-59,091	-29,941	-9,472
Critical (15%)	1,144	240	-40,595	43,807	-9,580

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-3. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,913	1,402,880	1,348,779	1,247,288	1,367,607
20%	1,397,234	1,398,995	1,330,501	1,151,512	1,331,580
30%	1,383,804	1,396,483	1,304,899	1,076,028	1,319,609
40%	1,361,660	1,387,544	1,284,770	1,025,646	1,301,422
50%	1,324,052	1,380,781	1,273,387	958,494	1,285,083
60%	1,302,499	1,356,884	1,257,377	910,240	1,273,275
70%	1,285,673	1,337,467	1,200,325	877,392	1,255,269
80%	1,209,817	1,317,403	1,147,542	871,333	1,236,598
90%	1,110,877	1,269,393	1,034,226	869,188	1,177,234
Long Term					
Full Simulation Period[b]	1,279,022	1,347,771	1,228,845	1,007,482	1,270,063
Water Year Types[c]					
Wet (32%)	1,208,241	1,322,121	1,258,600	1,017,390	1,253,869
Above Normal (16%)	1,321,724	1,358,993	1,202,350	899,621	1,252,481
Below Normal (13%)	1,342,980	1,370,832	1,183,951	932,527	1,195,328
Dry (24%)	1,280,462	1,339,410	1,204,846	1,029,261	1,315,141
Critical (15%)	1,325,090	1,383,981	1,274,231	1,135,274	1,317,574

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,791	1,402,801	1,350,780	1,252,313	1,357,205
20%	1,397,937	1,400,938	1,333,003	1,153,273	1,334,527
30%	1,383,430	1,397,141	1,305,454	1,044,551	1,310,720
40%	1,362,747	1,388,451	1,287,646	1,011,128	1,297,967
50%	1,328,004	1,381,449	1,276,882	940,783	1,281,811
60%	1,308,213	1,366,765	1,257,049	902,840	1,267,554
70%	1,292,294	1,345,468	1,210,126	877,459	1,245,717
80%	1,209,824	1,332,896	1,139,222	871,342	1,223,345
90%	1,110,707	1,292,590	1,050,095	868,102	1,174,413
Long Term					
Full Simulation Period[b]	1,280,939	1,352,263	1,232,517	1,001,043	1,267,903
Water Year Types[c]					
Wet (32%)	1,208,260	1,322,053	1,259,471	1,013,803	1,252,971
Above Normal (16%)	1,321,807	1,359,027	1,204,844	897,679	1,254,190
Below Normal (13%)	1,344,630	1,373,097	1,189,342	932,859	1,212,358
Dry (24%)	1,281,672	1,354,165	1,204,076	1,020,532	1,303,214
Critical (15%)	1,334,529	1,388,120	1,291,075	1,115,393	1,307,177

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	-122	-79	2,000	5,025	-10,402
20%	703	1,943	2,502	1,760	2,947
30%	-374	659	555	-31,477	-8,889
40%	1,087	907	2,876	-14,518	-3,455
50%	3,952	668	3,494	-17,710	-3,272
60%	5,714	9,881	-329	-7,400	-5,720
70%	6,621	8,002	9,801	67	-9,552
80%	7	15,493	-8,320	9	-13,253
90%	-170	23,197	15,870	-1,086	-2,821
Long Term					
Full Simulation Period[b]	1,917	4,492	3,672	-6,439	-2,160
Water Year Types[c]					
Wet (32%)	19	-68	871	-3,587	-899
Above Normal (16%)	82	34	2,494	-1,942	1,709
Below Normal (13%)	1,650	2,265	5,391	331	17,029
Dry (24%)	1,210	14,756	-770	-8,728	-11,927
Critical (15%)	9,439	4,138	16,844	-19,881	-10,397

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-4. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,405,324	1,404,630	1,349,285	1,253,699	1,364,744
20%	1,396,981	1,400,993	1,314,712	1,159,614	1,326,667
30%	1,390,559	1,395,902	1,284,018	1,048,761	1,313,107
40%	1,370,422	1,384,675	1,269,628	1,007,144	1,288,359
50%	1,320,969	1,375,661	1,220,534	953,500	1,271,188
60%	1,303,778	1,353,332	1,187,322	903,226	1,249,593
70%	1,289,429	1,326,846	1,111,983	875,530	1,214,612
80%	1,209,970	1,303,044	1,037,608	872,770	1,150,449
90%	1,110,468	1,259,168	900,913	868,689	1,073,928
Long Term					
Full Simulation Period[b]	1,284,304	1,344,150	1,175,993	1,004,101	1,235,735
Water Year Types[c]					
Wet (32%)	1,214,079	1,317,062	1,249,372	1,029,435	1,204,658
Above Normal (16%)	1,323,531	1,352,103	1,124,654	891,173	1,184,894
Below Normal (13%)	1,341,241	1,351,347	1,079,799	913,397	1,120,010
Dry (24%)	1,292,959	1,346,626	1,140,705	1,002,248	1,326,201
Critical (15%)	1,327,342	1,383,498	1,219,615	1,157,785	1,313,449

No Action Alternative

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,913	1,402,880	1,348,779	1,247,288	1,367,607
20%	1,397,234	1,398,995	1,330,501	1,151,512	1,331,580
30%	1,383,804	1,396,483	1,304,899	1,076,028	1,319,609
40%	1,361,660	1,387,544	1,284,770	1,025,646	1,301,422
50%	1,324,052	1,380,781	1,273,387	958,494	1,285,083
60%	1,302,499	1,356,884	1,257,377	910,240	1,273,275
70%	1,285,673	1,337,467	1,200,325	877,392	1,255,269
80%	1,209,817	1,317,403	1,147,542	871,333	1,236,598
90%	1,110,877	1,269,393	1,034,226	869,188	1,177,234
Long Term					
Full Simulation Period[b]	1,279,022	1,347,771	1,228,845	1,007,482	1,270,063
Water Year Types[c]					
Wet (32%)	1,208,241	1,322,121	1,258,600	1,017,390	1,253,869
Above Normal (16%)	1,321,724	1,358,993	1,202,350	899,621	1,252,481
Below Normal (13%)	1,342,980	1,370,832	1,183,951	932,527	1,195,328
Dry (24%)	1,280,462	1,339,410	1,204,846	1,029,261	1,315,141
Critical (15%)	1,325,090	1,383,981	1,274,231	1,135,274	1,317,574

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	-1,411	-1,750	-506	-6,411	2,863
20%	253	-1,998	15,789	-8,101	4,913
30%	-6,755	581	20,881	27,267	6,502
40%	-8,763	2,869	15,143	18,502	13,063
50%	3,083	5,120	52,854	4,994	13,894
60%	-1,278	3,552	70,055	7,014	23,681
70%	-3,756	10,621	88,341	1,863	40,658
80%	-152	14,359	109,934	-1,437	86,150
90%	409	10,225	133,312	500	103,306
Long Term					
Full Simulation Period[b]	-5,282	3,621	52,852	3,381	34,328
Water Year Types[c]					
Wet (32%)	-5,837	5,059	9,228	-12,045	49,211
Above Normal (16%)	-1,807	6,890	77,696	8,448	67,587
Below Normal (13%)	1,739	19,485	104,152	19,130	75,318
Dry (24%)	-12,497	-7,216	64,141	27,013	-11,060
Critical (15%)	-2,253	483	54,616	-22,511	4,125

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-5. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,405,324	1,404,630	1,349,285	1,253,699	1,364,744
20%	1,396,981	1,400,993	1,314,712	1,159,614	1,326,667
30%	1,390,559	1,395,902	1,284,018	1,048,761	1,313,107
40%	1,370,422	1,384,675	1,269,628	1,007,144	1,288,359
50%	1,320,969	1,375,661	1,220,534	953,500	1,271,188
60%	1,303,778	1,353,332	1,187,322	903,226	1,249,593
70%	1,289,429	1,326,846	1,111,983	875,530	1,214,612
80%	1,209,970	1,303,044	1,037,608	872,770	1,150,449
90%	1,110,468	1,259,168	900,913	868,689	1,073,928
Long Term					
Full Simulation Period[b]	1,284,304	1,344,150	1,175,993	1,004,101	1,235,735
Water Year Types[c]					
Wet (32%)	1,214,079	1,317,062	1,249,372	1,029,435	1,204,658
Above Normal (16%)	1,323,531	1,352,103	1,124,654	891,173	1,184,894
Below Normal (13%)	1,341,241	1,351,347	1,079,799	913,397	1,120,010
Dry (24%)	1,292,959	1,346,626	1,140,705	1,002,248	1,326,201
Critical (15%)	1,327,342	1,383,498	1,219,615	1,157,785	1,313,449

Alternative 3

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,847	1,404,936	1,349,165	1,248,654	1,347,291
20%	1,397,388	1,401,376	1,309,945	1,153,043	1,327,681
30%	1,387,079	1,394,573	1,282,169	1,089,259	1,301,074
40%	1,355,751	1,386,531	1,265,635	1,017,782	1,290,269
50%	1,324,261	1,375,293	1,231,937	928,638	1,281,086
60%	1,307,204	1,351,627	1,196,594	895,467	1,254,206
70%	1,292,343	1,328,229	1,128,461	877,400	1,221,431
80%	1,209,731	1,303,176	1,024,198	872,846	1,193,903
90%	1,110,594	1,251,007	940,203	870,160	1,145,752
Long Term					
Full Simulation Period[b]	1,282,458	1,343,002	1,182,749	1,005,743	1,251,126
Water Year Types[c]					
Wet (32%)	1,212,391	1,316,850	1,241,020	1,021,763	1,222,330
Above Normal (16%)	1,321,765	1,351,764	1,144,651	897,331	1,223,088
Below Normal (13%)	1,340,244	1,352,936	1,101,790	918,585	1,191,118
Dry (24%)	1,289,949	1,341,107	1,145,755	999,319	1,305,669
Critical (15%)	1,326,234	1,384,222	1,233,635	1,179,081	1,307,994

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	-1,478	306	-120	-5,044	-17,453
20%	407	382	-4,767	-6,571	1,014
30%	-3,480	-1,329	-1,849	40,498	-12,033
40%	-14,672	1,856	-3,992	10,637	1,910
50%	3,292	-368	11,404	-24,862	9,898
60%	3,426	-1,705	9,272	-7,759	4,613
70%	2,915	1,383	16,478	1,870	6,820
80%	-239	132	-13,410	76	43,454
90%	126	-8,162	39,290	1,472	71,824
Long Term					
Full Simulation Period[b]	-1,845	-1,148	6,755	1,642	15,391
Water Year Types[c]					
Wet (32%)	-1,688	-212	-8,352	-7,672	17,672
Above Normal (16%)	-1,767	-338	19,997	6,158	38,194
Below Normal (13%)	-996	1,589	21,991	5,188	71,108
Dry (24%)	-3,010	-5,519	5,050	-2,928	-20,532
Critical (15%)	-1,108	724	14,021	21,296	-5,456

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-17-6. Sacramento River Keswick to Battle Creek Winter-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,405,324	1,404,630	1,349,285	1,253,699	1,364,744
20%	1,396,981	1,400,993	1,314,712	1,159,614	1,326,667
30%	1,390,559	1,395,902	1,284,018	1,048,761	1,313,107
40%	1,370,422	1,384,675	1,269,628	1,007,144	1,288,359
50%	1,320,969	1,375,661	1,220,534	953,500	1,271,188
60%	1,303,778	1,353,332	1,187,322	903,226	1,249,593
70%	1,289,429	1,326,846	1,111,983	875,530	1,214,612
80%	1,209,970	1,303,044	1,037,608	872,770	1,150,449
90%	1,110,468	1,259,168	900,913	868,689	1,073,928
Long Term					
Full Simulation Period[b]	1,284,304	1,344,150	1,175,993	1,004,101	1,235,735
Water Year Types[c]					
Wet (32%)	1,214,079	1,317,062	1,249,372	1,029,435	1,204,658
Above Normal (16%)	1,323,531	1,352,103	1,124,654	891,173	1,184,894
Below Normal (13%)	1,341,241	1,351,347	1,079,799	913,397	1,120,010
Dry (24%)	1,292,959	1,346,626	1,140,705	1,002,248	1,326,201
Critical (15%)	1,327,342	1,383,498	1,219,615	1,157,785	1,313,449

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	1,403,791	1,402,801	1,350,780	1,252,313	1,357,205
20%	1,397,937	1,400,938	1,333,003	1,153,273	1,334,527
30%	1,383,430	1,397,141	1,305,454	1,044,551	1,310,720
40%	1,362,747	1,388,451	1,287,646	1,011,128	1,297,967
50%	1,328,004	1,381,449	1,276,882	940,783	1,281,811
60%	1,308,213	1,366,765	1,257,049	902,840	1,267,554
70%	1,292,294	1,345,468	1,210,126	877,459	1,245,717
80%	1,209,824	1,332,896	1,139,222	871,342	1,223,345
90%	1,110,707	1,292,590	1,050,095	868,102	1,174,413
Long Term					
Full Simulation Period[b]	1,280,939	1,352,263	1,232,517	1,001,043	1,267,903
Water Year Types[c]					
Wet (32%)	1,208,260	1,322,053	1,259,471	1,013,803	1,252,971
Above Normal (16%)	1,321,807	1,359,027	1,204,844	897,679	1,254,190
Below Normal (13%)	1,344,630	1,373,097	1,189,342	932,859	1,212,358
Dry (24%)	1,281,672	1,354,165	1,204,076	1,020,532	1,303,214
Critical (15%)	1,334,529	1,388,120	1,291,075	1,115,393	1,307,177

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Apr	May	Jun	Jul	Aug
Probability of Exceedance[a]					
10%	-1,533	-1,829	1,495	-1,386	-7,539
20%	956	-55	18,291	-6,341	7,860
30%	-7,129	1,239	21,437	-4,210	-2,386
40%	-7,676	3,776	18,019	3,984	9,608
50%	7,034	5,788	56,348	-12,716	10,622
60%	4,435	13,433	69,727	-386	17,961
70%	2,865	18,622	98,143	1,929	31,106
80%	-146	29,851	101,615	-1,428	72,896
90%	239	33,422	149,182	-586	100,485
Long Term					
Full Simulation Period[b]	-3,365	8,113	56,524	-3,059	32,168
Water Year Types[c]					
Wet (32%)	-5,818	4,991	10,099	-15,633	48,313
Above Normal (16%)	-1,725	6,924	80,189	6,506	69,296
Below Normal (13%)	3,389	21,750	109,543	19,462	92,348
Dry (24%)	-11,287	7,539	63,372	18,285	-22,987
Critical (15%)	7,187	4,622	71,460	-42,393	-6,273

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.18. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA

Table C-18-1. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	777,036	901,193	717,563	899,837	795,997
20%	718,973	898,195	692,261	798,837	787,634
30%	693,440	891,503	677,361	797,442	774,643
40%	676,866	861,731	669,826	793,205	751,689
50%	669,540	822,528	662,686	784,323	723,566
60%	663,027	780,278	658,055	764,027	718,470
70%	657,088	757,268	654,511	737,209	697,825
80%	649,166	716,756	649,701	714,498	675,164
90%	645,961	672,058	645,272	664,827	659,406
Long Term					
Full Simulation Period[b]	693,557	808,507	677,515	773,481	730,930
Water Year Types[c]					
Wet (32%)	681,264	798,706	671,961	814,689	716,090
Above Normal (16%)	695,288	877,818	667,580	672,509	737,636
Below Normal (13%)	714,092	853,837	706,305	770,540	720,160
Dry (24%)	700,321	793,075	673,307	779,975	730,735
Critical (15%)	688,221	738,826	680,932	785,458	766,013

Alternative 1

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	876,406	901,160	773,332	797,548	796,157
20%	776,331	896,584	725,284	795,630	795,690
30%	738,290	893,490	699,551	789,641	775,842
40%	697,773	869,905	681,701	776,581	765,083
50%	691,922	825,433	672,996	773,012	733,306
60%	675,636	788,743	662,654	752,858	720,847
70%	668,666	770,034	656,655	741,165	691,102
80%	655,558	709,353	652,439	731,472	673,098
90%	648,377	666,917	647,931	683,460	659,990
Long Term					
Full Simulation Period[b]	721,892	809,850	693,890	757,176	734,070
Water Year Types[c]					
Wet (32%)	684,230	790,092	690,232	736,710	727,056
Above Normal (16%)	742,799	882,394	699,981	745,101	736,594
Below Normal (13%)	781,782	866,782	748,090	765,601	721,622
Dry (24%)	731,750	807,978	667,680	777,057	726,140
Critical (15%)	709,514	725,002	689,215	773,742	771,159

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	99,370	-33	55,769	-102,290	160
20%	57,358	-1,611	33,022	-3,207	8,056
30%	44,850	1,987	22,189	-7,801	1,199
40%	20,907	8,174	11,875	-16,623	13,394
50%	22,382	2,905	10,310	-11,310	9,740
60%	12,609	8,465	4,599	-11,169	2,377
70%	11,578	12,766	2,144	3,956	-6,723
80%	6,391	-7,403	2,738	16,974	-2,066
90%	2,416	-5,140	2,658	18,633	584
Long Term					
Full Simulation Period[b]	28,334	1,343	16,375	-16,305	3,140
Water Year Types[c]					
Wet (32%)	2,966	-8,614	18,271	-77,979	10,966
Above Normal (16%)	47,511	4,576	32,401	72,592	-1,042
Below Normal (13%)	67,690	12,945	41,785	-4,939	1,462
Dry (24%)	31,428	14,903	-5,626	-2,918	-4,595
Critical (15%)	21,292	-13,824	8,282	-11,716	5,146

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-2. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	777,036	901,193	717,563	899,837	795,997
20%	718,973	898,195	692,261	798,837	787,634
30%	693,440	891,503	677,361	797,442	774,643
40%	676,866	861,731	669,826	793,205	751,689
50%	669,540	822,528	662,686	784,323	723,566
60%	663,027	780,278	658,055	764,027	718,470
70%	657,088	757,268	654,511	737,209	697,825
80%	649,166	716,756	649,701	714,498	675,164
90%	645,961	672,058	645,272	664,827	659,406
Long Term					
Full Simulation Period[b]	693,557	808,507	677,515	773,481	730,930
Water Year Types[c]					
Wet (32%)	681,264	798,706	671,961	814,689	716,090
Above Normal (16%)	695,288	877,818	667,580	672,509	737,636
Below Normal (13%)	714,092	853,837	706,305	770,540	720,160
Dry (24%)	700,321	793,075	673,307	779,975	730,735
Critical (15%)	688,221	738,826	680,932	785,458	766,013

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	836,741	899,510	727,605	797,468	796,324
20%	781,724	896,550	703,158	796,434	794,109
30%	729,833	891,393	686,225	791,912	779,591
40%	695,713	875,296	678,223	781,233	765,717
50%	686,914	846,791	667,843	765,786	736,791
60%	675,468	784,215	659,052	742,936	719,822
70%	669,424	748,909	654,472	734,900	702,328
80%	659,182	714,469	649,448	718,903	670,559
90%	649,327	668,704	644,087	681,410	659,313
Long Term					
Full Simulation Period[b]	717,540	810,069	681,516	753,158	734,416
Water Year Types[c]					
Wet (32%)	688,352	796,318	681,089	728,495	729,723
Above Normal (16%)	725,393	879,251	680,452	746,488	733,224
Below Normal (13%)	768,531	863,925	703,989	741,636	724,975
Dry (24%)	731,434	811,551	670,579	782,547	723,409
Critical (15%)	702,373	713,077	681,222	775,404	772,877

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	59,705	-1,683	10,042	-102,369	327
20%	62,751	-1,645	10,896	-2,403	6,475
30%	36,392	-110	8,863	-5,530	4,947
40%	18,847	13,564	8,398	-11,971	14,028
50%	17,375	24,264	5,157	-18,537	13,225
60%	12,441	3,938	997	-21,091	1,353
70%	12,336	-8,360	-38	-2,309	4,503
80%	10,016	-2,287	-253	4,406	-4,605
90%	3,367	-3,354	-1,185	16,583	-93
Long Term					
Full Simulation Period[b]	23,983	1,562	4,001	-20,323	3,487
Water Year Types[c]					
Wet (32%)	7,089	-2,388	9,128	-86,194	13,633
Above Normal (16%)	30,105	1,433	12,872	73,979	-4,413
Below Normal (13%)	54,439	10,088	-2,316	-28,904	4,815
Dry (24%)	31,112	18,476	-2,727	2,572	-7,326
Critical (15%)	14,152	-25,749	290	-10,054	6,863

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-3. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	777,036	901,193	717,563	899,837	795,997
20%	718,973	898,195	692,261	798,837	787,634
30%	693,440	891,503	677,361	797,442	774,643
40%	676,866	861,731	669,826	793,205	751,689
50%	669,540	822,528	662,686	784,323	723,566
60%	663,027	780,278	658,055	764,027	718,470
70%	657,088	757,268	654,511	737,209	697,825
80%	649,166	716,756	649,701	714,498	675,164
90%	645,961	672,058	645,272	664,827	659,406
Long Term					
Full Simulation Period[b]	693,557	808,507	677,515	773,481	730,930
Water Year Types[c]					
Wet (32%)	681,264	798,706	671,961	814,689	716,090
Above Normal (16%)	695,288	877,818	667,580	672,509	737,636
Below Normal (13%)	714,092	853,837	706,305	770,540	720,160
Dry (24%)	700,321	793,075	673,307	779,975	730,735
Critical (15%)	688,221	738,826	680,932	785,458	766,013

Alternative 5

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	770,134	901,817	711,676	898,008	794,117
20%	724,855	898,185	695,895	798,763	780,450
30%	690,734	891,327	678,859	796,831	772,523
40%	676,812	870,404	673,090	792,899	750,487
50%	669,716	836,404	666,341	784,390	723,241
60%	663,144	788,345	658,547	765,741	717,918
70%	656,993	771,884	654,679	735,475	706,659
80%	649,854	716,101	649,439	717,944	678,833
90%	646,076	666,579	643,874	663,729	659,127
Long Term					
Full Simulation Period[b]	692,635	812,012	676,616	772,849	730,814
Water Year Types[c]					
Wet (32%)	680,868	800,227	672,396	811,606	716,996
Above Normal (16%)	693,934	879,555	669,258	677,001	736,147
Below Normal (13%)	711,870	853,587	698,826	768,514	721,756
Dry (24%)	700,592	799,785	671,768	782,232	732,190
Critical (15%)	685,828	746,640	681,449	781,048	760,986

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	-6,901	625	-5,887	-1,829	-1,880
20%	5,882	-10	3,633	-74	-7,185
30%	-2,706	-176	1,497	-611	-2,120
40%	-54	8,673	3,264	-306	-1,202
50%	176	13,876	3,656	67	-325
60%	117	8,068	492	1,714	-551
70%	-95	14,616	169	-1,735	8,834
80%	688	-655	-262	3,447	3,670
90%	116	-5,479	-1,399	-1,098	-279
Long Term					
Full Simulation Period[b]	-922	3,504	-899	-632	-116
Water Year Types[c]					
Wet (32%)	-395	1,521	435	-3,082	906
Above Normal (16%)	-1,354	1,737	1,678	4,493	-1,490
Below Normal (13%)	-2,221	-250	-7,479	-2,026	1,596
Dry (24%)	271	6,710	-1,539	2,257	1,455
Critical (15%)	-2,393	7,814	517	-4,410	-5,028

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-4. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	876,406	901,160	773,332	797,548	796,157
20%	776,331	896,584	725,284	795,630	795,690
30%	738,290	893,490	699,551	789,641	775,842
40%	697,773	869,905	681,701	776,581	765,083
50%	691,922	825,433	672,996	773,012	733,306
60%	675,636	788,743	662,654	752,858	720,847
70%	668,666	770,034	656,655	741,165	691,102
80%	655,558	709,353	652,439	731,472	673,098
90%	648,377	666,917	647,931	683,460	659,990
Long Term					
Full Simulation Period[b]	721,892	809,850	693,890	757,176	734,070
Water Year Types[c]					
Wet (32%)	684,230	790,092	690,232	736,710	727,056
Above Normal (16%)	742,799	882,394	699,981	745,101	736,594
Below Normal (13%)	781,782	866,782	748,090	765,601	721,622
Dry (24%)	731,750	807,978	667,680	777,057	726,140
Critical (15%)	709,514	725,002	689,215	773,742	771,159

No Action Alternative

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	777,036	901,193	717,563	899,837	795,997
20%	718,973	898,195	692,261	798,837	787,634
30%	693,440	891,503	677,361	797,442	774,643
40%	676,866	861,731	669,826	793,205	751,689
50%	669,540	822,528	662,686	784,323	723,566
60%	663,027	780,278	658,055	764,027	718,470
70%	657,088	757,268	654,511	737,209	697,825
80%	649,166	716,756	649,701	714,498	675,164
90%	645,961	672,058	645,272	664,827	659,406
Long Term					
Full Simulation Period[b]	693,557	808,507	677,515	773,481	730,930
Water Year Types[c]					
Wet (32%)	681,264	798,706	671,961	814,689	716,090
Above Normal (16%)	695,288	877,818	667,580	672,509	737,636
Below Normal (13%)	714,092	853,837	706,305	770,540	720,160
Dry (24%)	700,321	793,075	673,307	779,975	730,735
Critical (15%)	688,221	738,826	680,932	785,458	766,013

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	-99,370	33	-55,769	102,290	-160
20%	-57,358	1,611	-33,022	3,207	-8,056
30%	-44,850	-1,987	-22,189	7,801	-1,199
40%	-20,907	-8,174	-11,875	16,623	-13,394
50%	-22,382	-2,905	-10,310	11,310	-9,740
60%	-12,609	-8,465	-4,599	11,169	-2,377
70%	-11,578	-12,766	-2,144	-3,956	6,723
80%	-6,391	7,403	-2,738	-16,974	2,066
90%	-2,416	5,140	-2,658	-18,633	-584
Long Term					
Full Simulation Period[b]	-28,334	-1,343	-16,375	16,305	-3,140
Water Year Types[c]					
Wet (32%)	-2,966	8,614	-18,271	77,979	-10,966
Above Normal (16%)	-47,511	-4,576	-32,401	-72,592	1,042
Below Normal (13%)	-67,690	-12,945	-41,785	4,939	-1,462
Dry (24%)	-31,428	-14,903	5,626	2,918	4,595
Critical (15%)	-21,292	13,824	-8,282	11,716	-5,146

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-5. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	876,406	901,160	773,332	797,548	796,157
20%	776,331	896,584	725,284	795,630	795,690
30%	738,290	893,490	699,551	789,641	775,842
40%	697,773	869,905	681,701	776,581	765,083
50%	691,922	825,433	672,996	773,012	733,306
60%	675,636	788,743	662,654	752,858	720,847
70%	668,666	770,034	656,655	741,165	691,102
80%	655,558	709,353	652,439	731,472	673,098
90%	648,377	666,917	647,931	683,460	659,990
Long Term					
Full Simulation Period[b]	721,892	809,850	693,890	757,176	734,070
Water Year Types[c]					
Wet (32%)	684,230	790,092	690,232	736,710	727,056
Above Normal (16%)	742,799	882,394	699,981	745,101	736,594
Below Normal (13%)	781,782	866,782	748,090	765,601	721,622
Dry (24%)	731,750	807,978	667,680	777,057	726,140
Critical (15%)	709,514	725,002	689,215	773,742	771,159

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	836,741	899,510	727,605	797,468	796,324
20%	781,724	896,550	703,158	796,434	794,109
30%	729,833	891,393	686,225	791,912	779,591
40%	695,713	875,296	678,223	781,233	765,717
50%	686,914	846,791	667,843	765,786	736,791
60%	675,468	784,215	659,052	742,936	719,822
70%	669,424	748,909	654,472	734,900	702,328
80%	659,182	714,469	649,448	718,903	670,559
90%	649,327	668,704	644,087	681,410	659,313
Long Term					
Full Simulation Period[b]	717,540	810,069	681,516	753,158	734,416
Water Year Types[c]					
Wet (32%)	688,352	796,318	681,089	728,495	729,723
Above Normal (16%)	725,393	879,251	680,452	746,488	733,224
Below Normal (13%)	768,531	863,925	703,989	741,636	724,975
Dry (24%)	731,434	811,551	670,579	782,547	723,409
Critical (15%)	702,373	713,077	681,222	775,404	772,877

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	-39,665	-1,650	-45,728	-79	167
20%	5,393	-34	-22,126	804	-1,581
30%	-8,458	-2,097	-13,326	2,272	3,749
40%	-2,060	5,390	-3,477	4,652	634
50%	-5,007	21,359	-5,153	-7,226	3,485
60%	-168	-4,528	-3,602	-9,922	-1,024
70%	758	-21,125	-2,182	-6,265	11,226
80%	3,624	5,116	-2,991	-12,568	-2,539
90%	950	1,787	-3,843	-2,050	-677
Long Term					
Full Simulation Period[b]	-4,352	219	-12,374	-4,018	346
Water Year Types[c]					
Wet (32%)	4,123	6,226	-9,143	-8,215	2,667
Above Normal (16%)	-17,406	-3,143	-19,529	1,387	-3,371
Below Normal (13%)	-13,251	-2,857	-44,100	-23,965	3,352
Dry (24%)	-316	3,573	2,899	5,490	-2,731
Critical (15%)	-7,141	-11,925	-7,992	1,662	1,718

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-18-6. Sacramento River Keswick to Battle Creek Winter-run Fry Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	876,406	901,160	773,332	797,548	796,157
20%	776,331	896,584	725,284	795,630	795,690
30%	738,290	893,490	699,551	789,641	775,842
40%	697,773	869,905	681,701	776,581	765,083
50%	691,922	825,433	672,996	773,012	733,306
60%	675,636	788,743	662,654	752,858	720,847
70%	668,666	770,034	656,655	741,165	691,102
80%	655,558	709,353	652,439	731,472	673,098
90%	648,377	666,917	647,931	683,460	659,990
Long Term					
Full Simulation Period[b]	721,892	809,850	693,890	757,176	734,070
Water Year Types[c]					
Wet (32%)	684,230	790,092	690,232	736,710	727,056
Above Normal (16%)	742,799	882,394	699,981	745,101	736,594
Below Normal (13%)	781,782	866,782	748,090	765,601	721,622
Dry (24%)	731,750	807,978	667,680	777,057	726,140
Critical (15%)	709,514	725,002	689,215	773,742	771,159

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	770,134	901,817	711,676	898,008	794,117
20%	724,855	898,185	695,895	798,763	780,450
30%	690,734	891,327	678,859	796,831	772,523
40%	676,812	870,404	673,090	792,899	750,487
50%	669,716	836,404	666,341	784,390	723,241
60%	663,144	788,345	658,547	765,741	717,918
70%	656,993	771,884	654,679	735,475	706,659
80%	649,854	716,101	649,439	717,944	678,833
90%	646,076	666,579	643,874	663,729	659,127
Long Term					
Full Simulation Period[b]	692,635	812,012	676,616	772,849	730,814
Water Year Types[c]					
Wet (32%)	680,868	800,227	672,396	811,606	716,996
Above Normal (16%)	693,934	879,555	669,258	677,001	736,147
Below Normal (13%)	711,870	853,587	698,826	768,514	721,756
Dry (24%)	700,592	799,785	671,768	782,232	732,190
Critical (15%)	685,828	746,640	681,449	781,048	760,986

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Jun	Jul	Aug	Sep	Oct
Probability of Exceedance[a]					
10%	-106,271	657	-61,656	100,461	-2,040
20%	-51,476	1,601	-29,389	3,133	-15,240
30%	-47,556	-2,163	-20,692	7,191	-3,319
40%	-20,961	499	-8,611	16,317	-14,596
50%	-22,206	10,971	-6,655	11,378	-10,065
60%	-12,492	-398	-4,107	12,883	-2,928
70%	-11,673	1,850	-1,975	-5,691	15,557
80%	-5,704	6,748	-3,000	-13,527	5,735
90%	-2,301	-339	-4,057	-19,731	-863
Long Term					
Full Simulation Period[b]	-29,257	2,162	-17,274	15,673	-3,256
Water Year Types[c]					
Wet (32%)	-3,361	10,135	-17,836	74,897	-10,060
Above Normal (16%)	-48,865	-2,839	-30,723	-68,100	-448
Below Normal (13%)	-69,911	-13,195	-49,263	2,913	133
Dry (24%)	-31,157	-8,193	4,088	5,174	6,050
Critical (15%)	-23,686	21,638	-7,765	7,306	-10,174

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.19. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA

Table C-19-1. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,409	310,548	333,866	332,325	333,147	334,345	343,635	406,001	337,232	333,331	327,278
20%	275,553	304,116	333,613	329,892	332,381	333,897	334,074	345,721	334,537	332,947	320,140
30%	273,347	301,490	333,204	324,327	331,691	333,630	333,823	334,173	334,164	331,465	318,857
40%	271,058	296,100	325,708	319,153	325,671	333,011	333,510	333,834	333,782	327,257	317,814
50%	270,255	290,552	318,898	317,858	317,290	332,534	332,839	333,548	333,053	321,915	314,448
60%	269,605	286,716	302,253	314,069	311,767	332,361	332,294	333,096	332,276	319,453	310,951
70%	269,298	282,110	282,624	310,607	301,862	332,133	330,936	332,329	330,796	317,580	308,312
80%	268,669	280,522	275,260	307,905	283,840	319,063	330,384	330,323	316,822	312,690	302,041
90%	267,972	276,033	270,850	299,056	276,503	294,114	295,991	313,048	277,019	290,194	292,622
Long Term											
Full Simulation Period[b]	273,329	292,177	307,770	316,470	312,474	328,615	331,119	339,565	327,071	320,338	311,336
Water Year Types[c]											
Wet (32%)	272,361	288,310	276,743	312,401	309,295	323,698	336,149	351,851	326,362	319,734	305,516
Above Normal (16%)	269,796	285,110	298,518	317,662	308,331	328,318	319,568	348,458	315,498	317,233	311,676
Below Normal (13%)	270,444	286,371	326,567	314,953	310,253	331,533	332,329	321,114	328,121	323,284	312,272
Dry (24%)	273,990	300,321	330,631	316,127	314,960	331,492	329,935	332,518	331,233	325,539	314,892
Critical (15%)	280,799	299,959	329,688	325,958	321,745	332,123	333,597	331,969	333,247	313,644	316,790

Alternative 1

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,861	310,030	333,916	332,462	333,251	343,398	343,713	407,678	337,747	333,424	322,687
20%	275,528	303,298	333,677	332,262	332,422	333,942	334,139	345,715	334,450	332,945	319,420
30%	271,975	298,945	333,445	326,577	332,262	333,598	333,805	334,195	334,169	331,224	318,162
40%	270,836	291,693	327,495	321,166	332,033	332,602	333,617	333,764	333,829	324,649	315,156
50%	269,910	286,071	324,919	318,776	324,963	332,433	332,740	333,331	333,016	320,063	312,731
60%	269,393	281,520	321,632	316,937	320,479	332,284	332,316	333,015	332,315	318,349	309,902
70%	269,168	278,857	320,301	310,233	317,892	332,146	330,865	332,257	330,122	316,027	307,003
80%	268,792	275,515	319,024	307,164	313,820	319,033	311,693	329,961	316,821	311,002	297,967
90%	268,269	273,309	299,287	300,948	309,156	307,873	286,720	306,586	275,987	288,344	286,561
Long Term											
Full Simulation Period[b]	273,191	289,077	321,770	317,799	323,011	330,202	329,440	339,047	326,400	318,751	308,886
Water Year Types[c]											
Wet (32%)	272,674	281,693	311,734	316,396	323,673	326,669	336,654	350,402	327,521	317,836	304,182
Above Normal (16%)	269,483	280,972	320,951	319,012	318,055	332,067	316,180	346,866	312,237	316,414	309,380
Below Normal (13%)	269,903	280,714	324,984	315,941	320,277	331,020	324,511	320,633	322,170	320,081	306,012
Dry (24%)	272,778	301,767	330,140	314,509	325,926	332,000	329,325	332,534	331,944	323,790	311,766
Critical (15%)	282,030	300,373	327,505	326,712	324,592	332,086	332,887	333,706	333,948	313,645	316,378

Alternative 1 minus No Action Alternative

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	452	-518	50	137	104	9,054	78	1,677	515	92	-4,591
20%	-25	-818	65	2,370	41	45	65	-6	-87	-1	-720
30%	-1,373	-2,545	241	2,250	571	-32	-18	22	5	-241	-695
40%	-222	-4,407	1,787	2,013	6,362	-410	107	-71	47	-2,608	-2,657
50%	-346	-4,480	6,020	919	7,673	-101	-99	-217	-37	-1,852	-1,717
60%	-212	-5,196	19,379	2,868	8,712	-78	22	-81	38	-1,104	-1,049
70%	-129	-3,253	37,677	-374	16,030	13	-71	-72	-674	-1,552	-1,309
80%	123	-5,007	43,763	-741	29,980	-30	-18,691	-362	-1	-1,688	-4,074
90%	298	-2,723	28,437	1,892	32,652	13,759	-9,272	-6,462	-1,032	-1,850	-6,061
Long Term											
Full Simulation Period[b]	-138	-3,099	14,000	1,329	10,537	1,586	-1,679	-518	-672	-1,588	-2,450
Water Year Types[c]											
Wet (32%)	313	-6,616	34,991	3,995	14,379	2,971	504	-1,449	1,159	-1,899	-1,334
Above Normal (16%)	-313	-4,138	22,434	1,350	9,725	3,749	-3,388	-1,593	-3,261	-818	-2,296
Below Normal (13%)	-540	-5,657	-1,582	988	10,025	-513	-7,818	-480	-5,951	-3,203	-6,261
Dry (24%)	-1,211	1,446	-491	-1,618	10,967	508	-610	16	711	-1,748	-3,126
Critical (15%)	1,231	414	-2,183	754	2,847	-36	-710	1,737	701	1	-412

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-19-2. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,409	310,548	333,866	332,325	333,147	334,345	343,635	406,001	337,232	333,331	327,278
20%	275,553	304,116	333,613	329,892	332,381	333,897	334,074	345,721	334,537	332,947	320,140
30%	273,347	301,490	333,204	324,327	331,691	333,630	333,823	334,173	334,164	331,465	318,857
40%	271,058	296,100	325,708	319,153	325,671	333,011	333,510	333,834	333,782	327,257	317,814
50%	270,255	290,552	318,898	317,858	317,290	332,534	332,839	333,548	333,053	321,915	314,448
60%	269,605	286,716	302,253	314,069	311,767	332,361	332,294	333,096	332,276	319,453	310,951
70%	269,298	282,110	282,624	310,607	301,862	332,133	330,936	332,329	330,796	317,580	308,312
80%	268,669	280,522	275,260	307,905	283,840	319,063	330,384	330,323	316,822	312,690	302,041
90%	267,972	276,033	270,850	299,056	276,503	294,114	295,991	313,048	277,019	290,194	292,622
Long Term											
Full Simulation Period[b]	273,329	292,177	307,770	316,470	312,474	328,615	331,119	339,565	327,071	320,338	311,336
Water Year Types[c]											
Wet (32%)	272,361	288,310	276,743	312,401	309,295	323,698	336,149	351,851	326,362	319,734	305,516
Above Normal (16%)	269,796	285,110	298,518	317,662	308,331	328,318	319,568	348,458	315,498	317,233	311,676
Below Normal (13%)	270,444	286,371	326,567	314,953	310,253	331,533	332,329	321,114	328,121	323,284	312,272
Dry (24%)	273,990	300,321	330,631	316,127	314,960	331,492	329,935	332,518	331,233	325,539	314,892
Critical (15%)	280,799	299,959	329,688	325,958	321,745	332,123	333,597	331,969	333,247	313,644	316,790

Alternative 3

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,548	306,963	333,805	332,323	333,602	342,915	345,788	408,067	337,808	333,426	322,181
20%	275,511	303,288	333,638	331,230	332,429	333,955	334,158	345,716	334,451	332,869	319,374
30%	273,778	295,705	333,364	326,457	332,317	333,634	333,865	334,108	334,183	331,604	318,125
40%	270,719	291,787	328,825	321,318	332,039	332,602	333,617	333,807	333,766	326,289	315,598
50%	269,805	289,384	322,723	318,089	328,566	332,381	332,947	333,536	332,924	320,368	312,735
60%	269,405	282,507	320,687	315,120	322,132	332,255	332,368	333,082	332,035	318,759	310,043
70%	269,239	279,447	318,959	310,972	318,054	332,037	331,005	332,140	329,953	316,628	304,355
80%	268,649	277,139	310,908	306,464	316,630	318,232	313,664	329,969	316,335	311,042	297,645
90%	267,841	275,321	302,839	300,568	310,263	309,357	287,114	308,295	275,987	288,602	286,112
Long Term											
Full Simulation Period[b]	273,315	289,425	320,558	317,225	323,890	329,958	330,105	339,427	326,624	319,463	308,895
Water Year Types[c]											
Wet (32%)	272,651	284,467	310,731	316,511	324,124	326,847	337,561	350,404	327,524	318,259	304,066
Above Normal (16%)	269,576	283,384	321,533	317,898	318,247	331,592	316,716	349,512	314,660	317,016	309,106
Below Normal (13%)	270,117	282,030	316,413	316,212	321,720	330,987	324,678	320,744	322,213	320,989	306,539
Dry (24%)	272,529	298,461	330,348	312,928	325,860	331,104	329,962	333,292	331,672	325,077	311,754
Critical (15%)	283,046	298,427	328,275	326,133	328,202	332,073	333,669	332,070	333,264	313,965	316,526

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	139	-3,585	-61	-2	455	8,570	2,152	2,066	576	95	-5,097
20%	-42	-829	25	1,337	48	57	84	-5	-87	-78	-766
30%	431	-5,785	160	2,131	626	4	42	-65	19	139	-731
40%	-338	-4,312	3,117	2,165	6,367	-409	107	-27	-17	-968	-2,216
50%	-450	-1,168	3,825	231	11,276	-154	108	-12	-129	-1,547	-1,713
60%	-200	-4,208	18,434	1,051	10,365	-106	74	-14	-242	-694	-909
70%	-58	-2,662	36,335	365	16,192	-96	69	-189	-843	-952	-3,956
80%	-20	-3,383	35,648	-1,440	32,790	-831	-16,721	-354	-487	-1,648	-4,397
90%	-130	-712	31,989	1,511	33,759	15,242	-8,878	-4,753	-1,032	-1,592	-6,510
Long Term											
Full Simulation Period[b]	-14	-2,752	12,788	754	11,416	1,342	-1,014	-138	-448	-875	-2,440
Water Year Types[c]											
Wet (32%)	290	-3,843	33,988	4,109	14,829	3,149	1,411	-1,447	1,162	-1,475	-1,450
Above Normal (16%)	-220	-1,726	23,015	236	9,917	3,274	-2,852	1,053	-839	-216	-2,570
Below Normal (13%)	-327	-4,340	-10,154	1,258	11,467	-546	-7,651	-369	-5,909	-2,296	-5,734
Dry (24%)	-1,460	-1,860	-283	-3,200	10,901	-388	27	774	439	-462	-3,138
Critical (15%)	2,248	-1,532	-1,413	175	6,457	-50	72	100	18	321	-264

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-19-3. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,409	310,548	333,866	332,325	333,147	334,345	343,635	406,001	337,232	333,331	327,278
20%	275,553	304,116	333,613	329,892	332,381	333,897	334,074	345,721	334,537	332,947	320,140
30%	273,347	301,490	333,204	324,327	331,691	333,630	333,823	334,173	334,164	331,465	318,857
40%	271,058	296,100	325,708	319,153	325,671	333,011	333,510	333,834	333,782	327,257	317,814
50%	270,255	290,552	318,898	317,858	317,290	332,534	332,839	333,548	333,053	321,915	314,448
60%	269,605	286,716	302,253	314,069	311,767	332,361	332,294	333,096	332,276	319,453	310,951
70%	269,298	282,110	282,624	310,607	301,862	332,133	330,936	332,329	330,796	317,580	308,312
80%	268,669	280,522	275,260	307,905	283,840	319,063	330,384	330,323	316,822	312,690	302,041
90%	267,972	276,033	270,850	299,056	276,503	294,114	295,991	313,048	277,019	290,194	292,622
Long Term											
Full Simulation Period[b]	273,329	292,177	307,770	316,470	312,474	328,615	331,119	339,565	327,071	320,338	311,336
Water Year Types[c]											
Wet (32%)	272,361	288,310	276,743	312,401	309,295	323,698	336,149	351,851	326,362	319,734	305,516
Above Normal (16%)	269,796	285,110	298,518	317,662	308,331	328,318	319,568	348,458	315,498	317,233	311,676
Below Normal (13%)	270,444	286,371	326,567	314,953	310,253	331,533	332,329	321,114	328,121	323,284	312,272
Dry (24%)	273,990	300,321	330,631	316,127	314,960	331,492	329,935	332,518	331,233	325,539	314,892
Critical (15%)	280,799	299,959	329,688	325,958	321,745	332,123	333,597	331,969	333,247	313,644	316,790

Alternative 5

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,614	309,760	333,644	332,324	333,248	334,335	343,636	404,698	337,234	333,331	327,047
20%	275,546	305,085	333,530	326,377	332,395	333,889	334,131	345,858	334,536	332,947	320,076
30%	271,881	297,690	331,233	323,695	332,056	333,638	333,818	334,165	334,160	331,462	319,158
40%	270,896	294,640	324,022	318,911	325,408	333,025	333,529	333,827	333,780	327,527	318,043
50%	269,993	289,826	319,077	317,828	317,393	332,534	332,767	333,550	332,901	322,687	314,900
60%	269,522	285,237	303,604	314,451	311,105	332,386	332,296	333,105	332,292	319,462	311,269
70%	269,127	281,290	283,038	311,554	302,699	332,164	330,813	332,326	330,800	317,595	309,406
80%	268,430	279,532	275,283	308,452	284,296	319,923	324,619	330,321	316,824	312,705	305,843
90%	267,935	275,908	270,849	299,072	276,548	293,411	295,987	313,022	277,018	294,681	296,195
Long Term											
Full Simulation Period[b]	273,023	291,158	307,533	316,163	312,649	328,449	331,075	339,618	327,024	320,862	312,618
Water Year Types[c]											
Wet (32%)	272,131	288,249	276,894	312,809	308,867	323,073	335,856	351,959	326,489	319,729	305,490
Above Normal (16%)	270,004	285,571	299,452	316,353	308,887	327,918	319,903	348,226	315,369	317,233	312,228
Below Normal (13%)	270,444	287,598	325,805	314,908	310,401	331,677	332,253	321,556	328,058	322,983	312,751
Dry (24%)	273,852	297,208	330,152	316,163	315,514	331,644	329,932	332,499	330,991	326,277	318,479
Critical (15%)	279,206	296,694	328,224	324,373	322,201	332,386	333,646	331,977	333,254	316,278	318,592

Alternative 5 minus No Action Alternative

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	204	-788	-222	-1	101	-10	0	-1,303	2	0	-231
20%	-7	969	-83	-3,515	14	-8	57	137	-1	1	-64
30%	-1,466	-3,799	-1,971	-632	365	8	-5	-8	-3	-3	301
40%	-162	-1,459	-1,686	-242	-264	13	19	-8	-2	270	230
50%	-263	-725	179	-30	103	0	-72	2	-152	772	452
60%	-83	-1,479	1,351	382	-662	25	2	8	16	10	318
70%	-171	-819	413	948	837	31	-123	-3	4	15	1,094
80%	-239	-989	23	547	456	860	-5,766	-2	2	15	3,802
90%	-37	-125	0	16	45	-703	-4	-26	0	4,486	3,573
Long Term											
Full Simulation Period[b]	-307	-1,019	-237	-308	175	-167	-44	53	-47	524	1,282
Water Year Types[c]											
Wet (32%)	-230	-60	151	407	-428	-625	-294	108	127	-5	-26
Above Normal (16%)	208	461	934	-1,309	556	-400	335	-232	-130	0	552
Below Normal (13%)	0	1,227	-762	-45	148	145	-76	443	-64	-301	479
Dry (24%)	-138	-3,113	-479	36	555	152	-3	-19	-242	738	3,587
Critical (15%)	-1,593	-3,265	-1,464	-1,585	457	263	49	8	7	2,635	1,802

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-19-4. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,861	310,030	333,916	332,462	333,251	343,398	343,713	407,678	337,747	333,424	322,687
20%	275,528	303,298	333,677	332,262	332,422	333,942	334,139	345,715	334,450	332,945	319,420
30%	271,975	298,945	333,445	326,577	332,262	333,598	333,805	334,195	334,169	331,224	318,162
40%	270,836	291,693	327,495	321,166	332,033	332,602	333,617	333,764	333,829	324,649	315,156
50%	269,910	286,071	324,919	318,776	324,963	332,433	332,740	333,331	333,016	320,063	312,731
60%	269,393	281,520	321,632	316,937	320,479	332,284	332,316	333,015	332,315	318,349	309,902
70%	269,168	278,857	320,301	310,233	317,892	332,146	330,865	332,257	330,122	316,027	307,003
80%	268,792	275,515	319,024	307,164	313,820	319,033	311,693	329,961	316,821	311,002	297,967
90%	268,269	273,309	299,287	300,948	309,156	307,873	286,720	306,586	275,987	288,344	286,561
Long Term											
Full Simulation Period[b]	273,191	289,077	321,770	317,799	323,011	330,202	329,440	339,047	326,400	318,751	308,886
Water Year Types[c]											
Wet (32%)	272,674	281,693	311,734	316,396	323,673	326,669	336,654	350,402	327,521	317,836	304,182
Above Normal (16%)	269,483	280,972	320,951	319,012	318,055	332,067	316,180	346,866	312,237	316,414	309,380
Below Normal (13%)	269,903	280,714	324,984	315,941	320,277	331,020	324,511	320,633	322,170	320,081	306,012
Dry (24%)	272,778	301,767	330,140	314,509	325,926	332,000	329,325	332,534	331,944	323,790	311,766
Critical (15%)	282,030	300,373	327,505	326,712	324,592	332,086	332,887	333,706	333,948	313,645	316,378

No Action Alternative

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,409	310,548	333,866	332,325	333,147	334,345	343,635	406,001	337,232	333,331	327,278
20%	275,553	304,116	333,613	329,892	332,381	333,897	334,074	345,721	334,537	332,947	320,140
30%	273,347	301,490	333,204	324,327	331,691	333,630	333,823	334,173	334,164	331,465	318,857
40%	271,058	296,100	325,708	319,153	325,671	333,011	333,510	333,834	333,782	327,257	317,814
50%	270,255	290,552	318,898	317,858	317,290	332,534	332,839	333,548	333,053	321,915	314,448
60%	269,605	286,716	302,253	314,069	311,767	332,361	332,294	333,096	332,276	319,453	310,951
70%	269,298	282,110	282,624	310,607	301,862	332,133	330,936	332,329	330,796	317,580	308,312
80%	268,669	280,522	275,260	307,905	283,840	319,063	330,384	330,323	316,822	312,690	302,041
90%	267,972	276,033	270,850	299,056	276,503	294,114	295,991	313,048	277,019	290,194	292,622
Long Term											
Full Simulation Period[b]	273,329	292,177	307,770	316,470	312,474	328,615	331,119	339,565	327,071	320,338	311,336
Water Year Types[c]											
Wet (32%)	272,361	288,310	276,743	312,401	309,295	323,698	336,149	351,851	326,362	319,734	305,516
Above Normal (16%)	269,796	285,110	298,518	317,662	308,331	328,318	319,568	348,458	315,498	317,233	311,676
Below Normal (13%)	270,444	286,371	326,567	314,953	310,253	331,533	332,329	321,114	328,121	323,284	312,272
Dry (24%)	273,990	300,321	330,631	316,127	314,960	331,492	329,935	332,518	331,233	325,539	314,892
Critical (15%)	280,799	299,959	329,688	325,958	321,745	332,123	333,597	331,969	333,247	313,644	316,790

No Action Alternative minus Second Basis of Comparison

	Monthly WUA (Feet2)										
Statistic	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	-452	518	-50	-137	-104	-9,054	-78	-1,677	-515	-92	4,591
20%	25	818	-65	-2,370	-41	-45	-65	6	87	1	720
30%	1,373	2,545	-241	-2,250	-571	32	18	-22	-5	241	695
40%	222	4,407	-1,787	-2,013	-6,362	410	-107	71	-47	2,608	2,657
50%	346	4,480	-6,020	-919	-7,673	101	99	217	37	1,852	1,717
60%	212	5,196	-19,379	-2,868	-8,712	78	-22	81	-38	1,104	1,049
70%	129	3,253	-37,677	374	-16,030	-13	71	72	674	1,552	1,309
80%	-123	5,007	-43,763	741	-29,980	30	18,691	362	1	1,688	4,074
90%	-298	2,723	-28,437	-1,892	-32,652	-13,759	9,272	6,462	1,032	1,850	6,061
Long Term											
Full Simulation Period[b]	138	3,099	-14,000	-1,329	-10,537	-1,586	1,679	518	672	1,588	2,450
Water Year Types[c]											
Wet (32%)	-313	6,616	-34,991	-3,995	-14,379	-2,971	-504	1,449	-1,159	1,899	1,334
Above Normal (16%)	313	4,138	-22,434	-1,350	-9,725	-3,749	3,388	1,593	3,261	818	2,296
Below Normal (13%)	540	5,657	1,582	-988	-10,025	513	7,818	480	5,951	3,203	6,261
Dry (24%)	1,211	-1,446	491	1,618	-10,967	-508	610	-16	-711	1,748	3,126
Critical (15%)	-1,231	-414	2,183	-754	-2,847	36	710	-1,737	-701	-1	412

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-19-5. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,861	310,030	333,916	332,462	333,251	343,398	343,713	407,678	337,747	333,424	322,687
20%	275,528	303,298	333,677	332,262	332,422	333,942	334,139	345,715	334,450	332,945	319,420
30%	271,975	298,945	333,445	326,577	332,262	333,598	333,805	334,195	334,169	331,224	318,162
40%	270,836	291,693	327,495	321,166	332,033	332,602	333,617	333,764	333,829	324,649	315,156
50%	269,910	286,071	324,919	318,776	324,963	332,433	332,740	333,331	333,016	320,063	312,731
60%	269,393	281,520	321,632	316,937	320,479	332,284	332,316	333,015	332,315	318,349	309,902
70%	269,168	278,857	320,301	310,233	317,892	332,146	330,865	332,257	330,122	316,027	307,003
80%	268,792	275,515	319,024	307,164	313,820	319,033	311,693	329,961	316,821	311,002	297,967
90%	268,269	273,309	299,287	300,948	309,156	307,873	286,720	306,586	275,987	288,344	286,561
Long Term											
Full Simulation Period[b]	273,191	289,077	321,770	317,799	323,011	330,202	329,440	339,047	326,400	318,751	308,886
Water Year Types[c]											
Wet (32%)	272,674	281,693	311,734	316,396	323,673	326,669	336,654	350,402	327,521	317,836	304,182
Above Normal (16%)	269,483	280,972	320,951	319,012	318,055	332,067	316,180	346,866	312,237	316,414	309,380
Below Normal (13%)	269,903	280,714	324,984	315,941	320,277	331,020	324,511	320,633	322,170	320,081	306,012
Dry (24%)	272,778	301,767	330,140	314,509	325,926	332,000	329,325	332,534	331,944	323,790	311,766
Critical (15%)	282,030	300,373	327,505	326,712	324,592	332,086	332,887	333,706	333,948	313,645	316,378

Alternative 3

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,548	306,963	333,805	332,323	333,602	342,915	345,788	408,067	337,808	333,426	322,181
20%	275,511	303,288	333,638	331,230	332,429	333,955	334,158	345,716	334,451	332,869	319,374
30%	273,778	295,705	333,364	326,457	332,317	333,634	333,865	334,108	334,183	331,604	318,125
40%	270,719	291,787	328,825	321,318	332,039	332,602	333,617	333,807	333,766	326,289	315,598
50%	269,805	289,384	322,723	318,089	328,566	332,381	332,947	333,536	332,924	320,368	312,735
60%	269,405	282,507	320,687	315,120	322,132	332,255	332,368	333,082	332,035	318,759	310,043
70%	269,239	279,447	318,959	310,972	318,054	332,037	331,005	332,140	329,953	316,628	304,355
80%	268,649	277,139	310,908	306,464	316,630	318,232	313,664	329,969	316,335	311,042	297,645
90%	267,841	275,321	302,839	300,568	310,263	309,357	287,114	308,295	275,987	288,602	286,112
Long Term											
Full Simulation Period[b]	273,315	289,425	320,558	317,225	323,890	329,958	330,105	339,427	326,624	319,463	308,895
Water Year Types[c]											
Wet (32%)	272,651	284,467	310,731	316,511	324,124	326,847	337,561	350,404	327,524	318,259	304,066
Above Normal (16%)	269,576	283,384	321,533	317,898	318,247	331,592	316,716	349,512	314,660	317,016	309,106
Below Normal (13%)	270,117	282,030	316,413	316,212	321,720	330,987	324,678	320,744	322,213	320,989	306,539
Dry (24%)	272,529	298,461	330,348	312,928	325,860	331,104	329,962	333,292	331,672	325,077	311,754
Critical (15%)	283,046	298,427	328,275	326,133	328,202	332,073	333,669	332,070	333,264	313,965	316,526

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	-313	-3,067	-111	-139	352	-483	2,074	389	61	2	-507
20%	-17	-11	-40	-1,033	8	13	19	1	0	-77	-46
30%	1,804	-3,240	-81	-120	56	36	60	-87	14	380	-37
40%	-117	94	1,330	152	5	0	0	43	-63	1,640	441
50%	-104	3,312	-2,196	-687	3,603	-53	208	205	-92	304	5
60%	12	988	-945	-1,818	1,653	-28	52	67	-280	410	141
70%	71	591	-1,341	739	162	-109	140	-117	-168	600	-2,648
80%	-143	1,624	-8,116	-699	2,810	-801	1,971	8	-486	40	-323
90%	-428	2,011	3,552	-380	1,107	1,484	394	1,709	0	258	-449
Long Term											
Full Simulation Period[b]	124	347	-1,212	-575	879	-244	665	380	224	712	9
Water Year Types[c]											
Wet (32%)	-23	2,773	-1,003	114	450	178	907	2	3	424	-116
Above Normal (16%)	93	2,412	582	-1,114	192	-475	535	2,646	2,423	602	-274
Below Normal (13%)	213	1,317	-8,572	271	1,442	-33	168	111	42	908	527
Dry (24%)	-249	-3,306	208	-1,582	-66	-896	637	758	-273	1,287	-12
Critical (15%)	1,016	-1,946	770	-579	3,610	-13	782	-1,637	-684	320	149

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-19-6. Sacramento River Keswick to Battle Creek Winter-run Juvenile Rearing WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,861	310,030	333,916	332,462	333,251	343,398	343,713	407,678	337,747	333,424	322,687
20%	275,528	303,298	333,677	332,262	332,422	333,942	334,139	345,715	334,450	332,945	319,420
30%	271,975	298,945	333,445	326,577	332,262	333,598	333,805	334,195	334,169	331,224	318,162
40%	270,836	291,693	327,495	321,166	332,033	332,602	333,617	333,764	333,829	324,649	315,156
50%	269,910	286,071	324,919	318,776	324,963	332,433	332,740	333,331	333,016	320,063	312,731
60%	269,393	281,520	321,632	316,937	320,479	332,284	332,316	333,015	332,315	318,349	309,902
70%	269,168	278,857	320,301	310,233	317,892	332,146	330,865	332,257	330,122	316,027	307,003
80%	268,792	275,515	319,024	307,164	313,820	319,033	311,693	329,961	316,821	311,002	297,967
90%	268,269	273,309	299,287	300,948	309,156	307,873	286,720	306,586	275,987	288,344	286,561
Long Term											
Full Simulation Period[b]	273,191	289,077	321,770	317,799	323,011	330,202	329,440	339,047	326,400	318,751	308,886
Water Year Types[c]											
Wet (32%)	272,674	281,693	311,734	316,396	323,673	326,669	336,654	350,402	327,521	317,836	304,182
Above Normal (16%)	269,483	280,972	320,951	319,012	318,055	332,067	316,180	346,866	312,237	316,414	309,380
Below Normal (13%)	269,903	280,714	324,984	315,941	320,277	331,020	324,511	320,633	322,170	320,081	306,012
Dry (24%)	272,778	301,767	330,140	314,509	325,926	332,000	329,325	332,534	331,944	323,790	311,766
Critical (15%)	282,030	300,373	327,505	326,712	324,592	332,086	332,887	333,706	333,948	313,645	316,378

Alternative 5

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	281,614	309,760	333,644	332,324	333,248	334,335	343,636	404,698	337,234	333,331	327,047
20%	275,546	305,085	333,530	326,377	332,395	333,889	334,131	345,858	334,536	332,947	320,076
30%	271,881	297,690	331,233	323,695	332,056	333,638	333,818	334,165	334,160	331,462	319,158
40%	270,896	294,640	324,022	318,911	325,408	333,025	333,529	333,827	333,780	327,527	318,043
50%	269,993	289,826	319,077	317,828	317,393	332,534	332,767	333,550	332,901	322,687	314,900
60%	269,522	285,237	303,604	314,451	311,105	332,386	332,296	333,105	332,292	319,462	311,269
70%	269,127	281,290	283,038	311,554	302,699	332,164	330,813	332,326	330,800	317,595	309,406
80%	268,430	279,532	275,283	308,452	284,296	319,923	324,619	330,321	316,824	312,705	305,843
90%	267,935	275,908	270,849	299,072	276,548	293,411	295,987	313,022	277,018	294,681	296,195
Long Term											
Full Simulation Period[b]	273,023	291,158	307,533	316,163	312,649	328,449	331,075	339,618	327,024	320,862	312,618
Water Year Types[c]											
Wet (32%)	272,131	288,249	276,894	312,809	308,867	323,073	335,856	351,959	326,489	319,729	305,490
Above Normal (16%)	270,004	285,571	299,452	316,353	308,887	327,918	319,903	348,226	315,369	317,233	312,228
Below Normal (13%)	270,444	287,598	325,805	314,908	310,401	331,677	332,253	321,556	328,058	322,983	312,751
Dry (24%)	273,852	297,208	330,152	316,163	315,514	331,644	329,932	332,499	330,991	326,277	318,479
Critical (15%)	279,206	296,694	328,224	324,373	322,201	332,386	333,646	331,977	333,254	316,278	318,592

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)										
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Probability of Exceedance[a]											
10%	-248	-270	-272	-138	-3	-9,063	-78	-2,979	-513	-93	4,360
20%	18	1,787	-148	-5,885	-27	-53	-8	144	86	2	656
30%	-93	-1,255	-2,212	-2,882	-206	40	13	-31	-8	238	996
40%	60	2,948	-3,473	-2,255	-6,625	423	-88	63	-49	2,878	2,887
50%	83	3,755	-5,842	-949	-7,569	101	28	219	-115	2,624	2,169
60%	129	3,717	-18,028	-2,486	-9,374	102	-20	89	-22	1,114	1,367
70%	-42	2,433	-37,263	1,322	-15,193	18	-53	69	678	1,567	2,403
80%	-362	4,018	-43,741	1,288	-29,524	890	12,925	360	3	1,703	7,876
90%	-334	2,598	-28,438	-1,876	-32,608	-14,462	9,268	6,436	1,031	6,336	9,633
Long Term											
Full Simulation Period[b]	-168	2,081	-14,237	-1,637	-10,362	-1,753	1,635	572	625	2,111	3,732
Water Year Types[c]											
Wet (32%)	-543	6,556	-34,840	-3,588	-14,806	-3,596	-798	1,557	-1,032	1,894	1,308
Above Normal (16%)	521	4,599	-21,499	-2,659	-9,169	-4,149	3,723	1,360	3,132	819	2,849
Below Normal (13%)	541	6,884	820	-1,033	-9,877	657	7,742	923	5,887	2,902	6,739
Dry (24%)	1,073	-4,559	12	1,654	-10,412	-356	608	-35	-953	2,486	6,713
Critical (15%)	-2,824	-3,679	719	-2,339	-2,390	299	759	-1,729	-694	2,633	2,215

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.20. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA

Table C-20-1. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	284,003	283,850	283,906	283,720	288,661
20%	283,181	282,795	282,695	282,397	287,127
30%	282,459	282,332	279,490	281,396	284,250
40%	282,376	278,850	278,481	277,972	283,373
50%	282,141	278,118	277,975	277,095	282,287
60%	278,213	277,481	277,014	275,560	280,816
70%	277,640	267,834	211,869	264,478	277,970
80%	244,866	184,430	55,367	185,310	265,132
90%	107,093	64,327	32,581	79,382	229,156
Long Term					
Full Simulation Period[b]	247,895	233,554	212,942	237,022	265,821
Water Year Types[c]					
Wet (32%)	192,399	159,564	152,615	171,965	241,241
Above Normal (16%)	247,134	234,295	145,325	237,752	271,943
Below Normal (13%)	283,008	281,449	242,651	273,115	282,683
Dry (24%)	281,745	275,791	279,846	277,609	279,748
Critical (15%)	280,361	278,767	278,161	276,459	273,780

Alternative 1

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	283,825	283,692	283,688	283,752	288,534
20%	283,110	282,670	282,430	282,403	287,353
30%	282,562	282,084	280,077	281,381	285,527
40%	282,388	278,318	278,535	277,864	282,953
50%	282,032	277,926	277,845	277,120	281,603
60%	278,253	277,179	276,604	275,295	280,577
70%	277,460	251,254	166,379	260,748	277,249
80%	198,591	121,599	55,376	172,463	261,272
90%	66,294	63,045	32,413	76,741	229,829
Long Term					
Full Simulation Period[b]	240,825	226,093	210,150	234,149	265,878
Water Year Types[c]					
Wet (32%)	168,495	147,240	149,720	171,420	242,092
Above Normal (16%)	250,290	218,468	138,235	225,962	271,985
Below Normal (13%)	283,338	272,964	236,455	263,040	279,616
Dry (24%)	281,639	276,021	279,970	279,003	280,203
Critical (15%)	280,295	279,024	278,508	277,688	274,335

Alternative 1 minus No Action Alternative

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	-178	-158	-219	32	-127
20%	-72	-125	-265	6	226
30%	103	-248	587	-15	1,277
40%	12	-532	54	-108	-419
50%	-109	-192	-130	25	-684
60%	40	-302	-410	-265	-239
70%	-180	-16,580	-45,490	-3,730	-721
80%	-46,276	-62,830	9	-12,847	-3,861
90%	-40,799	-1,282	-169	-2,641	672
Long Term					
Full Simulation Period[b]	-7,070	-7,461	-2,792	-2,874	57
Water Year Types[c]					
Wet (32%)	-23,903	-12,323	-2,895	-545	851
Above Normal (16%)	3,156	-15,827	-7,090	-11,790	42
Below Normal (13%)	330	-8,485	-6,195	-10,075	-3,067
Dry (24%)	-106	230	124	1,394	455
Critical (15%)	-66	257	347	1,230	555

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-20-2. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	284,003	283,850	283,906	283,720	288,661
20%	283,181	282,795	282,695	282,397	287,127
30%	282,459	282,332	279,490	281,396	284,250
40%	282,376	278,850	278,481	277,972	283,373
50%	282,141	278,118	277,975	277,095	282,287
60%	278,213	277,481	277,014	275,560	280,816
70%	277,640	267,834	211,869	264,478	277,970
80%	244,866	184,430	55,367	185,310	265,132
90%	107,093	64,327	32,581	79,382	229,156
Long Term					
Full Simulation Period[b]	247,895	233,554	212,942	237,022	265,821
Water Year Types[c]					
Wet (32%)	192,399	159,564	152,615	171,965	241,241
Above Normal (16%)	247,134	234,295	145,325	237,752	271,943
Below Normal (13%)	283,008	281,449	242,651	273,115	282,683
Dry (24%)	281,745	275,791	279,846	277,609	279,748
Critical (15%)	280,361	278,767	278,161	276,459	273,780

Alternative 3

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	284,086	283,694	283,700	283,704	288,883
20%	283,245	282,654	282,435	282,378	287,252
30%	282,724	282,080	279,196	280,380	284,215
40%	282,459	278,345	278,348	277,833	283,083
50%	282,147	277,802	277,801	276,976	282,043
60%	278,265	277,210	276,618	275,187	280,823
70%	277,537	251,649	175,771	260,051	277,242
80%	197,415	122,335	55,377	172,624	261,399
90%	65,797	55,625	32,308	76,698	229,934
Long Term					
Full Simulation Period[b]	240,753	226,253	211,064	233,536	265,789
Water Year Types[c]					
Wet (32%)	168,150	146,128	149,722	171,421	241,868
Above Normal (16%)	249,835	222,219	143,070	223,943	271,783
Below Normal (13%)	283,380	273,509	238,589	262,750	279,640
Dry (24%)	282,007	275,752	279,462	278,712	280,243
Critical (15%)	280,392	278,414	278,402	276,442	274,339

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	84	-157	-206	-16	221
20%	64	-141	-260	-19	125
30%	265	-252	-294	-1,016	-35
40%	83	-505	-133	-139	-289
50%	6	-316	-174	-119	-243
60%	52	-272	-397	-374	7
70%	-103	-16,185	-36,098	-4,428	-729
80%	-47,452	-62,095	10	-12,686	-3,734
90%	-41,296	-8,702	-273	-2,685	778
Long Term					
Full Simulation Period[b]	-7,142	-7,301	-1,878	-3,486	-32
Water Year Types[c]					
Wet (32%)	-24,249	-13,436	-2,893	-544	627
Above Normal (16%)	2,701	-12,076	-2,255	-13,809	-160
Below Normal (13%)	372	-7,940	-4,062	-10,365	-3,043
Dry (24%)	262	-39	-384	1,103	495
Critical (15%)	31	-354	240	-17	560

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-20-3. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	284,003	283,850	283,906	283,720	288,661
20%	283,181	282,795	282,695	282,397	287,127
30%	282,459	282,332	279,490	281,396	284,250
40%	282,376	278,850	278,481	277,972	283,373
50%	282,141	278,118	277,975	277,095	282,287
60%	278,213	277,481	277,014	275,560	280,816
70%	277,640	267,834	211,869	264,478	277,970
80%	244,866	184,430	55,367	185,310	265,132
90%	107,093	64,327	32,581	79,382	229,156
Long Term					
Full Simulation Period[b]	247,895	233,554	212,942	237,022	265,821
Water Year Types[c]					
Wet (32%)	192,399	159,564	152,615	171,965	241,241
Above Normal (16%)	247,134	234,295	145,325	237,752	271,943
Below Normal (13%)	283,008	281,449	242,651	273,115	282,683
Dry (24%)	281,745	275,791	279,846	277,609	279,748
Critical (15%)	280,361	278,767	278,161	276,459	273,780

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	283,695	283,872	283,905	283,719	288,857
20%	283,071	282,793	282,644	282,397	287,345
30%	282,458	282,342	279,474	281,412	284,024
40%	282,387	278,745	278,479	277,976	283,374
50%	282,150	278,033	277,977	277,096	282,292
60%	278,212	277,370	277,020	275,566	280,871
70%	277,590	267,152	213,137	264,485	278,054
80%	246,462	185,037	55,368	184,434	266,196
90%	112,101	64,324	32,936	79,380	229,953
Long Term					
Full Simulation Period[b]	247,897	233,696	212,856	236,783	266,445
Water Year Types[c]					
Wet (32%)	192,944	160,365	152,776	171,721	241,242
Above Normal (16%)	246,417	233,814	145,163	237,223	271,959
Below Normal (13%)	282,882	281,513	241,731	273,125	283,015
Dry (24%)	281,699	275,796	279,874	277,282	279,778
Critical (15%)	280,159	278,454	278,199	276,460	277,667

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	-308	22	-1	0	195
20%	-110	-2	-51	0	218
30%	-1	11	-17	17	-226
40%	11	-105	-2	4	1
50%	10	-85	2	1	5
60%	-2	-111	6	6	55
70%	-50	-682	1,268	7	84
80%	1,596	607	1	-876	1,063
90%	5,007	-3	355	-2	797
Long Term					
Full Simulation Period[b]	1	142	-86	-240	623
Water Year Types[c]					
Wet (32%)	545	801	161	-245	1
Above Normal (16%)	-717	-481	-162	-529	16
Below Normal (13%)	-126	64	-920	10	331
Dry (24%)	-46	5	28	-327	30
Critical (15%)	-203	-313	37	1	3,888

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-20-4. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	283,825	283,692	283,688	283,752	288,534
20%	283,110	282,670	282,430	282,403	287,353
30%	282,562	282,084	280,077	281,381	285,527
40%	282,388	278,318	278,535	277,864	282,953
50%	282,032	277,926	277,845	277,120	281,603
60%	278,253	277,179	276,604	275,295	280,577
70%	277,460	251,254	166,379	260,748	277,249
80%	198,591	121,599	55,376	172,463	261,272
90%	66,294	63,045	32,413	76,741	229,829
Long Term					
Full Simulation Period[b]	240,825	226,093	210,150	234,149	265,878
Water Year Types[c]					
Wet (32%)	168,495	147,240	149,720	171,420	242,092
Above Normal (16%)	250,290	218,468	138,235	225,962	271,985
Below Normal (13%)	283,338	272,964	236,455	263,040	279,616
Dry (24%)	281,639	276,021	279,970	279,003	280,203
Critical (15%)	280,295	279,024	278,508	277,688	274,335

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	284,003	283,850	283,906	283,720	288,661
20%	283,181	282,795	282,695	282,397	287,127
30%	282,459	282,332	279,490	281,396	284,250
40%	282,376	278,850	278,481	277,972	283,373
50%	282,141	278,118	277,975	277,095	282,287
60%	278,213	277,481	277,014	275,560	280,816
70%	277,640	267,834	211,869	264,478	277,970
80%	244,866	184,430	55,367	185,310	265,132
90%	107,093	64,327	32,581	79,382	229,156
Long Term					
Full Simulation Period[b]	247,895	233,554	212,942	237,022	265,821
Water Year Types[c]					
Wet (32%)	192,399	159,564	152,615	171,965	241,241
Above Normal (16%)	247,134	234,295	145,325	237,752	271,943
Below Normal (13%)	283,008	281,449	242,651	273,115	282,683
Dry (24%)	281,745	275,791	279,846	277,609	279,748
Critical (15%)	280,361	278,767	278,161	276,459	273,780

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	178	158	219	-32	127
20%	72	125	265	-6	-226
30%	-103	248	-587	15	-1,277
40%	-12	532	-54	108	419
50%	109	192	130	-25	684
60%	-40	302	410	265	239
70%	180	16,580	45,490	3,730	721
80%	46,276	62,830	-9	12,847	3,861
90%	40,799	1,282	169	2,641	-672
Long Term					
Full Simulation Period[b]	7,070	7,461	2,792	2,874	-57
Water Year Types[c]					
Wet (32%)	23,903	12,323	2,895	545	-851
Above Normal (16%)	-3,156	15,827	7,090	11,790	-42
Below Normal (13%)	-330	8,485	6,195	10,075	3,067
Dry (24%)	106	-230	-124	-1,394	-455
Critical (15%)	66	-257	-347	-1,230	-555

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-20-5. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	283,825	283,692	283,688	283,752	288,534
20%	283,110	282,670	282,430	282,403	287,353
30%	282,562	282,084	280,077	281,381	285,527
40%	282,388	278,318	278,535	277,864	282,953
50%	282,032	277,926	277,845	277,120	281,603
60%	278,253	277,179	276,604	275,295	280,577
70%	277,460	251,254	166,379	260,748	277,249
80%	198,591	121,599	55,376	172,463	261,272
90%	66,294	63,045	32,413	76,741	229,829
Long Term					
Full Simulation Period[b]	240,825	226,093	210,150	234,149	265,878
Water Year Types[c]					
Wet (32%)	168,495	147,240	149,720	171,420	242,092
Above Normal (16%)	250,290	218,468	138,235	225,962	271,985
Below Normal (13%)	283,338	272,964	236,455	263,040	279,616
Dry (24%)	281,639	276,021	279,970	279,003	280,203
Critical (15%)	280,295	279,024	278,508	277,688	274,335

Alternative 3

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	284,086	283,694	283,700	283,704	288,883
20%	283,245	282,654	282,435	282,378	287,252
30%	282,724	282,080	279,196	280,380	284,215
40%	282,459	278,345	278,348	277,833	283,083
50%	282,147	277,802	277,801	276,976	282,043
60%	278,265	277,210	276,618	275,187	280,823
70%	277,537	251,649	175,771	260,051	277,242
80%	197,415	122,335	55,377	172,624	261,399
90%	65,797	55,625	32,308	76,698	229,934
Long Term					
Full Simulation Period[b]	240,753	226,253	211,064	233,536	265,789
Water Year Types[c]					
Wet (32%)	168,150	146,128	149,722	171,421	241,868
Above Normal (16%)	249,835	222,219	143,070	223,943	271,783
Below Normal (13%)	283,380	273,509	238,589	262,750	279,640
Dry (24%)	282,007	275,752	279,462	278,712	280,243
Critical (15%)	280,392	278,414	278,402	276,442	274,339

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	262	1	12	-48	349
20%	136	-16	5	-25	-101
30%	162	-4	-881	-1,001	-1,312
40%	71	27	-187	-31	130
50%	115	-124	-44	-144	441
60%	12	31	14	-108	246
70%	78	395	9,392	-697	-7
80%	-1,176	736	2	161	127
90%	-497	-7,420	-104	-43	106
Long Term					
Full Simulation Period[b]	-72	160	914	-612	-89
Water Year Types[c]					
Wet (32%)	-346	-1,113	2	1	-224
Above Normal (16%)	-455	3,751	4,835	-2,019	-202
Below Normal (13%)	42	546	2,133	-290	24
Dry (24%)	368	-269	-508	-291	40
Critical (15%)	97	-611	-106	-1,247	5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-20-6. Sacramento River Keswick to Battle Creek Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	283,825	283,692	283,688	283,752	288,534
20%	283,110	282,670	282,430	282,403	287,353
30%	282,562	282,084	280,077	281,381	285,527
40%	282,388	278,318	278,535	277,864	282,953
50%	282,032	277,926	277,845	277,120	281,603
60%	278,253	277,179	276,604	275,295	280,577
70%	277,460	251,254	166,379	260,748	277,249
80%	198,591	121,599	55,376	172,463	261,272
90%	66,294	63,045	32,413	76,741	229,829
Long Term					
Full Simulation Period[b]	240,825	226,093	210,150	234,149	265,878
Water Year Types[c]					
Wet (32%)	168,495	147,240	149,720	171,420	242,092
Above Normal (16%)	250,290	218,468	138,235	225,962	271,985
Below Normal (13%)	283,338	272,964	236,455	263,040	279,616
Dry (24%)	281,639	276,021	279,970	279,003	280,203
Critical (15%)	280,295	279,024	278,508	277,688	274,335

Alternative 5

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	283,695	283,872	283,905	283,719	288,857
20%	283,071	282,793	282,644	282,397	287,345
30%	282,458	282,342	279,474	281,412	284,024
40%	282,387	278,745	278,479	277,976	283,374
50%	282,150	278,033	277,977	277,096	282,292
60%	278,212	277,370	277,020	275,566	280,871
70%	277,590	267,152	213,137	264,485	278,054
80%	246,462	185,037	55,368	184,434	266,196
90%	112,101	64,324	32,936	79,380	229,953
Long Term					
Full Simulation Period[b]	247,897	233,696	212,856	236,783	266,445
Water Year Types[c]					
Wet (32%)	192,944	160,365	152,776	171,721	241,242
Above Normal (16%)	246,417	233,814	145,163	237,223	271,959
Below Normal (13%)	282,882	281,513	241,731	273,125	283,015
Dry (24%)	281,699	275,796	279,874	277,282	279,778
Critical (15%)	280,159	278,454	278,199	276,460	277,667

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	-130	180	218	-33	323
20%	-39	123	214	-6	-8
30%	-104	259	-603	31	-1,503
40%	-1	427	-56	112	420
50%	119	108	132	-24	689
60%	-42	191	416	271	294
70%	130	15,898	46,758	3,737	805
80%	47,872	63,437	-8	11,971	4,924
90%	45,806	1,279	523	2,639	124
Long Term					
Full Simulation Period[b]	7,071	7,603	2,706	2,634	566
Water Year Types[c]					
Wet (32%)	24,448	13,125	3,056	301	-850
Above Normal (16%)	-3,873	15,346	6,928	11,261	-26
Below Normal (13%)	-456	8,549	5,275	10,085	3,399
Dry (24%)	61	-225	-96	-1,721	-425
Critical (15%)	-136	-570	-309	-1,228	3,333

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.21. Feather River Low Flow Channel Steelhead Spawning WUA

Table C-21-1. Feather River Low Flow Channel Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 1

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-2. Feather River Low Flow Channel Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-3. Feather River Low Flow Channel Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-4. Feather River Low Flow Channel Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

No Action Alternative

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

No Action Alternative minus Second Basis of Comparison

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-5. Feather River Low Flow Channel Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-21-6. Feather River Low Flow Channel Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	989,930	989,930	989,930	989,930	1,031,830
20%	989,930	989,930	989,930	989,930	1,031,830
30%	989,930	989,930	989,930	989,930	1,031,830
40%	989,930	989,930	989,930	989,930	1,031,830
50%	989,930	989,930	989,930	989,930	1,031,830
60%	989,930	989,930	989,930	989,930	1,031,830
70%	989,930	989,930	989,930	989,930	1,031,830
80%	989,930	989,930	989,930	989,930	1,031,830
90%	989,930	989,930	989,930	989,930	1,031,830
Long Term					
Full Simulation Period[b]	989,930	989,930	989,930	989,930	1,031,830
Water Year Types[c]					
Wet (32%)	989,930	989,930	989,930	989,930	1,031,830
Above Normal (16%)	989,930	989,930	989,930	989,930	1,031,830
Below Normal (13%)	989,930	989,930	989,930	989,930	1,031,830
Dry (24%)	989,930	989,930	989,930	989,930	1,031,830
Critical (15%)	989,930	989,930	989,930	989,930	1,031,830

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
Long Term					
Full Simulation Period[b]	0	0	0	0	0
Water Year Types[c]					
Wet (32%)	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0
Dry (24%)	0	0	0	0	0
Critical (15%)	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.22. Feather River below Thermalito Steelhead Spawning WUA

Table C-22-1. Feather River Below Thermalito Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,720,766	12,721,614	12,721,614	12,779,678	12,803,513
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	9,023,130	12,186,561
60%	9,023,130	9,023,130	9,023,130	2,838,055	8,393,389
70%	8,290,557	9,023,130	3,272,385	1,496,381	4,954,680
80%	3,348,126	7,376,589	1,243,430	1,243,430	3,384,015
90%	2,485,131	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,080,119	8,683,292	7,368,326	6,446,685	8,791,643
Water Year Types[c]					
Wet (32%)	7,195,939	5,088,091	2,722,063	1,636,105	4,687,997
Above Normal (16%)	7,457,219	9,151,953	7,423,853	3,543,420	9,577,740
Below Normal (13%)	7,921,910	9,535,341	9,564,818	9,047,043	11,082,428
Dry (24%)	8,704,412	10,677,103	10,202,343	10,867,037	11,180,445
Critical (15%)	9,775,191	11,861,114	10,638,263	10,263,894	10,750,046

Alternative 1

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,693,583	12,721,614	12,721,614	12,779,678	12,682,284
20%	10,812,258	11,745,270	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	5,358,559	11,441,060
60%	9,023,130	9,023,130	6,386,814	2,234,946	8,119,357
70%	6,351,528	9,023,130	1,686,441	1,243,430	4,795,349
80%	3,557,354	4,321,929	1,243,430	1,243,430	3,301,748
90%	2,584,419	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	7,875,580	8,488,265	7,049,394	6,165,565	8,656,926
Water Year Types[c]					
Wet (32%)	6,475,224	4,660,130	2,557,186	1,540,475	4,698,637
Above Normal (16%)	7,237,916	8,821,531	6,536,707	2,312,091	8,936,674
Below Normal (13%)	9,201,788	9,606,823	8,113,263	8,711,821	10,746,662
Dry (24%)	8,682,666	10,677,103	10,207,501	10,769,606	11,471,039
Critical (15%)	9,039,653	11,748,115	11,099,196	10,353,716	10,324,375

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	-27,183	0	0	0	-121,229
20%	-933,012	-781,075	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	-3,664,571	-745,501
60%	0	0	-2,636,316	-603,110	-274,032
70%	-1,939,029	0	-1,585,943	-252,951	-159,331
80%	209,229	-3,054,660	0	0	-82,267
90%	99,288	0	0	0	0
Long Term					
Full Simulation Period[b]	-204,540	-195,027	-318,932	-281,120	-134,717
Water Year Types[c]					
Wet (32%)	-720,715	-427,961	-164,877	-95,630	10,640
Above Normal (16%)	-219,302	-330,423	-887,146	-1,231,329	-641,066
Below Normal (13%)	1,279,878	71,482	-1,451,555	-335,223	-335,766
Dry (24%)	-21,746	0	5,158	-97,431	290,595
Critical (15%)	-735,538	-113,000	460,933	89,822	-425,671

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-2. Feather River Below Thermalito Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	12,720,766	12,721,614	12,721,614	12,779,678	12,803,513
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	9,023,130	12,186,561
60%	9,023,130	9,023,130	9,023,130	2,838,055	8,393,389
70%	8,290,557	9,023,130	3,272,385	1,496,381	4,954,680
80%	3,348,126	7,376,589	1,243,430	1,243,430	3,384,015
90%	2,485,131	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,080,119	8,683,292	7,368,326	6,446,685	8,791,643
Water Year Types[c]					
Wet (32%)	7,195,939	5,088,091	2,722,063	1,636,105	4,687,997
Above Normal (16%)	7,457,219	9,151,953	7,423,853	3,543,420	9,577,740
Below Normal (13%)	7,921,910	9,535,341	9,564,818	9,047,043	11,082,428
Dry (24%)	8,704,412	10,677,103	10,202,343	10,867,037	11,180,445
Critical (15%)	9,775,191	11,861,114	10,638,263	10,263,894	10,750,046

Alternative 3

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	12,719,142	12,721,614	12,721,614	12,779,678	12,748,644
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	5,444,748	11,551,617
60%	9,023,130	9,023,130	7,934,121	2,534,677	8,110,754
70%	8,693,663	9,023,130	1,877,599	1,243,430	4,626,720
80%	4,254,028	8,333,530	1,243,430	1,243,430	3,285,783
90%	2,414,288	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,226,149	8,652,317	7,099,831	6,225,156	8,597,852
Water Year Types[c]					
Wet (32%)	6,429,745	5,049,478	2,786,381	1,540,145	4,696,149
Above Normal (16%)	7,576,597	9,101,209	6,744,972	2,502,286	8,934,733
Below Normal (13%)	9,120,473	9,472,604	8,192,332	8,711,680	10,528,263
Dry (24%)	9,173,842	10,667,791	10,202,404	10,878,178	11,196,576
Critical (15%)	10,422,755	11,861,114	10,657,654	10,374,774	10,585,839

Alternative 3 minus No Action Alternative

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	-1,624	0	0	0	-54,869
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	-3,578,382	-634,944
60%	0	0	-1,089,009	-303,379	-282,635
70%	403,106	0	-1,394,786	-252,951	-327,960
80%	905,902	956,941	0	0	-98,232
90%	-70,843	0	0	0	0
Long Term					
Full Simulation Period[b]	146,030	-30,975	-268,495	-221,528	-193,790
Water Year Types[c]					
Wet (32%)	-766,194	-38,613	64,319	-95,960	8,152
Above Normal (16%)	119,379	-50,744	-678,881	-1,041,134	-643,008
Below Normal (13%)	1,198,564	-62,737	-1,372,486	-335,363	-554,165
Dry (24%)	469,430	-9,312	61	11,141	16,132
Critical (15%)	647,564	0	19,391	110,880	-164,207

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification

(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-3. Feather River Below Thermalito Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,720,766	12,721,614	12,721,614	12,779,678	12,803,513
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	9,023,130	12,186,561
60%	9,023,130	9,023,130	9,023,130	2,838,055	8,393,389
70%	8,290,557	9,023,130	3,272,385	1,496,381	4,954,680
80%	3,348,126	7,376,589	1,243,430	1,243,430	3,384,015
90%	2,485,131	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,080,119	8,683,292	7,368,326	6,446,685	8,791,643
Water Year Types[c]					
Wet (32%)	7,195,939	5,088,091	2,722,063	1,636,105	4,687,997
Above Normal (16%)	7,457,219	9,151,953	7,423,853	3,543,420	9,577,740
Below Normal (13%)	7,921,910	9,535,341	9,564,818	9,047,043	11,082,428
Dry (24%)	8,704,412	10,677,103	10,202,343	10,867,037	11,180,445
Critical (15%)	9,775,191	11,861,114	10,638,263	10,263,894	10,750,046

Alternative 5

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,720,769	12,721,614	12,721,614	12,779,678	12,808,150
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	9,023,130	12,377,121
60%	9,023,130	9,023,130	9,023,130	2,836,521	8,397,087
70%	8,257,271	9,023,130	3,247,076	1,776,306	5,245,762
80%	3,353,537	7,359,046	1,243,430	1,243,430	3,383,285
90%	2,477,496	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,071,006	8,663,984	7,392,916	6,450,056	8,847,069
Water Year Types[c]					
Wet (32%)	7,206,473	5,027,012	2,721,565	1,635,752	4,686,956
Above Normal (16%)	7,458,894	9,152,014	7,588,980	3,593,140	9,581,406
Below Normal (13%)	7,922,494	9,535,703	9,564,818	9,043,537	11,083,289
Dry (24%)	8,685,408	10,677,103	10,202,389	10,867,086	11,242,206
Critical (15%)	9,719,413	11,861,114	10,628,407	10,236,963	11,023,351

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	3	0	0	0	4,637
20%	0	0	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	0	190,560
60%	0	0	0	-1,535	3,698
70%	-33,287	0	-25,309	279,924	291,082
80%	5,412	-17,543	0	0	-730
90%	-7,636	0	0	0	0
Long Term					
Full Simulation Period[b]	-9,114	-19,308	24,590	3,371	55,426
Water Year Types[c]					
Wet (32%)	10,534	-61,079	-498	-353	-1,042
Above Normal (16%)	1,675	61	165,127	49,720	3,666
Below Normal (13%)	584	362	0	-3,507	861
Dry (24%)	-19,004	0	46	49	61,762
Critical (15%)	-55,778	0	-9,856	-26,931	273,305

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-4. Feather River Below Thermalito Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,693,583	12,721,614	12,721,614	12,779,678	12,682,284
20%	10,812,258	11,745,270	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	5,358,559	11,441,060
60%	9,023,130	9,023,130	6,386,814	2,234,946	8,119,357
70%	6,351,528	9,023,130	1,686,441	1,243,430	4,795,349
80%	3,557,354	4,321,929	1,243,430	1,243,430	3,301,748
90%	2,584,419	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	7,875,580	8,488,265	7,049,394	6,165,565	8,656,926
Water Year Types[c]					
Wet (32%)	6,475,224	4,660,130	2,557,186	1,540,475	4,698,637
Above Normal (16%)	7,237,916	8,821,531	6,536,707	2,312,091	8,936,674
Below Normal (13%)	9,201,788	9,606,823	8,113,263	8,711,821	10,746,662
Dry (24%)	8,682,666	10,677,103	10,207,501	10,769,606	11,471,039
Critical (15%)	9,039,653	11,748,115	11,099,196	10,353,716	10,324,375

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,720,766	12,721,614	12,721,614	12,779,678	12,803,513
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	9,023,130	12,186,561
60%	9,023,130	9,023,130	9,023,130	2,838,055	8,393,389
70%	8,290,557	9,023,130	3,272,385	1,496,381	4,954,680
80%	3,348,126	7,376,589	1,243,430	1,243,430	3,384,015
90%	2,485,131	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,080,119	8,683,292	7,368,326	6,446,685	8,791,643
Water Year Types[c]					
Wet (32%)	7,195,939	5,088,091	2,722,063	1,636,105	4,687,997
Above Normal (16%)	7,457,219	9,151,953	7,423,853	3,543,420	9,577,740
Below Normal (13%)	7,921,910	9,535,341	9,564,818	9,047,043	11,082,428
Dry (24%)	8,704,412	10,677,103	10,202,343	10,867,037	11,180,445
Critical (15%)	9,775,191	11,861,114	10,638,263	10,263,894	10,750,046

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	27,183	0	0	0	121,229
20%	933,012	781,075	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	3,664,571	745,501
60%	0	0	2,636,316	603,110	274,032
70%	1,939,029	0	1,585,943	252,951	159,331
80%	-209,229	3,054,660	0	0	82,267
90%	-99,288	0	0	0	0
Long Term					
Full Simulation Period[b]	204,540	195,027	318,932	281,120	134,717
Water Year Types[c]					
Wet (32%)	720,715	427,961	164,877	95,630	-10,640
Above Normal (16%)	219,302	330,423	887,146	1,231,329	641,066
Below Normal (13%)	-1,279,878	-71,482	1,451,555	335,223	335,766
Dry (24%)	21,746	0	-5,158	97,431	-290,595
Critical (15%)	735,538	113,000	-460,933	-89,822	425,671

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-5. Feather River Below Thermalito Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,693,583	12,721,614	12,721,614	12,779,678	12,682,284
20%	10,812,258	11,745,270	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	5,358,559	11,441,060
60%	9,023,130	9,023,130	6,386,814	2,234,946	8,119,357
70%	6,351,528	9,023,130	1,686,441	1,243,430	4,795,349
80%	3,557,354	4,321,929	1,243,430	1,243,430	3,301,748
90%	2,584,419	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	7,875,580	8,488,265	7,049,394	6,165,565	8,656,926
Water Year Types[c]					
Wet (32%)	6,475,224	4,660,130	2,557,186	1,540,475	4,698,637
Above Normal (16%)	7,237,916	8,821,531	6,536,707	2,312,091	8,936,674
Below Normal (13%)	9,201,788	9,606,823	8,113,263	8,711,821	10,746,662
Dry (24%)	8,682,666	10,677,103	10,207,501	10,769,606	11,471,039
Critical (15%)	9,039,653	11,748,115	11,099,196	10,353,716	10,324,375

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,719,142	12,721,614	12,721,614	12,779,678	12,748,644
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	5,444,748	11,551,617
60%	9,023,130	9,023,130	7,934,121	2,534,677	8,110,754
70%	8,693,663	9,023,130	1,877,599	1,243,430	4,626,720
80%	4,254,028	8,333,530	1,243,430	1,243,430	3,285,783
90%	2,414,288	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,226,149	8,652,317	7,099,831	6,225,156	8,597,852
Water Year Types[c]					
Wet (32%)	6,429,745	5,049,478	2,786,381	1,540,145	4,696,149
Above Normal (16%)	7,576,597	9,101,209	6,744,972	2,502,286	8,934,733
Below Normal (13%)	9,120,473	9,472,604	8,192,332	8,711,680	10,528,263
Dry (24%)	9,173,842	10,667,791	10,202,404	10,878,178	11,196,576
Critical (15%)	10,422,755	11,861,114	10,657,654	10,374,774	10,585,839

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	25,559	0	0	0	66,361
20%	933,012	781,075	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	86,189	110,557
60%	0	0	1,547,307	299,731	-8,604
70%	2,342,135	0	191,158	0	-168,629
80%	696,673	4,011,601	0	0	-15,965
90%	-170,131	0	0	0	0
Long Term					
Full Simulation Period[b]	350,570	164,051	50,437	59,592	-59,073
Water Year Types[c]					
Wet (32%)	-45,479	389,348	229,196	-330	-2,488
Above Normal (16%)	338,681	279,679	208,265	190,194	-1,942
Below Normal (13%)	-81,314	-134,219	79,069	-141	-218,399
Dry (24%)	491,176	-9,312	-5,098	108,573	-274,463
Critical (15%)	1,383,102	113,000	-441,542	21,057	261,464

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-22-6. Feather River Below Thermalito Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,693,583	12,721,614	12,721,614	12,779,678	12,682,284
20%	10,812,258	11,745,270	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	5,358,559	11,441,060
60%	9,023,130	9,023,130	6,386,814	2,234,946	8,119,357
70%	6,351,528	9,023,130	1,686,441	1,243,430	4,795,349
80%	3,557,354	4,321,929	1,243,430	1,243,430	3,301,748
90%	2,584,419	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	7,875,580	8,488,265	7,049,394	6,165,565	8,656,926
Water Year Types[c]					
Wet (32%)	6,475,224	4,660,130	2,557,186	1,540,475	4,698,637
Above Normal (16%)	7,237,916	8,821,531	6,536,707	2,312,091	8,936,674
Below Normal (13%)	9,201,788	9,606,823	8,113,263	8,711,821	10,746,662
Dry (24%)	8,682,666	10,677,103	10,207,501	10,769,606	11,471,039
Critical (15%)	9,039,653	11,748,115	11,099,196	10,353,716	10,324,375

Alternative 5

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	12,720,769	12,721,614	12,721,614	12,779,678	12,808,150
20%	11,745,270	12,526,345	11,745,270	12,663,550	12,663,550
30%	9,023,130	11,745,270	9,023,130	9,023,130	12,663,550
40%	9,023,130	9,023,130	9,023,130	9,023,130	12,663,550
50%	9,023,130	9,023,130	9,023,130	9,023,130	12,377,121
60%	9,023,130	9,023,130	9,023,130	2,836,521	8,397,087
70%	8,257,271	9,023,130	3,247,076	1,776,306	5,245,762
80%	3,353,537	7,359,046	1,243,430	1,243,430	3,383,285
90%	2,477,496	1,243,430	1,243,430	1,243,430	1,243,430
Long Term					
Full Simulation Period[b]	8,071,006	8,663,984	7,392,916	6,450,056	8,847,069
Water Year Types[c]					
Wet (32%)	7,206,473	5,027,012	2,721,565	1,635,752	4,686,956
Above Normal (16%)	7,458,894	9,152,014	7,588,980	3,593,140	9,581,406
Below Normal (13%)	7,922,494	9,535,703	9,564,818	9,043,537	11,083,289
Dry (24%)	8,685,408	10,677,103	10,202,389	10,867,086	11,242,206
Critical (15%)	9,719,413	11,861,114	10,628,407	10,236,963	11,023,351

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	27,186	0	0	0	125,867
20%	933,012	781,075	0	0	0
30%	0	0	0	0	0
40%	0	0	0	0	0
50%	0	0	0	3,664,571	936,061
60%	0	0	2,636,316	601,575	277,730
70%	1,905,743	0	1,560,634	532,876	450,413
80%	-203,817	3,037,118	0	0	81,537
90%	-106,923	0	0	0	0
Long Term					
Full Simulation Period[b]	195,426	175,718	343,522	284,491	190,143
Water Year Types[c]					
Wet (32%)	731,249	366,882	164,379	95,277	-11,681
Above Normal (16%)	220,977	330,484	1,052,273	1,281,049	644,732
Below Normal (13%)	-1,279,294	-71,120	1,451,555	331,716	336,627
Dry (24%)	2,742	0	-5,112	97,480	-228,833
Critical (15%)	679,761	113,000	-470,789	-116,753	698,976

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.23. Feather River Low Flow Channel Fall-run Spawning WUA

Table C-23-1. Feather River Low Flow Channel Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 1

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0
Long Term							
Full Simulation Period[b]	0	0	0	0	0	0	0
Water Year Types[c]							
Wet (32%)	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-2. Feather River Low Flow Channel Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 3

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0
Long Term							
Full Simulation Period[b]	0	0	0	0	0	0	0
Water Year Types[c]							
Wet (32%)	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-3. Feather River Low Flow Channel Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
	Monthly WUA (Feet2)						
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 5

Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
	Monthly WUA (Feet2)						
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 5 minus No Action Alternative

Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
	Monthly WUA (Feet2)						
Probability of Exceedance[a]							
10%	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0
Long Term							
Full Simulation Period[b]	0	0	0	0	0	0	0
Water Year Types[c]							
Wet (32%)	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-4. Feather River Low Flow Channel Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0
Long Term							
Full Simulation Period[b]	0	0	0	0	0	0	0
Water Year Types[c]							
Wet (32%)	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-5. Feather River Low Flow Channel Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 3

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0
Long Term							
Full Simulation Period[b]	0	0	0	0	0	0	0
Water Year Types[c]							
Wet (32%)	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-23-6. Feather River Low Flow Channel Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)						
Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 5

	Monthly WUA (Feet2)						
Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
20%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
30%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
40%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
50%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
60%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
70%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
80%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
90%	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Long Term							
Full Simulation Period[b]	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Water Year Types[c]							
Wet (32%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Above Normal (16%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Below Normal (13%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Dry (24%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140
Critical (15%)	24,623,964	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140	24,736,140

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)						
Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	0	0	0	0	0	0	0
20%	0	0	0	0	0	0	0
30%	0	0	0	0	0	0	0
40%	0	0	0	0	0	0	0
50%	0	0	0	0	0	0	0
60%	0	0	0	0	0	0	0
70%	0	0	0	0	0	0	0
80%	0	0	0	0	0	0	0
90%	0	0	0	0	0	0	0
Long Term							
Full Simulation Period[b]	0	0	0	0	0	0	0
Water Year Types[c]							
Wet (32%)	0	0	0	0	0	0	0
Above Normal (16%)	0	0	0	0	0	0	0
Below Normal (13%)	0	0	0	0	0	0	0
Dry (24%)	0	0	0	0	0	0	0
Critical (15%)	0	0	0	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.24. Feather River below Thermalito Fall-run Spawning WUA

Table C-24-1. Feather River Below Thermalito Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
	Monthly WUA (Feet2)						
Probability of Exceedance[a]							
10%	33,333,011	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	31,341,881	34,796,595	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,204,290	32,691,770	33,836,271	35,198,088	35,198,088	35,198,088	30,531,317
40%	21,675,598	30,248,751	32,691,770	35,109,485	35,198,088	32,691,770	27,907,015
50%	13,576,541	28,651,642	30,408,820	32,837,847	32,691,770	28,651,642	27,098,994
60%	10,224,170	19,214,760	30,408,820	32,231,619	30,267,693	28,651,642	16,558,498
70%	10,224,170	19,214,760	30,408,820	28,651,642	28,651,642	20,558,706	11,222,561
80%	10,224,170	19,214,760	28,910,482	21,186,712	28,651,642	10,224,170	10,224,170
90%	10,224,170	19,214,760	28,651,642	14,768,679	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	19,493,864	26,772,026	31,264,010	29,332,133	29,033,129	25,980,815	22,918,722
Water Year Types[c]							
Wet (32%)	11,062,074	26,281,951	30,818,674	29,293,814	22,111,836	15,211,071	11,943,327
Above Normal (16%)	10,224,170	28,726,415	31,820,384	27,290,181	30,975,948	26,807,422	18,238,581
Below Normal (13%)	23,523,311	24,198,199	31,762,781	29,604,012	34,493,702	34,365,349	31,966,805
Dry (24%)	26,889,930	25,357,801	31,261,534	30,018,605	32,732,891	32,309,264	31,860,294
Critical (15%)	31,784,477	30,432,982	31,173,088	30,233,929	30,752,748	30,186,534	28,572,199

Alternative 1

Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
	Monthly WUA (Feet2)						
Probability of Exceedance[a]							
10%	33,706,952	34,938,319	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	32,430,525	33,448,191	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,802,749	30,707,394	35,198,088	35,198,088	35,198,088	34,871,693	30,204,290
40%	30,204,290	28,651,642	34,431,241	35,196,517	35,198,088	32,691,770	27,098,994
50%	28,046,601	22,379,746	32,691,770	32,847,639	32,691,770	28,651,642	27,098,994
60%	20,241,358	19,345,841	30,447,453	29,997,845	29,180,786	27,840,395	13,899,774
70%	16,962,984	19,214,760	30,408,820	28,651,642	28,651,642	11,990,462	10,224,170
80%	14,685,529	19,214,760	30,408,820	22,517,048	25,686,778	10,224,170	10,224,170
90%	13,743,977	19,214,760	28,651,642	15,221,904	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	24,392,133	25,520,412	32,031,555	29,332,859	28,591,614	24,627,737	22,139,012
Water Year Types[c]							
Wet (32%)	23,110,223	25,465,715	31,806,280	26,883,379	20,884,575	14,520,956	11,573,794
Above Normal (16%)	17,898,191	27,096,493	32,757,766	27,492,250	30,383,035	23,248,973	14,277,054
Below Normal (13%)	23,677,135	22,580,278	32,461,765	33,633,302	34,375,109	29,963,337	31,465,154
Dry (24%)	26,681,930	25,839,785	31,800,234	30,689,805	32,732,891	32,353,485	32,137,042
Critical (15%)	31,043,793	26,094,337	31,724,101	30,430,409	31,145,831	30,252,214	28,335,089

Alternative 1 minus No Action Alternative

Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
	Monthly WUA (Feet2)						
Probability of Exceedance[a]							
10%	373,941	-259,769	0	0	0	0	0
20%	1,088,644	-1,348,404	0	0	0	0	0
30%	598,459	-1,984,376	1,361,817	0	0	-326,395	-327,027
40%	8,528,692	-1,597,109	1,739,471	87,032	0	0	-808,021
50%	14,470,061	-6,271,896	2,282,950	9,792	0	0	0
60%	10,017,188	131,081	38,633	-2,233,774	-1,086,907	-811,247	-2,658,724
70%	6,738,814	0	0	0	0	-8,568,244	-998,391
80%	4,461,359	0	1,498,338	1,330,336	-2,964,864	0	0
90%	3,519,807	0	0	453,224	0	0	0
Long Term							
Full Simulation Period[b]	4,898,268	-1,251,613	767,545	726	-441,515	-1,353,078	-779,710
Water Year Types[c]							
Wet (32%)	12,048,149	-816,235	987,606	-2,410,435	-1,227,262	-690,115	-369,533
Above Normal (16%)	7,674,021	-1,629,922	937,382	202,069	-592,912	-3,558,449	-3,961,527
Below Normal (13%)	153,824	-1,617,921	698,984	4,029,289	-118,592	-4,402,013	-501,652
Dry (24%)	-208,001	481,984	538,699	671,200	0	44,221	276,748
Critical (15%)	-740,684	-4,338,645	551,014	196,480	393,082	65,680	-237,110

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-2. Feather River Below Thermalito Fall-run Spawning WUA, Monthly WUA

No Action Alternative

	Monthly WUA (Feet2)						
Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,333,011	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	31,341,881	34,796,595	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,204,290	32,691,770	33,836,271	35,198,088	35,198,088	35,198,088	30,531,317
40%	21,675,598	30,248,751	32,691,770	35,109,485	35,198,088	32,691,770	27,907,015
50%	13,576,541	28,651,642	30,408,820	32,837,847	32,691,770	28,651,642	27,098,994
60%	10,224,170	19,214,760	30,408,820	32,231,619	30,267,693	28,651,642	16,558,498
70%	10,224,170	19,214,760	30,408,820	28,651,642	28,651,642	20,558,706	11,222,561
80%	10,224,170	19,214,760	28,910,482	21,186,712	28,651,642	10,224,170	10,224,170
90%	10,224,170	19,214,760	28,651,642	14,768,679	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	19,493,864	26,772,026	31,264,010	29,332,133	29,033,129	25,980,815	22,918,722
Water Year Types[c]							
Wet (32%)	11,062,074	26,281,951	30,818,674	29,293,814	22,111,836	15,211,071	11,943,327
Above Normal (16%)	10,224,170	28,726,415	31,820,384	27,290,181	30,975,948	26,807,422	18,238,581
Below Normal (13%)	23,523,311	24,198,199	31,762,781	29,604,012	34,493,702	34,365,349	31,966,805
Dry (24%)	26,889,930	25,357,801	31,261,534	30,018,605	32,732,891	32,309,264	31,860,294
Critical (15%)	31,784,477	30,432,982	31,173,088	30,233,929	30,752,748	30,186,534	28,572,199

Alternative 3

	Monthly WUA (Feet2)						
Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,777,304	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	32,485,908	35,110,630	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,815,896	32,779,690	35,198,088	35,198,088	35,198,088	35,198,088	30,204,290
40%	30,204,290	31,083,556	34,007,312	35,198,088	35,198,088	32,691,770	27,098,994
50%	29,870,769	28,651,642	32,691,770	33,312,011	32,691,770	28,651,642	27,098,994
60%	26,684,954	22,345,634	30,408,820	32,691,770	30,267,693	28,651,642	15,022,238
70%	20,325,531	19,214,760	30,408,820	28,651,642	28,651,642	12,690,134	10,224,170
80%	15,989,853	19,214,760	28,706,794	25,706,241	28,651,642	10,224,170	10,224,170
90%	14,282,070	19,214,760	28,651,642	14,626,163	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	25,697,720	27,238,854	31,755,575	29,653,744	28,860,880	25,189,774	22,174,847
Water Year Types[c]							
Wet (32%)	25,123,354	26,579,504	31,294,094	26,714,836	21,582,367	15,207,515	11,573,668
Above Normal (16%)	18,163,474	28,551,699	32,389,360	27,961,666	30,966,711	25,642,082	15,051,212
Below Normal (13%)	25,953,862	25,518,911	32,624,077	33,279,166	34,475,983	29,834,397	31,464,643
Dry (24%)	27,532,535	27,944,987	31,911,673	31,764,503	32,730,727	32,309,964	31,769,600
Critical (15%)	31,811,457	27,644,926	31,012,559	31,013,227	30,752,748	30,203,445	28,354,439

Alternative 3 minus No Action Alternative

	Monthly WUA (Feet2)						
Statistic	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	444,294	0	0	0	0	0	0
20%	1,144,027	314,035	0	0	0	0	0
30%	611,606	87,920	1,361,817	0	0	0	-327,027
40%	8,528,692	834,805	1,315,542	88,603	0	0	-808,021
50%	16,294,229	0	2,282,950	474,164	0	0	0
60%	16,460,784	3,130,874	0	460,151	0	0	-1,536,260
70%	10,101,361	0	0	0	0	-7,868,573	-998,391
80%	5,765,683	0	-203,688	4,519,529	0	0	0
90%	4,057,900	0	0	-142,517	0	0	0
Long Term							
Full Simulation Period[b]	6,203,855	466,829	491,564	321,611	-172,249	-791,042	-743,875
Water Year Types[c]							
Wet (32%)	14,061,280	297,553	475,420	-2,578,978	-529,469	-3,556	-369,659
Above Normal (16%)	7,939,304	-174,717	568,976	671,484	-9,237	-1,165,339	-3,187,369
Below Normal (13%)	2,430,551	1,320,712	861,296	3,675,154	-17,719	-4,530,952	-502,162
Dry (24%)	642,604	2,587,186	650,139	1,745,897	-2,164	700	-90,694
Critical (15%)	26,980	-2,788,056	-160,529	779,298	0	16,910	-217,760

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-3. Feather River Below Thermalito Fall-run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,333,011	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	31,341,881	34,796,595	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,204,290	32,691,770	33,836,271	35,198,088	35,198,088	35,198,088	30,531,317
40%	21,675,598	30,248,751	32,691,770	35,109,485	35,198,088	32,691,770	27,907,015
50%	13,576,541	28,651,642	30,408,820	32,837,847	32,691,770	28,651,642	27,098,994
60%	10,224,170	19,214,760	30,408,820	32,231,619	30,267,693	28,651,642	16,558,498
70%	10,224,170	19,214,760	30,408,820	28,651,642	28,651,642	20,558,706	11,222,561
80%	10,224,170	19,214,760	28,910,482	21,186,712	28,651,642	10,224,170	10,224,170
90%	10,224,170	19,214,760	28,651,642	14,768,679	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	19,493,864	26,772,026	31,264,010	29,332,133	29,033,129	25,980,815	22,918,722
Water Year Types[c]							
Wet (32%)	11,062,074	26,281,951	30,818,674	29,293,814	22,111,836	15,211,071	11,943,327
Above Normal (16%)	10,224,170	28,726,415	31,820,384	27,290,181	30,975,948	26,807,422	18,238,581
Below Normal (13%)	23,523,311	24,198,199	31,762,781	29,604,012	34,493,702	34,365,349	31,966,805
Dry (24%)	26,889,930	25,357,801	31,261,534	30,018,605	32,732,891	32,309,264	31,860,294
Critical (15%)	31,784,477	30,432,982	31,173,088	30,233,929	30,752,748	30,186,534	28,572,199

Alternative 5

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,865,465	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	31,372,250	34,798,753	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,204,290	32,691,770	33,939,911	35,198,088	35,198,088	35,198,088	30,533,003
40%	24,815,466	30,440,840	32,691,770	35,087,554	35,198,088	32,778,926	27,597,049
50%	13,460,109	28,651,642	30,408,820	32,837,442	32,691,770	30,671,706	27,098,994
60%	10,224,170	19,214,760	30,408,820	32,401,804	30,267,693	28,651,642	16,549,156
70%	10,224,170	19,214,760	30,408,820	28,651,642	28,651,642	20,368,760	12,334,457
80%	10,224,170	19,214,760	29,386,480	21,227,294	28,651,642	10,224,170	10,224,170
90%	10,224,170	19,214,760	28,651,642	14,734,634	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	19,547,683	26,775,449	31,310,168	29,317,610	28,943,166	26,104,257	22,938,320
Water Year Types[c]							
Wet (32%)	11,076,085	26,159,579	30,814,718	29,324,948	21,828,184	15,211,109	11,941,464
Above Normal (16%)	10,224,170	28,750,622	32,185,751	27,296,663	30,976,207	27,656,337	18,474,607
Below Normal (13%)	23,225,254	24,198,277	31,762,781	29,607,819	34,493,209	34,365,349	31,955,180
Dry (24%)	27,221,390	25,486,065	31,223,266	29,970,496	32,732,891	32,309,793	31,857,927
Critical (15%)	31,842,668	30,481,444	31,165,034	30,136,903	30,752,748	30,109,432	28,469,065

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	532,454	0	0	0	0	0	0
20%	30,369	2,158	0	0	0	0	0
30%	0	0	103,640	0	0	0	1,686
40%	3,139,868	192,089	0	-21,930	0	87,156	-309,966
50%	-116,432	0	0	-405	0	2,020,064	0
60%	0	0	0	170,185	0	0	-9,342
70%	0	0	0	0	0	-189,946	1,111,896
80%	0	0	475,999	40,582	0	0	0
90%	0	0	0	-34,046	0	0	0
Long Term							
Full Simulation Period[b]	53,819	3,423	46,157	-14,523	-89,963	123,442	19,598
Water Year Types[c]							
Wet (32%)	14,011	-122,372	-3,956	31,134	-283,652	38	-1,863
Above Normal (16%)	0	24,207	365,367	6,482	259	848,915	236,026
Below Normal (13%)	-298,057	78	0	3,806	-493	0	-11,626
Dry (24%)	331,460	128,264	-38,268	-48,110	0	529	-2,368
Critical (15%)	58,191	48,462	-8,054	-97,026	0	-77,103	-103,134

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-4. Feather River Below Thermalito Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,706,952	34,938,319	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	32,430,525	33,448,191	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,802,749	30,707,394	35,198,088	35,198,088	35,198,088	34,871,693	30,204,290
40%	30,204,290	28,651,642	34,431,241	35,196,517	35,198,088	32,691,770	27,098,994
50%	28,046,601	22,379,746	32,691,770	32,847,639	32,691,770	28,651,642	27,098,994
60%	20,241,358	19,345,841	30,447,453	29,997,845	29,180,786	27,840,395	13,899,774
70%	16,962,984	19,214,760	30,408,820	28,651,642	28,651,642	11,990,462	10,224,170
80%	14,685,529	19,214,760	30,408,820	22,517,048	25,686,778	10,224,170	10,224,170
90%	13,743,977	19,214,760	28,651,642	15,221,904	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	24,392,133	25,520,412	32,031,555	29,332,859	28,591,614	24,627,737	22,139,012
Water Year Types[c]							
Wet (32%)	23,110,223	25,465,715	31,806,280	26,883,379	20,884,575	14,520,956	11,573,794
Above Normal (16%)	17,898,191	27,096,493	32,757,766	27,492,250	30,383,035	23,248,973	14,277,054
Below Normal (13%)	23,677,135	22,580,278	32,461,765	33,633,302	34,375,109	29,963,337	31,465,154
Dry (24%)	26,681,930	25,839,785	31,800,234	30,689,805	32,732,891	32,353,485	32,137,042
Critical (15%)	31,043,793	26,094,337	31,724,101	30,430,409	31,145,831	30,252,214	28,335,089

No Action Alternative

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,333,011	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	31,341,881	34,796,595	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,204,290	32,691,770	33,836,271	35,198,088	35,198,088	35,198,088	30,531,317
40%	21,675,598	30,248,751	32,691,770	35,109,485	35,198,088	32,691,770	27,907,015
50%	13,576,541	28,651,642	30,408,820	32,837,847	32,691,770	28,651,642	27,098,994
60%	10,224,170	19,214,760	30,408,820	32,231,619	30,267,693	28,651,642	16,558,498
70%	10,224,170	19,214,760	30,408,820	28,651,642	28,651,642	20,558,706	11,222,561
80%	10,224,170	19,214,760	28,910,482	21,186,712	28,651,642	10,224,170	10,224,170
90%	10,224,170	19,214,760	28,651,642	14,768,679	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	19,493,864	26,772,026	31,264,010	29,332,133	29,033,129	25,980,815	22,918,722
Water Year Types[c]							
Wet (32%)	11,062,074	26,281,951	30,818,674	29,293,814	22,111,836	15,211,071	11,943,327
Above Normal (16%)	10,224,170	28,726,415	31,820,384	27,290,181	30,975,948	26,807,422	18,238,581
Below Normal (13%)	23,523,311	24,198,199	31,762,781	29,604,012	34,493,702	34,365,349	31,966,805
Dry (24%)	26,889,930	25,357,801	31,261,534	30,018,605	32,732,891	32,309,264	31,860,294
Critical (15%)	31,784,477	30,432,982	31,173,088	30,233,929	30,752,748	30,186,534	28,572,199

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	-373,941	259,769	0	0	0	0	0
20%	-1,088,644	1,348,404	0	0	0	0	0
30%	-598,459	1,984,376	-1,361,817	0	0	326,395	327,027
40%	-8,528,692	1,597,109	-1,739,471	-87,032	0	0	808,021
50%	-14,470,061	6,271,896	-2,282,950	-9,792	0	0	0
60%	-10,017,188	-131,081	-38,633	2,233,774	1,086,907	811,247	2,658,724
70%	-6,738,814	0	0	0	0	8,568,244	998,391
80%	-4,461,359	0	-1,498,338	-1,330,336	2,964,864	0	0
90%	-3,519,807	0	0	-453,224	0	0	0
Long Term							
Full Simulation Period[b]	-4,898,268	1,251,613	-767,545	-726	441,515	1,353,078	779,710
Water Year Types[c]							
Wet (32%)	-12,048,149	816,235	-987,606	2,410,435	1,227,262	690,115	369,533
Above Normal (16%)	-7,674,021	1,629,922	-937,382	-202,069	592,912	3,558,449	3,961,527
Below Normal (13%)	-153,824	1,617,921	-698,984	-4,029,289	118,592	4,402,013	501,652
Dry (24%)	208,001	-481,984	-538,699	-671,200	0	-44,221	-276,748
Critical (15%)	740,684	4,338,645	-551,014	-196,480	-393,082	-65,680	237,110

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-5. Feather River Below Thermalito Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,706,952	34,938,319	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	32,430,525	33,448,191	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,802,749	30,707,394	35,198,088	35,198,088	35,198,088	34,871,693	30,204,290
40%	30,204,290	28,651,642	34,431,241	35,196,517	35,198,088	32,691,770	27,098,994
50%	28,046,601	22,379,746	32,691,770	32,847,639	32,691,770	28,651,642	27,098,994
60%	20,241,358	19,345,841	30,447,453	29,997,845	29,180,786	27,840,395	13,899,774
70%	16,962,984	19,214,760	30,408,820	28,651,642	28,651,642	11,990,462	10,224,170
80%	14,685,529	19,214,760	30,408,820	22,517,048	25,686,778	10,224,170	10,224,170
90%	13,743,977	19,214,760	28,651,642	15,221,904	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	24,392,133	25,520,412	32,031,555	29,332,859	28,591,614	24,627,737	22,139,012
Water Year Types[c]							
Wet (32%)	23,110,223	25,465,715	31,806,280	26,883,379	20,884,575	14,520,956	11,573,794
Above Normal (16%)	17,898,191	27,096,493	32,757,766	27,492,250	30,383,035	23,248,973	14,277,054
Below Normal (13%)	23,677,135	22,580,278	32,461,765	33,633,302	34,375,109	29,963,337	31,465,154
Dry (24%)	26,681,930	25,839,785	31,800,234	30,689,805	32,732,891	32,353,485	32,137,042
Critical (15%)	31,043,793	26,094,337	31,724,101	30,430,409	31,145,831	30,252,214	28,335,089

Alternative 3

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,777,304	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	32,485,908	35,110,630	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,815,896	32,779,690	35,198,088	35,198,088	35,198,088	35,198,088	30,204,290
40%	30,204,290	31,083,556	34,007,312	35,198,088	35,198,088	32,691,770	27,098,994
50%	29,870,769	28,651,642	32,691,770	33,312,011	32,691,770	28,651,642	27,098,994
60%	26,684,954	22,345,634	30,408,820	32,691,770	30,267,693	28,651,642	15,022,238
70%	20,325,531	19,214,760	30,408,820	28,651,642	28,651,642	12,690,134	10,224,170
80%	15,989,853	19,214,760	28,706,794	25,706,241	28,651,642	10,224,170	10,224,170
90%	14,282,070	19,214,760	28,651,642	14,626,163	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	25,697,720	27,238,854	31,755,575	29,653,744	28,860,880	25,189,774	22,174,847
Water Year Types[c]							
Wet (32%)	25,123,354	26,579,504	31,294,094	26,714,836	21,582,367	15,207,515	11,573,668
Above Normal (16%)	18,163,474	28,551,699	32,389,360	27,961,666	30,966,711	25,642,082	15,051,212
Below Normal (13%)	25,953,862	25,518,911	32,624,077	33,279,166	34,475,983	29,834,397	31,464,643
Dry (24%)	27,532,535	27,944,987	31,911,673	31,764,503	32,730,727	32,309,964	31,769,600
Critical (15%)	31,811,457	27,644,926	31,012,559	31,013,227	30,752,748	30,203,445	28,354,439

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	70,352	259,769	0	0	0	0	0
20%	55,383	1,662,440	0	0	0	0	0
30%	13,147	2,072,296	0	0	0	326,395	0
40%	0	2,431,914	-423,929	1,571	0	0	0
50%	1,824,168	6,271,896	0	464,372	0	0	0
60%	6,443,596	2,999,794	-38,633	2,693,925	1,086,907	811,247	1,122,464
70%	3,362,547	0	0	0	0	699,672	0
80%	1,304,324	0	-1,702,026	3,189,193	2,964,864	0	0
90%	538,093	0	0	-595,741	0	0	0
Long Term							
Full Simulation Period[b]	1,305,587	1,718,442	-275,981	320,885	269,265	562,036	35,835
Water Year Types[c]							
Wet (32%)	2,013,131	1,113,788	-512,187	-168,543	697,793	686,559	-126
Above Normal (16%)	265,283	1,455,206	-368,405	469,416	583,676	2,393,110	774,158
Below Normal (13%)	2,276,727	2,938,633	162,312	-354,136	100,874	-128,939	-511
Dry (24%)	850,605	2,105,202	111,440	1,074,697	-2,164	-43,521	-367,442
Critical (15%)	767,664	1,550,589	-711,543	582,818	-393,082	-48,770	19,350

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-24-6. Feather River Below Thermalito Fall-run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,706,952	34,938,319	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	32,430,525	33,448,191	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,802,749	30,707,394	35,198,088	35,198,088	35,198,088	34,871,693	30,204,290
40%	30,204,290	28,651,642	34,431,241	35,196,517	35,198,088	32,691,770	27,098,994
50%	28,046,601	22,379,746	32,691,770	32,847,639	32,691,770	28,651,642	27,098,994
60%	20,241,358	19,345,841	30,447,453	29,997,845	29,180,786	27,840,395	13,899,774
70%	16,962,984	19,214,760	30,408,820	28,651,642	28,651,642	11,990,462	10,224,170
80%	14,685,529	19,214,760	30,408,820	22,517,048	25,686,778	10,224,170	10,224,170
90%	13,743,977	19,214,760	28,651,642	15,221,904	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	24,392,133	25,520,412	32,031,555	29,332,859	28,591,614	24,627,737	22,139,012
Water Year Types[c]							
Wet (32%)	23,110,223	25,465,715	31,806,280	26,883,379	20,884,575	14,520,956	11,573,794
Above Normal (16%)	17,898,191	27,096,493	32,757,766	27,492,250	30,383,035	23,248,973	14,277,054
Below Normal (13%)	23,677,135	22,580,278	32,461,765	33,633,302	34,375,109	29,963,337	31,465,154
Dry (24%)	26,681,930	25,839,785	31,800,234	30,689,805	32,732,891	32,353,485	32,137,042
Critical (15%)	31,043,793	26,094,337	31,724,101	30,430,409	31,145,831	30,252,214	28,335,089

Alternative 5

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	33,865,465	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
20%	31,372,250	34,798,753	35,198,088	35,198,088	35,198,088	35,198,088	35,198,088
30%	30,204,290	32,691,770	33,939,911	35,198,088	35,198,088	35,198,088	30,533,003
40%	24,815,466	30,440,840	32,691,770	35,087,554	35,198,088	32,778,926	27,597,049
50%	13,460,109	28,651,642	30,408,820	32,837,442	32,691,770	30,671,706	27,098,994
60%	10,224,170	19,214,760	30,408,820	32,401,804	30,267,693	28,651,642	16,549,156
70%	10,224,170	19,214,760	30,408,820	28,651,642	28,651,642	20,368,760	12,334,457
80%	10,224,170	19,214,760	29,386,480	21,227,294	28,651,642	10,224,170	10,224,170
90%	10,224,170	19,214,760	28,651,642	14,734,634	10,224,170	10,224,170	10,224,170
Long Term							
Full Simulation Period[b]	19,547,683	26,775,449	31,310,168	29,317,610	28,943,166	26,104,257	22,938,320
Water Year Types[c]							
Wet (32%)	11,076,085	26,159,579	30,814,718	29,324,948	21,828,184	15,211,109	11,941,464
Above Normal (16%)	10,224,170	28,750,622	32,185,751	27,296,663	30,976,207	27,656,337	18,474,607
Below Normal (13%)	23,225,254	24,198,277	31,762,781	29,607,819	34,493,209	34,365,349	31,955,180
Dry (24%)	27,221,390	25,486,065	31,223,266	29,970,496	32,732,891	32,309,793	31,857,927
Critical (15%)	31,842,668	30,481,444	31,165,034	30,136,903	30,752,748	30,109,432	28,469,065

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)						
	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Probability of Exceedance[a]							
10%	158,513	259,769	0	0	0	0	0
20%	-1,058,275	1,350,562	0	0	0	0	0
30%	-598,459	1,984,376	-1,258,177	0	0	326,395	328,713
40%	-5,388,824	1,789,198	-1,739,471	-108,962	0	87,156	498,055
50%	-14,586,492	6,271,896	-2,282,950	-10,197	0	2,020,064	0
60%	-10,017,188	-131,081	-38,633	2,403,960	1,086,907	811,247	2,649,382
70%	-6,738,814	0	0	0	0	8,378,299	2,110,287
80%	-4,461,359	0	-1,022,340	-1,289,754	2,964,864	0	0
90%	-3,519,807	0	0	-487,270	0	0	0
Long Term							
Full Simulation Period[b]	-4,844,449	1,255,037	-721,388	-15,249	351,551	1,476,520	799,309
Water Year Types[c]							
Wet (32%)	-12,034,138	693,863	-991,563	2,441,569	943,610	690,153	367,671
Above Normal (16%)	-7,674,021	1,654,129	-572,015	-195,587	593,172	4,407,364	4,197,552
Below Normal (13%)	-451,881	1,617,999	-698,984	-4,025,483	118,099	4,402,013	490,026
Dry (24%)	539,461	-353,720	-576,967	-719,310	0	-43,692	-279,116
Critical (15%)	798,875	4,387,107	-559,068	-293,506	-393,082	-142,782	133,976

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.25. American River below Nimbus Fall-run Spawning WUA

Table C-25-1. American River Below Nimbus Fall-Run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	878,663	880,132	881,528
20%	868,978	874,597	881,528
30%	862,503	872,517	881,528
40%	862,503	855,799	876,343
50%	862,503	833,195	859,903
60%	859,526	767,728	791,242
70%	821,118	740,252	609,089
80%	749,898	609,089	467,889
90%	609,089	446,307	282,031
Long Term			
Full Simulation Period[b]	793,199	745,474	709,367
Water Year Types[c]			
Wet (32%)	836,993	709,662	566,617
Above Normal (16%)	734,467	710,743	695,308
Below Normal (13%)	801,950	771,543	795,846
Dry (24%)	782,142	780,077	816,670
Critical (15%)	772,342	779,125	775,777

Alternative 1

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	872,929	880,132	881,528
20%	862,503	879,325	881,528
30%	862,503	874,395	876,990
40%	862,503	868,521	870,868
50%	862,503	841,739	823,381
60%	862,503	762,862	743,750
70%	837,871	689,086	609,089
80%	674,314	609,089	466,520
90%	600,397	403,562	250,680
Long Term			
Full Simulation Period[b]	786,647	741,731	688,437
Water Year Types[c]			
Wet (32%)	825,953	720,015	533,793
Above Normal (16%)	731,801	693,422	667,877
Below Normal (13%)	795,680	772,032	777,325
Dry (24%)	771,424	766,495	799,125
Critical (15%)	777,991	772,070	779,815

Alternative 1 minus No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	-5,734	0	0
20%	-6,475	4,727	0
30%	0	1,878	-4,538
40%	0	12,721	-5,475
50%	0	8,544	-36,522
60%	2,978	-4,866	-47,493
70%	16,752	-51,166	0
80%	-75,584	0	-1,369
90%	-8,692	-42,745	-31,351
Long Term			
Full Simulation Period[b]	-6,552	-3,743	-20,929
Water Year Types[c]			
Wet (32%)	-11,041	10,353	-32,824
Above Normal (16%)	-2,666	-17,320	-27,431
Below Normal (13%)	-6,270	489	-18,521
Dry (24%)	-10,718	-13,582	-17,545
Critical (15%)	5,649	-7,055	4,038

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-2. American River Below Nimbus Fall-Run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	878,663	880,132	881,528
20%	868,978	874,597	881,528
30%	862,503	872,517	881,528
40%	862,503	855,799	876,343
50%	862,503	833,195	859,903
60%	859,526	767,728	791,242
70%	821,118	740,252	609,089
80%	749,898	609,089	467,889
90%	609,089	446,307	282,031
Long Term			
Full Simulation Period[b]	793,199	745,474	709,367
Water Year Types[c]			
Wet (32%)	836,993	709,662	566,617
Above Normal (16%)	734,467	710,743	695,308
Below Normal (13%)	801,950	771,543	795,846
Dry (24%)	782,142	780,077	816,670
Critical (15%)	772,342	779,125	775,777

Alternative 3

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	879,083	880,132	881,528
20%	866,138	880,132	881,528
30%	862,503	874,395	876,343
40%	862,503	869,546	862,177
50%	862,503	846,219	815,683
60%	862,503	796,665	743,774
70%	845,529	730,285	609,089
80%	774,565	619,125	466,542
90%	609,089	488,788	247,453
Long Term			
Full Simulation Period[b]	798,897	753,761	693,122
Water Year Types[c]			
Wet (32%)	829,926	727,108	535,360
Above Normal (16%)	751,660	711,941	683,812
Below Normal (13%)	801,041	790,161	772,859
Dry (24%)	789,040	774,015	809,347
Critical (15%)	797,304	789,694	778,226

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	419	0	0
20%	-2,841	5,535	0
30%	0	1,878	-5,186
40%	0	13,746	-14,166
50%	0	13,024	-44,220
60%	2,978	28,937	-47,468
70%	24,411	-9,967	0
80%	24,667	10,037	-1,347
90%	0	42,481	-34,578
Long Term			
Full Simulation Period[b]	5,698	8,287	-16,245
Water Year Types[c]			
Wet (32%)	-7,068	17,446	-31,258
Above Normal (16%)	17,194	1,198	-11,496
Below Normal (13%)	-909	18,618	-22,986
Dry (24%)	6,898	-6,062	-7,323
Critical (15%)	24,962	10,569	2,449

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-3. American River Below Nimbus Fall-Run Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	878,663	880,132	881,528
20%	868,978	874,597	881,528
30%	862,503	872,517	881,528
40%	862,503	855,799	876,343
50%	862,503	833,195	859,903
60%	859,526	767,728	791,242
70%	821,118	740,252	609,089
80%	749,898	609,089	467,889
90%	609,089	446,307	282,031
Long Term			
Full Simulation Period[b]	793,199	745,474	709,367
Water Year Types[c]			
Wet (32%)	836,993	709,662	566,617
Above Normal (16%)	734,467	710,743	695,308
Below Normal (13%)	801,950	771,543	795,846
Dry (24%)	782,142	780,077	816,670
Critical (15%)	772,342	779,125	775,777

Alternative 5

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	875,329	880,132	881,528
20%	863,849	875,412	881,528
30%	862,503	872,536	878,964
40%	862,503	854,056	875,153
50%	862,503	824,470	854,006
60%	853,955	767,862	795,540
70%	822,159	734,101	609,089
80%	750,763	609,089	468,296
90%	609,089	455,653	281,677
Long Term			
Full Simulation Period[b]	790,823	745,710	707,446
Water Year Types[c]			
Wet (32%)	834,432	706,010	567,264
Above Normal (16%)	747,545	709,433	692,541
Below Normal (13%)	799,217	769,383	781,534
Dry (24%)	783,195	782,444	817,858
Critical (15%)	748,238	788,103	775,390

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	-3,335	0	0
20%	-5,129	815	0
30%	0	20	-2,564
40%	0	-1,743	-1,190
50%	0	-8,726	-5,897
60%	-5,570	134	4,297
70%	1,041	-6,150	0
80%	865	0	407
90%	0	9,346	-354
Long Term			
Full Simulation Period[b]	-2,376	236	-1,920
Water Year Types[c]			
Wet (32%)	-2,561	-3,652	647
Above Normal (16%)	13,078	-1,309	-2,767
Below Normal (13%)	-2,733	-2,160	-14,312
Dry (24%)	1,053	2,366	1,188
Critical (15%)	-24,104	8,978	-387

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-4. American River Below Nimbus Fall-Run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	872,929	880,132	881,528
20%	862,503	879,325	881,528
30%	862,503	874,395	876,990
40%	862,503	868,521	870,868
50%	862,503	841,739	823,381
60%	862,503	762,862	743,750
70%	837,871	689,086	609,089
80%	674,314	609,089	466,520
90%	600,397	403,562	250,680
Long Term			
Full Simulation Period[b]	786,647	741,731	688,437
Water Year Types[c]			
Wet (32%)	825,953	720,015	533,793
Above Normal (16%)	731,801	693,422	667,877
Below Normal (13%)	795,680	772,032	777,325
Dry (24%)	771,424	766,495	799,125
Critical (15%)	777,991	772,070	779,815

No Action Alternative

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	878,663	880,132	881,528
20%	868,978	874,597	881,528
30%	862,503	872,517	881,528
40%	862,503	855,799	876,343
50%	862,503	833,195	859,903
60%	859,526	767,728	791,242
70%	821,118	740,252	609,089
80%	749,898	609,089	467,889
90%	609,089	446,307	282,031
Long Term			
Full Simulation Period[b]	793,199	745,474	709,367
Water Year Types[c]			
Wet (32%)	836,993	709,662	566,617
Above Normal (16%)	734,467	710,743	695,308
Below Normal (13%)	801,950	771,543	795,846
Dry (24%)	782,142	780,077	816,670
Critical (15%)	772,342	779,125	775,777

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2)		
	Oct	Nov	Dec
Probability of Exceedance[a]			
10%	5,734	0	0
20%	6,475	-4,727	0
30%	0	-1,878	4,538
40%	0	-12,721	5,475
50%	0	-8,544	36,522
60%	-2,978	4,866	47,493
70%	-16,752	51,166	0
80%	75,584	0	1,369
90%	8,692	42,745	31,351
Long Term			
Full Simulation Period[b]	6,552	3,743	20,929
Water Year Types[c]			
Wet (32%)	11,041	-10,353	32,824
Above Normal (16%)	2,666	17,320	27,431
Below Normal (13%)	6,270	-489	18,521
Dry (24%)	10,718	13,582	17,545
Critical (15%)	-5,649	7,055	-4,038

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-5. American River Below Nimbus Fall-Run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	872,929	880,132	881,528
20%	862,503	879,325	881,528
30%	862,503	874,395	876,990
40%	862,503	868,521	870,868
50%	862,503	841,739	823,381
60%	862,503	762,862	743,750
70%	837,871	689,086	609,089
80%	674,314	609,089	466,520
90%	600,397	403,562	250,680
Long Term			
Full Simulation Period[b]	786,647	741,731	688,437
Water Year Types[c]			
Wet (32%)	825,953	720,015	533,793
Above Normal (16%)	731,801	693,422	667,877
Below Normal (13%)	795,680	772,032	777,325
Dry (24%)	771,424	766,495	799,125
Critical (15%)	777,991	772,070	779,815

Alternative 3

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	879,083	880,132	881,528
20%	866,138	880,132	881,528
30%	862,503	874,395	876,343
40%	862,503	869,546	862,177
50%	862,503	846,219	815,683
60%	862,503	796,665	743,774
70%	845,529	730,285	609,089
80%	774,565	619,125	466,542
90%	609,089	488,788	247,453
Long Term			
Full Simulation Period[b]	798,897	753,761	693,122
Water Year Types[c]			
Wet (32%)	829,926	727,108	535,360
Above Normal (16%)	751,660	711,941	683,812
Below Normal (13%)	801,041	790,161	772,859
Dry (24%)	789,040	774,015	809,347
Critical (15%)	797,304	789,694	778,226

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	6,153	0	0
20%	3,634	807	0
30%	0	0	-647
40%	0	1,025	-8,691
50%	0	4,480	-7,698
60%	0	33,803	24
70%	7,659	41,199	0
80%	100,251	10,037	22
90%	8,692	85,226	-3,228
Long Term			
Full Simulation Period[b]	12,250	12,030	4,685
Water Year Types[c]			
Wet (32%)	3,973	7,093	1,566
Above Normal (16%)	19,860	18,518	15,935
Below Normal (13%)	5,361	18,129	-4,465
Dry (24%)	17,616	7,520	10,222
Critical (15%)	19,313	17,624	-1,589

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-25-6. American River Below Nimbus Fall-Run Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	872,929	880,132	881,528
20%	862,503	879,325	881,528
30%	862,503	874,395	876,990
40%	862,503	868,521	870,868
50%	862,503	841,739	823,381
60%	862,503	762,862	743,750
70%	837,871	689,086	609,089
80%	674,314	609,089	466,520
90%	600,397	403,562	250,680
Long Term			
Full Simulation Period[b]	786,647	741,731	688,437
Water Year Types[c]			
Wet (32%)	825,953	720,015	533,793
Above Normal (16%)	731,801	693,422	667,877
Below Normal (13%)	795,680	772,032	777,325
Dry (24%)	771,424	766,495	799,125
Critical (15%)	777,991	772,070	779,815

Alternative 5

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	875,329	880,132	881,528
20%	863,849	875,412	881,528
30%	862,503	872,536	878,964
40%	862,503	854,056	875,153
50%	862,503	824,470	854,006
60%	853,955	767,862	795,540
70%	822,159	734,101	609,089
80%	750,763	609,089	468,296
90%	609,089	455,653	281,677
Long Term			
Full Simulation Period[b]	790,823	745,710	707,446
Water Year Types[c]			
Wet (32%)	834,432	706,010	567,264
Above Normal (16%)	747,545	709,433	692,541
Below Normal (13%)	799,217	769,383	781,534
Dry (24%)	783,195	782,444	817,858
Critical (15%)	748,238	788,103	775,390

Alternative 5 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Oct	Nov	Dec
Probability of Exceedance[a]			
10%	2,399	0	0
20%	1,346	-3,912	0
30%	0	-1,858	1,974
40%	0	-14,464	4,285
50%	0	-17,270	30,625
60%	-8,548	5,000	51,790
70%	-15,711	45,016	0
80%	76,449	0	1,777
90%	8,692	52,091	30,997
Long Term			
Full Simulation Period[b]	4,176	3,979	19,009
Water Year Types[c]			
Wet (32%)	8,480	-14,005	33,471
Above Normal (16%)	15,745	16,011	24,664
Below Normal (13%)	3,537	-2,649	4,209
Dry (24%)	11,771	15,948	18,733
Critical (15%)	-29,753	16,033	-4,424

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

C.26. American River below Nimbus Steelhead Spawning WUA

Table C-26-1. American River Below Nimbus Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	285,223	279,028	277,336	280,548	280,548
20%	285,223	279,028	271,755	264,437	276,864
30%	285,223	273,342	263,024	251,454	269,281
40%	280,548	262,440	241,823	205,382	238,344
50%	274,021	231,899	195,347	195,347	206,383
60%	252,244	194,219	137,490	195,347	195,347
70%	195,347	142,694	105,666	167,825	186,789
80%	164,818	98,910	71,518	111,692	154,244
90%	93,384	70,711	70,711	81,209	107,736
Long Term					
Full Simulation Period[b]	229,569	199,778	179,729	193,238	210,109
Water Year Types[c]					
Wet (32%)	186,565	128,944	115,025	157,936	183,565
Above Normal (16%)	224,484	198,784	161,582	169,629	230,626
Below Normal (13%)	256,911	243,922	217,841	242,027	227,164
Dry (24%)	262,329	254,455	240,539	222,522	228,484
Critical (15%)	248,593	222,736	203,294	201,770	199,135

Alternative 1

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	285,223	279,028	272,186	280,548	281,607
20%	285,223	279,028	263,555	268,472	278,599
30%	282,337	273,690	253,891	249,447	274,209
40%	277,607	264,248	226,168	205,760	252,416
50%	263,613	222,420	195,347	195,347	235,044
60%	240,908	195,347	128,662	195,347	195,347
70%	195,347	145,999	103,353	166,005	187,494
80%	155,541	99,151	72,131	106,868	154,447
90%	81,014	70,711	70,711	80,740	107,736
Long Term					
Full Simulation Period[b]	223,019	199,831	175,836	192,340	213,917
Water Year Types[c]					
Wet (32%)	176,198	128,443	111,109	157,999	183,660
Above Normal (16%)	215,958	193,304	156,690	166,724	230,884
Below Normal (13%)	251,048	248,135	207,597	242,179	235,743
Dry (24%)	256,972	250,904	235,574	223,024	232,560
Critical (15%)	249,833	232,173	208,143	197,667	210,012

Alternative 1 minus No Action Alternative

Statistic	Dec	Jan	Feb	Mar	Apr
	Monthly WUA (Feet2)				
Probability of Exceedance[a]					
10%	0	0	-5,150	0	1,058
20%	0	0	-8,200	4,035	1,735
30%	-2,886	349	-9,133	-2,007	4,928
40%	-2,941	1,808	-15,655	378	14,072
50%	-10,408	-9,479	0	0	28,662
60%	-11,335	1,128	-8,829	0	0
70%	0	3,305	-2,314	-1,820	705
80%	-9,277	241	612	-4,824	203
90%	-12,370	0	0	-470	0
Long Term					
Full Simulation Period[b]	-6,550	52	-3,893	-898	3,808
Water Year Types[c]					
Wet (32%)	-10,367	-502	-3,916	62	96
Above Normal (16%)	-8,526	-5,480	-4,893	-2,904	259
Below Normal (13%)	-5,863	4,213	-10,244	152	8,579
Dry (24%)	-5,357	-3,552	-4,964	502	4,076
Critical (15%)	1,239	9,437	4,848	-4,103	10,878

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-2. American River Below Nimbus Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	277,336	280,548	280,548
20%	285,223	279,028	271,755	264,437	276,864
30%	285,223	273,342	263,024	251,454	269,281
40%	280,548	262,440	241,823	205,382	238,344
50%	274,021	231,899	195,347	195,347	206,383
60%	252,244	194,219	137,490	195,347	195,347
70%	195,347	142,694	105,666	167,825	186,789
80%	164,818	98,910	71,518	111,692	154,244
90%	93,384	70,711	70,711	81,209	107,736
Long Term					
Full Simulation Period[b]	229,569	199,778	179,729	193,238	210,109
Water Year Types[c]					
Wet (32%)	186,565	128,944	115,025	157,936	183,565
Above Normal (16%)	224,484	198,784	161,582	169,629	230,626
Below Normal (13%)	256,911	243,922	217,841	242,027	227,164
Dry (24%)	262,329	254,455	240,539	222,522	228,484
Critical (15%)	248,593	222,736	203,294	201,770	199,135

Alternative 3

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	280,378	272,186	280,548	280,548
20%	285,223	279,028	263,024	268,472	276,329
30%	280,548	274,553	252,405	249,823	270,028
40%	275,387	264,772	228,189	205,760	244,427
50%	261,755	222,271	195,347	195,347	226,177
60%	240,905	195,347	128,655	195,347	195,347
70%	195,347	143,311	103,353	166,005	187,494
80%	156,211	99,151	72,200	106,868	154,304
90%	81,071	70,711	70,711	80,979	107,736
Long Term					
Full Simulation Period[b]	224,527	200,366	175,739	192,500	211,277
Water Year Types[c]					
Wet (32%)	176,682	128,381	111,139	157,999	183,643
Above Normal (16%)	220,890	197,449	158,358	166,569	230,799
Below Normal (13%)	250,017	246,437	206,868	242,167	229,934
Dry (24%)	260,218	251,966	235,063	222,283	227,573
Critical (15%)	249,279	231,262	207,131	200,181	205,740

Alternative 3 minus No Action Alternative

Statistic	Monthly WUA (Feet2)				
	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	1,350	-5,150	0	0
20%	0	0	-8,731	4,035	-536
30%	-4,674	1,212	-10,619	-1,631	748
40%	-5,162	2,332	-13,635	378	6,083
50%	-12,266	-9,628	0	0	19,794
60%	-11,338	1,128	-8,835	0	0
70%	0	617	-2,314	-1,820	705
80%	-8,606	241	682	-4,824	60
90%	-12,313	0	0	-230	0
Long Term					
Full Simulation Period[b]	-5,043	588	-3,990	-738	1,168
Water Year Types[c]					
Wet (32%)	-9,884	-563	-3,887	62	78
Above Normal (16%)	-3,594	-1,335	-3,224	-3,060	174
Below Normal (13%)	-6,894	2,515	-10,973	139	2,769
Dry (24%)	-2,111	-2,489	-5,476	-240	-911
Critical (15%)	686	8,525	3,837	-1,589	6,606

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-3. American River Below Nimbus Steelhead Spawning WUA, Monthly WUA

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	277,336	280,548	280,548
20%	285,223	279,028	271,755	264,437	276,864
30%	285,223	273,342	263,024	251,454	269,281
40%	280,548	262,440	241,823	205,382	238,344
50%	274,021	231,899	195,347	195,347	206,383
60%	252,244	194,219	137,490	195,347	195,347
70%	195,347	142,694	105,666	167,825	186,789
80%	164,818	98,910	71,518	111,692	154,244
90%	93,384	70,711	70,711	81,209	107,736
Long Term					
Full Simulation Period[b]	229,569	199,778	179,729	193,238	210,109
Water Year Types[c]					
Wet (32%)	186,565	128,944	115,025	157,936	183,565
Above Normal (16%)	224,484	198,784	161,582	169,629	230,626
Below Normal (13%)	256,911	243,922	217,841	242,027	227,164
Dry (24%)	262,329	254,455	240,539	222,522	228,484
Critical (15%)	248,593	222,736	203,294	201,770	199,135

Alternative 5

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	277,336	280,548	280,548
20%	285,223	279,028	271,741	264,360	276,329
30%	284,188	273,228	259,731	251,261	266,932
40%	280,520	262,675	234,998	205,307	238,344
50%	272,556	232,665	195,347	195,347	200,225
60%	253,403	189,969	136,905	195,347	195,347
70%	195,347	140,468	105,656	165,839	186,539
80%	166,533	98,405	71,525	111,692	154,260
90%	93,239	70,711	70,711	81,131	107,736
Long Term					
Full Simulation Period[b]	228,903	198,721	179,687	193,113	209,482
Water Year Types[c]					
Wet (32%)	186,628	128,857	115,004	157,938	183,569
Above Normal (16%)	223,573	199,284	161,575	169,488	230,609
Below Normal (13%)	252,282	235,698	219,524	241,747	225,309
Dry (24%)	262,804	254,505	239,729	222,559	228,468
Critical (15%)	248,342	222,615	202,869	201,260	196,590

Alternative 5 minus No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	0	0	0
20%	0	0	-14	-77	-536
30%	-1,035	-113	-3,293	-193	-2,349
40%	-28	235	-6,825	-75	0
50%	-1,465	766	0	0	-6,157
60%	1,159	-4,250	-585	0	0
70%	0	-2,226	-10	-1,986	-250
80%	1,716	-505	7	0	16
90%	-144	0	0	-79	0
Long Term					
Full Simulation Period[b]	-666	-1,057	-42	-125	-627
Water Year Types[c]					
Wet (32%)	63	-87	-21	2	4
Above Normal (16%)	-911	500	-7	-141	-16
Below Normal (13%)	-4,629	-8,224	1,683	-280	-1,855
Dry (24%)	476	50	-809	36	-16
Critical (15%)	-251	-122	-426	-510	-2,545

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-4. American River Below Nimbus Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	272,186	280,548	281,607
20%	285,223	279,028	263,555	268,472	278,599
30%	282,337	273,690	253,891	249,447	274,209
40%	277,607	264,248	226,168	205,760	252,416
50%	263,613	222,420	195,347	195,347	235,044
60%	240,908	195,347	128,662	195,347	195,347
70%	195,347	145,999	103,353	166,005	187,494
80%	155,541	99,151	72,131	106,868	154,447
90%	81,014	70,711	70,711	80,740	107,736
Long Term					
Full Simulation Period[b]	223,019	199,831	175,836	192,340	213,917
Water Year Types[c]					
Wet (32%)	176,198	128,443	111,109	157,999	183,660
Above Normal (16%)	215,958	193,304	156,690	166,724	230,884
Below Normal (13%)	251,048	248,135	207,597	242,179	235,743
Dry (24%)	256,972	250,904	235,574	223,024	232,560
Critical (15%)	249,833	232,173	208,143	197,667	210,012

No Action Alternative

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	277,336	280,548	280,548
20%	285,223	279,028	271,755	264,437	276,864
30%	285,223	273,342	263,024	251,454	269,281
40%	280,548	262,440	241,823	205,382	238,344
50%	274,021	231,899	195,347	195,347	206,383
60%	252,244	194,219	137,490	195,347	195,347
70%	195,347	142,694	105,666	167,825	186,789
80%	164,818	98,910	71,518	111,692	154,244
90%	93,384	70,711	70,711	81,209	107,736
Long Term					
Full Simulation Period[b]	229,569	199,778	179,729	193,238	210,109
Water Year Types[c]					
Wet (32%)	186,565	128,944	115,025	157,936	183,565
Above Normal (16%)	224,484	198,784	161,582	169,629	230,626
Below Normal (13%)	256,911	243,922	217,841	242,027	227,164
Dry (24%)	262,329	254,455	240,539	222,522	228,484
Critical (15%)	248,593	222,736	203,294	201,770	199,135

No Action Alternative minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	5,150	0	-1,058
20%	0	0	8,200	-4,035	-1,735
30%	2,886	-349	9,133	2,007	-4,928
40%	2,941	-1,808	15,655	-378	-14,072
50%	10,408	9,479	0	0	-28,662
60%	11,335	-1,128	8,829	0	0
70%	0	-3,305	2,314	1,820	-705
80%	9,277	-241	-612	4,824	-203
90%	12,370	0	0	470	0
Long Term					
Full Simulation Period[b]	6,550	-52	3,893	898	-3,808
Water Year Types[c]					
Wet (32%)	10,367	502	3,916	-62	-96
Above Normal (16%)	8,526	5,480	4,893	2,904	-259
Below Normal (13%)	5,863	-4,213	10,244	-152	-8,579
Dry (24%)	5,357	3,552	4,964	-502	-4,076
Critical (15%)	-1,239	-9,437	-4,848	4,103	-10,878

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-5. American River Below Nimbus Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	272,186	280,548	281,607
20%	285,223	279,028	263,555	268,472	278,599
30%	282,337	273,690	253,891	249,447	274,209
40%	277,607	264,248	226,168	205,760	252,416
50%	263,613	222,420	195,347	195,347	235,044
60%	240,908	195,347	128,662	195,347	195,347
70%	195,347	145,999	103,353	166,005	187,494
80%	155,541	99,151	72,131	106,868	154,447
90%	81,014	70,711	70,711	80,740	107,736
Long Term					
Full Simulation Period[b]	223,019	199,831	175,836	192,340	213,917
Water Year Types[c]					
Wet (32%)	176,198	128,443	111,109	157,999	183,660
Above Normal (16%)	215,958	193,304	156,690	166,724	230,884
Below Normal (13%)	251,048	248,135	207,597	242,179	235,743
Dry (24%)	256,972	250,904	235,574	223,024	232,560
Critical (15%)	249,833	232,173	208,143	197,667	210,012

Alternative 3

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	280,378	272,186	280,548	280,548
20%	285,223	279,028	263,024	268,472	276,329
30%	280,548	274,553	252,405	249,823	270,028
40%	275,387	264,772	228,189	205,760	244,427
50%	261,755	222,271	195,347	195,347	226,177
60%	240,905	195,347	128,655	195,347	195,347
70%	195,347	143,311	103,353	166,005	187,494
80%	156,211	99,151	72,200	106,868	154,304
90%	81,071	70,711	70,711	80,979	107,736
Long Term					
Full Simulation Period[b]	224,527	200,366	175,739	192,500	211,277
Water Year Types[c]					
Wet (32%)	176,682	128,381	111,139	157,999	183,643
Above Normal (16%)	220,890	197,449	158,358	166,569	230,799
Below Normal (13%)	250,017	246,437	206,868	242,167	229,934
Dry (24%)	260,218	251,966	235,063	222,283	227,573
Critical (15%)	249,279	231,262	207,131	200,181	205,740

Alternative 3 minus Second Basis of Comparison

Statistic	Monthly WUA (Feet2) Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	1,350	0	0	-1,058
20%	0	0	-531	0	-2,271
30%	-1,788	863	-1,485	376	-4,181
40%	-2,220	524	2,020	0	-7,988
50%	-1,858	-148	0	0	-8,867
60%	-3	0	-6	0	0
70%	0	-2,688	0	-1	0
80%	671	0	70	0	-143
90%	57	0	0	240	0
Long Term					
Full Simulation Period[b]	1,507	536	-97	161	-2,640
Water Year Types[c]					
Wet (32%)	483	-62	29	0	-18
Above Normal (16%)	4,932	4,145	1,668	-156	-85
Below Normal (13%)	-1,031	-1,698	-729	-13	-5,810
Dry (24%)	3,246	1,063	-511	-742	-4,987
Critical (15%)	-553	-912	-1,011	2,514	-4,272

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification
(SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table C-26-6. American River Below Nimbus Steelhead Spawning WUA, Monthly WUA

Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	272,186	280,548	281,607
20%	285,223	279,028	263,555	268,472	278,599
30%	282,337	273,690	253,891	249,447	274,209
40%	277,607	264,248	226,168	205,760	252,416
50%	263,613	222,420	195,347	195,347	235,044
60%	240,908	195,347	128,662	195,347	195,347
70%	195,347	145,999	103,353	166,005	187,494
80%	155,541	99,151	72,131	106,868	154,447
90%	81,014	70,711	70,711	80,740	107,736
Long Term					
Full Simulation Period[b]	223,019	199,831	175,836	192,340	213,917
Water Year Types[c]					
Wet (32%)	176,198	128,443	111,109	157,999	183,660
Above Normal (16%)	215,958	193,304	156,690	166,724	230,884
Below Normal (13%)	251,048	248,135	207,597	242,179	235,743
Dry (24%)	256,972	250,904	235,574	223,024	232,560
Critical (15%)	249,833	232,173	208,143	197,667	210,012

Alternative 5

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	285,223	279,028	277,336	280,548	280,548
20%	285,223	279,028	271,741	264,360	276,329
30%	284,188	273,228	259,731	251,261	266,932
40%	280,520	262,675	234,998	205,307	238,344
50%	272,556	232,665	195,347	195,347	200,225
60%	253,403	189,969	136,905	195,347	195,347
70%	195,347	140,468	105,656	165,839	186,539
80%	166,533	98,405	71,525	111,692	154,260
90%	93,239	70,711	70,711	81,131	107,736
Long Term					
Full Simulation Period[b]	228,903	198,721	179,687	193,113	209,482
Water Year Types[c]					
Wet (32%)	186,628	128,857	115,004	157,938	183,569
Above Normal (16%)	223,573	199,284	161,575	169,488	230,609
Below Normal (13%)	252,282	235,698	219,524	241,747	225,309
Dry (24%)	262,804	254,505	239,729	222,559	228,468
Critical (15%)	248,342	222,615	202,869	201,260	196,590

Alternative 5 minus Second Basis of Comparison

	Monthly WUA (Feet2)				
Statistic	Dec	Jan	Feb	Mar	Apr
Probability of Exceedance[a]					
10%	0	0	5,150	0	-1,058
20%	0	0	8,186	-4,112	-2,271
30%	1,851	-462	5,840	1,814	-7,278
40%	2,913	-1,573	8,830	-452	-14,072
50%	8,943	10,245	0	0	-34,819
60%	12,495	-5,378	8,243	0	0
70%	0	-5,531	2,304	-166	-955
80%	10,993	-746	-606	4,824	-188
90%	12,225	0	0	391	0
Long Term					
Full Simulation Period[b]	5,884	-1,110	3,851	773	-4,435
Water Year Types[c]					
Wet (32%)	10,430	414	3,895	-61	-92
Above Normal (16%)	7,615	5,980	4,885	2,763	-275
Below Normal (13%)	1,234	-12,438	11,927	-432	-10,434
Dry (24%)	5,832	3,601	4,155	-466	-4,092
Critical (15%)	-1,490	-9,559	-5,274	3,594	-13,423

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

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Appendix 9F

Reservoir Fish Analysis Documentation

This appendix provides information about the methods and assumptions used for the Coordinated Long Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis of reservoir fish. It is organized in two main sections:

- Section 9F.1: Reservoir Fish Analysis Methodology and Assumptions
  - The reservoir fish impacts analysis uses modeled monthly reservoir elevations to develop rates of water level change to evaluate the effects on reservoir fish that spawn in the nearshore areas. The species analyzed were Largemouth Bass, Smallmouth Bass, and Spotted Bass. This section describes the overall analytical approach and assumptions.
- Section 9F.2: Reservoir Fish Analysis Results
  - This section presents the survival estimates for each reservoir and fish species evaluated during the spawning period. Statistics are presented in exceedance plots and in tabular format.

9F.1 Reservoir Fish Analysis Methodology and Assumptions

9F.1.1 Reservoir Fish Analysis Methodology

Reservoir storage and surface water elevations in the reservoirs from the CalSim II model were used to analyze the potential effects on reservoir fishes. Although aquatic habitat within the CVP and SWP water supply reservoirs may not be limiting, storage volume is used as an indicator of how much habitat is available to fish species inhabiting these reservoirs. Warm water fish species that inhabit the upper layer of these reservoirs may be affected by fluctuations in storage through changes in reservoir water surface elevations.

The evaluation method used to assess the influence of fluctuating water levels in the reservoirs was developed using the relationship presented in Lee (1999) and by examining literature on nest success levels found in self-sustaining populations of black bass (*Micropterus* spp.). Available literature suggests that nest failure is highly variable among water bodies and between years, but it is not uncommon to have up to 40 percent of nests fail (60 percent survival) (Scott and Crossman 1973). Many self-sustaining black bass populations in North America experience nest success (that is, the nest produces swim-up fry) rates of 21 to 96 percent, with many reported survival rates in the 40 to 60 percent range (Forbes 1981; Hunt and Annett 2002; Steinhart 2004) suggesting that much less than 100 percent survival is required to support a self-sustaining population. Based on the literature review, nest survival probability in excess of 40 percent is assumed to be sufficient to provide for a self-sustaining bass fishery.

The conceptual approach used to evaluate the effects of water surface elevation fluctuations on bass nests was based on a relationship between black bass nest success and water surface elevation reductions developed by Lee (1999) from research conducted on five California reservoirs. Lee (1999) examined the relationship between water surface elevation fluctuation rates and nesting success for Black Bass, and developed nest survival curves for Largemouth, Smallmouth, and Spotted bass. The equations corresponding to the relationship curves are the following:

- *Largemouth Bass* $Y = -56.378*\ln(X)-102.59$
- *Smallmouth Bass* $Y = -46.466*\ln(X)-83.34$
- *Spotted Bass* $Y = -79.095*\ln(X)-94.162$
  - where: X is the fluctuation rate (meter/day) and Y is the percentage of successful nests

Based on the work by Lee (1999), the maximum receding water level rate providing 100 percent successful nesting varied among species, with receding water level rates of less than 0.02, less than 0.01, and less than 0.065 meters per day (m/day) providing successful nesting of 100 percent of the Largemouth Bass, Smallmouth Bass, and Spotted Bass, nests, respectively. Recession rates of 0.07, 0.06, and 0.17 m/day would allow for successful nesting of 50 percent of the Largemouth Bass, Smallmouth Bass, and Spotted Bass, nests, respectively.

For this analysis, water surface elevations at the end of each month from the CalSim II model output were used to calculate the monthly, and subsequently, daily fluctuation rates used to compute the percentage of successful nests using the equations from Lee (1999). CalSim II reports end-of-month (EOM) water surface elevations; therefore, water surface elevations from February through June were used in this analysis (that is, the March fluctuation rate is equal to the March EOM elevation minus the February EOM elevation). The average daily fluctuation rate used as "X" in the equations presented previously to compute the percentage of successful nests during that month was approximated by use of the monthly change in elevation divided by the number of days in that month. The percentage of successful nests was computed based on the equations from Lee (1999) for each month of the potential spawning season for these species.

This assessment is not intended to predict the absolute rate of survival in Black Bass nests, but rather to provide the basis for evaluating the relative differences among alternatives. These results should be viewed as indicators of the relative performance of the alternatives evaluated.

9F.1.2 Reservoir Fish Analysis Scenario Assumptions

This section describes the assumptions for the Reservoir Fish Analysis for the No Action Alternative, Second Basis of Comparison, and other alternatives.

The following CalSim II model simulations were performed as the basis for evaluating the impacts of the Alternatives 1 through 5 as compared to the No

Action Alternative, and the No Action Alternative and Alternatives 1 through 5 as compared to the Second Basis of Comparison:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 2 – for simulation purposes, considered the same as No Action Alternative
- Alternative 3
- Alternative 4 – for simulation purposes, considered the same as Second Basis of Comparison
- Alternative 5

Assumptions for each of these alternatives were developed with the surface water modeling tools and are described in Appendix 5A, Section B.

Alternative 1 modeling assumptions are the same as those for the Second Basis of Comparison and Alternative 2 modeling assumptions are the same as those for the No Action Alternative; therefore, the assumptions for those alternatives are not discussed separately in this document.

Assumptions for each of these alternatives are reflected to monthly CalSim II reservoir storage elevations that are used in the Reservoir Fish analysis described in this section.

9F.2 Reservoir Fish Results

Results are provided for each of the following runs separately:

- No Action Alternative
- Second Basis of Comparison
- Alternative 1
- Alternative 3
- Alternative 5

In addition, the same statistics are provided for the following comparisons to establish changes of the alternative with respect to one of the bases of comparison:

- Alternative 1 compared to No Action Alternative
- Alternative 3 compared to No Action Alternative
- Alternative 5 compared to No Action Alternative

- No Action Alternative compared to Second Basis of Comparison
- Alternative 1 compared to Second Basis of Comparison
- Alternative 3 compared to Second Basis of Comparison
- Alternative 5 compared to Second Basis of Comparison

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

The first set of results is provided as probability exceedance curves of nest survival percentage for each reservoir and species of bass. For this analysis, exceedance plots for the percentage of nest survival were generated based on the 82-year CalSim II time period for each of the alternatives and bases of comparison. Differences among alternatives were evaluated using the exceedance probability corresponding to varying levels of survival.

The second set of results is provided as tables summarizing the monthly nest survival percentage for each reservoir and species of bass (as described previously) with monthly exceedance probabilities and long-term averages over the entire CalSim II simulation period. Averages are also provided by water year type.

Exceedance plots and tables, numbered to correspond to the following model results, are presented at the end of this appendix:

- B.1. Trinity Largemouth Bass Survival Percentage
- B.2. Trinity Smallmouth Bass Survival Percentage
- B.3. Trinity Spotted Bass Survival Percentage
- B.4. Shasta Largemouth Bass Survival Percentage
- B.5. Shasta Smallmouth Bass Survival Percentage
- B.6. Shasta Spotted Bass Survival Percentage
- B.7. Oroville Largemouth Bass Survival Percentage
- B.8. Oroville Smallmouth Bass Survival Percentage
- B.9. Oroville Spotted Bass Survival Percentage
- B.10. Folsom Largemouth Bass Survival Percentage
- B.11. Folsom Smallmouth Bass Survival Percentage
- B.12. Folsom Spotted Bass Survival Percentage
- B.13. New Melones Largemouth Bass Survival Percentage
- B.14. New Melones Smallmouth Bass Survival Percentage
- B.15. New Melones Spotted Bass Survival Percentage

9F.3 References

Forbes, A. 1981. *Review of Smallmouth Bass (Micropterus dolomieui) Spawning Requirements and First Year Survival in Lakes*. Wisconsin Department of Natural Resources Research Report 111.

Hunt, J. and C.A. Annett. 2002. *Effects of habitat manipulation on reproductive success of individual largemouth bass in an Ozark Reservoir*. North American Journal of Fisheries Management 22:1201-1208.

Lee, D.P. 1999. *Water Level Fluctuation Criteria for Black Bass in California Reservoirs*. California Department of Fish and Game. Reservoir Research and Management Project–Informational Leaflet No. 12. 12 pp.

Scott, W.B. and E.J. Crossman, 1973. *Freshwater fishes of Canada*. Bull. Fish. Res. Board Can. 184:1-966.

Steinhart, G.B. 2004. *Exploring factors affecting smallmouth bass nest success and reproductive behavior*. Ph. D. Dissertation. Department of Evolution, Ecology, and Organismal Biology. The Ohio State University.

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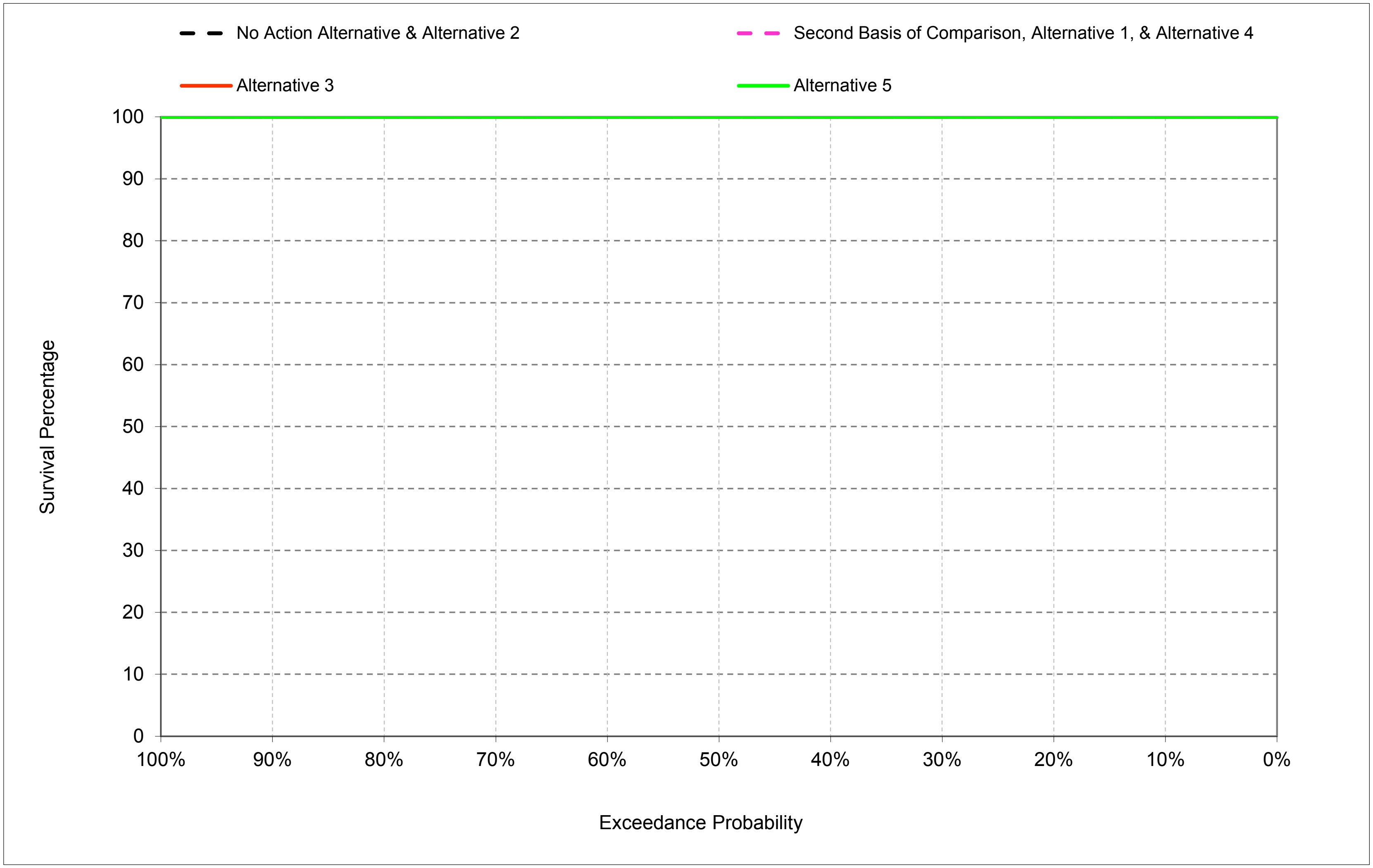
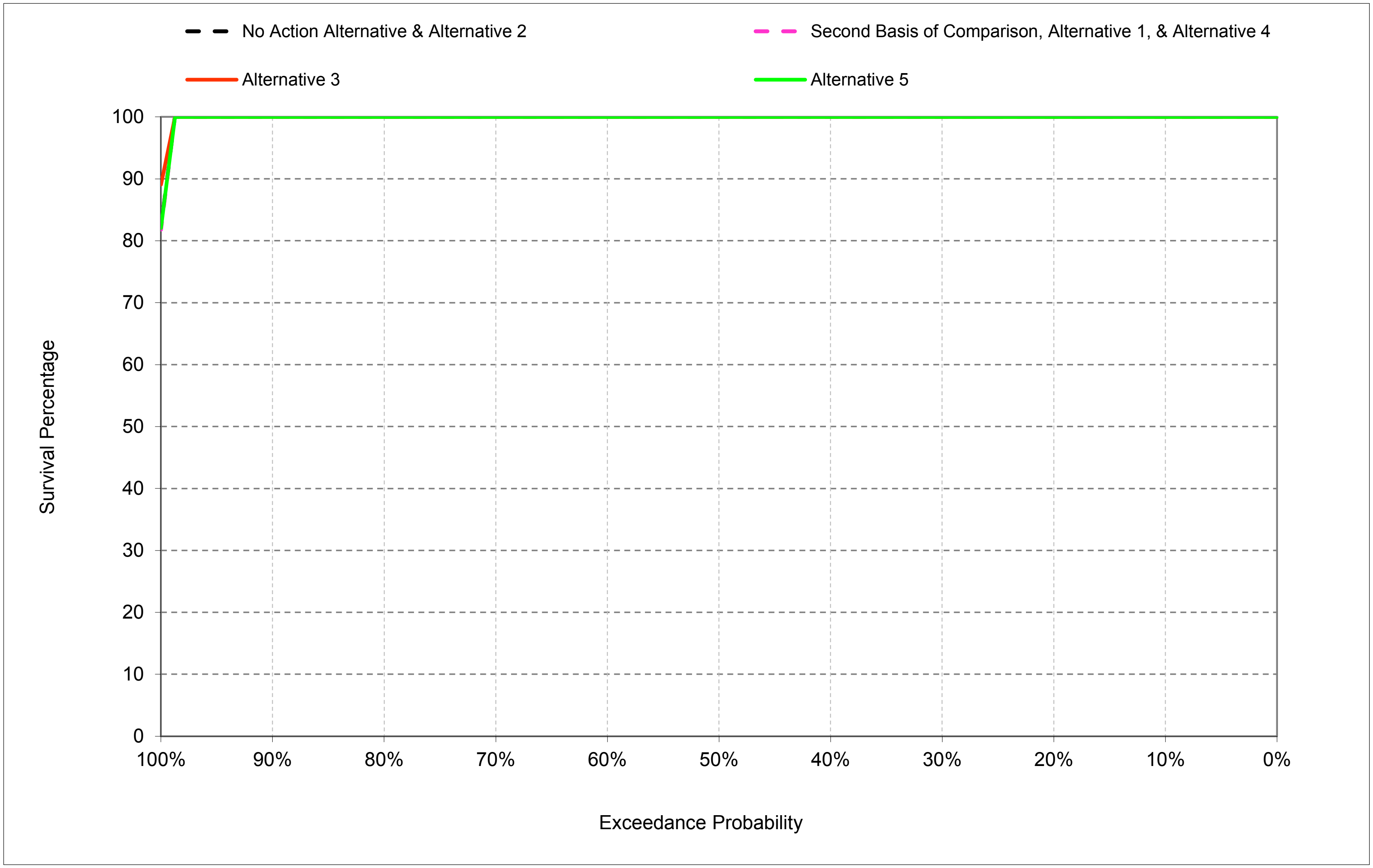
B.1. Trinity Large Mouth Bass Survival Percentage

Figure B-1-1. Trinity Large Mouth Bass Nest Survival Percentage, March



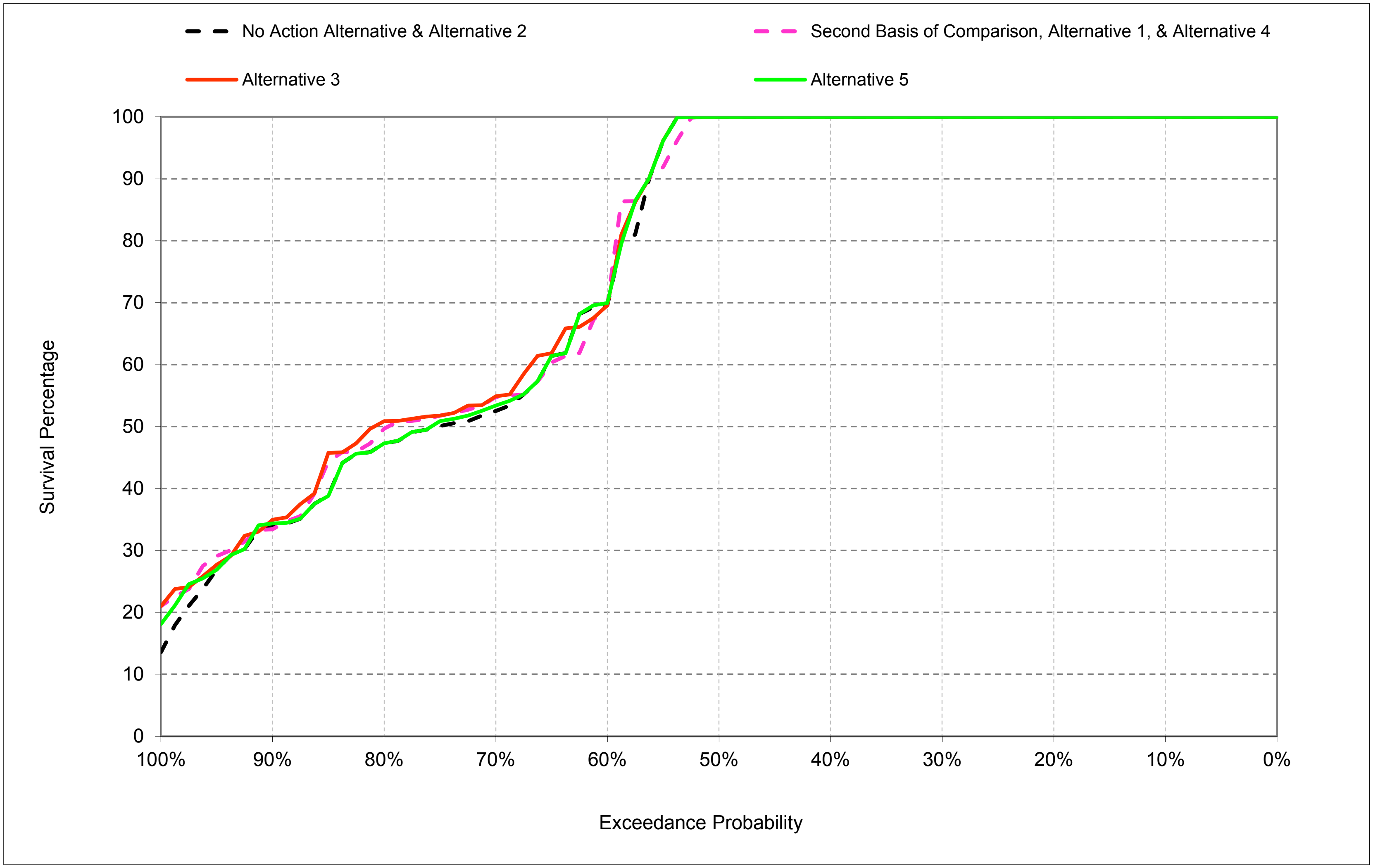
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-2. Trinity Large Mouth Bass Nest Survival Percentage, April



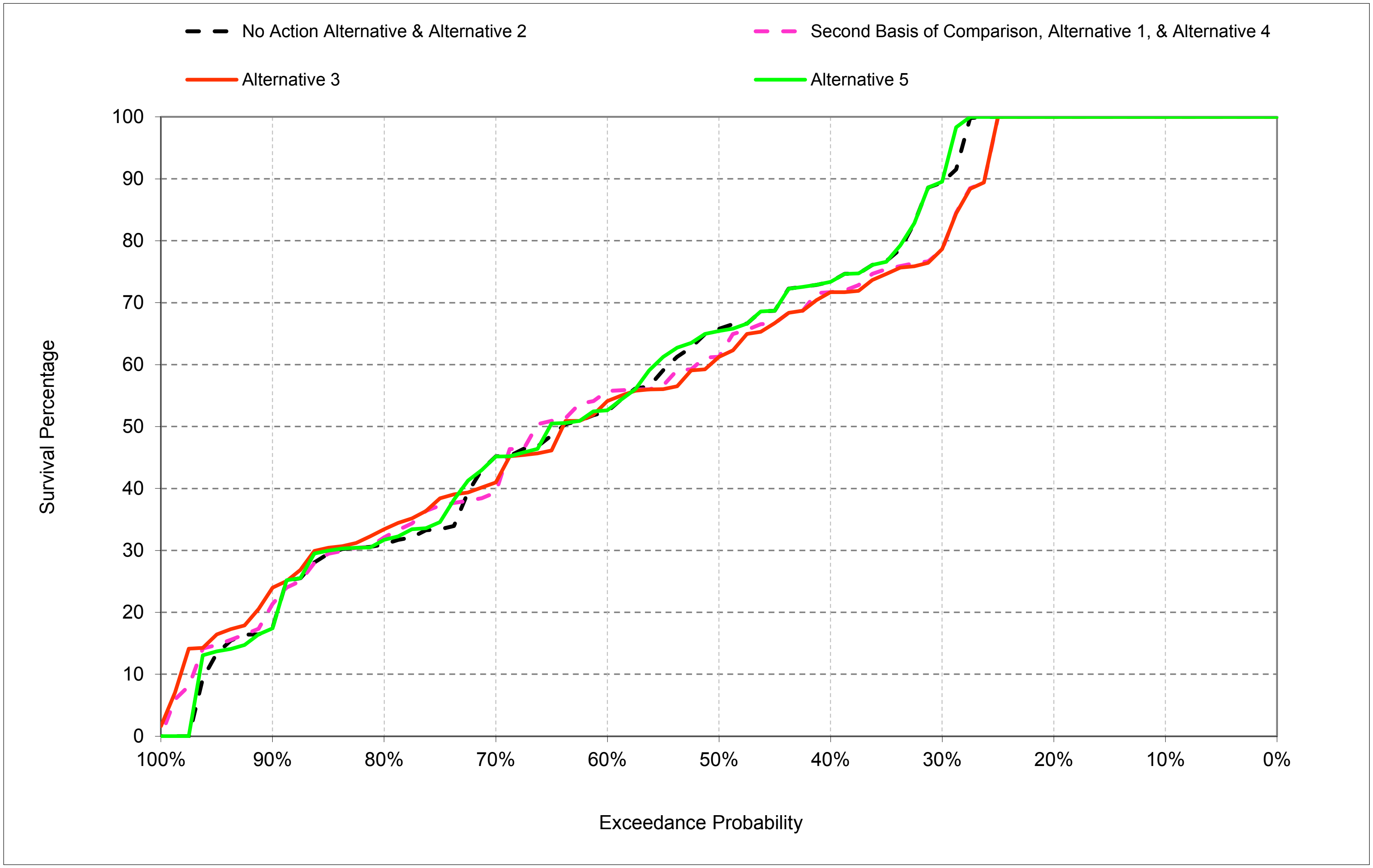
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-3. Trinity Large Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-1-4. Trinity Large Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-1. Trinity Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	89
40%	100	100	100	73
50%	100	100	100	65
60%	100	100	69	52
70%	100	100	52	44
80%	100	100	46	31
90%	100	100	33	17
Long Term				
Full Simulation Period[b]	100	100	76	62
Water Year Types[c]				
Wet (32%)	99	100	87	72
Above Normal (16%)	100	100	84	52
Below Normal (13%)	100	100	64	42
Dry (24%)	100	100	67	58
Critical (15%)	100	97	67	75

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	78
40%	100	100	100	72
50%	100	100	100	61
60%	100	100	68	55
70%	100	100	54	39
80%	100	100	48	31
90%	100	100	33	18
Long Term				
Full Simulation Period[b]	100	99	76	61
Water Year Types[c]				
Wet (32%)	99	100	87	71
Above Normal (16%)	100	100	85	51
Below Normal (13%)	100	100	66	46
Dry (24%)	100	100	68	59
Critical (15%)	100	95	69	69

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-11
40%	0	0	0	-2
50%	0	0	0	-4
60%	0	0	-1	3
70%	0	0	2	-5
80%	0	0	2	0
90%	0	0	0	1
Long Term				
Full Simulation Period[b]	0	0	1	-1
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	1	-1
Below Normal (13%)	0	0	1	4
Dry (24%)	0	0	0	0
Critical (15%)	0	-2	1	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-2. Trinity Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	89
40%	100	100	100	73
50%	100	100	100	65
60%	100	100	69	52
70%	100	100	52	44
80%	100	100	46	31
90%	100	100	33	17
Long Term				
Full Simulation Period[b]	100	100	76	62
Water Year Types[c]				
Wet (32%)	99	100	87	72
Above Normal (16%)	100	100	84	52
Below Normal (13%)	100	100	64	42
Dry (24%)	100	100	67	58
Critical (15%)	100	97	67	75

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	78
40%	100	100	100	71
50%	100	100	100	60
60%	100	100	68	53
70%	100	100	54	40
80%	100	100	50	32
90%	100	100	33	21
Long Term				
Full Simulation Period[b]	100	100	77	61
Water Year Types[c]				
Wet (32%)	99	100	87	71
Above Normal (16%)	100	100	86	52
Below Normal (13%)	100	100	65	42
Dry (24%)	100	100	68	60
Critical (15%)	100	98	70	70

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-11
40%	0	0	0	-2
50%	0	0	0	-5
60%	0	0	-1	1
70%	0	0	2	-3
80%	0	0	4	2
90%	0	0	0	4
Long Term				
Full Simulation Period[b]	0	0	1	-1
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	2	0
Below Normal (13%)	0	0	1	0
Dry (24%)	0	0	1	2
Critical (15%)	0	1	2	-5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-3. Trinity Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	89
40%	100	100	100	73
50%	100	100	100	65
60%	100	100	69	52
70%	100	100	52	44
80%	100	100	46	31
90%	100	100	33	17
Long Term				
Full Simulation Period[b]	100	100	76	62
Water Year Types[c]				
Wet (32%)	99	100	87	72
Above Normal (16%)	100	100	84	52
Below Normal (13%)	100	100	64	42
Dry (24%)	100	100	67	58
Critical (15%)	100	97	67	75

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	89
40%	100	100	100	73
50%	100	100	100	65
60%	100	100	70	53
70%	100	100	53	44
80%	100	100	46	31
90%	100	100	34	17
Long Term				
Full Simulation Period[b]	100	100	76	62
Water Year Types[c]				
Wet (32%)	99	100	87	72
Above Normal (16%)	100	100	84	53
Below Normal (13%)	100	100	65	42
Dry (24%)	100	100	68	58
Critical (15%)	100	97	67	78

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	1	0
80%	0	0	0	0
90%	0	0	1	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	1	0
Dry (24%)	0	0	0	-1
Critical (15%)	0	0	0	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-4. Trinity Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	78
40%	100	100	100	72
50%	100	100	100	61
60%	100	100	68	55
70%	100	100	54	39
80%	100	100	48	31
90%	100	100	33	18
Long Term				
Full Simulation Period[b]	100	99	76	61
Water Year Types[c]				
Wet (32%)	99	100	87	71
Above Normal (16%)	100	100	85	51
Below Normal (13%)	100	100	66	46
Dry (24%)	100	100	68	59
Critical (15%)	100	95	69	69

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	89
40%	100	100	100	73
50%	100	100	100	65
60%	100	100	69	52
70%	100	100	52	44
80%	100	100	46	31
90%	100	100	33	17
Long Term				
Full Simulation Period[b]	100	100	76	62
Water Year Types[c]				
Wet (32%)	99	100	87	72
Above Normal (16%)	100	100	84	52
Below Normal (13%)	100	100	64	42
Dry (24%)	100	100	67	58
Critical (15%)	100	97	67	75

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	11
40%	0	0	0	2
50%	0	0	0	4
60%	0	0	1	-3
70%	0	0	-2	5
80%	0	0	-2	0
90%	0	0	0	-1
Long Term				
Full Simulation Period[b]	0	0	-1	1
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	-1	1
Below Normal (13%)	0	0	-1	-4
Dry (24%)	0	0	0	0
Critical (15%)	0	2	-1	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-5. Trinity Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	78
40%	100	100	100	72
50%	100	100	100	61
60%	100	100	68	55
70%	100	100	54	39
80%	100	100	48	31
90%	100	100	33	18
Long Term				
Full Simulation Period[b]	100	99	76	61
Water Year Types[c]				
Wet (32%)	99	100	87	71
Above Normal (16%)	100	100	85	51
Below Normal (13%)	100	100	66	46
Dry (24%)	100	100	68	59
Critical (15%)	100	95	69	69

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	78
40%	100	100	100	71
50%	100	100	100	60
60%	100	100	68	53
70%	100	100	54	40
80%	100	100	50	32
90%	100	100	33	21
Long Term				
Full Simulation Period[b]	100	100	77	61
Water Year Types[c]				
Wet (32%)	99	100	87	71
Above Normal (16%)	100	100	86	52
Below Normal (13%)	100	100	65	42
Dry (24%)	100	100	68	60
Critical (15%)	100	98	70	70

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	-1
60%	0	0	0	-2
70%	0	0	0	2
80%	0	0	2	2
90%	0	0	0	3
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	1	1
Below Normal (13%)	0	0	0	-4
Dry (24%)	0	0	0	1
Critical (15%)	0	3	1	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-1-6. Trinity Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	78
40%	100	100	100	72
50%	100	100	100	61
60%	100	100	68	55
70%	100	100	54	39
80%	100	100	48	31
90%	100	100	33	18
Long Term				
Full Simulation Period[b]	100	99	76	61
Water Year Types[c]				
Wet (32%)	99	100	87	71
Above Normal (16%)	100	100	85	51
Below Normal (13%)	100	100	66	46
Dry (24%)	100	100	68	59
Critical (15%)	100	95	69	69

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	89
40%	100	100	100	73
50%	100	100	100	65
60%	100	100	70	53
70%	100	100	53	44
80%	100	100	46	31
90%	100	100	34	17
Long Term				
Full Simulation Period[b]	100	100	76	62
Water Year Types[c]				
Wet (32%)	99	100	87	72
Above Normal (16%)	100	100	84	53
Below Normal (13%)	100	100	65	42
Dry (24%)	100	100	68	58
Critical (15%)	100	97	67	78

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	11
40%	0	0	0	2
50%	0	0	0	4
60%	0	0	2	-2
70%	0	0	-1	5
80%	0	0	-2	0
90%	0	0	1	-1
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	0	2
Below Normal (13%)	0	0	0	-4
Dry (24%)	0	0	0	-1
Critical (15%)	0	2	-1	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

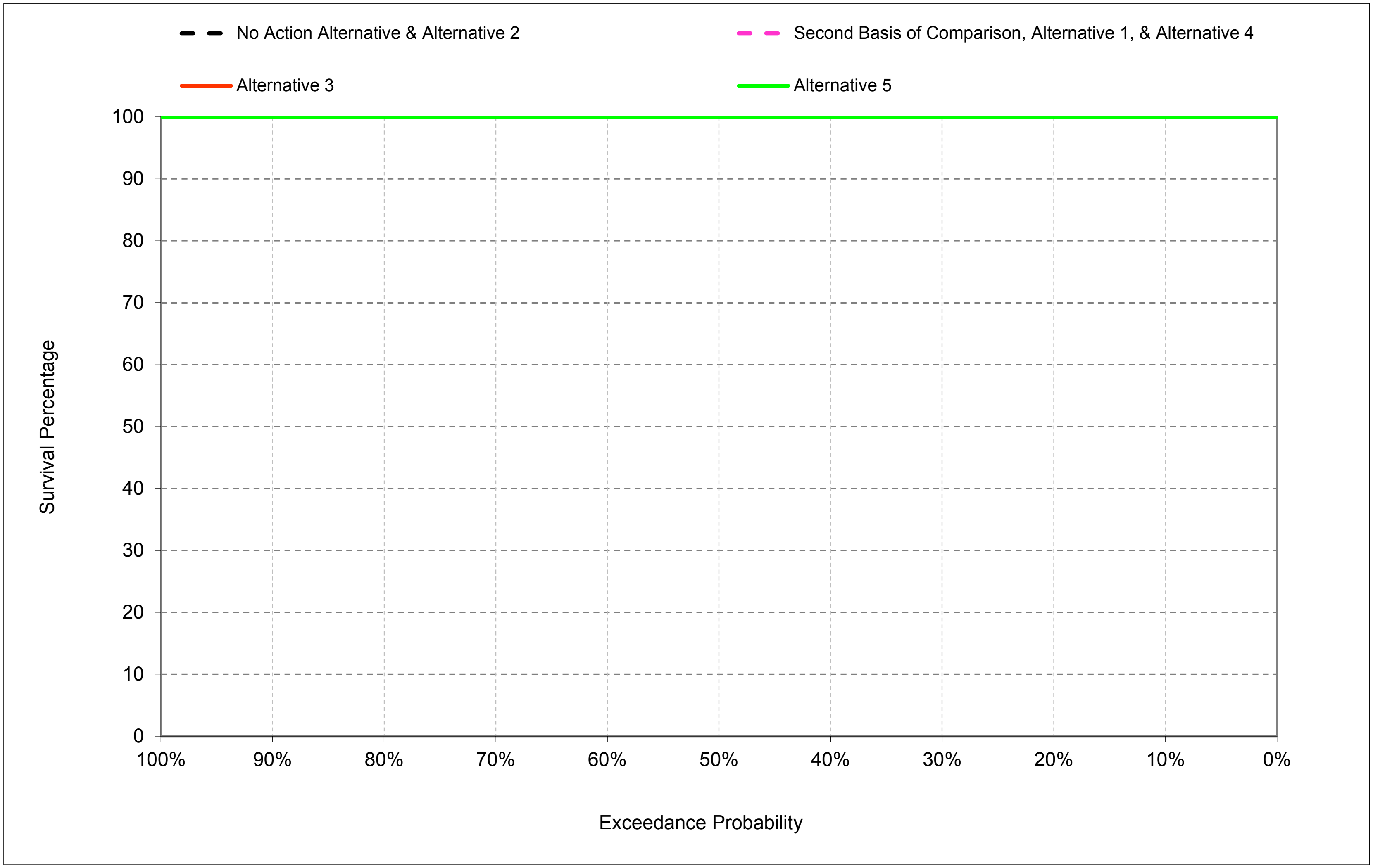
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

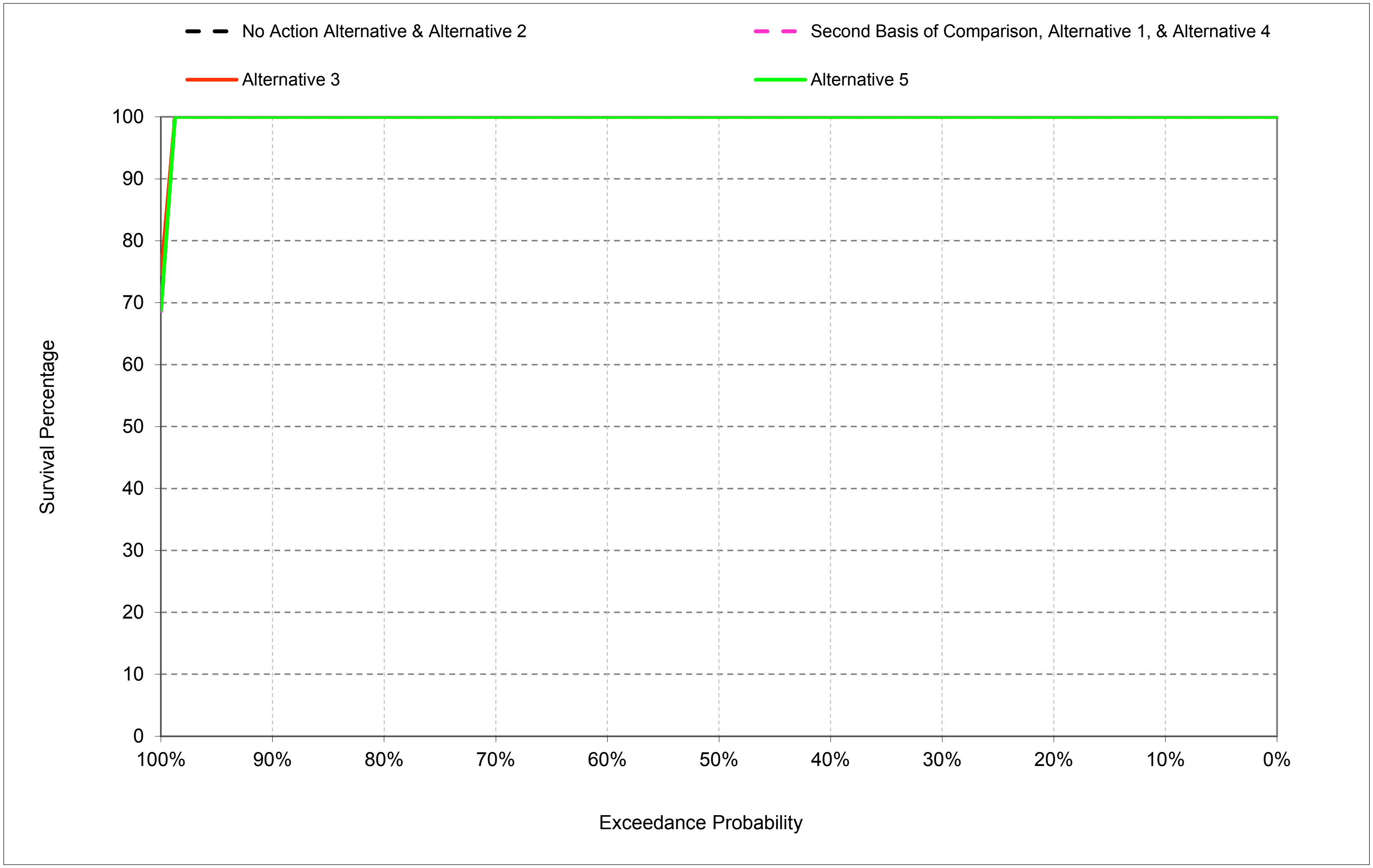
B.2. Trinity Small Mouth Bass Survival Percentage

Figure B-2-1. Trinity Small Mouth Bass Nest Survival Percentage, March



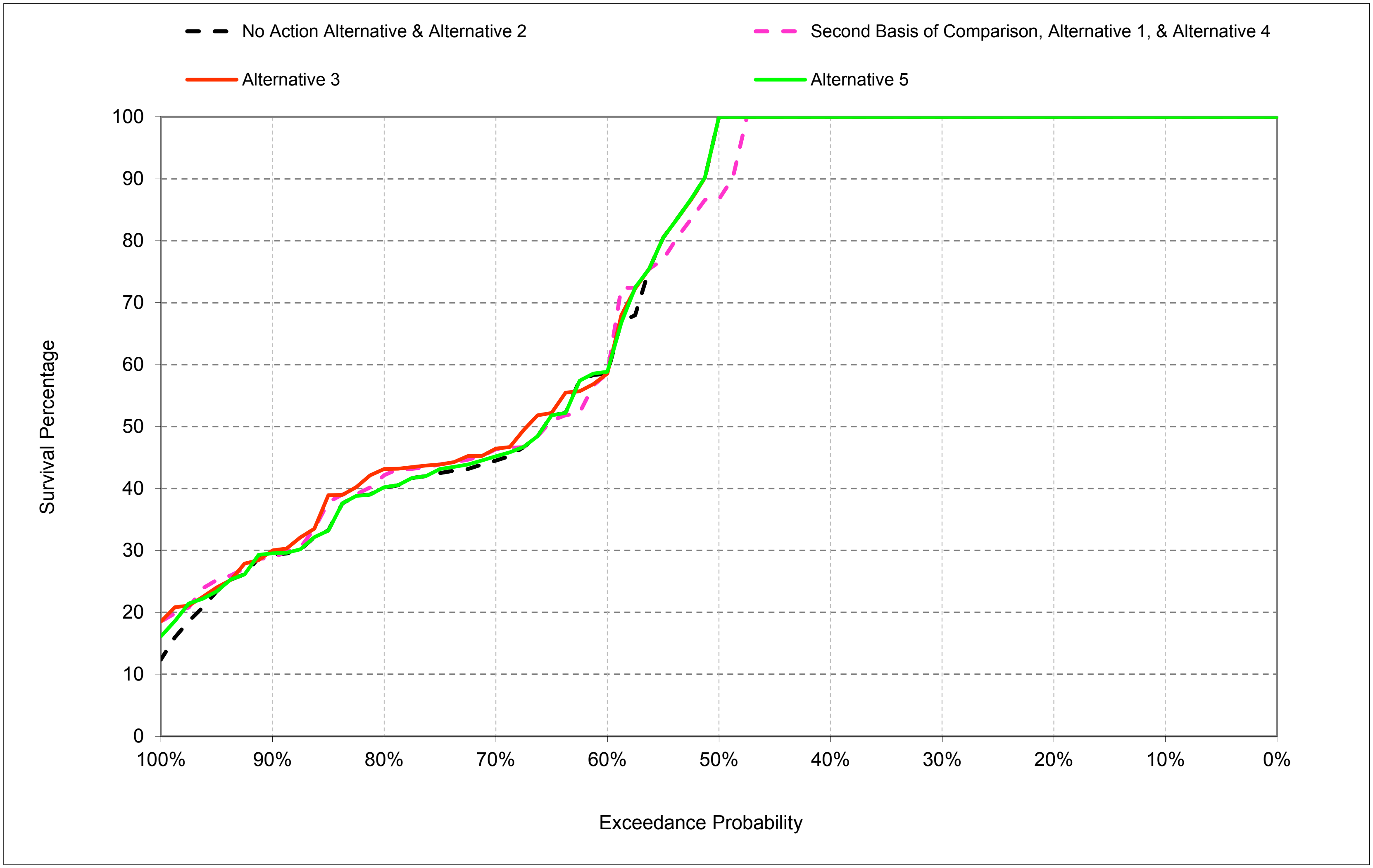
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-2. Trinity Small Mouth Bass Nest Survival Percentage, April



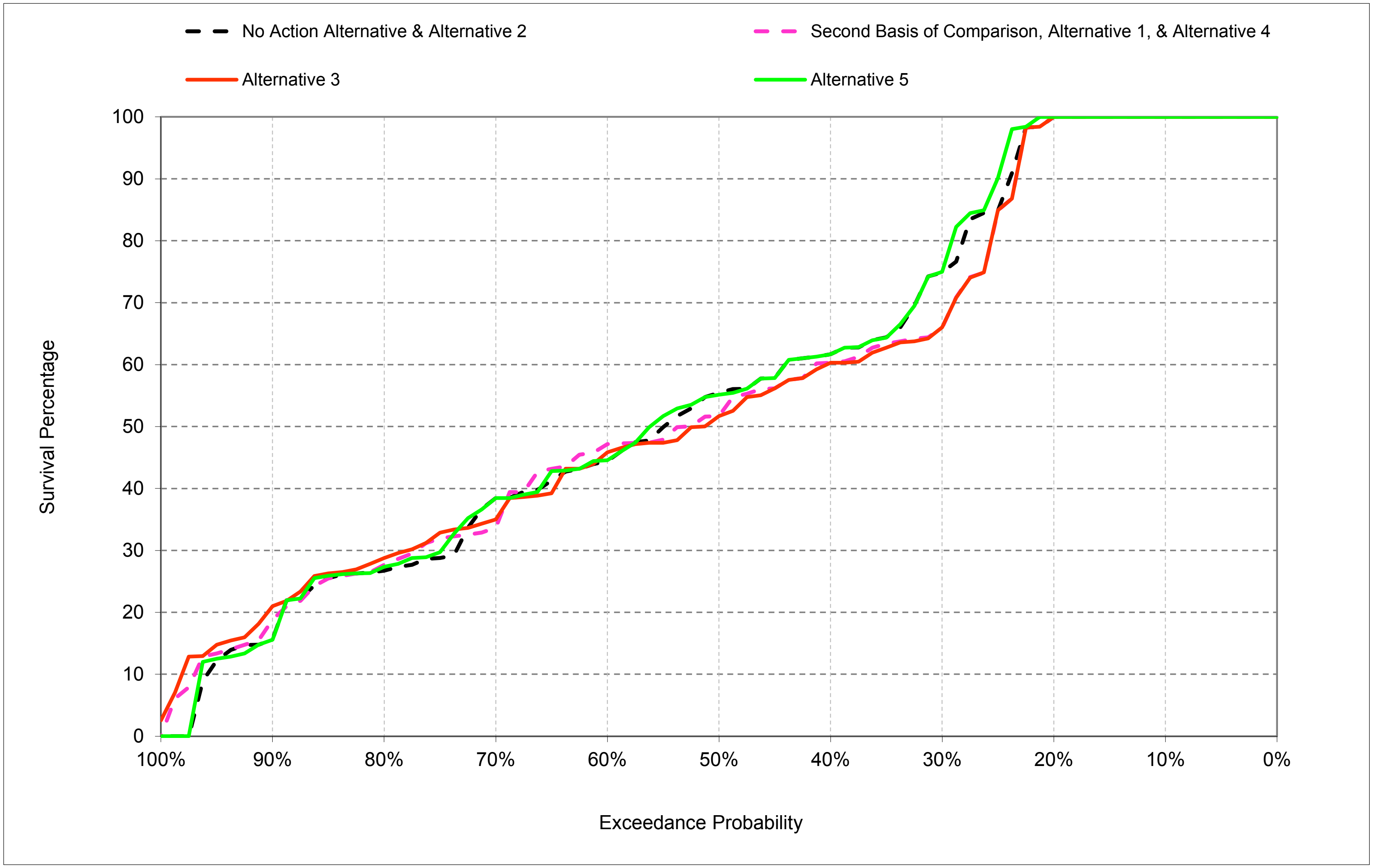
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-3. Trinity Small Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-2-4. Trinity Small Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-1. Trinity Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	75
40%	100	100	100	62
50%	100	100	95	55
60%	100	100	58	44
70%	100	100	44	37
80%	100	100	39	26
90%	100	100	29	15
Long Term				
Full Simulation Period[b]	100	99	72	56
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	80	47
Below Normal (13%)	100	100	59	37
Dry (24%)	100	100	63	51
Critical (15%)	100	95	62	70

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	65
40%	100	100	100	60
50%	100	100	87	52
60%	100	100	57	46
70%	100	100	46	33
80%	100	100	41	27
90%	100	100	29	16
Long Term				
Full Simulation Period[b]	100	99	72	55
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	81	46
Below Normal (13%)	100	100	60	41
Dry (24%)	100	100	63	52
Critical (15%)	100	93	62	63

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-9
40%	0	0	0	-1
50%	0	0	-8	-3
60%	0	0	-1	2
70%	0	0	1	-4
80%	0	0	1	0
90%	0	0	0	1
Long Term				
Full Simulation Period[b]	0	0	0	-1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	1	-1
Below Normal (13%)	0	0	1	3
Dry (24%)	0	0	0	1
Critical (15%)	0	-2	0	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-2. Trinity Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	75
40%	100	100	100	62
50%	100	100	95	55
60%	100	100	58	44
70%	100	100	44	37
80%	100	100	39	26
90%	100	100	29	15
Long Term				
Full Simulation Period[b]	100	99	72	56
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	80	47
Below Normal (13%)	100	100	59	37
Dry (24%)	100	100	63	51
Critical (15%)	100	95	62	70

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	65
40%	100	100	100	60
50%	100	100	95	51
60%	100	100	58	45
70%	100	100	46	35
80%	100	100	42	28
90%	100	100	29	18
Long Term				
Full Simulation Period[b]	100	99	73	56
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	82	47
Below Normal (13%)	100	100	60	37
Dry (24%)	100	100	64	53
Critical (15%)	100	95	64	64

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-9
40%	0	0	0	-2
50%	0	0	0	-4
60%	0	0	-1	1
70%	0	0	2	-3
80%	0	0	3	2
90%	0	0	0	4
Long Term				
Full Simulation Period[b]	0	0	1	-1
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	1	0
Below Normal (13%)	0	0	1	0
Dry (24%)	0	0	1	2
Critical (15%)	0	0	2	-5

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-3. Trinity Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	75
40%	100	100	100	62
50%	100	100	95	55
60%	100	100	58	44
70%	100	100	44	37
80%	100	100	39	26
90%	100	100	29	15
Long Term				
Full Simulation Period[b]	100	99	72	56
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	80	47
Below Normal (13%)	100	100	59	37
Dry (24%)	100	100	63	51
Critical (15%)	100	95	62	70

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	75
40%	100	100	100	62
50%	100	100	95	55
60%	100	100	59	44
70%	100	100	45	37
80%	100	100	39	27
90%	100	100	29	15
Long Term				
Full Simulation Period[b]	100	99	72	57
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	81	47
Below Normal (13%)	100	100	60	38
Dry (24%)	100	100	64	51
Critical (15%)	100	95	62	72

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	1	0
80%	0	0	0	0
90%	0	0	1	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	1	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-4. Trinity Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	65
40%	100	100	100	60
50%	100	100	87	52
60%	100	100	57	46
70%	100	100	46	33
80%	100	100	41	27
90%	100	100	29	16
Long Term				
Full Simulation Period[b]	100	99	72	55
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	81	46
Below Normal (13%)	100	100	60	41
Dry (24%)	100	100	63	52
Critical (15%)	100	93	62	63

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	75
40%	100	100	100	62
50%	100	100	95	55
60%	100	100	58	44
70%	100	100	44	37
80%	100	100	39	26
90%	100	100	29	15
Long Term				
Full Simulation Period[b]	100	99	72	56
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	80	47
Below Normal (13%)	100	100	59	37
Dry (24%)	100	100	63	51
Critical (15%)	100	95	62	70

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	9
40%	0	0	0	1
50%	0	0	8	3
60%	0	0	1	-2
70%	0	0	-1	4
80%	0	0	-1	0
90%	0	0	0	-1
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	-1	1
Below Normal (13%)	0	0	-1	-3
Dry (24%)	0	0	0	-1
Critical (15%)	0	2	0	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-5. Trinity Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	65
40%	100	100	100	60
50%	100	100	87	52
60%	100	100	57	46
70%	100	100	46	33
80%	100	100	41	27
90%	100	100	29	16
Long Term				
Full Simulation Period[b]	100	99	72	55
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	81	46
Below Normal (13%)	100	100	60	41
Dry (24%)	100	100	63	52
Critical (15%)	100	93	62	63

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	65
40%	100	100	100	60
50%	100	100	95	51
60%	100	100	58	45
70%	100	100	46	35
80%	100	100	42	28
90%	100	100	29	18
Long Term				
Full Simulation Period[b]	100	99	73	56
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	82	47
Below Normal (13%)	100	100	60	37
Dry (24%)	100	100	64	53
Critical (15%)	100	95	64	64

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	8	-1
60%	0	0	0	-2
70%	0	0	0	1
80%	0	0	2	1
90%	0	0	0	3
Long Term				
Full Simulation Period[b]	0	0	1	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	1	1
Below Normal (13%)	0	0	0	-3
Dry (24%)	0	0	1	1
Critical (15%)	0	2	2	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-2-6. Trinity Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	65
40%	100	100	100	60
50%	100	100	87	52
60%	100	100	57	46
70%	100	100	46	33
80%	100	100	41	27
90%	100	100	29	16
Long Term				
Full Simulation Period[b]	100	99	72	55
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	81	46
Below Normal (13%)	100	100	60	41
Dry (24%)	100	100	63	52
Critical (15%)	100	93	62	63

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	75
40%	100	100	100	62
50%	100	100	95	55
60%	100	100	59	44
70%	100	100	45	37
80%	100	100	39	27
90%	100	100	29	15
Long Term				
Full Simulation Period[b]	100	99	72	57
Water Year Types[c]				
Wet (32%)	99	100	84	66
Above Normal (16%)	100	100	81	47
Below Normal (13%)	100	100	60	38
Dry (24%)	100	100	64	51
Critical (15%)	100	95	62	72

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	9
40%	0	0	0	1
50%	0	0	8	3
60%	0	0	1	-2
70%	0	0	-1	4
80%	0	0	-1	0
90%	0	0	1	-1
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	1
Below Normal (13%)	0	0	0	-3
Dry (24%)	0	0	1	-1
Critical (15%)	0	2	0	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

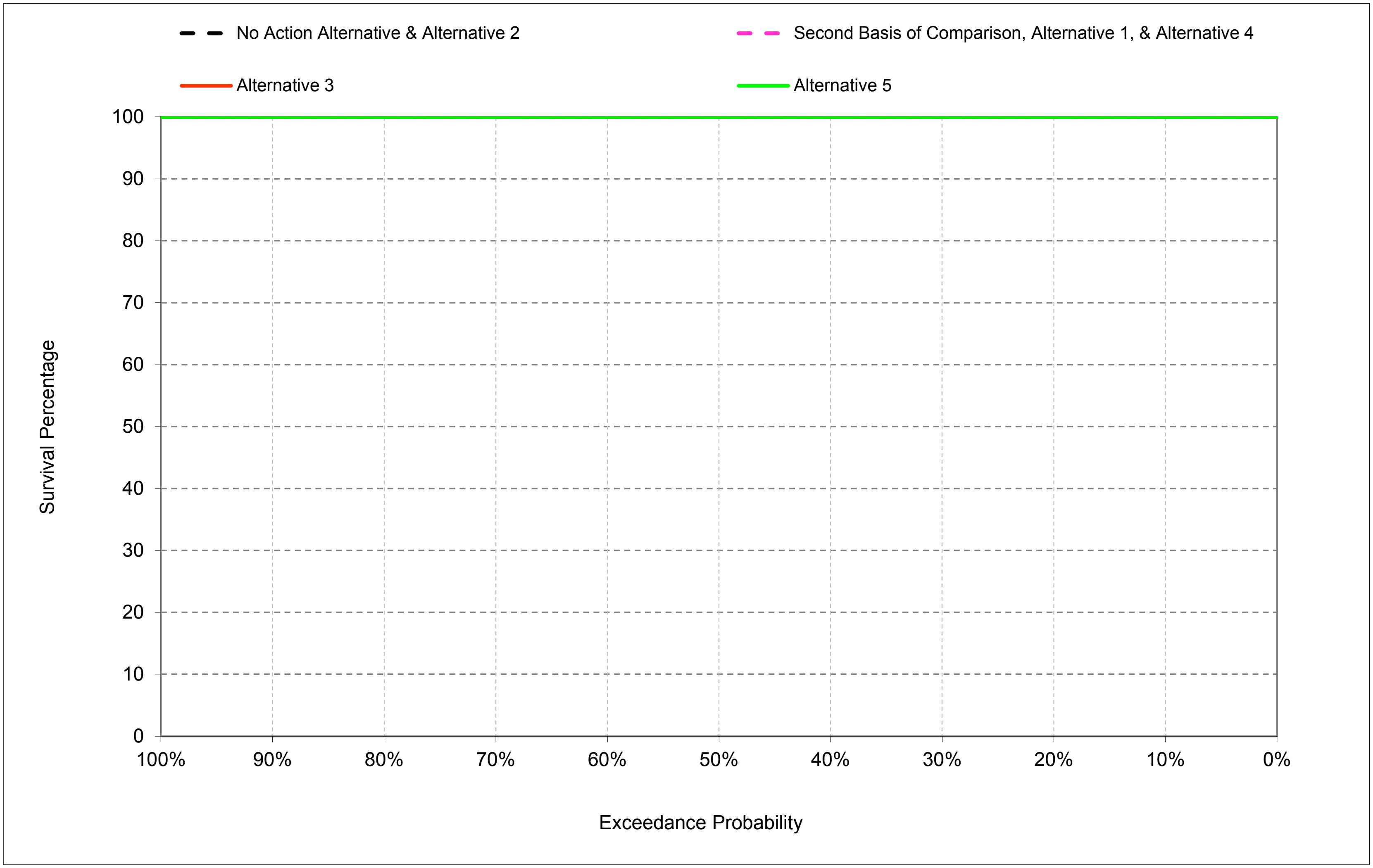
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

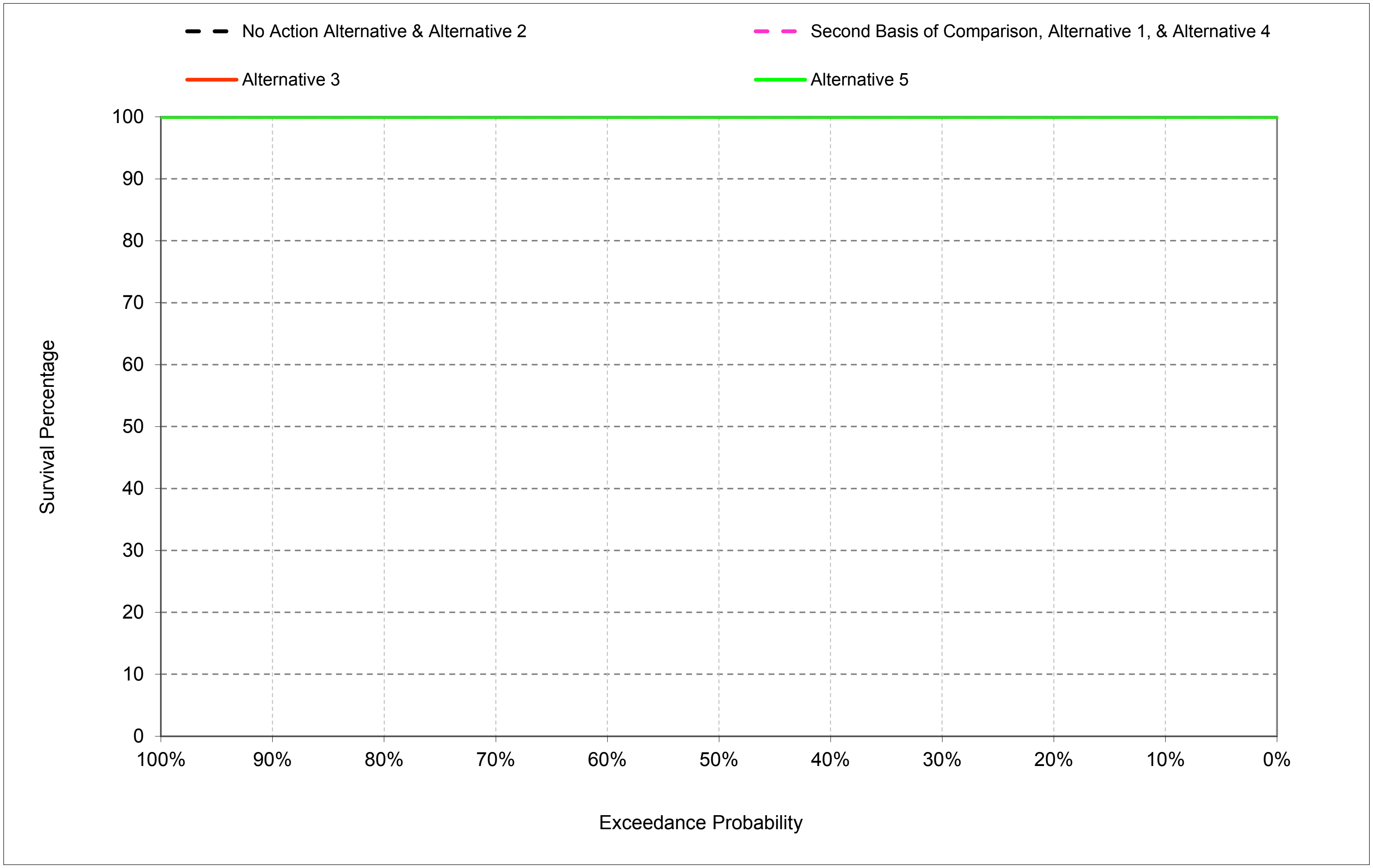
B.3. Trinity Spotted Bass Survival Percentage

Figure B-3-1. Trinity Spotted Bass Nest Survival Percentage, March



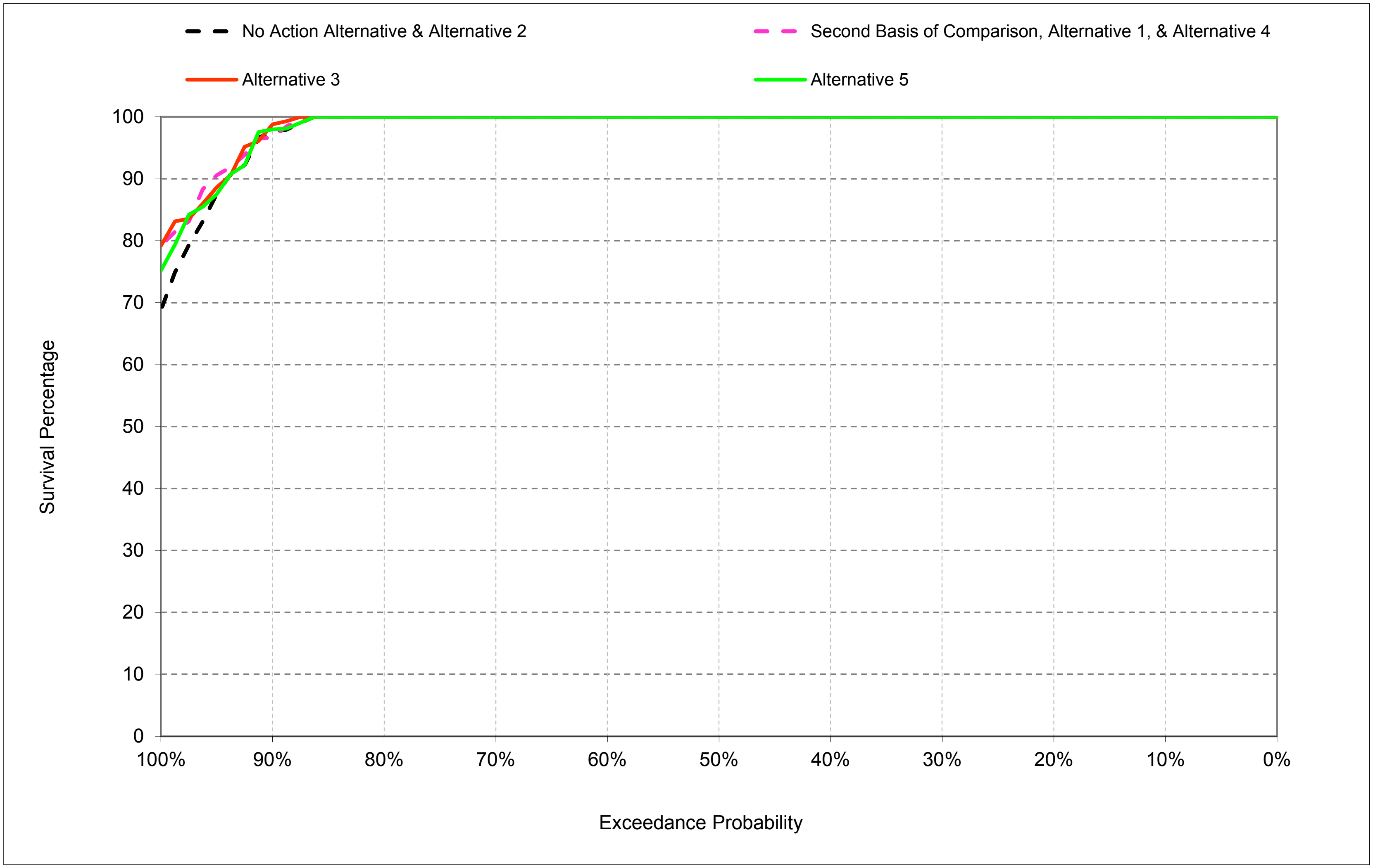
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-2. Trinity Spotted Bass Nest Survival Percentage, April



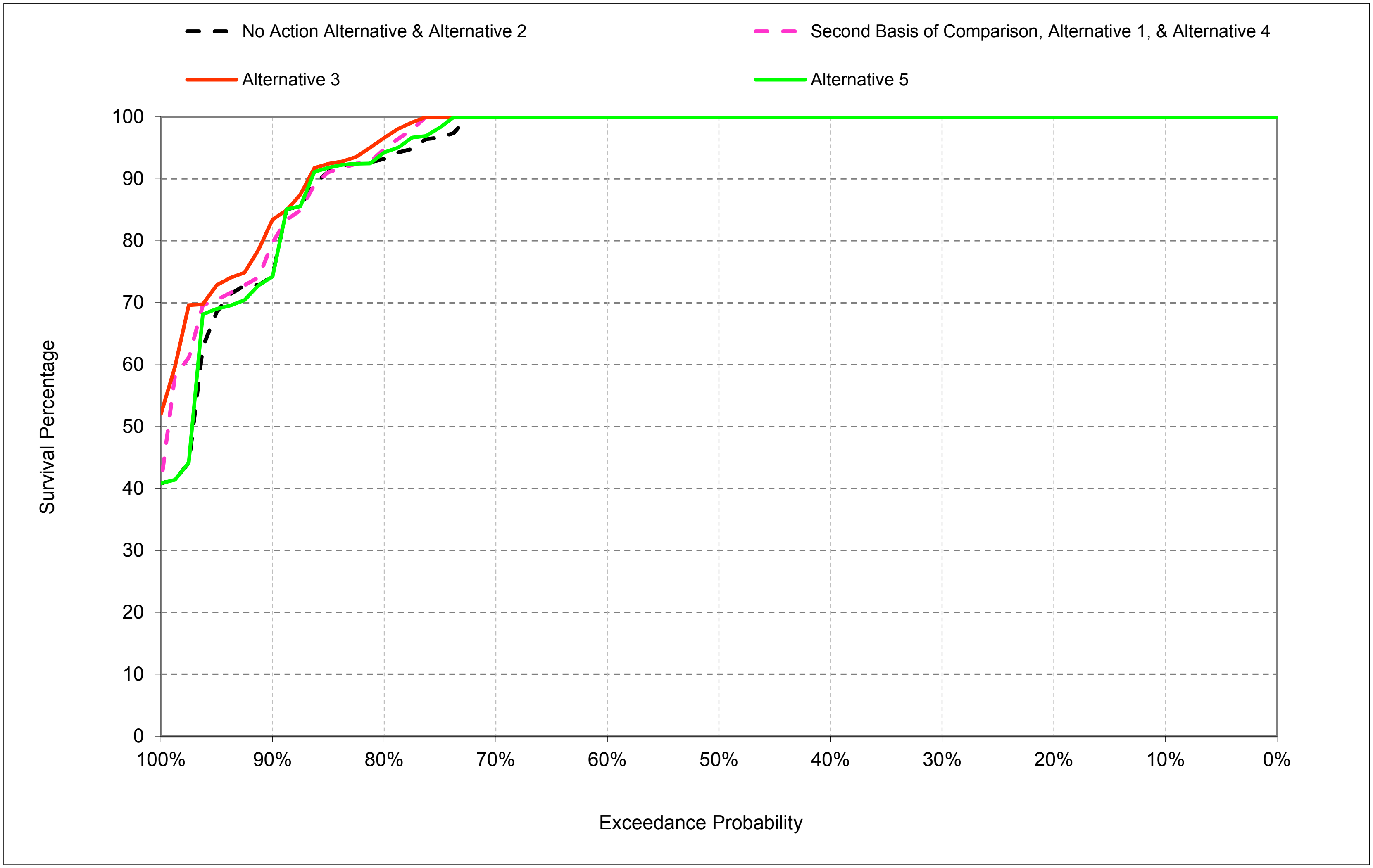
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-3. Trinity Spotted Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-3-4. Trinity Spotted Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-1. Trinity Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	73
Long Term				
Full Simulation Period[b]	100	100	98	94
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	93
Below Normal (13%)	100	100	96	89
Dry (24%)	100	100	96	90
Critical (15%)	100	100	99	99

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	75
Long Term				
Full Simulation Period[b]	100	100	98	95
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	91
Below Normal (13%)	100	100	98	89
Dry (24%)	100	100	97	96
Critical (15%)	100	100	99	99

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	2
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	-2
Below Normal (13%)	0	0	2	-1
Dry (24%)	0	0	1	5
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-2. Trinity Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	73
Long Term				
Full Simulation Period[b]	100	100	98	94
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	93
Below Normal (13%)	100	100	96	89
Dry (24%)	100	100	96	90
Critical (15%)	100	100	99	99

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	95
90%	100	100	96	79
Long Term				
Full Simulation Period[b]	100	100	98	95
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	93
Below Normal (13%)	100	100	97	90
Dry (24%)	100	100	97	96
Critical (15%)	100	100	100	100

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	3
90%	0	0	0	6
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	2	1
Dry (24%)	0	0	1	6
Critical (15%)	0	0	0	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-3. Trinity Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	73
Long Term				
Full Simulation Period[b]	100	100	98	94
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	93
Below Normal (13%)	100	100	96	89
Dry (24%)	100	100	96	90
Critical (15%)	100	100	99	99

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	98	73
Long Term				
Full Simulation Period[b]	100	100	98	94
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	97	89
Dry (24%)	100	100	96	90
Critical (15%)	100	100	99	99

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	1	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	2	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-4. Trinity Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	75
Long Term				
Full Simulation Period[b]	100	100	98	95
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	91
Below Normal (13%)	100	100	98	89
Dry (24%)	100	100	97	96
Critical (15%)	100	100	99	99

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	73
Long Term				
Full Simulation Period[b]	100	100	98	94
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	93
Below Normal (13%)	100	100	96	89
Dry (24%)	100	100	96	90
Critical (15%)	100	100	99	99

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	0	-2
Long Term				
Full Simulation Period[b]	0	0	0	-1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	2
Below Normal (13%)	0	0	-2	1
Dry (24%)	0	0	-1	-5
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-5. Trinity Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	75
Long Term				
Full Simulation Period[b]	100	100	98	95
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	91
Below Normal (13%)	100	100	98	89
Dry (24%)	100	100	97	96
Critical (15%)	100	100	99	99

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	95
90%	100	100	96	79
Long Term				
Full Simulation Period[b]	100	100	98	95
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	93
Below Normal (13%)	100	100	97	90
Dry (24%)	100	100	97	96
Critical (15%)	100	100	100	100

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	2
90%	0	0	0	4
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	2
Below Normal (13%)	0	0	-1	1
Dry (24%)	0	0	0	0
Critical (15%)	0	0	0	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-3-6. Trinity Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	97	75
Long Term				
Full Simulation Period[b]	100	100	98	95
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	91
Below Normal (13%)	100	100	98	89
Dry (24%)	100	100	97	96
Critical (15%)	100	100	99	99

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	93
90%	100	100	98	73
Long Term				
Full Simulation Period[b]	100	100	98	94
Water Year Types[c]				
Wet (32%)	100	100	98	96
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	97	89
Dry (24%)	100	100	96	90
Critical (15%)	100	100	99	99

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	0
90%	0	0	1	-2
Long Term				
Full Simulation Period[b]	0	0	0	-1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	3
Below Normal (13%)	0	0	-1	1
Dry (24%)	0	0	-1	-5
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

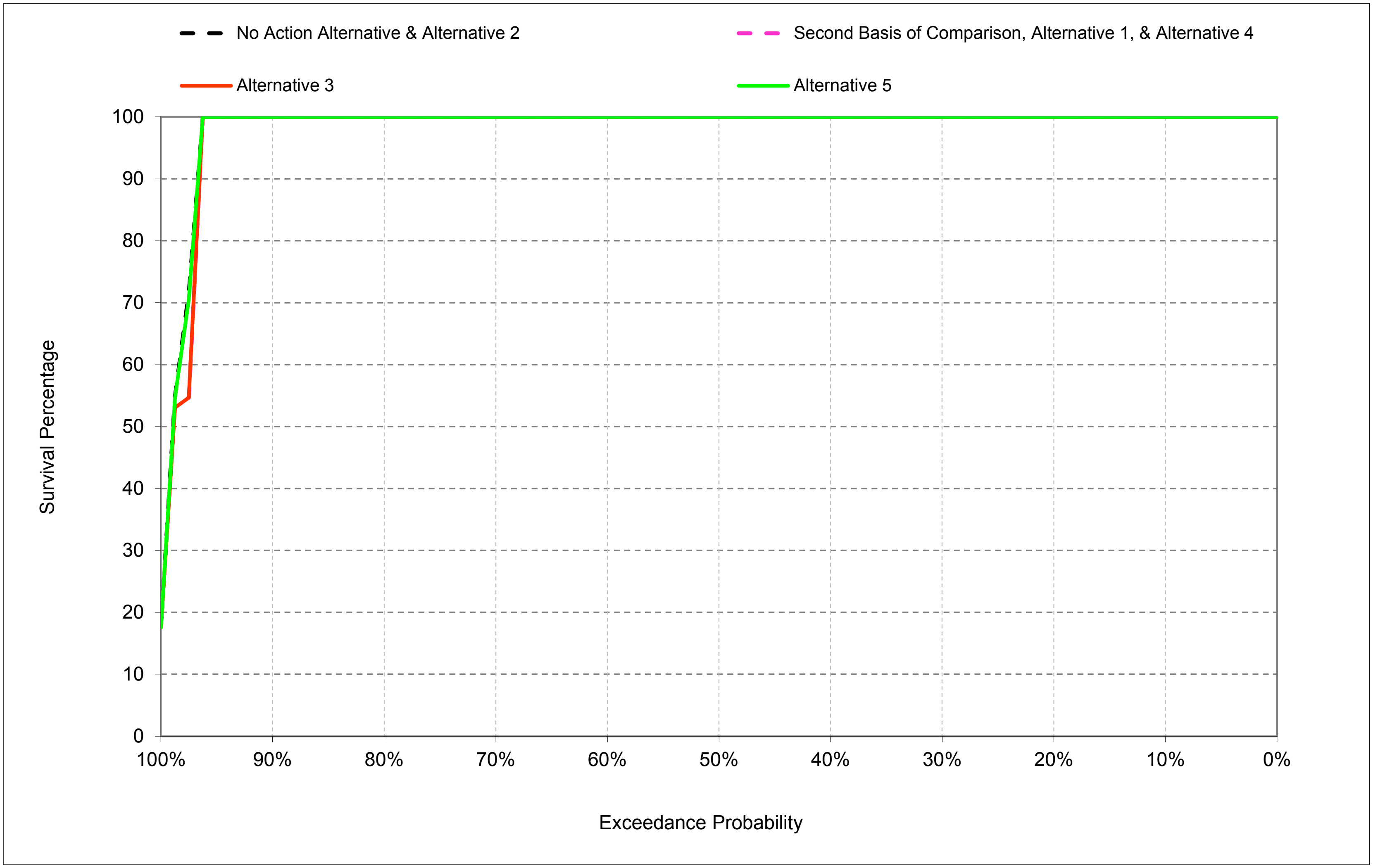
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

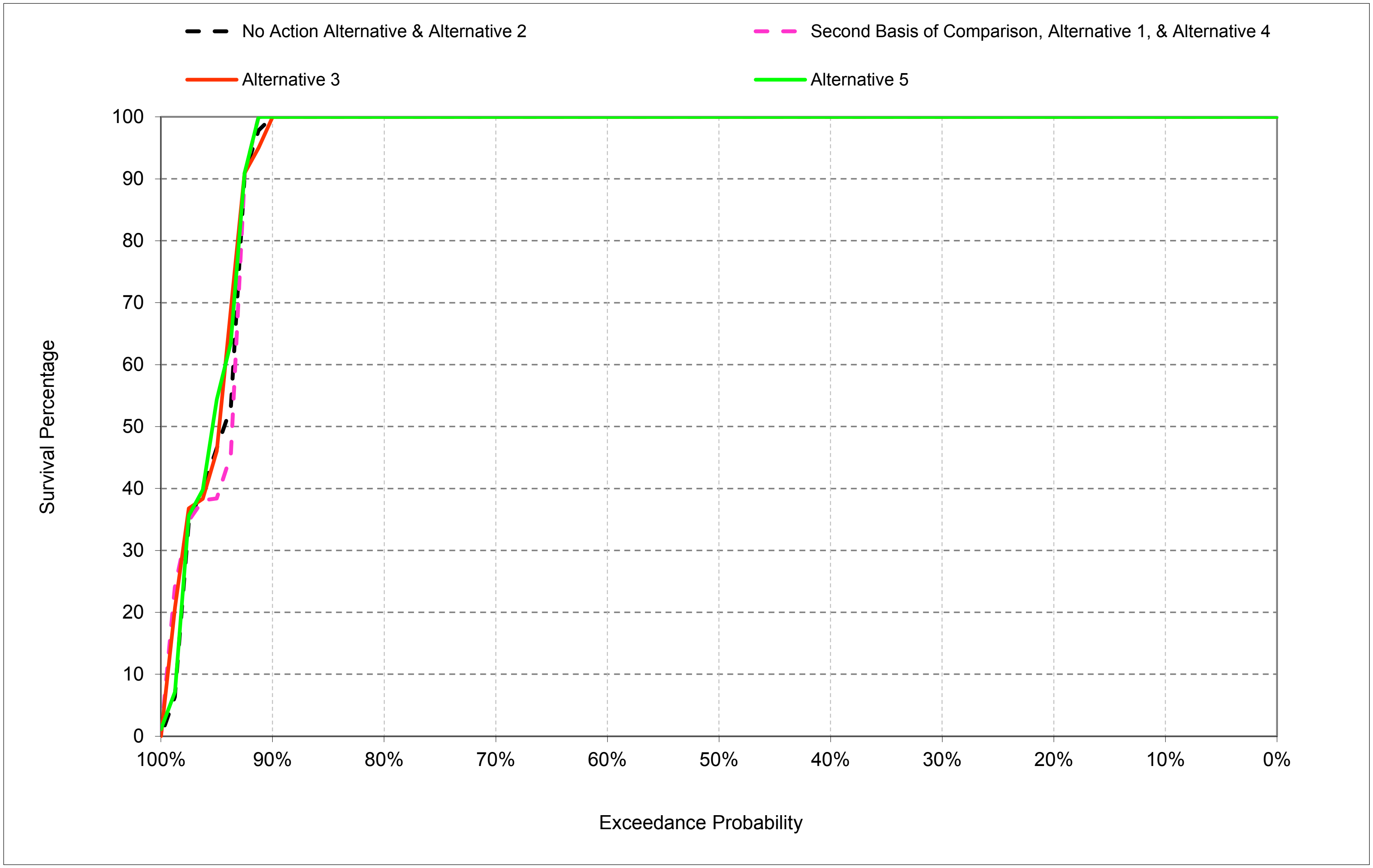
B.4. Shasta Large Mouth Bass Survival Percentage

Figure B-4-1. Shasta Large Mouth Bass Nest Survival Percentage, March



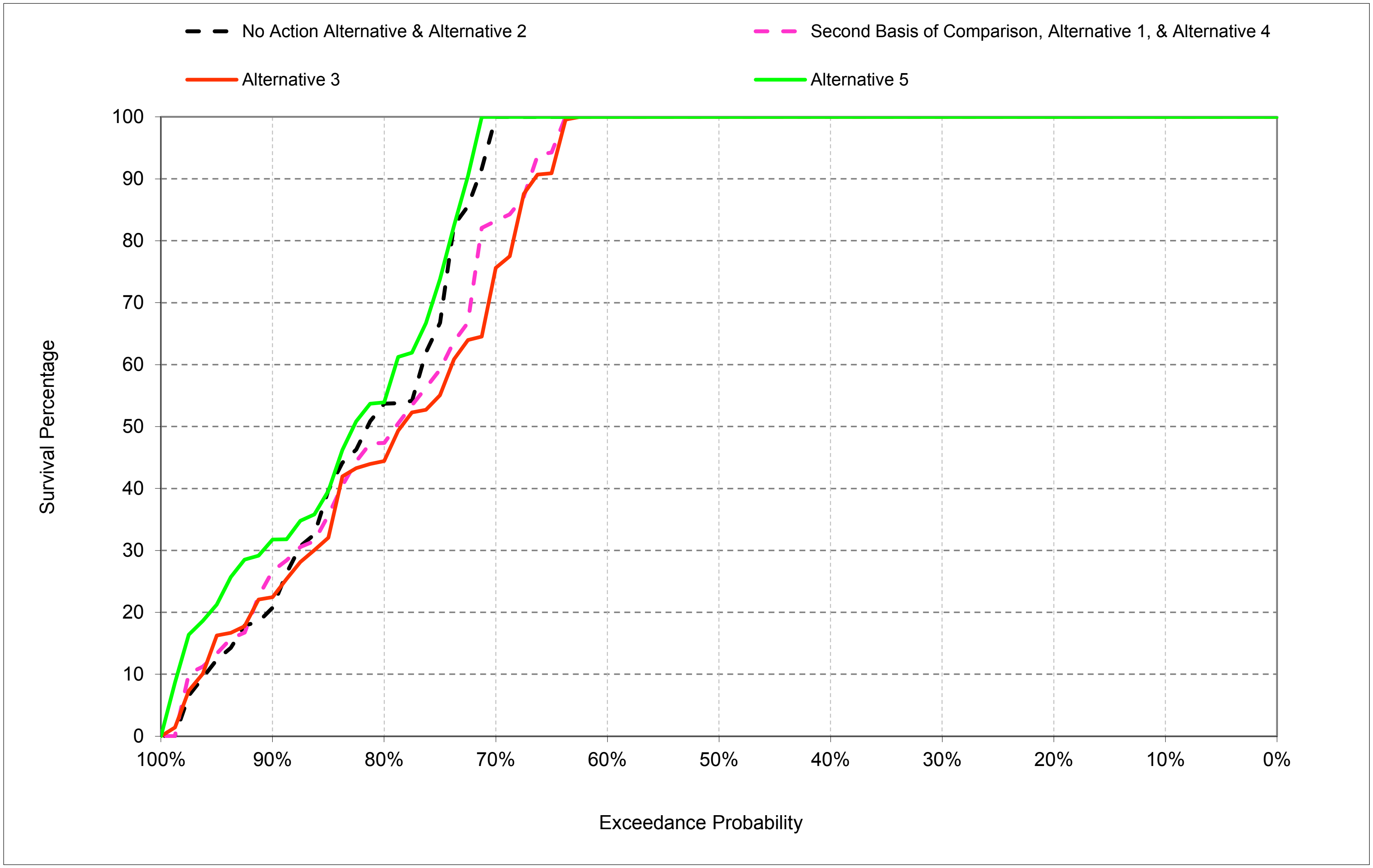
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-2. Shasta Large Mouth Bass Nest Survival Percentage, April



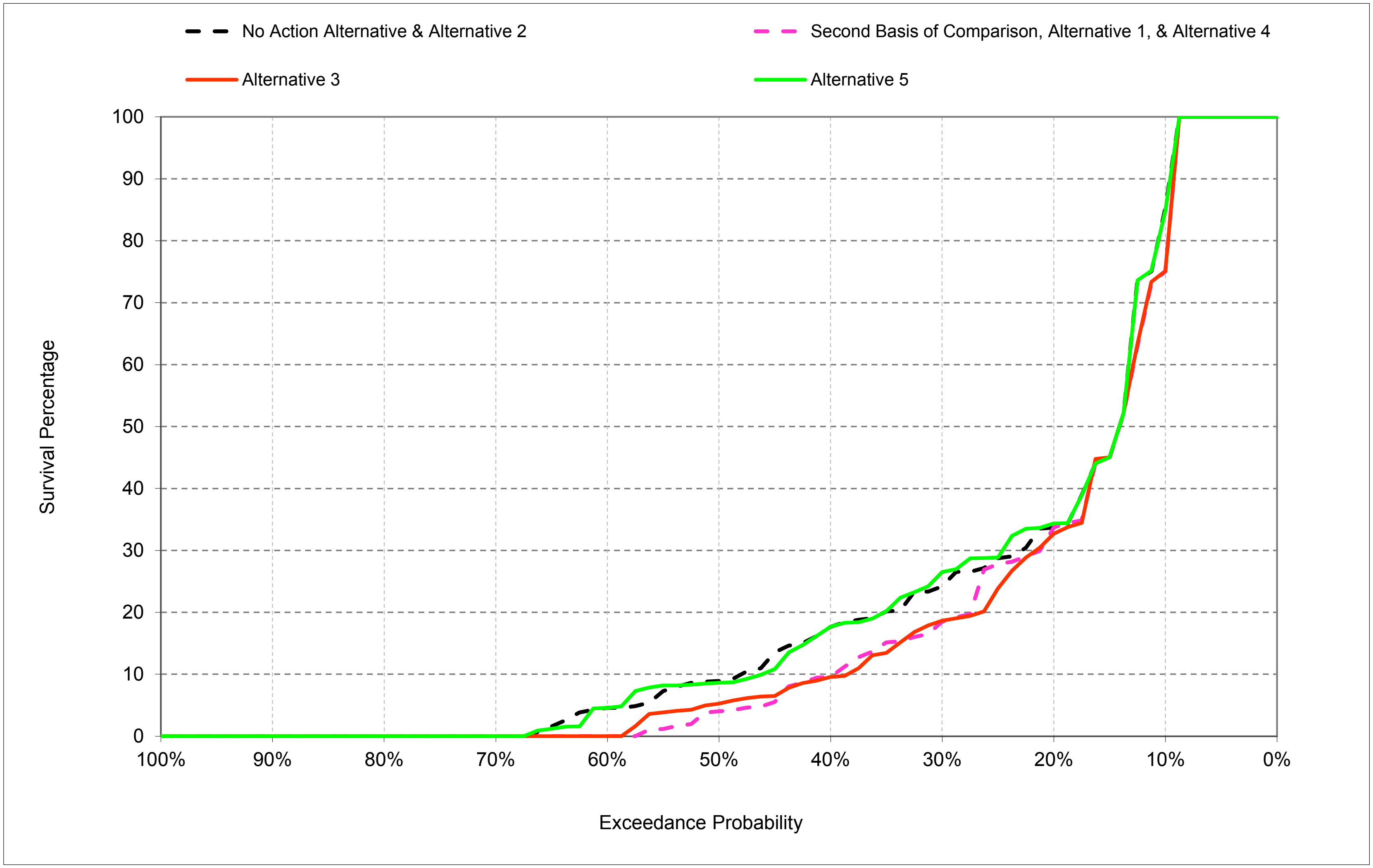
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-3. Shasta Large Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-4-4. Shasta Large Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-1. Shasta Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	84
20%	100	100	100	34
30%	100	100	100	24
40%	100	100	100	17
50%	100	100	100	9
60%	100	100	100	4
70%	100	100	94	0
80%	100	100	51	0
90%	100	98	19	0
Long Term				
Full Simulation Period[b]	97	94	81	22
Water Year Types[c]				
Wet (32%)	91	100	98	48
Above Normal (16%)	100	100	99	14
Below Normal (13%)	100	95	71	17
Dry (24%)	100	98	68	9
Critical (15%)	100	65	55	3

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	75
20%	100	100	100	33
30%	100	100	100	18
40%	100	100	100	10
50%	100	100	100	4
60%	100	100	100	0
70%	100	100	82	0
80%	100	100	47	0
90%	100	100	23	0
Long Term				
Full Simulation Period[b]	97	94	79	20
Water Year Types[c]				
Wet (32%)	90	100	97	46
Above Normal (16%)	100	100	97	11
Below Normal (13%)	100	94	64	13
Dry (24%)	100	97	68	5
Critical (15%)	100	66	54	3

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	-9
20%	0	0	0	-1
30%	0	0	0	-6
40%	0	0	0	-8
50%	0	0	0	-5
60%	0	0	0	-4
70%	0	0	-12	0
80%	0	0	-4	0
90%	0	2	4	0
Long Term				
Full Simulation Period[b]	0	0	-2	-3
Water Year Types[c]				
Wet (32%)	-1	0	-1	-2
Above Normal (16%)	0	0	-2	-3
Below Normal (13%)	0	-1	-7	-3
Dry (24%)	0	0	1	-4
Critical (15%)	0	1	-1	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-2. Shasta Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	84
20%	100	100	100	34
30%	100	100	100	24
40%	100	100	100	17
50%	100	100	100	9
60%	100	100	100	4
70%	100	100	94	0
80%	100	100	51	0
90%	100	98	19	0
Long Term				
Full Simulation Period[b]	97	94	81	22
Water Year Types[c]				
Wet (32%)	91	100	98	48
Above Normal (16%)	100	100	99	14
Below Normal (13%)	100	95	71	17
Dry (24%)	100	98	68	9
Critical (15%)	100	65	55	3

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	75
20%	100	100	100	32
30%	100	100	100	18
40%	100	100	100	9
50%	100	100	100	5
60%	100	100	100	0
70%	100	100	68	0
80%	100	100	44	0
90%	100	95	22	0
Long Term				
Full Simulation Period[b]	97	94	78	20
Water Year Types[c]				
Wet (32%)	90	100	96	45
Above Normal (16%)	100	100	94	12
Below Normal (13%)	100	97	64	14
Dry (24%)	100	97	68	5
Critical (15%)	100	66	54	3

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	-9
20%	0	0	0	-1
30%	0	0	0	-5
40%	0	0	0	-8
50%	0	0	0	-4
60%	0	0	0	-4
70%	0	0	-26	0
80%	0	0	-7	0
90%	0	-3	3	0
Long Term				
Full Simulation Period[b]	0	0	-2	-3
Water Year Types[c]				
Wet (32%)	-1	0	-1	-3
Above Normal (16%)	0	0	-5	-3
Below Normal (13%)	0	2	-8	-3
Dry (24%)	0	0	0	-3
Critical (15%)	0	1	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-3. Shasta Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	84
20%	100	100	100	34
30%	100	100	100	24
40%	100	100	100	17
50%	100	100	100	9
60%	100	100	100	4
70%	100	100	94	0
80%	100	100	51	0
90%	100	98	19	0
Long Term				
Full Simulation Period[b]	97	94	81	22
Water Year Types[c]				
Wet (32%)	91	100	98	48
Above Normal (16%)	100	100	99	14
Below Normal (13%)	100	95	71	17
Dry (24%)	100	98	68	9
Critical (15%)	100	65	55	3

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	84
20%	100	100	100	34
30%	100	100	100	26
40%	100	100	100	17
50%	100	100	100	9
60%	100	100	100	4
70%	100	100	100	0
80%	100	100	54	0
90%	100	100	29	0
Long Term				
Full Simulation Period[b]	97	94	82	22
Water Year Types[c]				
Wet (32%)	90	100	98	48
Above Normal (16%)	100	100	100	14
Below Normal (13%)	100	97	71	16
Dry (24%)	100	98	72	10
Critical (15%)	100	65	58	3

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	1
30%	0	0	0	2
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	6	0
80%	0	0	2	0
90%	0	2	11	0
Long Term				
Full Simulation Period[b]	0	0	2	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	1	0
Below Normal (13%)	0	2	0	-1
Dry (24%)	0	0	4	1
Critical (15%)	0	0	4	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-4. Shasta Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	75
20%	100	100	100	33
30%	100	100	100	18
40%	100	100	100	10
50%	100	100	100	4
60%	100	100	100	0
70%	100	100	82	0
80%	100	100	47	0
90%	100	100	23	0
Long Term				
Full Simulation Period[b]	97	94	79	20
Water Year Types[c]				
Wet (32%)	90	100	97	46
Above Normal (16%)	100	100	97	11
Below Normal (13%)	100	94	64	13
Dry (24%)	100	97	68	5
Critical (15%)	100	66	54	3

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	84
20%	100	100	100	34
30%	100	100	100	24
40%	100	100	100	17
50%	100	100	100	9
60%	100	100	100	4
70%	100	100	94	0
80%	100	100	51	0
90%	100	98	19	0
Long Term				
Full Simulation Period[b]	97	94	81	22
Water Year Types[c]				
Wet (32%)	91	100	98	48
Above Normal (16%)	100	100	99	14
Below Normal (13%)	100	95	71	17
Dry (24%)	100	98	68	9
Critical (15%)	100	65	55	3

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	9
20%	0	0	0	1
30%	0	0	0	6
40%	0	0	0	8
50%	0	0	0	5
60%	0	0	0	4
70%	0	0	12	0
80%	0	0	4	0
90%	0	-2	-4	0
Long Term				
Full Simulation Period[b]	0	0	2	3
Water Year Types[c]				
Wet (32%)	1	0	1	2
Above Normal (16%)	0	0	2	3
Below Normal (13%)	0	1	7	3
Dry (24%)	0	0	-1	4
Critical (15%)	0	-1	1	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-5. Shasta Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	75
20%	100	100	100	33
30%	100	100	100	18
40%	100	100	100	10
50%	100	100	100	4
60%	100	100	100	0
70%	100	100	82	0
80%	100	100	47	0
90%	100	100	23	0
Long Term				
Full Simulation Period[b]	97	94	79	20
Water Year Types[c]				
Wet (32%)	90	100	97	46
Above Normal (16%)	100	100	97	11
Below Normal (13%)	100	94	64	13
Dry (24%)	100	97	68	5
Critical (15%)	100	66	54	3

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	75
20%	100	100	100	32
30%	100	100	100	18
40%	100	100	100	9
50%	100	100	100	5
60%	100	100	100	0
70%	100	100	68	0
80%	100	100	44	0
90%	100	95	22	0
Long Term				
Full Simulation Period[b]	97	94	78	20
Water Year Types[c]				
Wet (32%)	90	100	96	45
Above Normal (16%)	100	100	94	12
Below Normal (13%)	100	97	64	14
Dry (24%)	100	97	68	5
Critical (15%)	100	66	54	3

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	-1
30%	0	0	0	1
40%	0	0	0	0
50%	0	0	0	1
60%	0	0	0	0
70%	0	0	-15	0
80%	0	0	-3	0
90%	0	-5	-1	0
Long Term				
Full Simulation Period[b]	0	0	-1	0
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	-3	1
Below Normal (13%)	0	3	-1	0
Dry (24%)	0	0	-1	1
Critical (15%)	0	0	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-4-6. Shasta Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	75
20%	100	100	100	33
30%	100	100	100	18
40%	100	100	100	10
50%	100	100	100	4
60%	100	100	100	0
70%	100	100	82	0
80%	100	100	47	0
90%	100	100	23	0
Long Term				
Full Simulation Period[b]	97	94	79	20
Water Year Types[c]				
Wet (32%)	90	100	97	46
Above Normal (16%)	100	100	97	11
Below Normal (13%)	100	94	64	13
Dry (24%)	100	97	68	5
Critical (15%)	100	66	54	3

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	84
20%	100	100	100	34
30%	100	100	100	26
40%	100	100	100	17
50%	100	100	100	9
60%	100	100	100	4
70%	100	100	100	0
80%	100	100	54	0
90%	100	100	29	0
Long Term				
Full Simulation Period[b]	97	94	82	22
Water Year Types[c]				
Wet (32%)	90	100	98	48
Above Normal (16%)	100	100	100	14
Below Normal (13%)	100	97	71	16
Dry (24%)	100	98	72	10
Critical (15%)	100	65	58	3

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	9
20%	0	0	0	1
30%	0	0	0	8
40%	0	0	0	8
50%	0	0	0	5
60%	0	0	0	4
70%	0	0	18	0
80%	0	0	6	0
90%	0	0	6	0
Long Term				
Full Simulation Period[b]	0	0	3	3
Water Year Types[c]				
Wet (32%)	1	0	1	2
Above Normal (16%)	0	0	3	3
Below Normal (13%)	0	2	7	3
Dry (24%)	0	0	4	5
Critical (15%)	0	-1	5	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

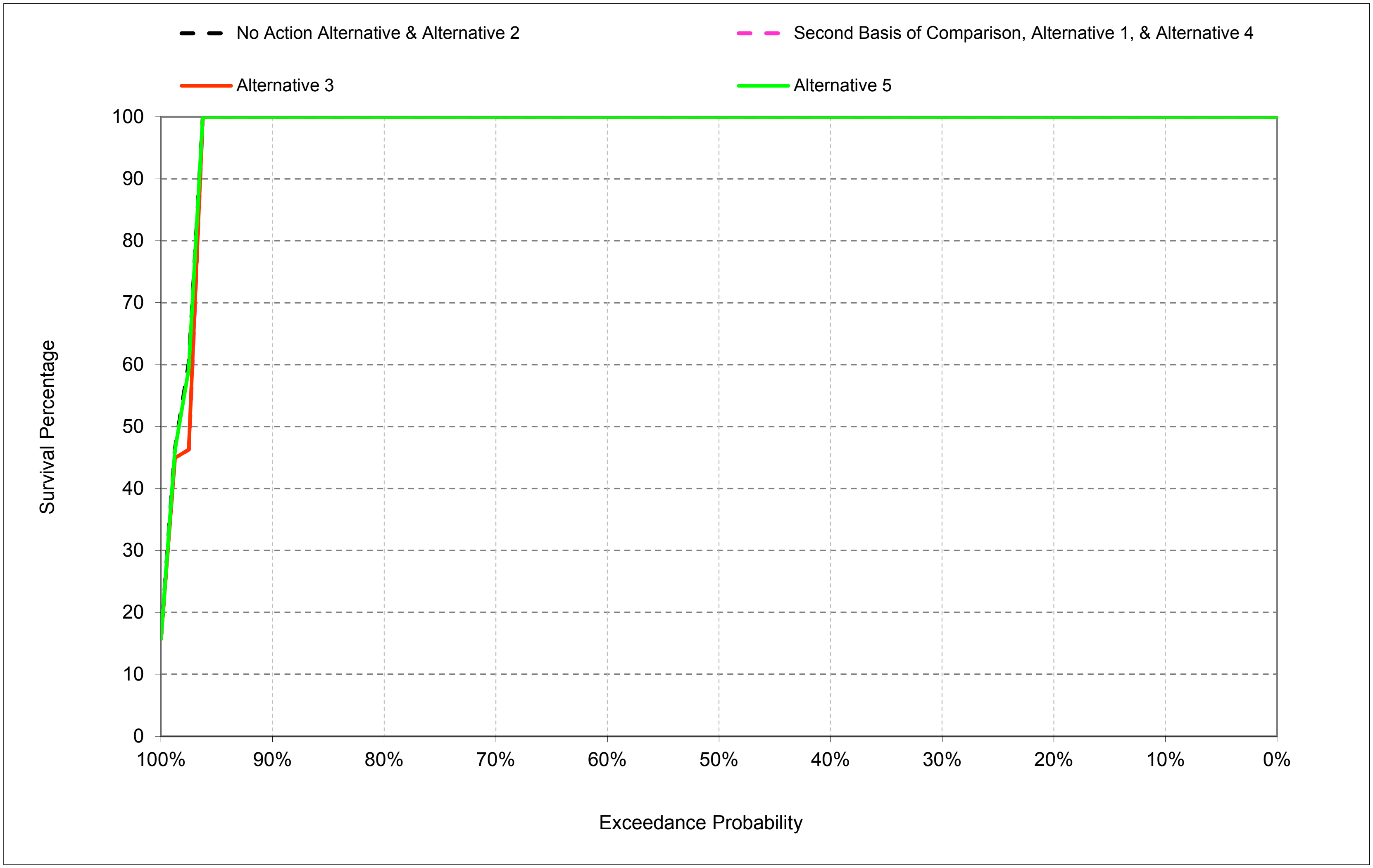
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

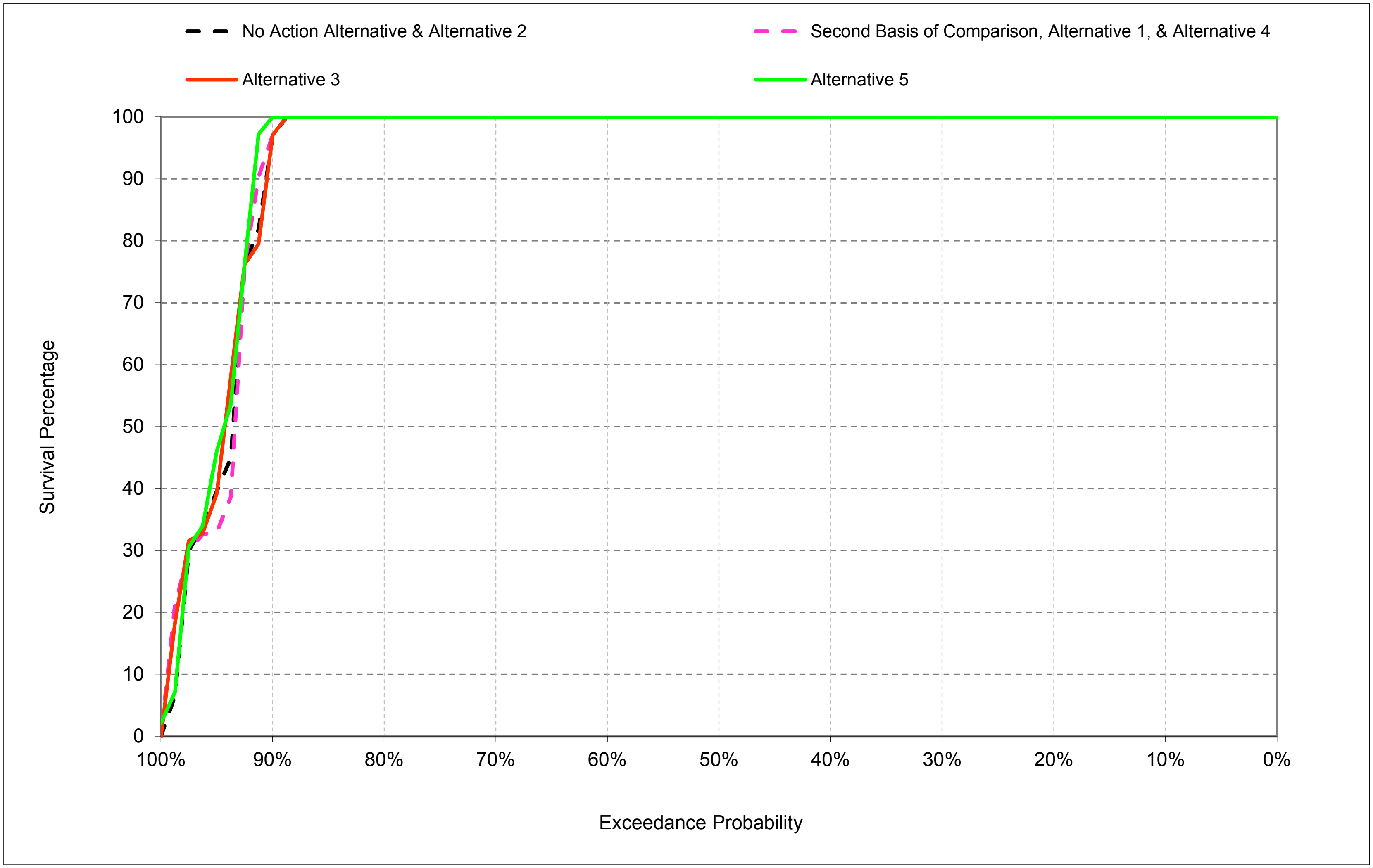
B.5. Shasta Small Mouth Bass Survival Percentage

Figure B-5-1. Shasta Small Mouth Bass Nest Survival Percentage, March



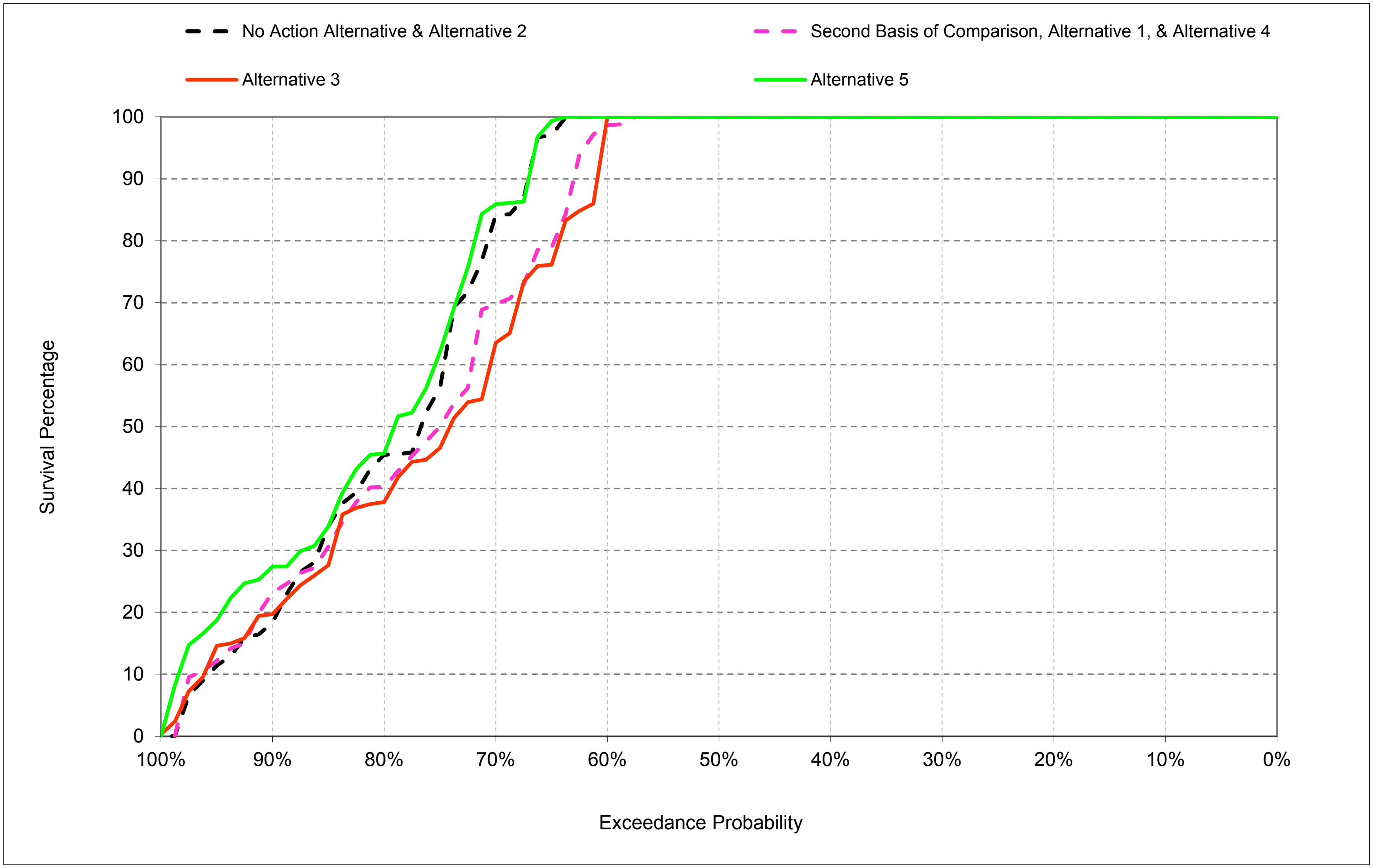
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-2. Shasta Small Mouth Bass Nest Survival Percentage, April



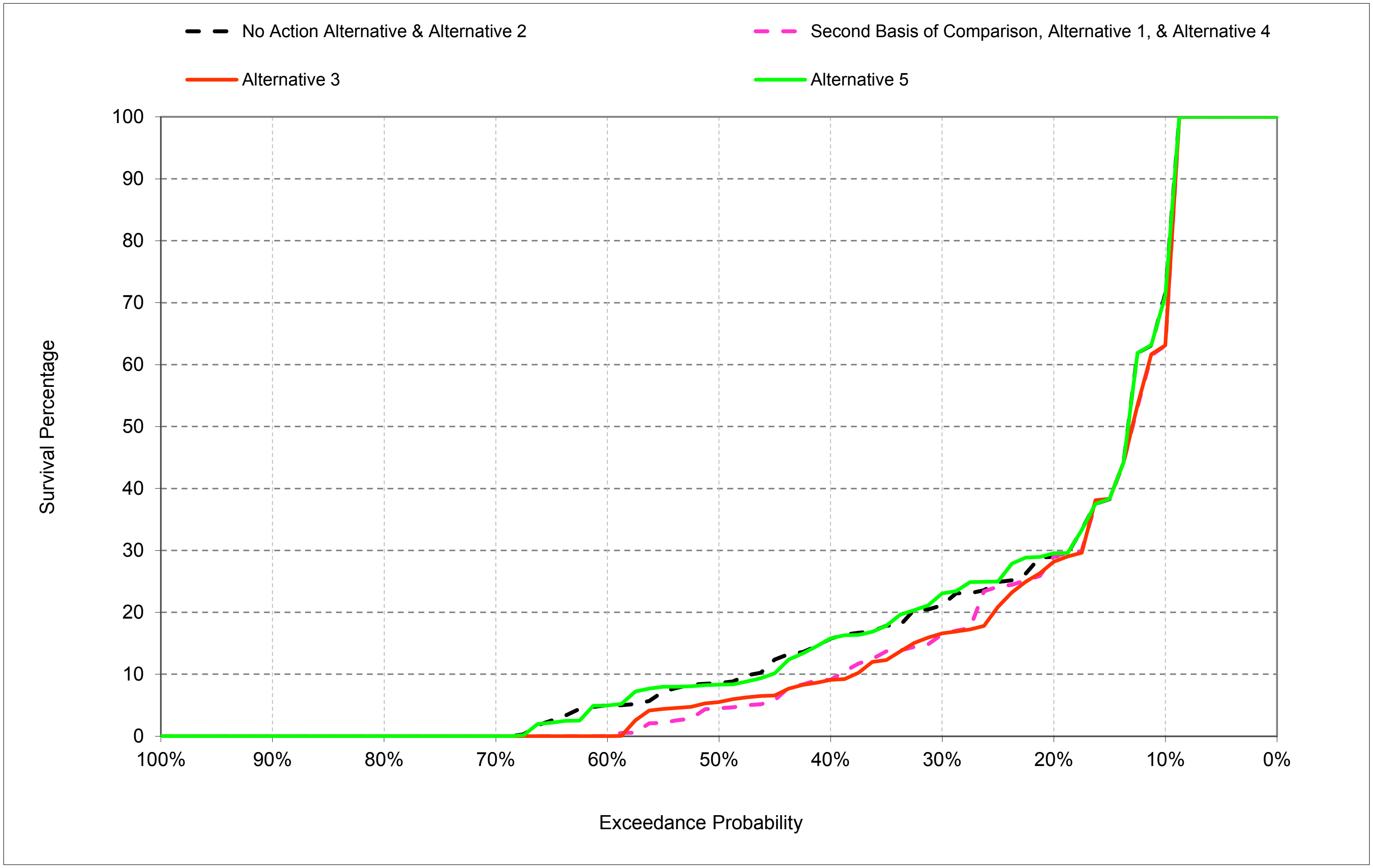
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-3. Shasta Small Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-5-4. Shasta Small Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-1. Shasta Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	71
20%	100	100	100	29
30%	100	100	100	21
40%	100	100	100	15
50%	100	100	100	9
60%	100	100	100	5
70%	100	100	79	0
80%	100	100	44	0
90%	100	83	17	0
Long Term				
Full Simulation Period[b]	97	93	78	21
Water Year Types[c]				
Wet (32%)	90	99	97	44
Above Normal (16%)	100	100	97	14
Below Normal (13%)	100	95	66	16
Dry (24%)	100	96	66	8
Critical (15%)	100	64	50	3

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	63
20%	100	100	100	28
30%	100	100	100	16
40%	100	100	100	9
50%	100	100	100	4
60%	100	100	98	0
70%	100	100	69	0
80%	100	100	40	0
90%	100	91	20	0
Long Term				
Full Simulation Period[b]	97	93	77	19
Water Year Types[c]				
Wet (32%)	89	99	96	43
Above Normal (16%)	100	100	95	11
Below Normal (13%)	100	94	57	13
Dry (24%)	100	97	66	5
Critical (15%)	100	64	49	2

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	-8
20%	0	0	0	-1
30%	0	0	0	-5
40%	0	0	0	-6
50%	0	0	0	-4
60%	0	0	-2	-5
70%	0	0	-10	0
80%	0	0	-3	0
90%	0	8	4	0
Long Term				
Full Simulation Period[b]	0	0	-2	-2
Water Year Types[c]				
Wet (32%)	-1	0	-1	-2
Above Normal (16%)	0	0	-2	-3
Below Normal (13%)	0	-1	-8	-3
Dry (24%)	0	1	0	-3
Critical (15%)	0	0	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-2. Shasta Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	71
20%	100	100	100	29
30%	100	100	100	21
40%	100	100	100	15
50%	100	100	100	9
60%	100	100	100	5
70%	100	100	79	0
80%	100	100	44	0
90%	100	83	17	0
Long Term				
Full Simulation Period[b]	97	93	78	21
Water Year Types[c]				
Wet (32%)	90	99	97	44
Above Normal (16%)	100	100	97	14
Below Normal (13%)	100	95	66	16
Dry (24%)	100	96	66	8
Critical (15%)	100	64	50	3

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	63
20%	100	100	100	28
30%	100	100	100	16
40%	100	100	100	9
50%	100	100	100	5
60%	100	100	92	0
70%	100	100	57	0
80%	100	100	38	0
90%	100	81	19	0
Long Term				
Full Simulation Period[b]	97	93	76	19
Water Year Types[c]				
Wet (32%)	89	99	96	42
Above Normal (16%)	100	100	91	12
Below Normal (13%)	100	96	57	13
Dry (24%)	100	96	65	5
Critical (15%)	100	65	50	3

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	-8
20%	0	0	0	-1
30%	0	0	0	-5
40%	0	0	0	-6
50%	0	0	0	-3
60%	0	0	-8	-5
70%	0	0	-22	0
80%	0	0	-6	0
90%	0	-2	3	0
Long Term				
Full Simulation Period[b]	0	0	-3	-2
Water Year Types[c]				
Wet (32%)	-1	0	-2	-2
Above Normal (16%)	0	0	-6	-2
Below Normal (13%)	0	2	-9	-2
Dry (24%)	0	0	-1	-3
Critical (15%)	0	1	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-3. Shasta Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	71
20%	100	100	100	29
30%	100	100	100	21
40%	100	100	100	15
50%	100	100	100	9
60%	100	100	100	5
70%	100	100	79	0
80%	100	100	44	0
90%	100	83	17	0
Long Term				
Full Simulation Period[b]	97	93	78	21
Water Year Types[c]				
Wet (32%)	90	99	97	44
Above Normal (16%)	100	100	97	14
Below Normal (13%)	100	95	66	16
Dry (24%)	100	96	66	8
Critical (15%)	100	64	50	3

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	70
20%	100	100	100	29
30%	100	100	100	22
40%	100	100	100	15
50%	100	100	100	8
60%	100	100	100	5
70%	100	100	85	0
80%	100	100	45	0
90%	100	97	25	0
Long Term				
Full Simulation Period[b]	97	93	80	21
Water Year Types[c]				
Wet (32%)	90	99	97	45
Above Normal (16%)	100	100	98	14
Below Normal (13%)	100	96	65	15
Dry (24%)	100	97	70	9
Critical (15%)	100	64	55	3

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	2
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	6	0
80%	0	0	2	0
90%	0	14	9	0
Long Term				
Full Simulation Period[b]	0	0	2	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	1	0
Below Normal (13%)	0	1	-1	0
Dry (24%)	0	1	3	1
Critical (15%)	0	0	5	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-4. Shasta Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	63
20%	100	100	100	28
30%	100	100	100	16
40%	100	100	100	9
50%	100	100	100	4
60%	100	100	98	0
70%	100	100	69	0
80%	100	100	40	0
90%	100	91	20	0
Long Term				
Full Simulation Period[b]	97	93	77	19
Water Year Types[c]				
Wet (32%)	89	99	96	43
Above Normal (16%)	100	100	95	11
Below Normal (13%)	100	94	57	13
Dry (24%)	100	97	66	5
Critical (15%)	100	64	49	2

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	71
20%	100	100	100	29
30%	100	100	100	21
40%	100	100	100	15
50%	100	100	100	9
60%	100	100	100	5
70%	100	100	79	0
80%	100	100	44	0
90%	100	83	17	0
Long Term				
Full Simulation Period[b]	97	93	78	21
Water Year Types[c]				
Wet (32%)	90	99	97	44
Above Normal (16%)	100	100	97	14
Below Normal (13%)	100	95	66	16
Dry (24%)	100	96	66	8
Critical (15%)	100	64	50	3

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	8
20%	0	0	0	1
30%	0	0	0	5
40%	0	0	0	6
50%	0	0	0	4
60%	0	0	2	5
70%	0	0	10	0
80%	0	0	3	0
90%	0	-8	-4	0
Long Term				
Full Simulation Period[b]	0	0	2	2
Water Year Types[c]				
Wet (32%)	1	0	1	2
Above Normal (16%)	0	0	2	3
Below Normal (13%)	0	1	8	3
Dry (24%)	0	-1	0	3
Critical (15%)	0	0	1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-5. Shasta Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	63
20%	100	100	100	28
30%	100	100	100	16
40%	100	100	100	9
50%	100	100	100	4
60%	100	100	98	0
70%	100	100	69	0
80%	100	100	40	0
90%	100	91	20	0
Long Term				
Full Simulation Period[b]	97	93	77	19
Water Year Types[c]				
Wet (32%)	89	99	96	43
Above Normal (16%)	100	100	95	11
Below Normal (13%)	100	94	57	13
Dry (24%)	100	97	66	5
Critical (15%)	100	64	49	2

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	63
20%	100	100	100	28
30%	100	100	100	16
40%	100	100	100	9
50%	100	100	100	5
60%	100	100	92	0
70%	100	100	57	0
80%	100	100	38	0
90%	100	81	19	0
Long Term				
Full Simulation Period[b]	97	93	76	19
Water Year Types[c]				
Wet (32%)	89	99	96	42
Above Normal (16%)	100	100	91	12
Below Normal (13%)	100	96	57	13
Dry (24%)	100	96	65	5
Critical (15%)	100	65	50	3

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	-1
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	1
60%	0	0	-6	0
70%	0	0	-12	0
80%	0	0	-3	0
90%	0	-10	-1	0
Long Term				
Full Simulation Period[b]	0	0	-1	0
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	-4	1
Below Normal (13%)	0	2	0	0
Dry (24%)	0	-1	-1	0
Critical (15%)	0	1	0	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-5-6. Shasta Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	63
20%	100	100	100	28
30%	100	100	100	16
40%	100	100	100	9
50%	100	100	100	4
60%	100	100	98	0
70%	100	100	69	0
80%	100	100	40	0
90%	100	91	20	0
Long Term				
Full Simulation Period[b]	97	93	77	19
Water Year Types[c]				
Wet (32%)	89	99	96	43
Above Normal (16%)	100	100	95	11
Below Normal (13%)	100	94	57	13
Dry (24%)	100	97	66	5
Critical (15%)	100	64	49	2

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	70
20%	100	100	100	29
30%	100	100	100	22
40%	100	100	100	15
50%	100	100	100	8
60%	100	100	100	5
70%	100	100	85	0
80%	100	100	45	0
90%	100	97	25	0
Long Term				
Full Simulation Period[b]	97	93	80	21
Water Year Types[c]				
Wet (32%)	90	99	97	45
Above Normal (16%)	100	100	98	14
Below Normal (13%)	100	96	65	15
Dry (24%)	100	97	70	9
Critical (15%)	100	64	55	3

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	7
20%	0	0	0	1
30%	0	0	0	7
40%	0	0	0	6
50%	0	0	0	4
60%	0	0	2	5
70%	0	0	16	0
80%	0	0	5	0
90%	0	7	5	0
Long Term				
Full Simulation Period[b]	0	0	3	2
Water Year Types[c]				
Wet (32%)	1	0	1	2
Above Normal (16%)	0	0	3	3
Below Normal (13%)	0	2	7	2
Dry (24%)	0	0	3	4
Critical (15%)	0	0	5	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

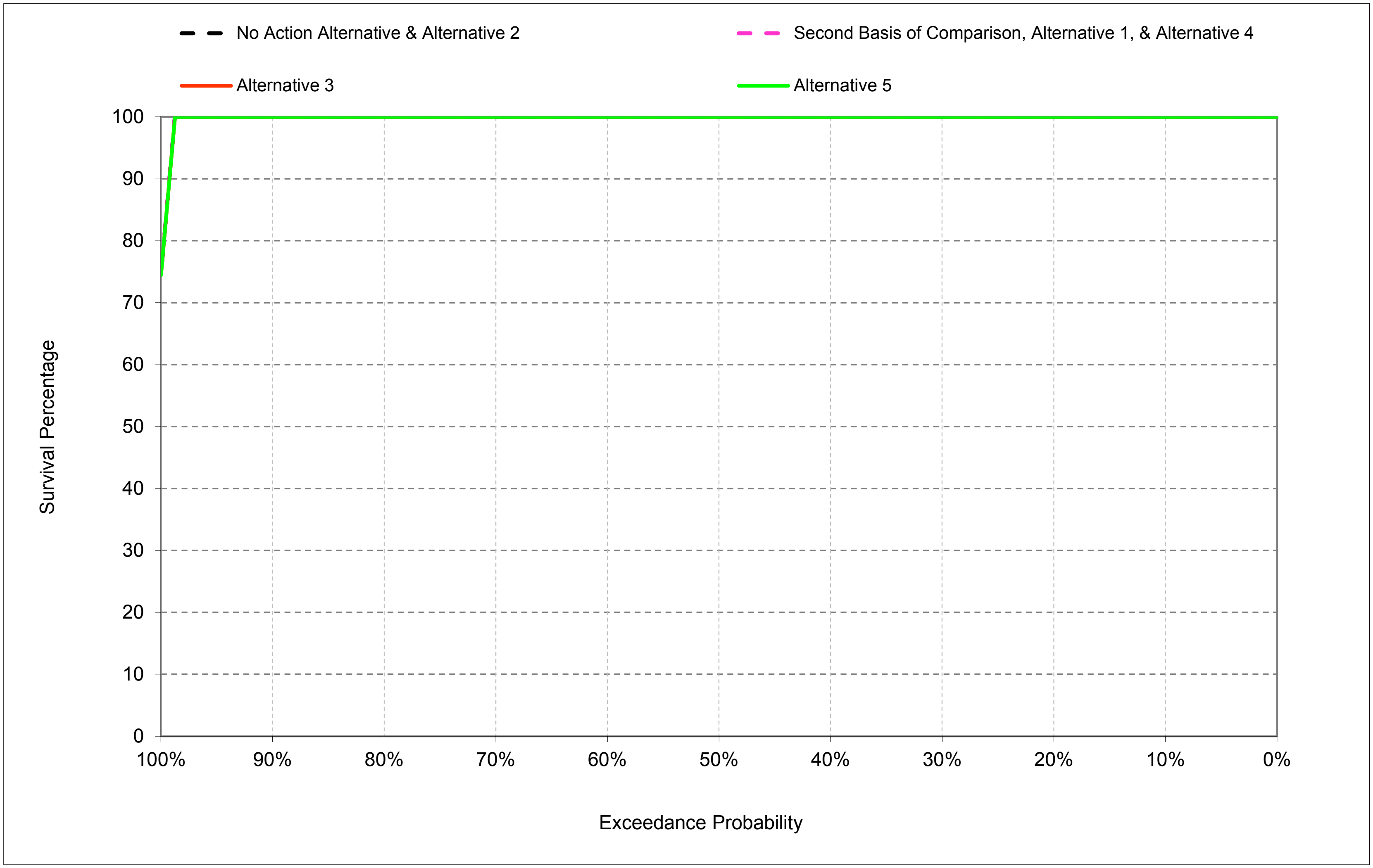
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

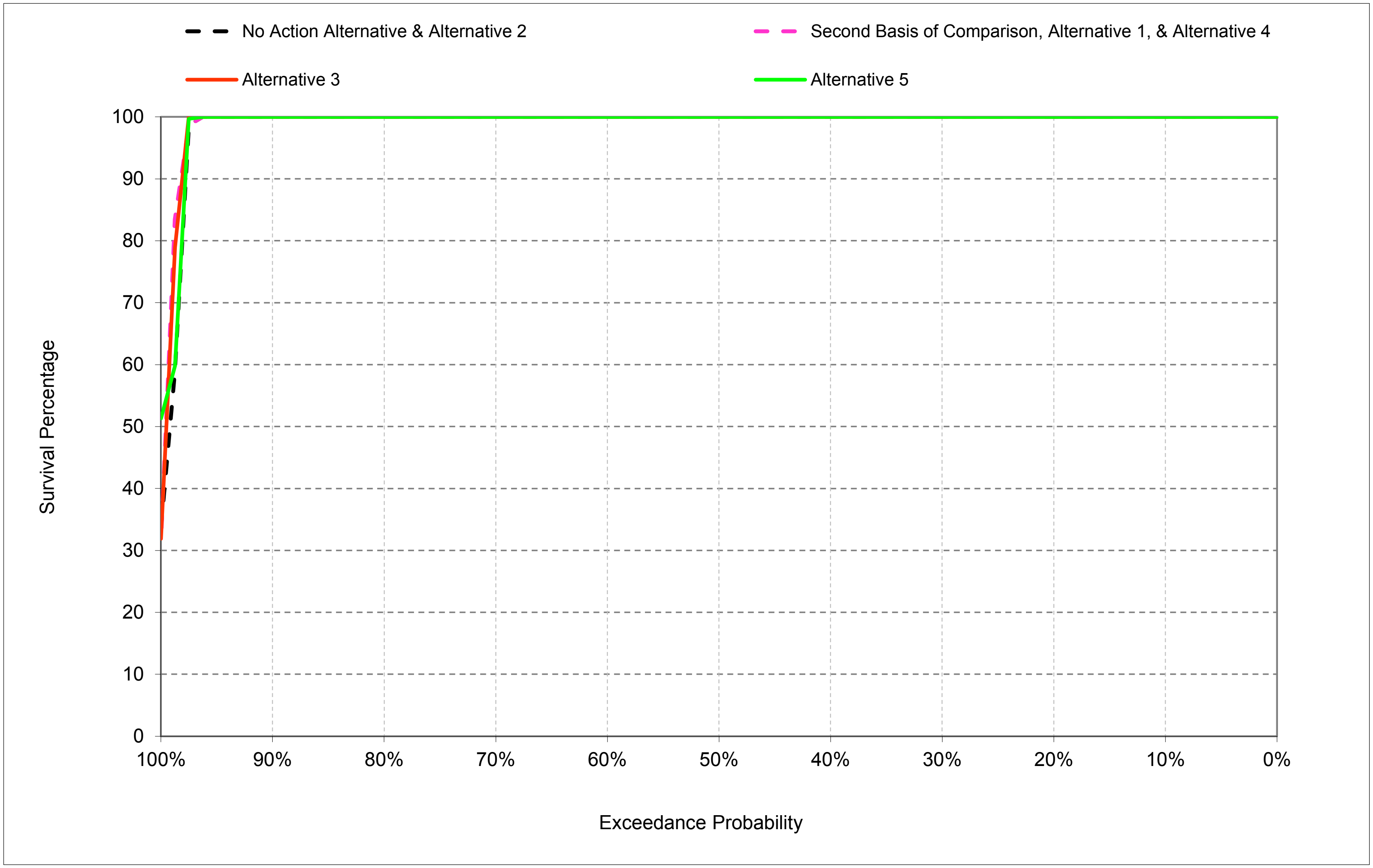
B.6. Shasta Spotted Bass Survival Percentage

Figure B-6-1. Shasta Spotted Bass Nest Survival Percentage, March



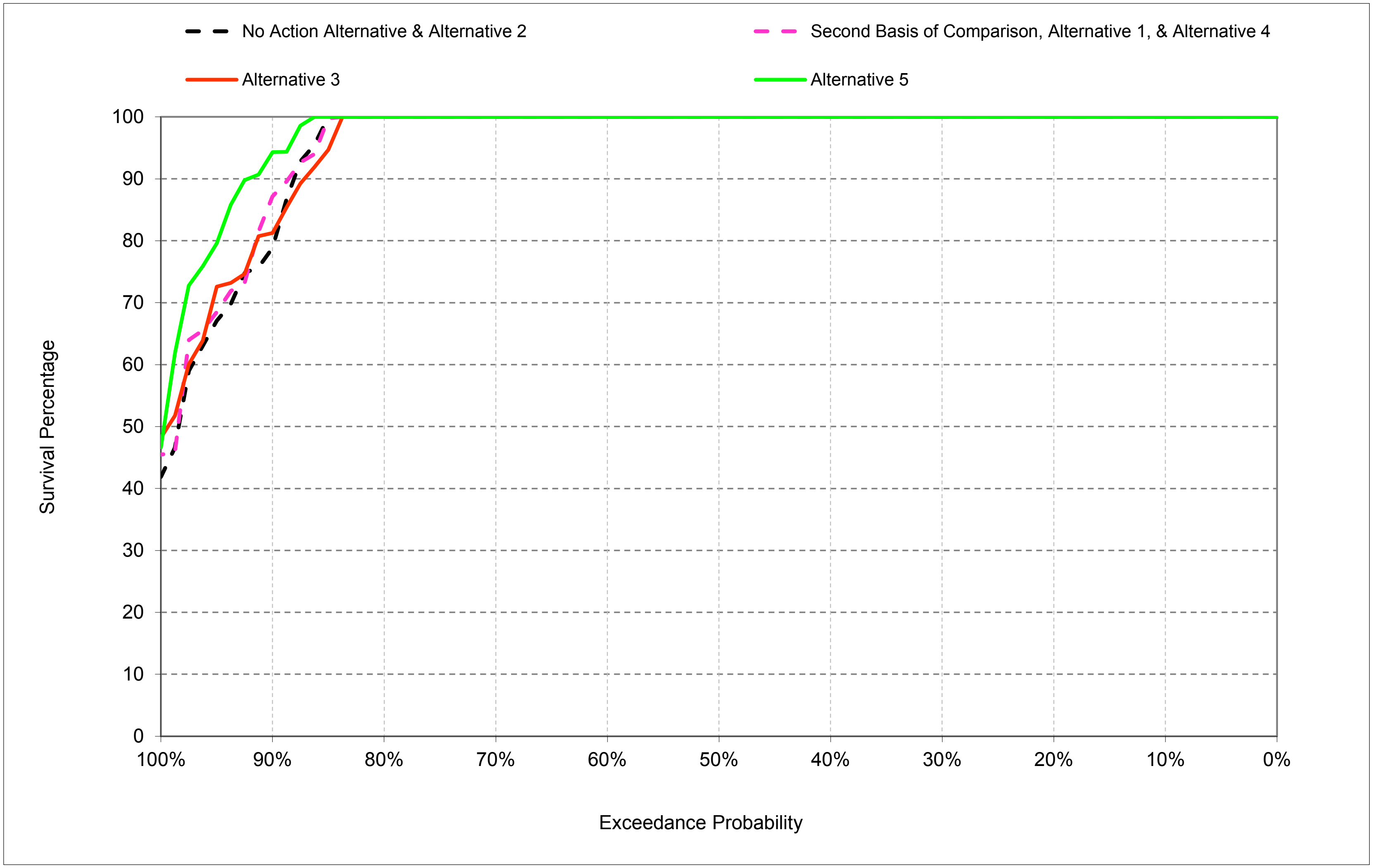
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-2. Shasta Spotted Bass Nest Survival Percentage, April



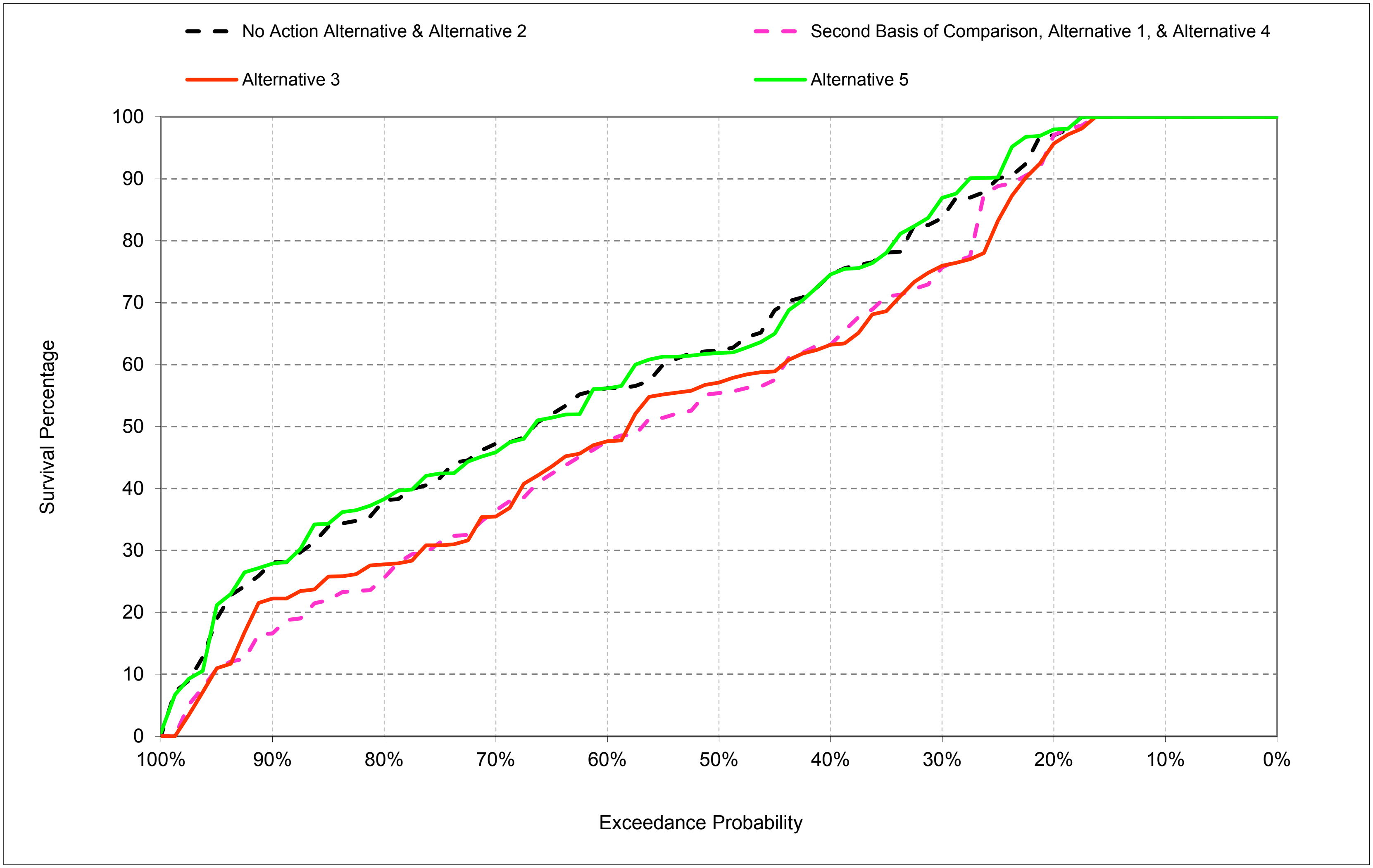
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-3. Shasta Spotted Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-6-4. Shasta Spotted Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-1. Shasta Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	97
30%	100	100	100	83
40%	100	100	100	74
50%	100	100	100	62
60%	100	100	100	56
70%	100	100	100	46
80%	100	100	100	36
90%	100	100	76	26
Long Term				
Full Simulation Period[b]	99	98	95	63
Water Year Types[c]				
Wet (32%)	98	100	100	87
Above Normal (16%)	100	100	100	60
Below Normal (13%)	100	100	96	58
Dry (24%)	100	100	91	55
Critical (15%)	100	84	84	31

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	96
30%	100	100	100	75
40%	100	100	100	63
50%	100	100	100	55
60%	100	100	100	47
70%	100	100	100	35
80%	100	100	100	24
90%	100	100	82	16
Long Term				
Full Simulation Period[b]	99	98	95	56
Water Year Types[c]				
Wet (32%)	98	100	100	86
Above Normal (16%)	100	100	100	51
Below Normal (13%)	100	100	96	45
Dry (24%)	100	100	93	44
Critical (15%)	100	86	83	27

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	-1
30%	0	0	0	-8
40%	0	0	0	-11
50%	0	0	0	-7
60%	0	0	0	-9
70%	0	0	0	-11
80%	0	0	0	-12
90%	0	0	6	-10
Long Term				
Full Simulation Period[b]	0	0	0	-7
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	0	-9
Below Normal (13%)	0	0	-1	-13
Dry (24%)	0	0	2	-11
Critical (15%)	0	2	0	-4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-2. Shasta Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	97
30%	100	100	100	83
40%	100	100	100	74
50%	100	100	100	62
60%	100	100	100	56
70%	100	100	100	46
80%	100	100	100	36
90%	100	100	76	26
Long Term				
Full Simulation Period[b]	99	98	95	63
Water Year Types[c]				
Wet (32%)	98	100	100	87
Above Normal (16%)	100	100	100	60
Below Normal (13%)	100	100	96	58
Dry (24%)	100	100	91	55
Critical (15%)	100	84	84	31

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	95
30%	100	100	100	76
40%	100	100	100	63
50%	100	100	100	57
60%	100	100	100	47
70%	100	100	100	35
80%	100	100	100	28
90%	100	100	81	22
Long Term				
Full Simulation Period[b]	99	98	95	57
Water Year Types[c]				
Wet (32%)	98	100	100	84
Above Normal (16%)	100	100	100	53
Below Normal (13%)	100	100	96	48
Dry (24%)	100	100	92	45
Critical (15%)	100	86	84	29

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	-2
30%	0	0	0	-8
40%	0	0	0	-11
50%	0	0	0	-5
60%	0	0	0	-9
70%	0	0	0	-11
80%	0	0	0	-8
90%	0	0	5	-5
Long Term				
Full Simulation Period[b]	0	0	0	-6
Water Year Types[c]				
Wet (32%)	0	0	0	-3
Above Normal (16%)	0	0	0	-7
Below Normal (13%)	0	0	-1	-11
Dry (24%)	0	0	1	-10
Critical (15%)	0	2	1	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-3. Shasta Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	97
30%	100	100	100	83
40%	100	100	100	74
50%	100	100	100	62
60%	100	100	100	56
70%	100	100	100	46
80%	100	100	100	36
90%	100	100	76	26
Long Term				
Full Simulation Period[b]	99	98	95	63
Water Year Types[c]				
Wet (32%)	98	100	100	87
Above Normal (16%)	100	100	100	60
Below Normal (13%)	100	100	96	58
Dry (24%)	100	100	91	55
Critical (15%)	100	84	84	31

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	98
30%	100	100	100	86
40%	100	100	100	74
50%	100	100	100	62
60%	100	100	100	56
70%	100	100	100	45
80%	100	100	100	37
90%	100	100	91	27
Long Term				
Full Simulation Period[b]	99	98	97	63
Water Year Types[c]				
Wet (32%)	98	100	100	87
Above Normal (16%)	100	100	100	60
Below Normal (13%)	100	100	97	58
Dry (24%)	100	100	97	56
Critical (15%)	100	87	86	32

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	1
30%	0	0	0	3
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	-1
80%	0	0	0	1
90%	0	0	15	1
Long Term				
Full Simulation Period[b]	0	0	2	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	6	1
Critical (15%)	0	3	2	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-4. Shasta Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	96
30%	100	100	100	75
40%	100	100	100	63
50%	100	100	100	55
60%	100	100	100	47
70%	100	100	100	35
80%	100	100	100	24
90%	100	100	82	16
Long Term				
Full Simulation Period[b]	99	98	95	56
Water Year Types[c]				
Wet (32%)	98	100	100	86
Above Normal (16%)	100	100	100	51
Below Normal (13%)	100	100	96	45
Dry (24%)	100	100	93	44
Critical (15%)	100	86	83	27

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	97
30%	100	100	100	83
40%	100	100	100	74
50%	100	100	100	62
60%	100	100	100	56
70%	100	100	100	46
80%	100	100	100	36
90%	100	100	76	26
Long Term				
Full Simulation Period[b]	99	98	95	63
Water Year Types[c]				
Wet (32%)	98	100	100	87
Above Normal (16%)	100	100	100	60
Below Normal (13%)	100	100	96	58
Dry (24%)	100	100	91	55
Critical (15%)	100	84	84	31

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	1
30%	0	0	0	8
40%	0	0	0	11
50%	0	0	0	7
60%	0	0	0	9
70%	0	0	0	11
80%	0	0	0	12
90%	0	0	-6	10
Long Term				
Full Simulation Period[b]	0	0	0	7
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	0	9
Below Normal (13%)	0	0	1	13
Dry (24%)	0	0	-2	11
Critical (15%)	0	-2	0	4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-5. Shasta Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	96
30%	100	100	100	75
40%	100	100	100	63
50%	100	100	100	55
60%	100	100	100	47
70%	100	100	100	35
80%	100	100	100	24
90%	100	100	82	16
Long Term				
Full Simulation Period[b]	99	98	95	56
Water Year Types[c]				
Wet (32%)	98	100	100	86
Above Normal (16%)	100	100	100	51
Below Normal (13%)	100	100	96	45
Dry (24%)	100	100	93	44
Critical (15%)	100	86	83	27

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	95
30%	100	100	100	76
40%	100	100	100	63
50%	100	100	100	57
60%	100	100	100	47
70%	100	100	100	35
80%	100	100	100	28
90%	100	100	81	22
Long Term				
Full Simulation Period[b]	99	98	95	57
Water Year Types[c]				
Wet (32%)	98	100	100	84
Above Normal (16%)	100	100	100	53
Below Normal (13%)	100	100	96	48
Dry (24%)	100	100	92	45
Critical (15%)	100	86	84	29

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	-1
30%	0	0	0	1
40%	0	0	0	0
50%	0	0	0	2
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	4
90%	0	0	-1	5
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	-2
Above Normal (16%)	0	0	0	2
Below Normal (13%)	0	0	0	2
Dry (24%)	0	0	-1	1
Critical (15%)	0	0	1	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-6-6. Shasta Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	96
30%	100	100	100	75
40%	100	100	100	63
50%	100	100	100	55
60%	100	100	100	47
70%	100	100	100	35
80%	100	100	100	24
90%	100	100	82	16
Long Term				
Full Simulation Period[b]	99	98	95	56
Water Year Types[c]				
Wet (32%)	98	100	100	86
Above Normal (16%)	100	100	100	51
Below Normal (13%)	100	100	96	45
Dry (24%)	100	100	93	44
Critical (15%)	100	86	83	27

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	98
30%	100	100	100	86
40%	100	100	100	74
50%	100	100	100	62
60%	100	100	100	56
70%	100	100	100	45
80%	100	100	100	37
90%	100	100	91	27
Long Term				
Full Simulation Period[b]	99	98	97	63
Water Year Types[c]				
Wet (32%)	98	100	100	87
Above Normal (16%)	100	100	100	60
Below Normal (13%)	100	100	97	58
Dry (24%)	100	100	97	56
Critical (15%)	100	87	86	32

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	2
30%	0	0	0	11
40%	0	0	0	11
50%	0	0	0	7
60%	0	0	0	9
70%	0	0	0	10
80%	0	0	0	13
90%	0	0	9	11
Long Term				
Full Simulation Period[b]	0	0	1	7
Water Year Types[c]				
Wet (32%)	0	0	0	2
Above Normal (16%)	0	0	0	9
Below Normal (13%)	0	0	1	13
Dry (24%)	0	0	4	12
Critical (15%)	0	1	2	4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

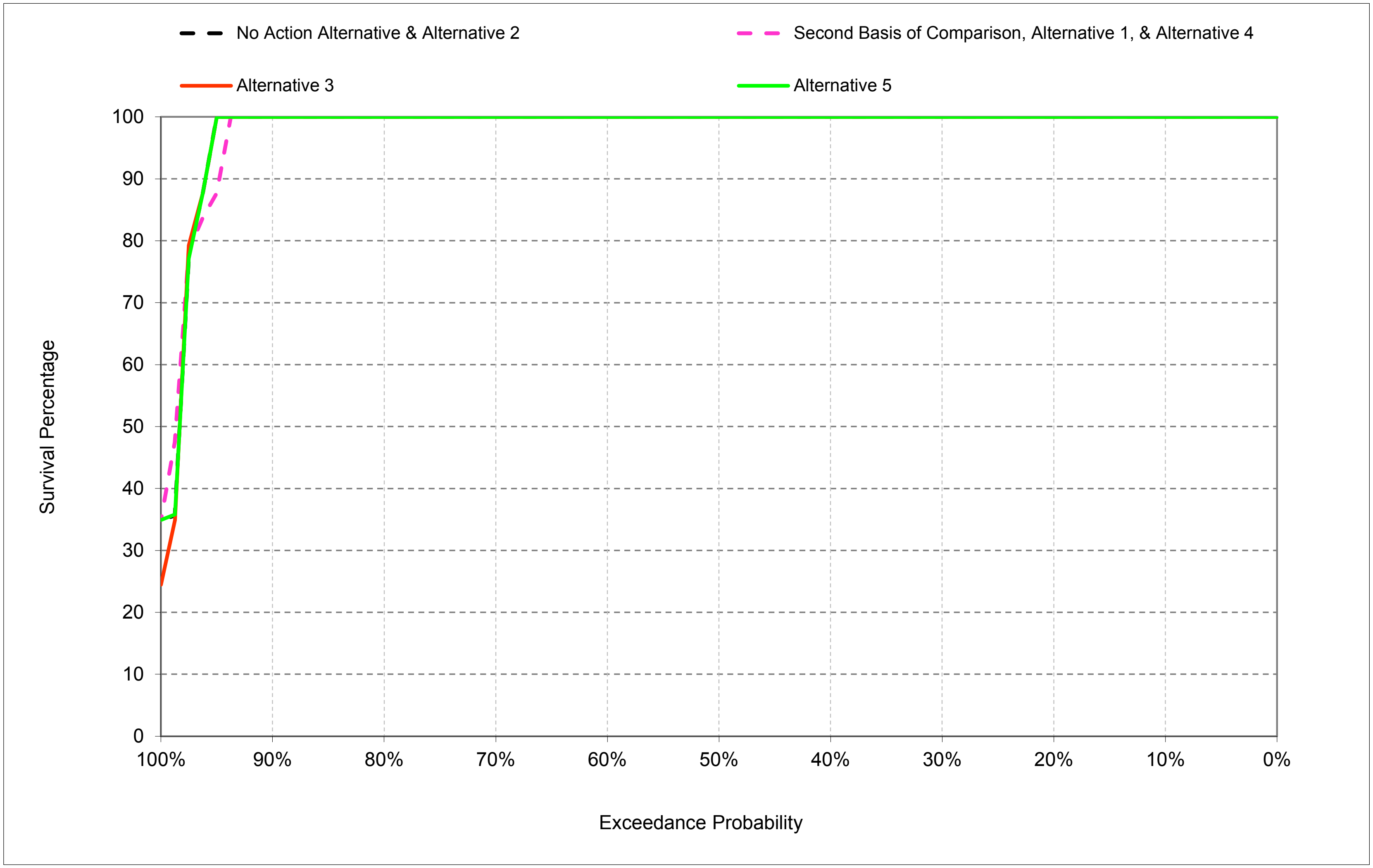
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

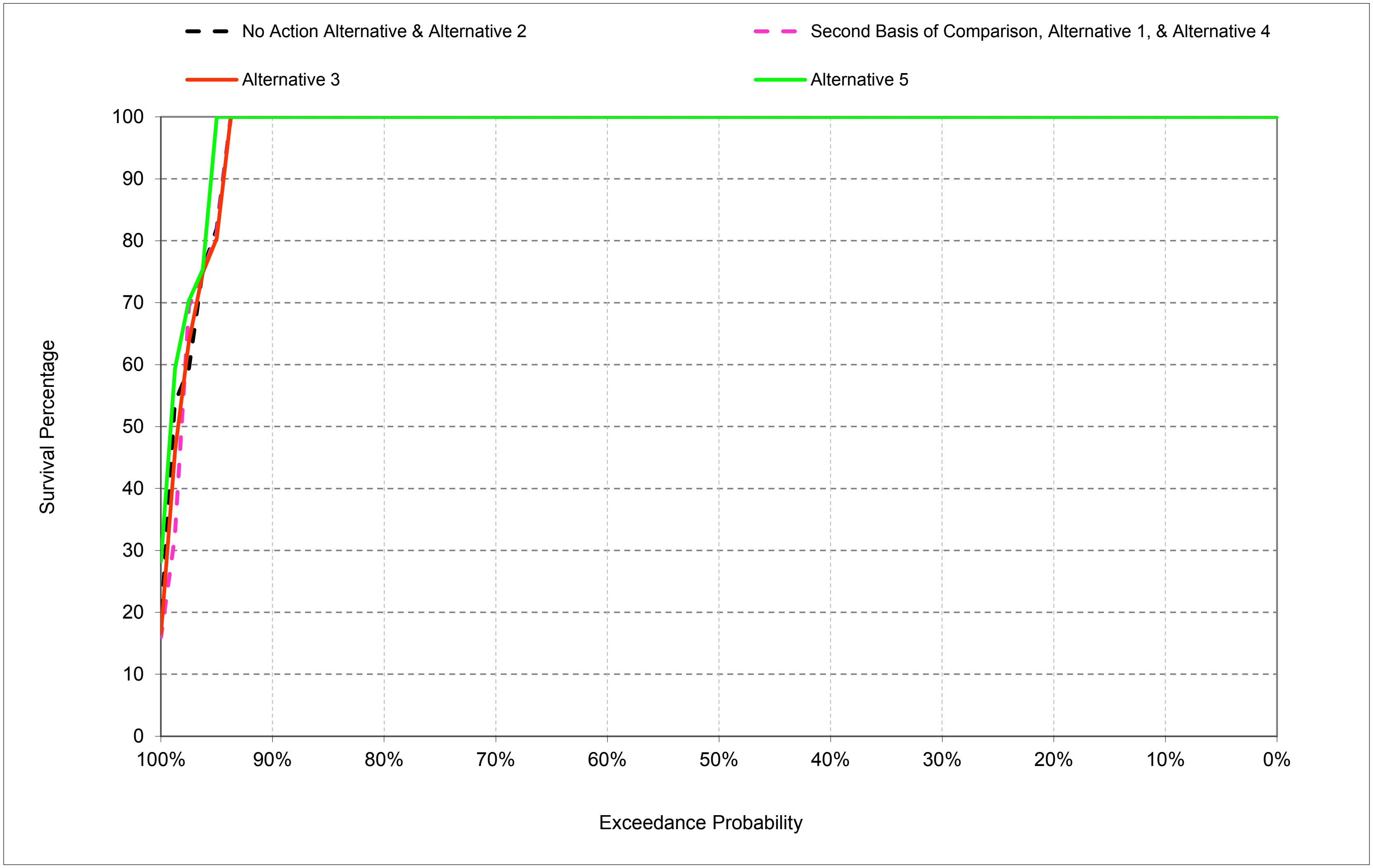
B.7. Oroville Large Mouth Bass Survival Percentage

Figure B-7-1. Oroville Large Mouth Bass Nest Survival Percentage, March



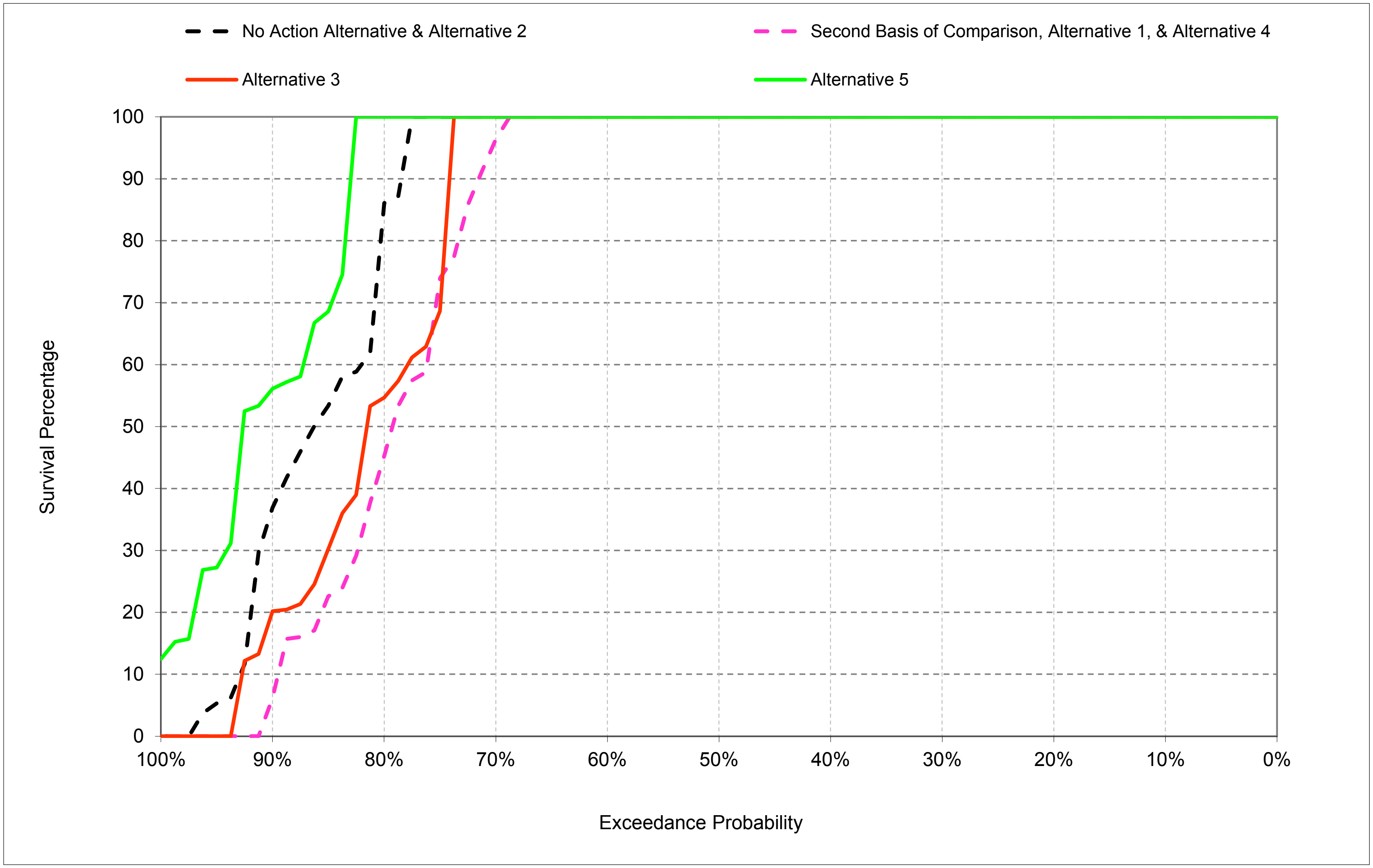
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-2. Oroville Large Mouth Bass Nest Survival Percentage, April



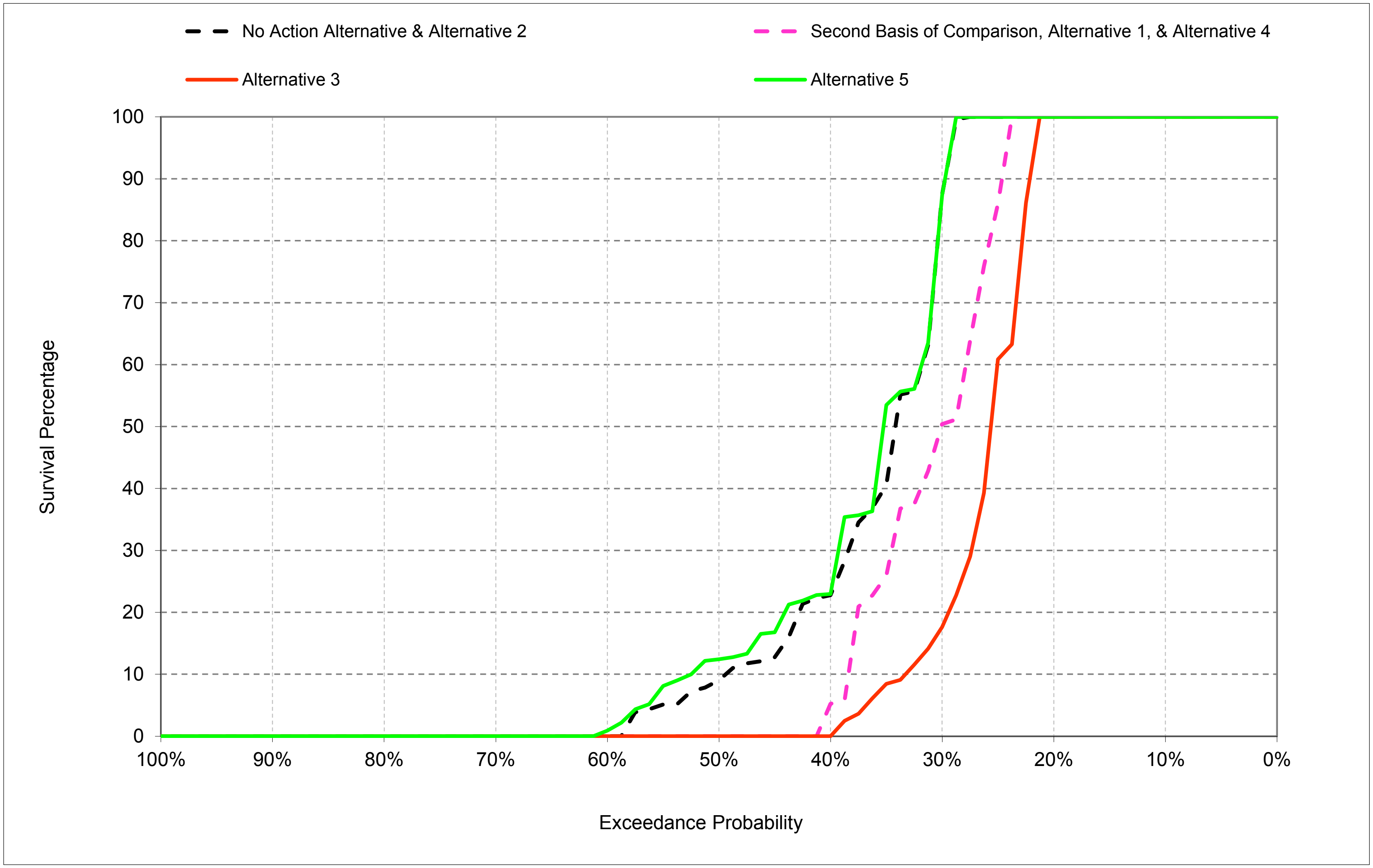
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-3. Oroville Large Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-7-4. Oroville Large Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-1. Oroville Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	80
40%	100	100	100	23
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	67	0
90%	100	100	30	0
Long Term				
Full Simulation Period[b]	97	96	85	36
Water Year Types[c]				
Wet (32%)	91	100	100	81
Above Normal (16%)	100	100	100	37
Below Normal (13%)	100	96	82	24
Dry (24%)	100	100	69	2
Critical (15%)	98	78	62	7

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	48
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	93	0
80%	100	100	39	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	97	96	78	31
Water Year Types[c]				
Wet (32%)	91	100	97	73
Above Normal (16%)	100	100	85	31
Below Normal (13%)	100	98	63	12
Dry (24%)	100	100	67	0
Critical (15%)	98	74	63	7

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-32
40%	0	0	0	-19
50%	0	0	0	-8
60%	0	0	0	0
70%	0	0	-7	0
80%	0	0	-27	0
90%	0	0	-30	0
Long Term				
Full Simulation Period[b]	0	0	-6	-5
Water Year Types[c]				
Wet (32%)	0	0	-3	-8
Above Normal (16%)	0	0	-15	-6
Below Normal (13%)	0	2	-20	-12
Dry (24%)	0	0	-3	-2
Critical (15%)	0	-3	1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-2. Oroville Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	80
40%	100	100	100	23
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	67	0
90%	100	100	30	0
Long Term				
Full Simulation Period[b]	97	96	85	36
Water Year Types[c]				
Wet (32%)	91	100	100	81
Above Normal (16%)	100	100	100	37
Below Normal (13%)	100	96	82	24
Dry (24%)	100	100	69	2
Critical (15%)	98	78	62	7

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	17
40%	100	100	100	0
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	54	0
90%	100	100	14	0
Long Term				
Full Simulation Period[b]	97	96	80	27
Water Year Types[c]				
Wet (32%)	90	100	97	63
Above Normal (16%)	100	100	86	26
Below Normal (13%)	100	95	73	10
Dry (24%)	100	100	67	0
Critical (15%)	98	78	65	6

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-64
40%	0	0	0	-23
50%	0	0	0	-8
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	-13	0
90%	0	0	-16	0
Long Term				
Full Simulation Period[b]	0	0	-4	-10
Water Year Types[c]				
Wet (32%)	0	0	-3	-17
Above Normal (16%)	0	0	-14	-11
Below Normal (13%)	0	-1	-9	-13
Dry (24%)	0	0	-2	-2
Critical (15%)	0	0	3	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-3. Oroville Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	80
40%	100	100	100	23
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	67	0
90%	100	100	30	0
Long Term				
Full Simulation Period[b]	97	96	85	36
Water Year Types[c]				
Wet (32%)	91	100	100	81
Above Normal (16%)	100	100	100	37
Below Normal (13%)	100	96	82	24
Dry (24%)	100	100	69	2
Critical (15%)	98	78	62	7

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	80
40%	100	100	100	23
50%	100	100	100	12
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	100	0
90%	100	100	54	0
Long Term				
Full Simulation Period[b]	97	97	89	37
Water Year Types[c]				
Wet (32%)	91	100	100	82
Above Normal (16%)	100	100	100	37
Below Normal (13%)	100	96	90	26
Dry (24%)	100	100	81	3
Critical (15%)	98	82	68	8

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	4
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	33	0
90%	0	0	23	0
Long Term				
Full Simulation Period[b]	0	1	5	1
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	8	2
Dry (24%)	0	0	12	1
Critical (15%)	0	4	6	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-4. Oroville Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	48
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	93	0
80%	100	100	39	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	97	96	78	31
Water Year Types[c]				
Wet (32%)	91	100	97	73
Above Normal (16%)	100	100	85	31
Below Normal (13%)	100	98	63	12
Dry (24%)	100	100	67	0
Critical (15%)	98	74	63	7

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	80
40%	100	100	100	23
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	67	0
90%	100	100	30	0
Long Term				
Full Simulation Period[b]	97	96	85	36
Water Year Types[c]				
Wet (32%)	91	100	100	81
Above Normal (16%)	100	100	100	37
Below Normal (13%)	100	96	82	24
Dry (24%)	100	100	69	2
Critical (15%)	98	78	62	7

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	32
40%	0	0	0	19
50%	0	0	0	8
60%	0	0	0	0
70%	0	0	7	0
80%	0	0	27	0
90%	0	0	30	0
Long Term				
Full Simulation Period[b]	0	0	6	5
Water Year Types[c]				
Wet (32%)	0	0	3	8
Above Normal (16%)	0	0	15	6
Below Normal (13%)	0	-2	20	12
Dry (24%)	0	0	3	2
Critical (15%)	0	3	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-5. Oroville Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	48
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	93	0
80%	100	100	39	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	97	96	78	31
Water Year Types[c]				
Wet (32%)	91	100	97	73
Above Normal (16%)	100	100	85	31
Below Normal (13%)	100	98	63	12
Dry (24%)	100	100	67	0
Critical (15%)	98	74	63	7

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	17
40%	100	100	100	0
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	54	0
90%	100	100	14	0
Long Term				
Full Simulation Period[b]	97	96	80	27
Water Year Types[c]				
Wet (32%)	90	100	97	63
Above Normal (16%)	100	100	86	26
Below Normal (13%)	100	95	73	10
Dry (24%)	100	100	67	0
Critical (15%)	98	78	65	6

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-32
40%	0	0	0	-3
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	7	0
80%	0	0	14	0
90%	0	0	13	0
Long Term				
Full Simulation Period[b]	0	0	2	-4
Water Year Types[c]				
Wet (32%)	0	0	0	-10
Above Normal (16%)	0	0	0	-5
Below Normal (13%)	0	-3	10	-1
Dry (24%)	0	0	1	0
Critical (15%)	0	4	2	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-7-6. Oroville Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	48
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	93	0
80%	100	100	39	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	97	96	78	31
Water Year Types[c]				
Wet (32%)	91	100	97	73
Above Normal (16%)	100	100	85	31
Below Normal (13%)	100	98	63	12
Dry (24%)	100	100	67	0
Critical (15%)	98	74	63	7

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	80
40%	100	100	100	23
50%	100	100	100	12
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	100	0
90%	100	100	54	0
Long Term				
Full Simulation Period[b]	97	97	89	37
Water Year Types[c]				
Wet (32%)	91	100	100	82
Above Normal (16%)	100	100	100	37
Below Normal (13%)	100	96	90	26
Dry (24%)	100	100	81	3
Critical (15%)	98	82	68	8

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	32
40%	0	0	0	20
50%	0	0	0	12
60%	0	0	0	0
70%	0	0	7	0
80%	0	0	61	0
90%	0	0	53	0
Long Term				
Full Simulation Period[b]	0	1	11	6
Water Year Types[c]				
Wet (32%)	0	0	3	8
Above Normal (16%)	0	0	15	6
Below Normal (13%)	0	-2	28	14
Dry (24%)	0	0	14	2
Critical (15%)	0	7	5	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

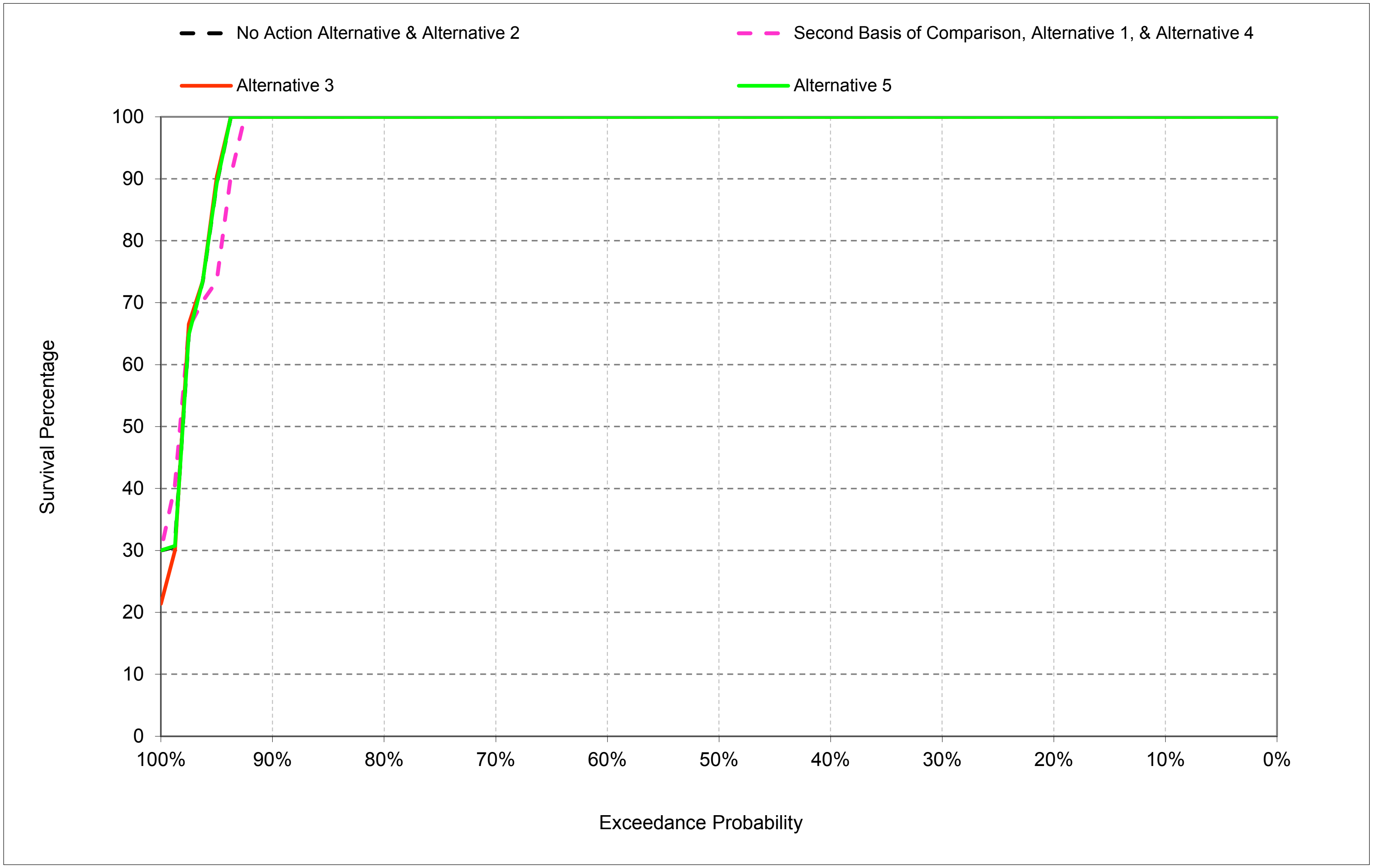
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

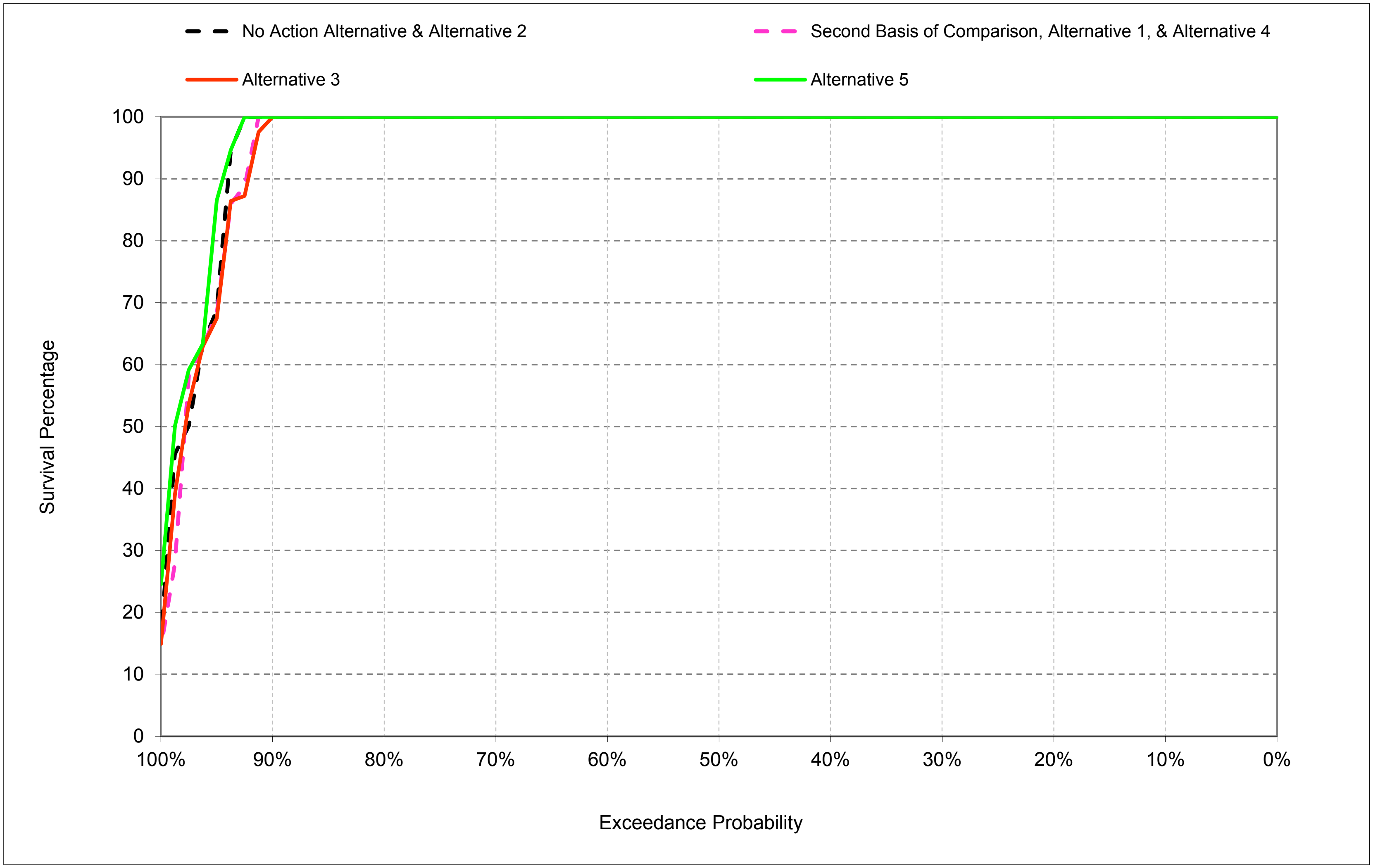
B.8. Oroville Small Mouth Bass Survival Percentage

Figure B-8-1. Oroville Small Mouth Bass Nest Survival Percentage, March



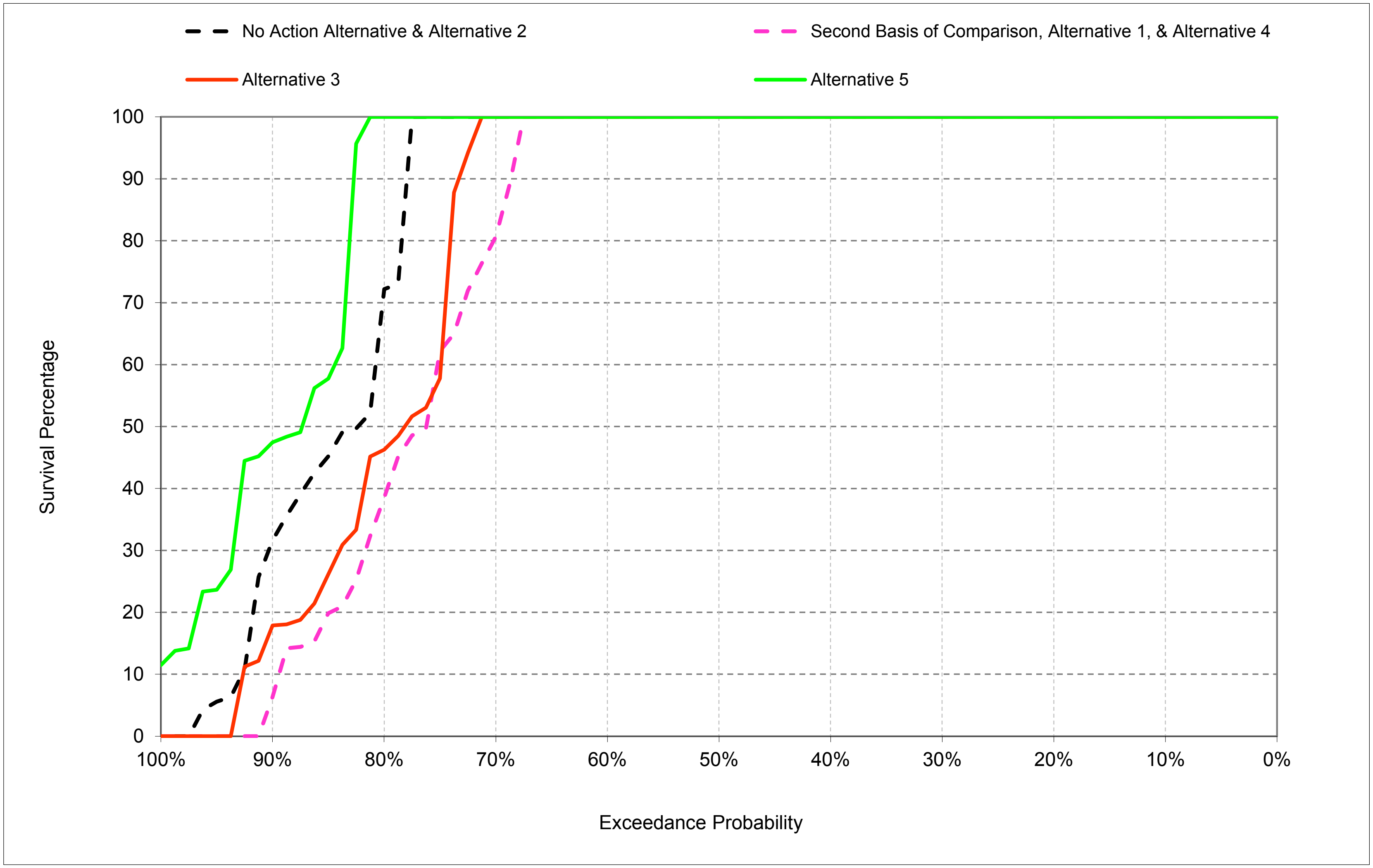
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-2. Oroville Small Mouth Bass Nest Survival Percentage, April



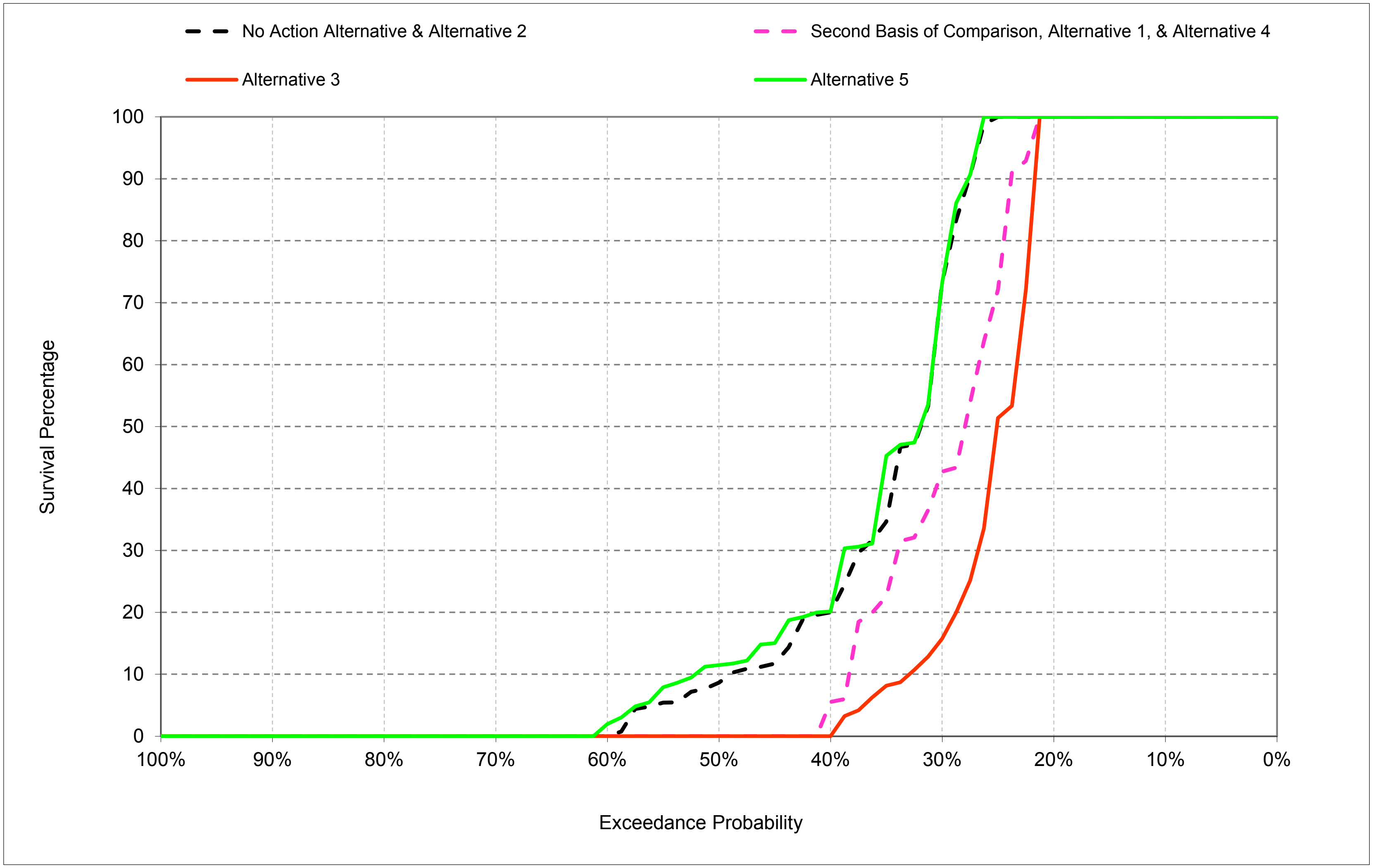
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-3. Oroville Small Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-8-4. Oroville Small Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-1. Oroville Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	67
40%	100	100	100	20
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	56	0
90%	100	100	26	0
Long Term				
Full Simulation Period[b]	96	96	83	35
Water Year Types[c]				
Wet (32%)	90	100	100	79
Above Normal (16%)	100	100	100	35
Below Normal (13%)	100	95	81	22
Dry (24%)	100	100	68	2
Critical (15%)	97	75	58	7

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	41
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	78	0
80%	100	100	34	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	96	95	77	30
Water Year Types[c]				
Wet (32%)	89	100	97	72
Above Normal (16%)	100	100	85	28
Below Normal (13%)	100	97	59	11
Dry (24%)	100	100	65	0
Critical (15%)	97	70	58	6

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-26
40%	0	0	0	-17
50%	0	0	0	-8
60%	0	0	0	0
70%	0	0	-22	0
80%	0	0	-23	0
90%	0	0	-26	0
Long Term				
Full Simulation Period[b]	0	0	-7	-5
Water Year Types[c]				
Wet (32%)	-1	0	-3	-8
Above Normal (16%)	0	0	-15	-7
Below Normal (13%)	0	2	-22	-10
Dry (24%)	0	0	-3	-1
Critical (15%)	0	-5	1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-2. Oroville Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	67
40%	100	100	100	20
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	56	0
90%	100	100	26	0
Long Term				
Full Simulation Period[b]	96	96	83	35
Water Year Types[c]				
Wet (32%)	90	100	100	79
Above Normal (16%)	100	100	100	35
Below Normal (13%)	100	95	81	22
Dry (24%)	100	100	68	2
Critical (15%)	97	75	58	7

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	15
40%	100	100	100	0
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	45	0
90%	100	98	13	0
Long Term				
Full Simulation Period[b]	96	95	79	26
Water Year Types[c]				
Wet (32%)	89	100	97	63
Above Normal (16%)	100	100	85	23
Below Normal (13%)	100	93	72	10
Dry (24%)	100	100	66	0
Critical (15%)	97	74	62	5

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-52
40%	0	0	0	-20
50%	0	0	0	-8
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	-11	0
90%	0	-2	-14	0
Long Term				
Full Simulation Period[b]	0	0	-4	-9
Water Year Types[c]				
Wet (32%)	0	0	-3	-16
Above Normal (16%)	0	0	-15	-12
Below Normal (13%)	0	-2	-9	-11
Dry (24%)	0	0	-2	-2
Critical (15%)	0	-1	4	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-3. Oroville Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	67
40%	100	100	100	20
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	56	0
90%	100	100	26	0
Long Term				
Full Simulation Period[b]	96	96	83	35
Water Year Types[c]				
Wet (32%)	90	100	100	79
Above Normal (16%)	100	100	100	35
Below Normal (13%)	100	95	81	22
Dry (24%)	100	100	68	2
Critical (15%)	97	75	58	7

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	67
40%	100	100	100	20
50%	100	100	100	11
60%	100	100	100	1
70%	100	100	100	0
80%	100	100	100	0
90%	100	100	45	0
Long Term				
Full Simulation Period[b]	96	96	88	36
Water Year Types[c]				
Wet (32%)	90	100	100	80
Above Normal (16%)	100	100	100	35
Below Normal (13%)	100	95	89	23
Dry (24%)	100	100	79	2
Critical (15%)	97	78	65	7

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	3
60%	0	0	0	1
70%	0	0	0	0
80%	0	0	44	0
90%	0	0	19	0
Long Term				
Full Simulation Period[b]	0	1	5	1
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	8	2
Dry (24%)	0	0	11	1
Critical (15%)	0	4	7	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-4. Oroville Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	41
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	78	0
80%	100	100	34	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	96	95	77	30
Water Year Types[c]				
Wet (32%)	89	100	97	72
Above Normal (16%)	100	100	85	28
Below Normal (13%)	100	97	59	11
Dry (24%)	100	100	65	0
Critical (15%)	97	70	58	6

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	67
40%	100	100	100	20
50%	100	100	100	8
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	56	0
90%	100	100	26	0
Long Term				
Full Simulation Period[b]	96	96	83	35
Water Year Types[c]				
Wet (32%)	90	100	100	79
Above Normal (16%)	100	100	100	35
Below Normal (13%)	100	95	81	22
Dry (24%)	100	100	68	2
Critical (15%)	97	75	58	7

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	26
40%	0	0	0	17
50%	0	0	0	8
60%	0	0	0	0
70%	0	0	22	0
80%	0	0	23	0
90%	0	0	26	0
Long Term				
Full Simulation Period[b]	0	0	7	5
Water Year Types[c]				
Wet (32%)	1	0	3	8
Above Normal (16%)	0	0	15	7
Below Normal (13%)	0	-2	22	10
Dry (24%)	0	0	3	1
Critical (15%)	0	5	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-5. Oroville Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	41
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	78	0
80%	100	100	34	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	96	95	77	30
Water Year Types[c]				
Wet (32%)	89	100	97	72
Above Normal (16%)	100	100	85	28
Below Normal (13%)	100	97	59	11
Dry (24%)	100	100	65	0
Critical (15%)	97	70	58	6

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	15
40%	100	100	100	0
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	100	0
80%	100	100	45	0
90%	100	98	13	0
Long Term				
Full Simulation Period[b]	96	95	79	26
Water Year Types[c]				
Wet (32%)	89	100	97	63
Above Normal (16%)	100	100	85	23
Below Normal (13%)	100	93	72	10
Dry (24%)	100	100	66	0
Critical (15%)	97	74	62	5

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-26
40%	0	0	0	-3
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	22	0
80%	0	0	12	0
90%	0	-2	12	0
Long Term				
Full Simulation Period[b]	0	0	2	-4
Water Year Types[c]				
Wet (32%)	0	0	0	-9
Above Normal (16%)	0	0	0	-5
Below Normal (13%)	0	-4	13	-1
Dry (24%)	0	0	1	0
Critical (15%)	0	4	3	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-8-6. Oroville Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	41
40%	100	100	100	3
50%	100	100	100	0
60%	100	100	100	0
70%	100	100	78	0
80%	100	100	34	0
90%	100	100	1	0
Long Term				
Full Simulation Period[b]	96	95	77	30
Water Year Types[c]				
Wet (32%)	89	100	97	72
Above Normal (16%)	100	100	85	28
Below Normal (13%)	100	97	59	11
Dry (24%)	100	100	65	0
Critical (15%)	97	70	58	6

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	67
40%	100	100	100	20
50%	100	100	100	11
60%	100	100	100	1
70%	100	100	100	0
80%	100	100	100	0
90%	100	100	45	0
Long Term				
Full Simulation Period[b]	96	96	88	36
Water Year Types[c]				
Wet (32%)	90	100	100	80
Above Normal (16%)	100	100	100	35
Below Normal (13%)	100	95	89	23
Dry (24%)	100	100	79	2
Critical (15%)	97	78	65	7

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	26
40%	0	0	0	17
50%	0	0	0	11
60%	0	0	0	1
70%	0	0	22	0
80%	0	0	66	0
90%	0	0	45	0
Long Term				
Full Simulation Period[b]	0	1	12	6
Water Year Types[c]				
Wet (32%)	1	0	3	8
Above Normal (16%)	0	0	15	7
Below Normal (13%)	0	-2	30	12
Dry (24%)	0	0	14	2
Critical (15%)	0	8	7	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

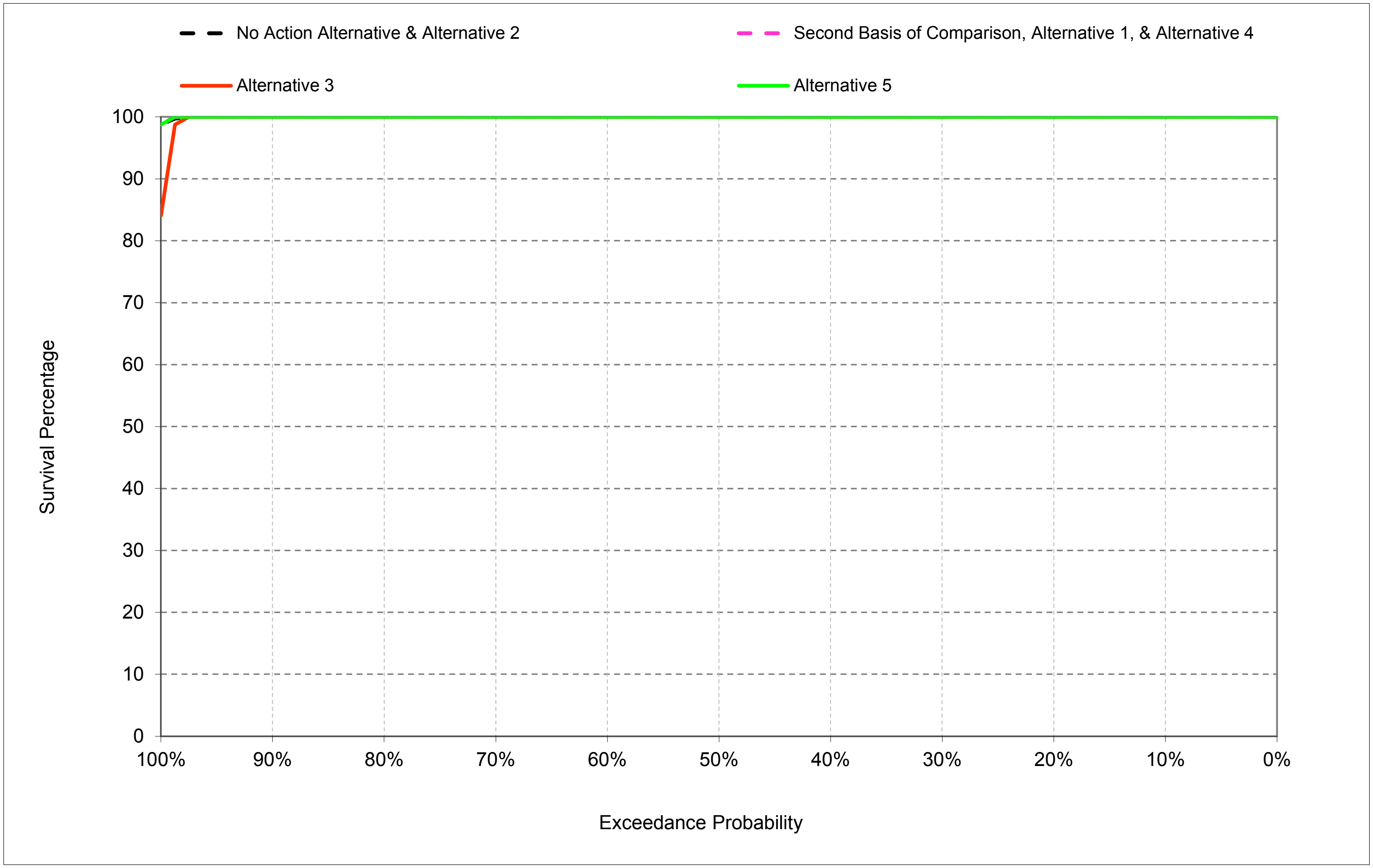
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

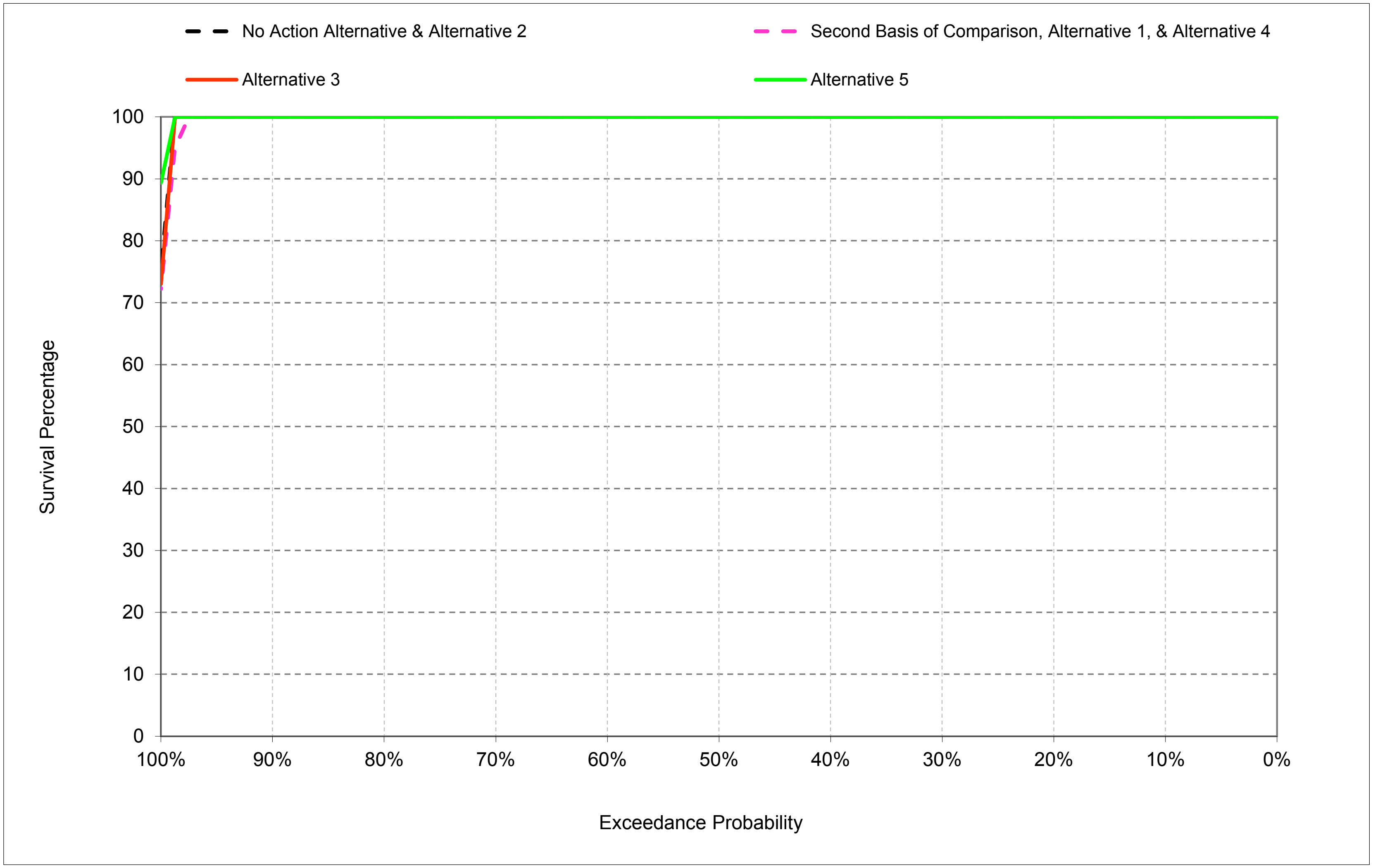
B.9. Oroville Spotted Bass Survival Percentage

Figure B-9-1. Oroville Spotted Bass Nest Survival Percentage, March



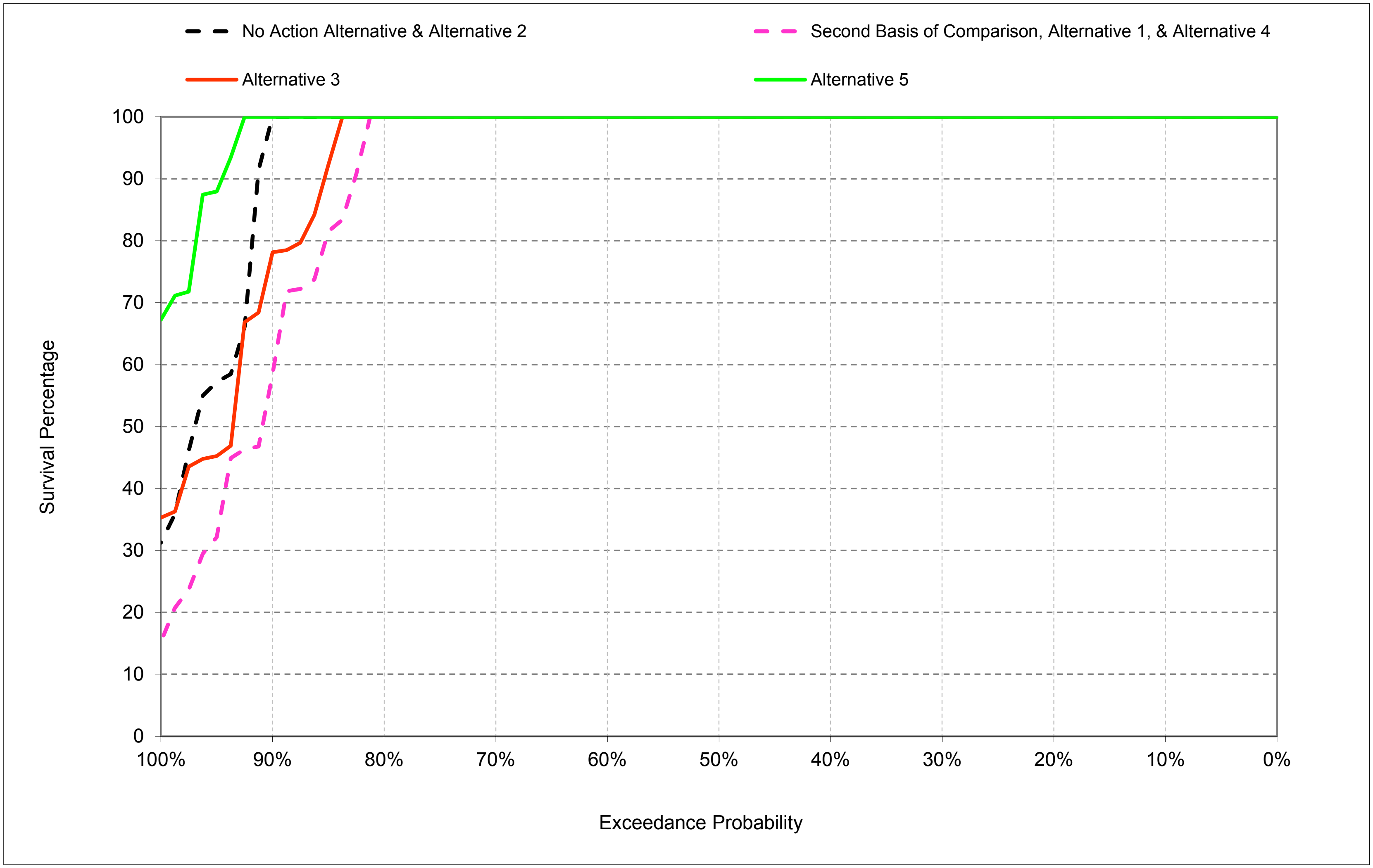
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-2. Oroville Spotted Bass Nest Survival Percentage, April



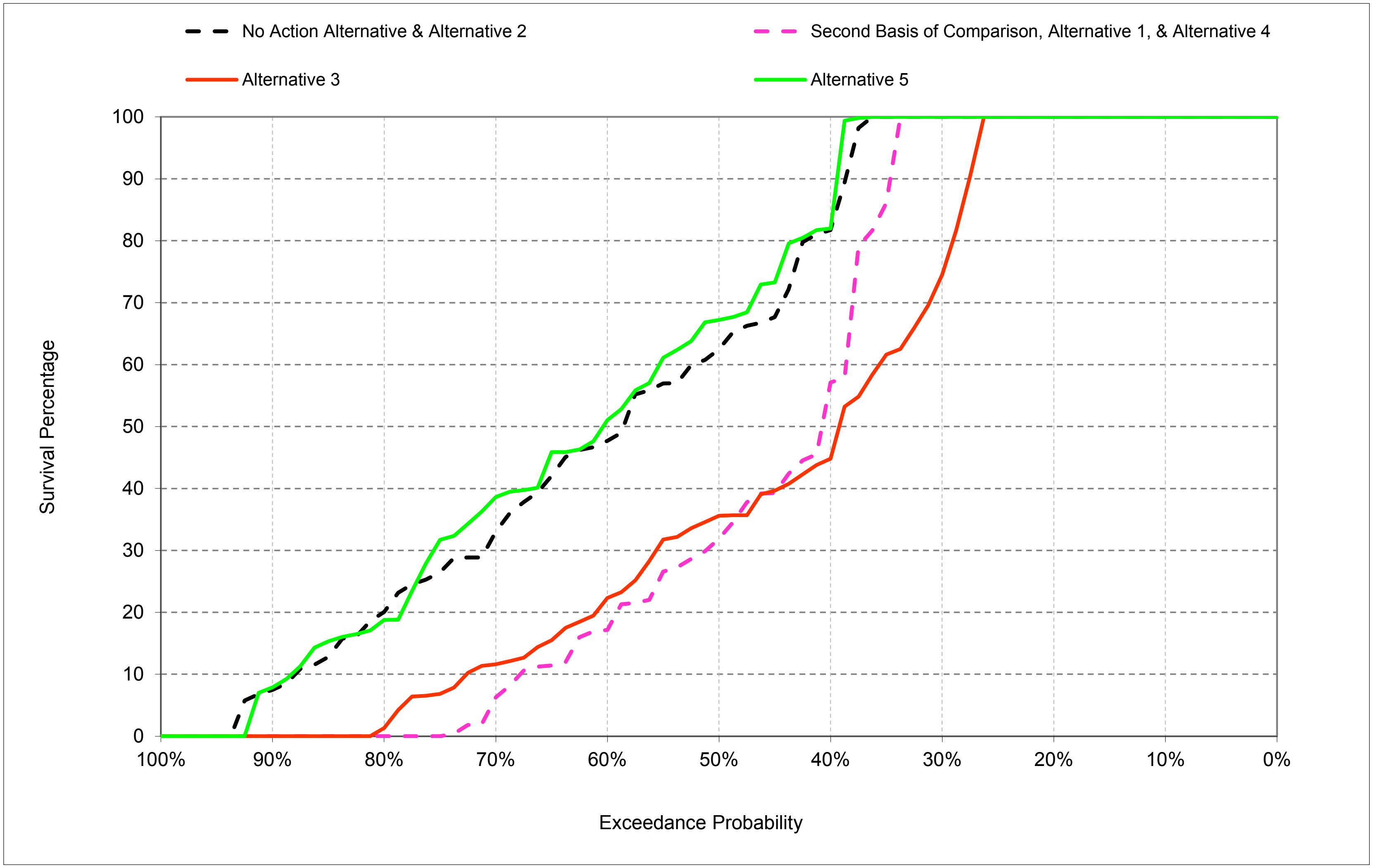
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-3. Oroville Spotted Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-9-4. Oroville Spotted Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-1. Oroville Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	81
50%	100	100	100	62
60%	100	100	100	47
70%	100	100	100	30
80%	100	100	100	19
90%	100	100	92	7
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	98	100	100	95
Above Normal (16%)	100	100	100	68
Below Normal (13%)	100	100	96	55
Dry (24%)	100	100	86	22
Critical (15%)	100	94	90	43

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	52
50%	100	100	100	31
60%	100	100	100	17
70%	100	100	100	3
80%	100	100	100	0
90%	100	100	48	0
Long Term				
Full Simulation Period[b]	99	99	90	46
Water Year Types[c]				
Wet (32%)	98	100	99	86
Above Normal (16%)	100	100	93	44
Below Normal (13%)	100	100	78	26
Dry (24%)	100	100	83	14
Critical (15%)	100	90	90	32

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-29
50%	0	0	0	-31
60%	0	0	0	-30
70%	0	0	0	-27
80%	0	0	0	-19
90%	0	0	-44	-7
Long Term				
Full Simulation Period[b]	0	-1	-4	-14
Water Year Types[c]				
Wet (32%)	0	0	-1	-9
Above Normal (16%)	0	0	-7	-24
Below Normal (13%)	0	0	-18	-29
Dry (24%)	0	0	-3	-8
Critical (15%)	0	-4	0	-11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-2. Oroville Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	81
50%	100	100	100	62
60%	100	100	100	47
70%	100	100	100	30
80%	100	100	100	19
90%	100	100	92	7
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	98	100	100	95
Above Normal (16%)	100	100	100	68
Below Normal (13%)	100	100	96	55
Dry (24%)	100	100	86	22
Critical (15%)	100	94	90	43

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	73
40%	100	100	100	44
50%	100	100	100	35
60%	100	100	100	21
70%	100	100	100	11
80%	100	100	100	0
90%	100	100	69	0
Long Term				
Full Simulation Period[b]	99	99	93	44
Water Year Types[c]				
Wet (32%)	98	100	100	79
Above Normal (16%)	100	100	93	49
Below Normal (13%)	100	100	91	34
Dry (24%)	100	100	85	9
Critical (15%)	100	90	93	32

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-27
40%	0	0	0	-37
50%	0	0	0	-27
60%	0	0	0	-26
70%	0	0	0	-19
80%	0	0	0	-19
90%	0	0	-23	-7
Long Term				
Full Simulation Period[b]	0	-1	-2	-16
Water Year Types[c]				
Wet (32%)	-1	0	0	-16
Above Normal (16%)	0	0	-7	-19
Below Normal (13%)	0	0	-5	-21
Dry (24%)	0	0	-2	-13
Critical (15%)	0	-4	4	-10

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-3. Oroville Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	81
50%	100	100	100	62
60%	100	100	100	47
70%	100	100	100	30
80%	100	100	100	19
90%	100	100	92	7
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	98	100	100	95
Above Normal (16%)	100	100	100	68
Below Normal (13%)	100	100	96	55
Dry (24%)	100	100	86	22
Critical (15%)	100	94	90	43

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	82
50%	100	100	100	67
60%	100	100	100	49
70%	100	100	100	37
80%	100	100	100	17
90%	100	100	100	7
Long Term				
Full Simulation Period[b]	99	99	98	61
Water Year Types[c]				
Wet (32%)	98	100	100	95
Above Normal (16%)	100	100	100	69
Below Normal (13%)	100	100	97	59
Dry (24%)	100	100	97	23
Critical (15%)	100	96	94	46

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	5
60%	0	0	0	2
70%	0	0	0	7
80%	0	0	0	-1
90%	0	0	8	0
Long Term				
Full Simulation Period[b]	0	0	3	1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	2	4
Dry (24%)	0	0	11	0
Critical (15%)	0	2	4	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-4. Oroville Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	52
50%	100	100	100	31
60%	100	100	100	17
70%	100	100	100	3
80%	100	100	100	0
90%	100	100	48	0
Long Term				
Full Simulation Period[b]	99	99	90	46
Water Year Types[c]				
Wet (32%)	98	100	99	86
Above Normal (16%)	100	100	93	44
Below Normal (13%)	100	100	78	26
Dry (24%)	100	100	83	14
Critical (15%)	100	90	90	32

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	81
50%	100	100	100	62
60%	100	100	100	47
70%	100	100	100	30
80%	100	100	100	19
90%	100	100	92	7
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	98	100	100	95
Above Normal (16%)	100	100	100	68
Below Normal (13%)	100	100	96	55
Dry (24%)	100	100	86	22
Critical (15%)	100	94	90	43

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	29
50%	0	0	0	31
60%	0	0	0	30
70%	0	0	0	27
80%	0	0	0	19
90%	0	0	44	7
Long Term				
Full Simulation Period[b]	0	1	4	14
Water Year Types[c]				
Wet (32%)	0	0	1	9
Above Normal (16%)	0	0	7	24
Below Normal (13%)	0	0	18	29
Dry (24%)	0	0	3	8
Critical (15%)	0	4	0	11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-5. Oroville Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	52
50%	100	100	100	31
60%	100	100	100	17
70%	100	100	100	3
80%	100	100	100	0
90%	100	100	48	0
Long Term				
Full Simulation Period[b]	99	99	90	46
Water Year Types[c]				
Wet (32%)	98	100	99	86
Above Normal (16%)	100	100	93	44
Below Normal (13%)	100	100	78	26
Dry (24%)	100	100	83	14
Critical (15%)	100	90	90	32

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	73
40%	100	100	100	44
50%	100	100	100	35
60%	100	100	100	21
70%	100	100	100	11
80%	100	100	100	0
90%	100	100	69	0
Long Term				
Full Simulation Period[b]	99	99	93	44
Water Year Types[c]				
Wet (32%)	98	100	100	79
Above Normal (16%)	100	100	93	49
Below Normal (13%)	100	100	91	34
Dry (24%)	100	100	85	9
Critical (15%)	100	90	93	32

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	-27
40%	0	0	0	-8
50%	0	0	0	4
60%	0	0	0	4
70%	0	0	0	8
80%	0	0	0	0
90%	0	0	21	0
Long Term				
Full Simulation Period[b]	0	0	3	-2
Water Year Types[c]				
Wet (32%)	-1	0	0	-7
Above Normal (16%)	0	0	1	5
Below Normal (13%)	0	0	13	8
Dry (24%)	0	0	1	-5
Critical (15%)	0	1	3	1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-9-6. Oroville Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	52
50%	100	100	100	31
60%	100	100	100	17
70%	100	100	100	3
80%	100	100	100	0
90%	100	100	48	0
Long Term				
Full Simulation Period[b]	99	99	90	46
Water Year Types[c]				
Wet (32%)	98	100	99	86
Above Normal (16%)	100	100	93	44
Below Normal (13%)	100	100	78	26
Dry (24%)	100	100	83	14
Critical (15%)	100	90	90	32

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	82
50%	100	100	100	67
60%	100	100	100	49
70%	100	100	100	37
80%	100	100	100	17
90%	100	100	100	7
Long Term				
Full Simulation Period[b]	99	99	98	61
Water Year Types[c]				
Wet (32%)	98	100	100	95
Above Normal (16%)	100	100	100	69
Below Normal (13%)	100	100	97	59
Dry (24%)	100	100	97	23
Critical (15%)	100	96	94	46

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	29
50%	0	0	0	36
60%	0	0	0	32
70%	0	0	0	34
80%	0	0	0	17
90%	0	0	52	7
Long Term				
Full Simulation Period[b]	0	1	8	15
Water Year Types[c]				
Wet (32%)	0	0	1	9
Above Normal (16%)	0	0	7	24
Below Normal (13%)	0	0	19	34
Dry (24%)	0	0	14	8
Critical (15%)	0	6	3	14

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

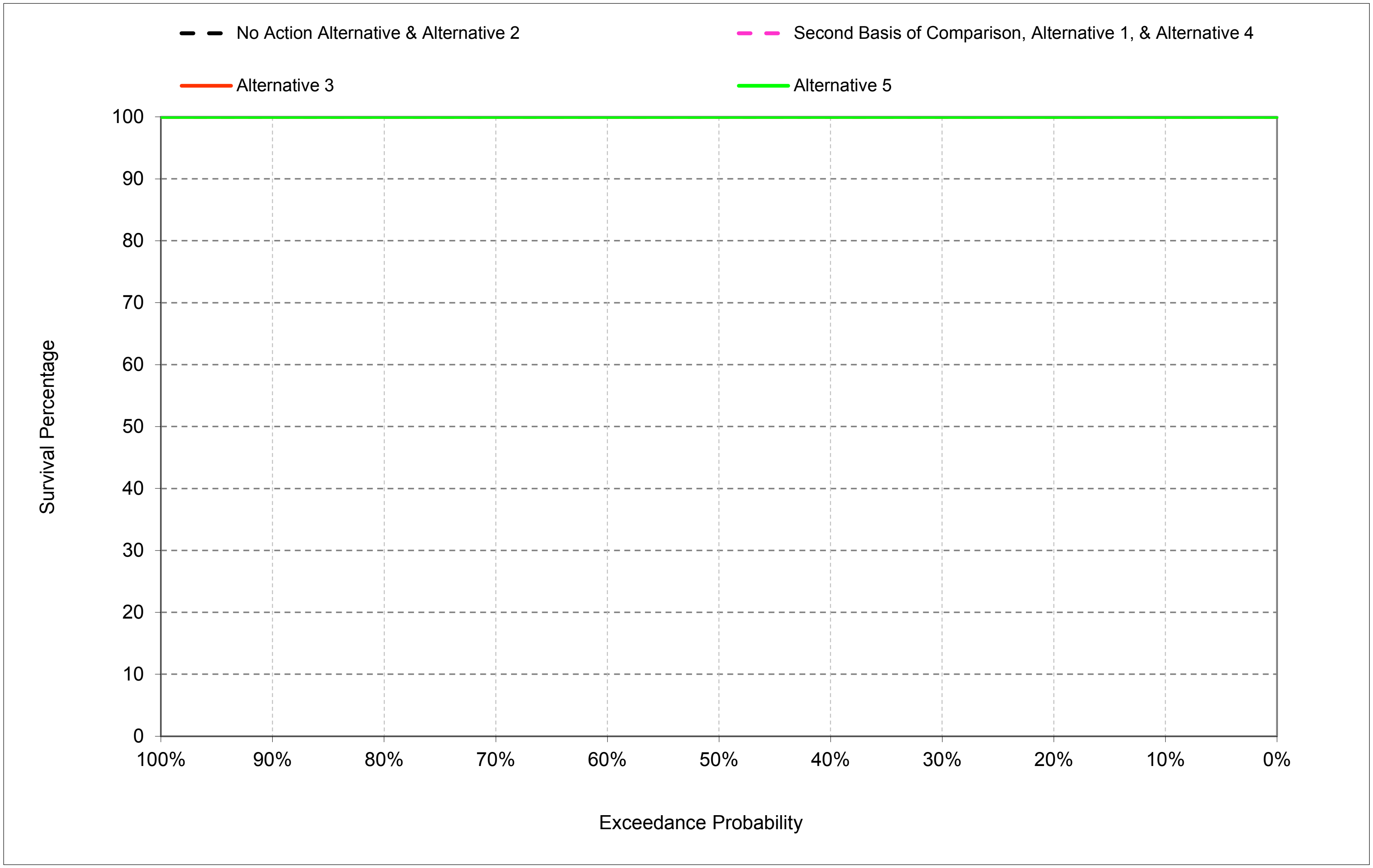
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

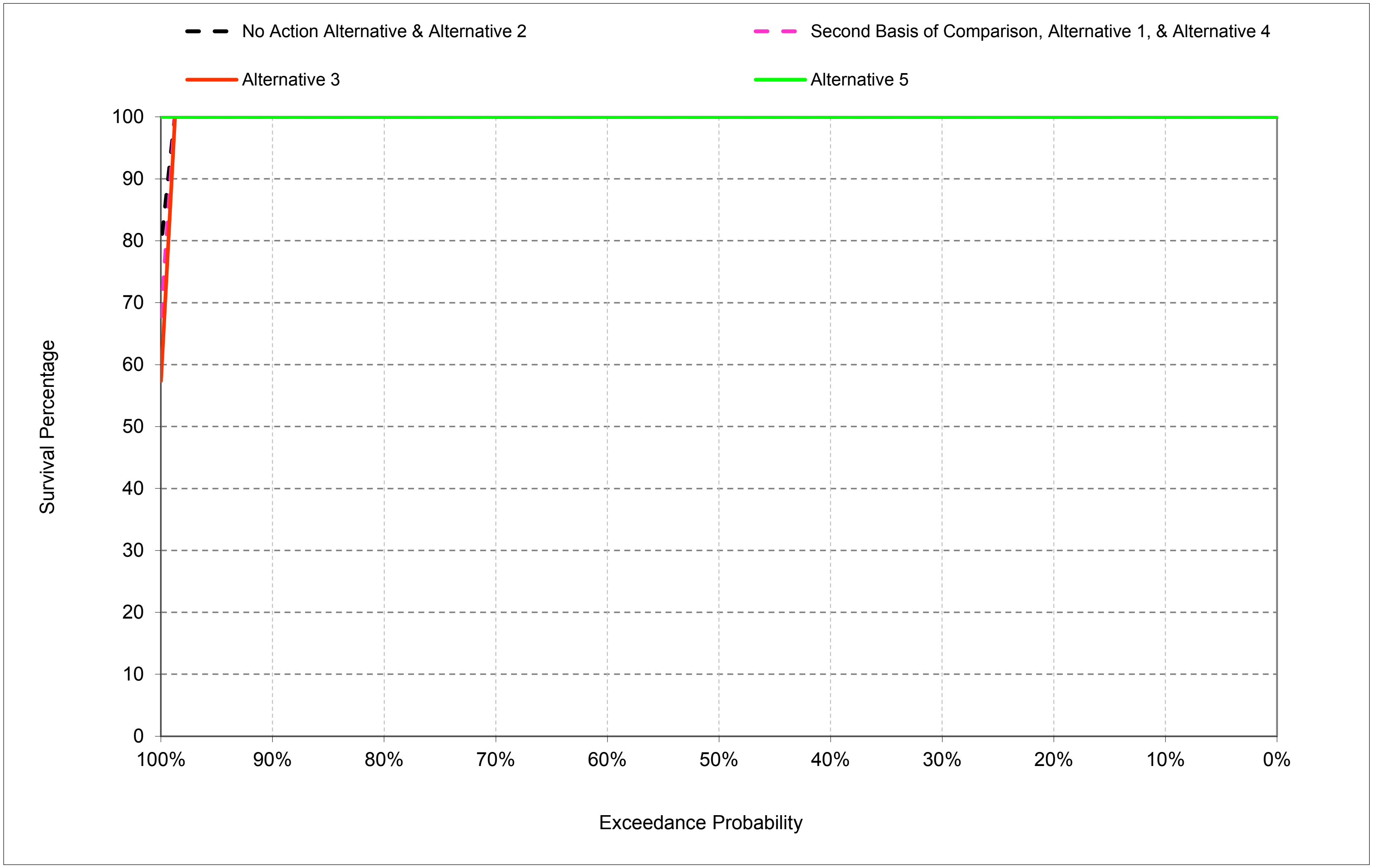
B.10. Folsom Large Mouth Bass Survival Percentage

Figure B-10-1. Folsom Large Mouth Bass Nest Survival Percentage, March



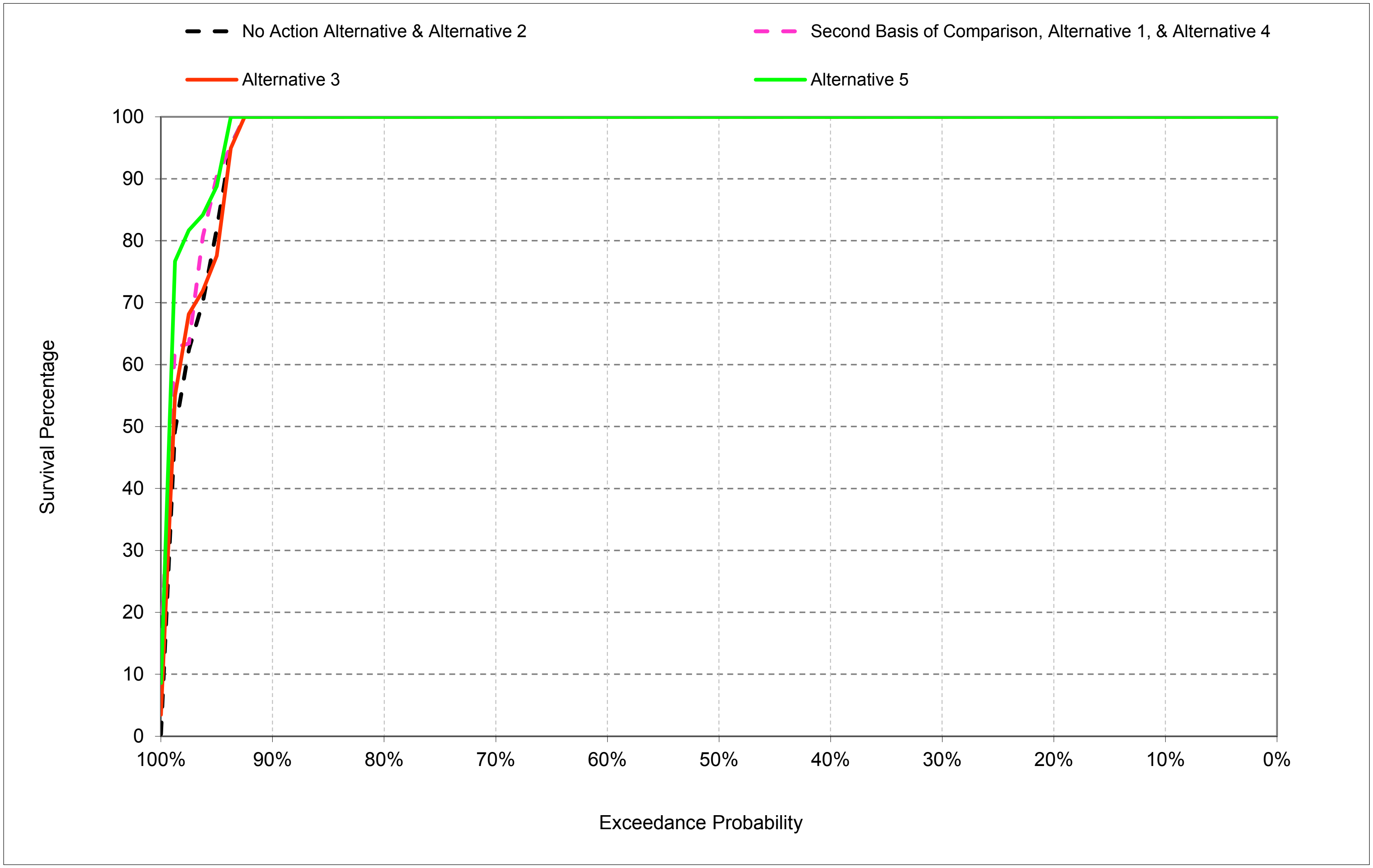
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-2. Folsom Large Mouth Bass Nest Survival Percentage, April



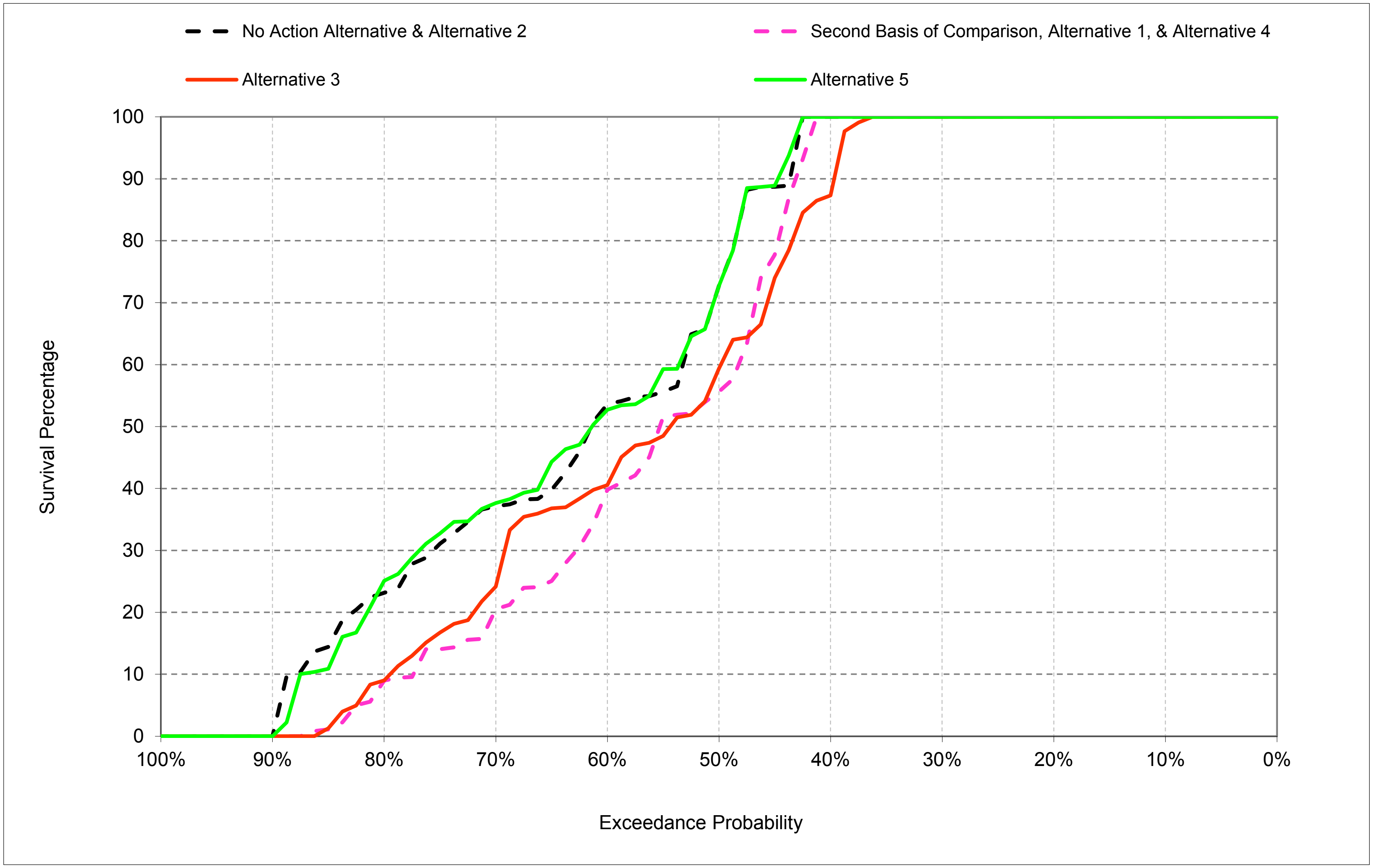
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-3. Folsom Large Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-10-4. Folsom Large Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-1. Folsom Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	69
60%	100	100	100	52
70%	100	100	100	37
80%	100	100	100	23
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	63
Water Year Types[c]				
Wet (32%)	100	100	100	93
Above Normal (16%)	100	100	100	61
Below Normal (13%)	100	100	100	61
Dry (24%)	100	100	94	35
Critical (15%)	97	93	82	46

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	55
60%	100	100	100	37
70%	100	100	100	17
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	56
Water Year Types[c]				
Wet (32%)	100	100	100	90
Above Normal (16%)	100	100	100	45
Below Normal (13%)	100	100	100	35
Dry (24%)	100	100	96	32
Critical (15%)	97	92	83	55

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	-14
60%	0	0	0	-15
70%	0	0	0	-20
80%	0	0	0	-16
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	1	-7
Water Year Types[c]				
Wet (32%)	0	0	0	-3
Above Normal (16%)	0	0	0	-16
Below Normal (13%)	0	0	0	-26
Dry (24%)	0	0	2	-3
Critical (15%)	0	-1	1	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-2. Folsom Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	69
60%	100	100	100	52
70%	100	100	100	37
80%	100	100	100	23
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	63
Water Year Types[c]				
Wet (32%)	100	100	100	93
Above Normal (16%)	100	100	100	61
Below Normal (13%)	100	100	100	61
Dry (24%)	100	100	94	35
Critical (15%)	97	93	82	46

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	87
50%	100	100	100	57
60%	100	100	100	40
70%	100	100	100	22
80%	100	100	100	8
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	96	57
Water Year Types[c]				
Wet (32%)	100	100	100	85
Above Normal (16%)	100	100	100	45
Below Normal (13%)	100	100	98	50
Dry (24%)	100	100	96	34
Critical (15%)	96	91	81	54

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-13
50%	0	0	0	-13
60%	0	0	0	-12
70%	0	0	0	-14
80%	0	0	0	-14
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	-6
Water Year Types[c]				
Wet (32%)	0	0	0	-8
Above Normal (16%)	0	0	0	-16
Below Normal (13%)	0	0	-2	-11
Dry (24%)	0	0	2	-1
Critical (15%)	-1	-2	-1	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
b Based on the 82-year simulation period.
c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-3. Folsom Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	69
60%	100	100	100	52
70%	100	100	100	37
80%	100	100	100	23
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	63
Water Year Types[c]				
Wet (32%)	100	100	100	93
Above Normal (16%)	100	100	100	61
Below Normal (13%)	100	100	100	61
Dry (24%)	100	100	94	35
Critical (15%)	97	93	82	46

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	69
60%	100	100	100	51
70%	100	100	100	37
80%	100	100	100	22
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	97	63
Water Year Types[c]				
Wet (32%)	100	100	100	93
Above Normal (16%)	100	100	100	61
Below Normal (13%)	100	100	100	62
Dry (24%)	100	100	97	37
Critical (15%)	97	95	83	43

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	-1
70%	0	0	0	0
80%	0	0	0	-1
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	1	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	1
Dry (24%)	0	0	3	2
Critical (15%)	0	2	1	-3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-4. Folsom Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	55
60%	100	100	100	37
70%	100	100	100	17
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	56
Water Year Types[c]				
Wet (32%)	100	100	100	90
Above Normal (16%)	100	100	100	45
Below Normal (13%)	100	100	100	35
Dry (24%)	100	100	96	32
Critical (15%)	97	92	83	55

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	69
60%	100	100	100	52
70%	100	100	100	37
80%	100	100	100	23
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	63
Water Year Types[c]				
Wet (32%)	100	100	100	93
Above Normal (16%)	100	100	100	61
Below Normal (13%)	100	100	100	61
Dry (24%)	100	100	94	35
Critical (15%)	97	93	82	46

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	14
60%	0	0	0	15
70%	0	0	0	20
80%	0	0	0	16
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	-1	7
Water Year Types[c]				
Wet (32%)	0	0	0	3
Above Normal (16%)	0	0	0	16
Below Normal (13%)	0	0	0	26
Dry (24%)	0	0	-2	3
Critical (15%)	0	1	-1	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-5. Folsom Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	55
60%	100	100	100	37
70%	100	100	100	17
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	56
Water Year Types[c]				
Wet (32%)	100	100	100	90
Above Normal (16%)	100	100	100	45
Below Normal (13%)	100	100	100	35
Dry (24%)	100	100	96	32
Critical (15%)	97	92	83	55

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	87
50%	100	100	100	57
60%	100	100	100	40
70%	100	100	100	22
80%	100	100	100	8
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	96	57
Water Year Types[c]				
Wet (32%)	100	100	100	85
Above Normal (16%)	100	100	100	45
Below Normal (13%)	100	100	98	50
Dry (24%)	100	100	96	34
Critical (15%)	96	91	81	54

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-13
50%	0	0	0	2
60%	0	0	0	4
70%	0	0	0	5
80%	0	0	0	2
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	-5
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	-2	15
Dry (24%)	0	0	0	2
Critical (15%)	-1	-1	-2	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-10-6. Folsom Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	55
60%	100	100	100	37
70%	100	100	100	17
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	96	56
Water Year Types[c]				
Wet (32%)	100	100	100	90
Above Normal (16%)	100	100	100	45
Below Normal (13%)	100	100	100	35
Dry (24%)	100	100	96	32
Critical (15%)	97	92	83	55

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	69
60%	100	100	100	51
70%	100	100	100	37
80%	100	100	100	22
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	100	99	97	63
Water Year Types[c]				
Wet (32%)	100	100	100	93
Above Normal (16%)	100	100	100	61
Below Normal (13%)	100	100	100	62
Dry (24%)	100	100	97	37
Critical (15%)	97	95	83	43

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	14
60%	0	0	0	15
70%	0	0	0	20
80%	0	0	0	15
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	7
Water Year Types[c]				
Wet (32%)	0	0	0	3
Above Normal (16%)	0	0	0	17
Below Normal (13%)	0	0	0	27
Dry (24%)	0	0	2	4
Critical (15%)	0	3	0	-12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

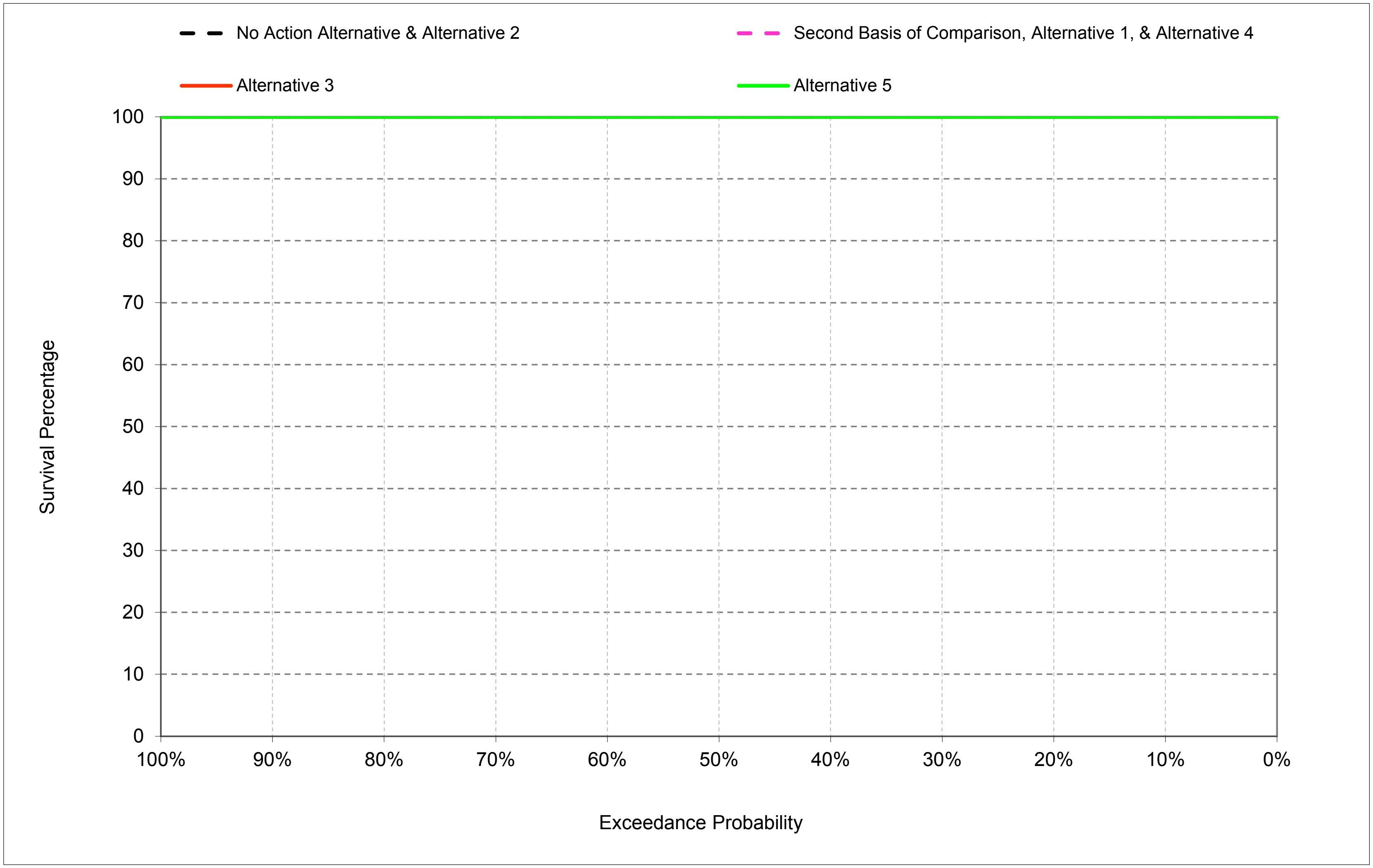
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

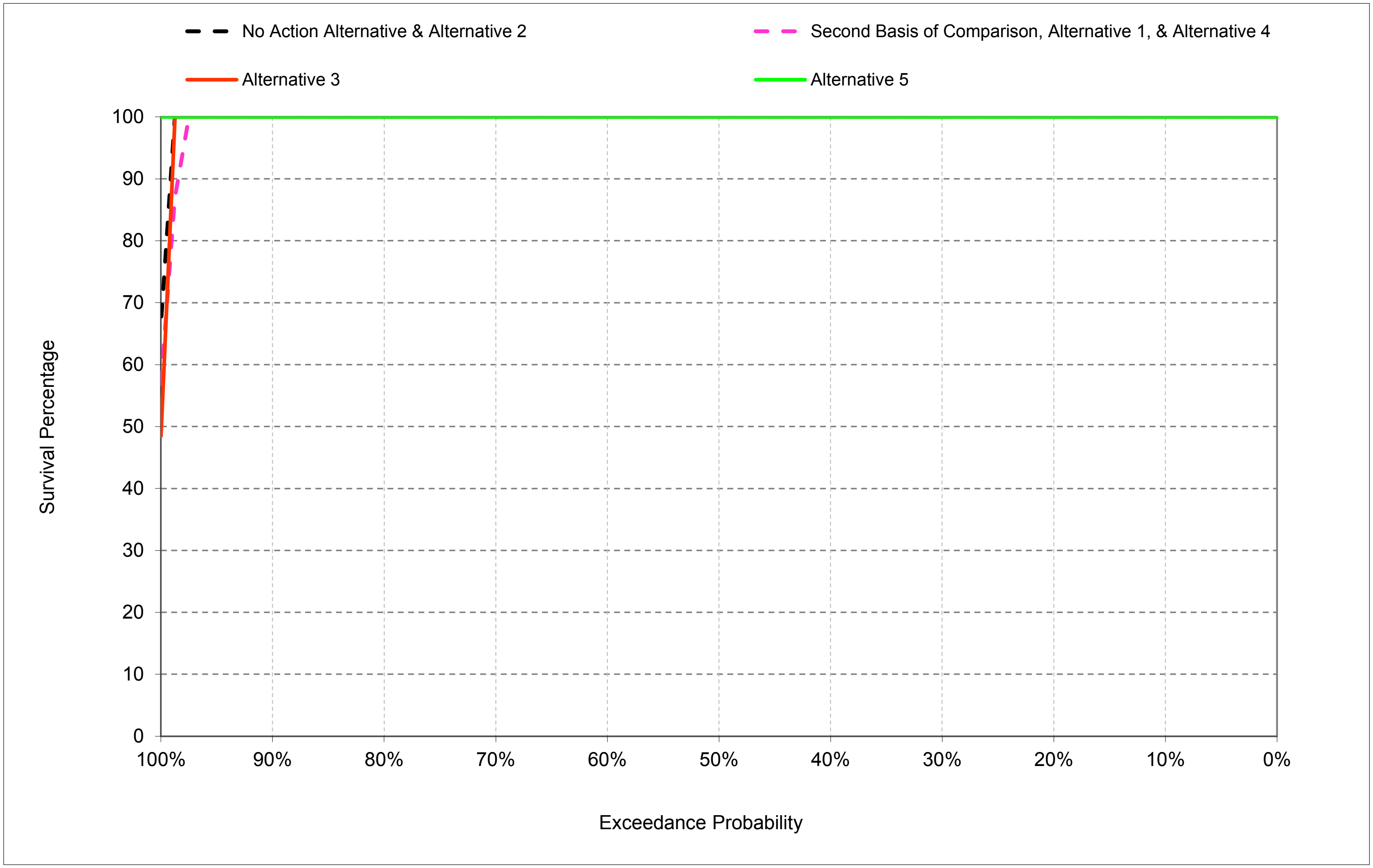
B.11. Folsom Small Mouth Bass Survival Percentage

Figure B-11-1. Folsom Small Mouth Bass Nest Survival Percentage, March



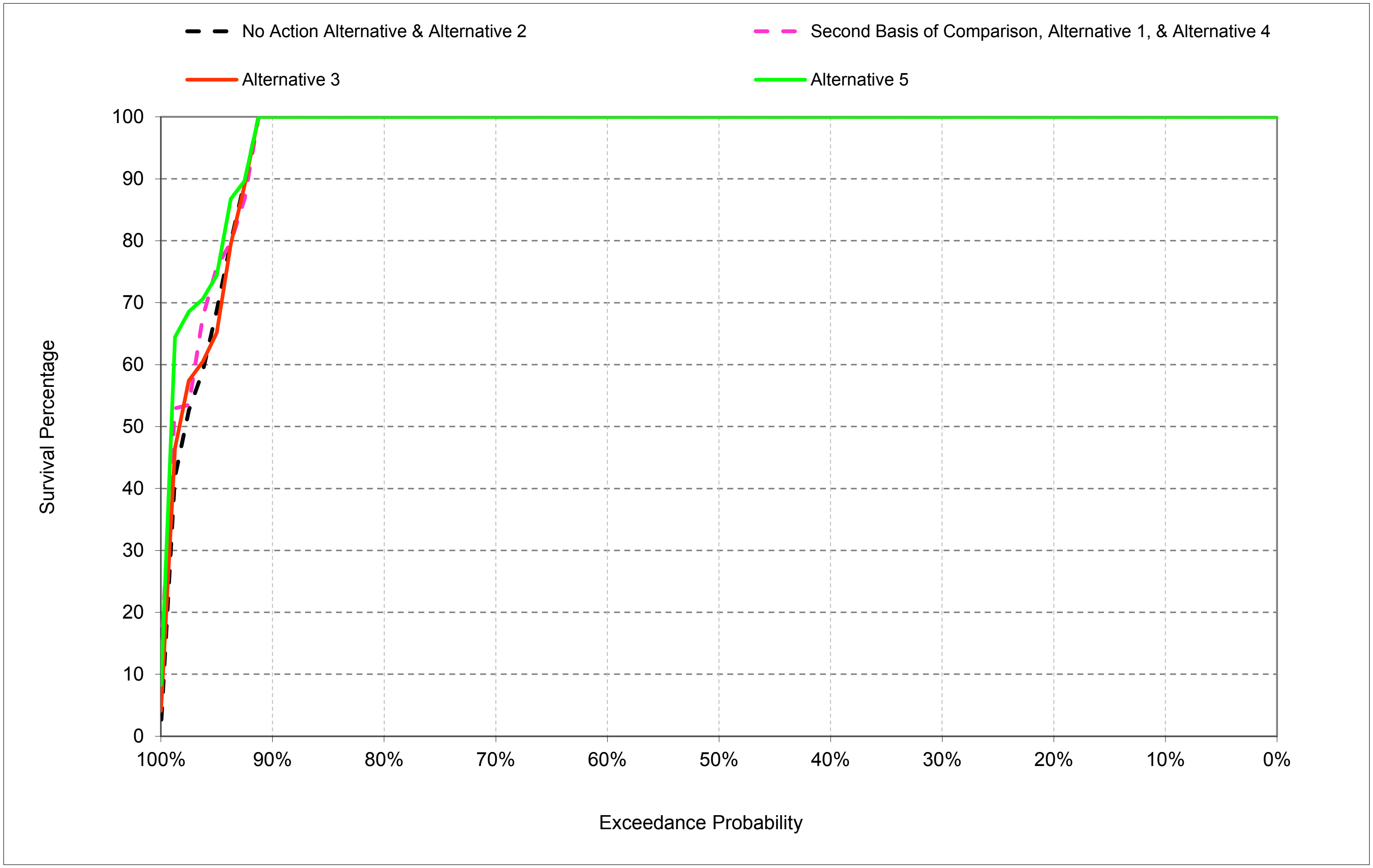
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-2. Folsom Small Mouth Bass Nest Survival Percentage, April



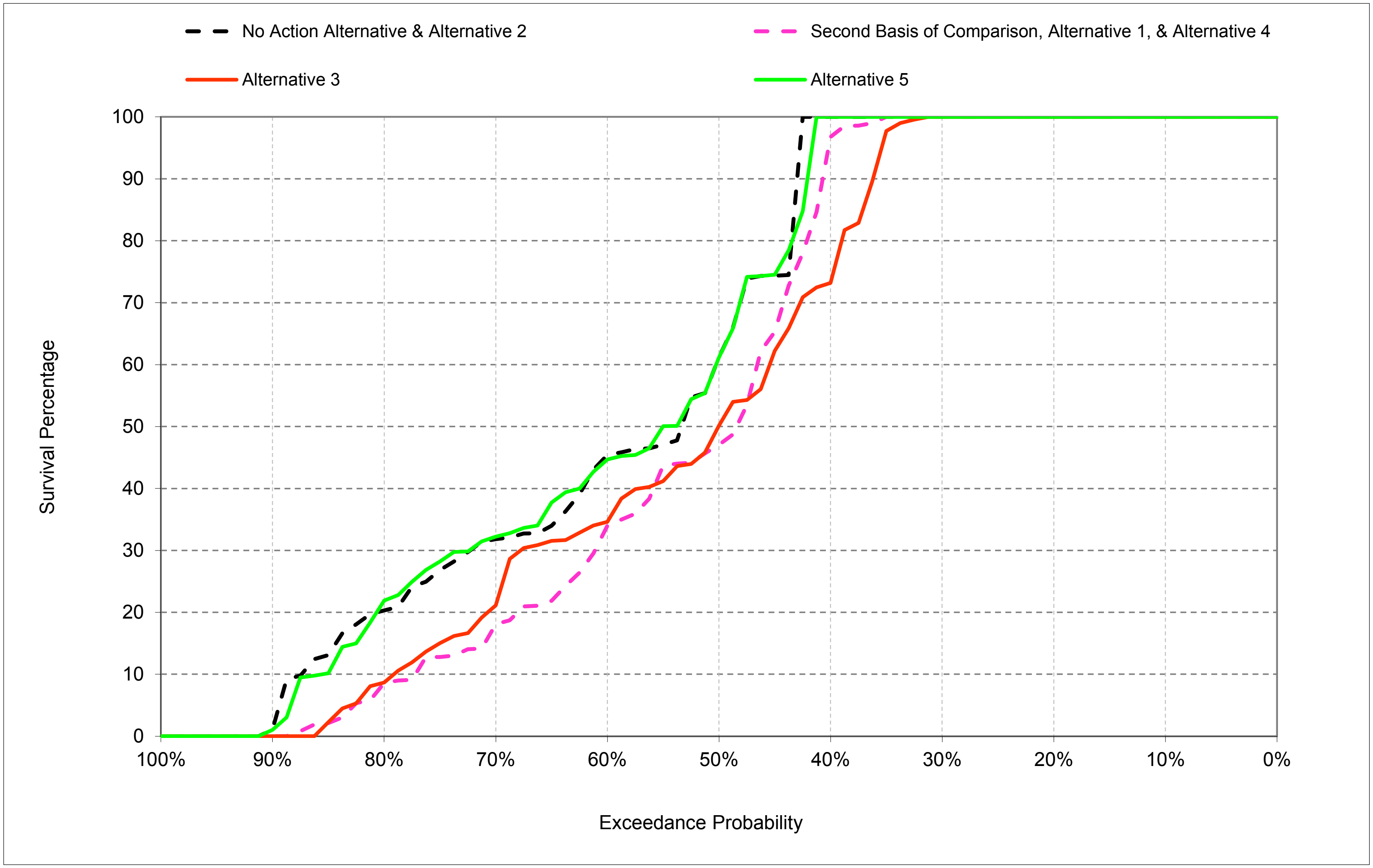
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-3. Folsom Small Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-11-4. Folsom Small Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-1. Folsom Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	58
60%	100	100	100	44
70%	100	100	100	32
80%	100	100	100	20
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	100	100	100	92
Above Normal (16%)	100	100	100	58
Below Normal (13%)	100	100	98	57
Dry (24%)	100	100	93	32
Critical (15%)	96	92	80	41

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	92
50%	100	100	100	46
60%	100	100	100	31
70%	100	100	100	15
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	54
Water Year Types[c]				
Wet (32%)	100	100	100	89
Above Normal (16%)	100	100	100	43
Below Normal (13%)	100	100	98	34
Dry (24%)	100	100	94	29
Critical (15%)	96	90	81	50

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-8
50%	0	0	0	-12
60%	0	0	0	-13
70%	0	0	0	-16
80%	0	0	0	-13
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	-6
Water Year Types[c]				
Wet (32%)	0	0	0	-3
Above Normal (16%)	0	0	0	-15
Below Normal (13%)	0	0	0	-24
Dry (24%)	0	0	1	-2
Critical (15%)	0	-2	1	9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-2. Folsom Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	58
60%	100	100	100	44
70%	100	100	100	32
80%	100	100	100	20
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	100	100	100	92
Above Normal (16%)	100	100	100	58
Below Normal (13%)	100	100	98	57
Dry (24%)	100	100	93	32
Critical (15%)	96	92	80	41

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	73
50%	100	100	100	48
60%	100	100	100	34
70%	100	100	100	20
80%	100	100	100	8
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	54
Water Year Types[c]				
Wet (32%)	100	100	100	82
Above Normal (16%)	100	100	100	43
Below Normal (13%)	100	100	97	46
Dry (24%)	100	100	94	31
Critical (15%)	95	90	79	50

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-27
50%	0	0	0	-10
60%	0	0	0	-10
70%	0	0	0	-12
80%	0	0	0	-12
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	-6
Water Year Types[c]				
Wet (32%)	0	0	0	-10
Above Normal (16%)	0	0	0	-15
Below Normal (13%)	0	0	-1	-12
Dry (24%)	0	0	2	-1
Critical (15%)	-1	-2	-1	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-3. Folsom Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	58
60%	100	100	100	44
70%	100	100	100	32
80%	100	100	100	20
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	100	100	100	92
Above Normal (16%)	100	100	100	58
Below Normal (13%)	100	100	98	57
Dry (24%)	100	100	93	32
Critical (15%)	96	92	80	41

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	58
60%	100	100	100	43
70%	100	100	100	32
80%	100	100	100	19
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	96	60
Water Year Types[c]				
Wet (32%)	100	100	100	92
Above Normal (16%)	100	100	100	58
Below Normal (13%)	100	100	99	58
Dry (24%)	100	100	95	33
Critical (15%)	96	95	81	38

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	-1
70%	0	0	0	0
80%	0	0	0	-1
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	1	0
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	1	1
Dry (24%)	0	0	3	1
Critical (15%)	0	3	1	-4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-4. Folsom Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	92
50%	100	100	100	46
60%	100	100	100	31
70%	100	100	100	15
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	54
Water Year Types[c]				
Wet (32%)	100	100	100	89
Above Normal (16%)	100	100	100	43
Below Normal (13%)	100	100	98	34
Dry (24%)	100	100	94	29
Critical (15%)	96	90	81	50

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	58
60%	100	100	100	44
70%	100	100	100	32
80%	100	100	100	20
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	60
Water Year Types[c]				
Wet (32%)	100	100	100	92
Above Normal (16%)	100	100	100	58
Below Normal (13%)	100	100	98	57
Dry (24%)	100	100	93	32
Critical (15%)	96	92	80	41

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	8
50%	0	0	0	12
60%	0	0	0	13
70%	0	0	0	16
80%	0	0	0	13
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	6
Water Year Types[c]				
Wet (32%)	0	0	0	3
Above Normal (16%)	0	0	0	15
Below Normal (13%)	0	0	0	24
Dry (24%)	0	0	-1	2
Critical (15%)	0	2	-1	-9

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-5. Folsom Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	92
50%	100	100	100	46
60%	100	100	100	31
70%	100	100	100	15
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	54
Water Year Types[c]				
Wet (32%)	100	100	100	89
Above Normal (16%)	100	100	100	43
Below Normal (13%)	100	100	98	34
Dry (24%)	100	100	94	29
Critical (15%)	96	90	81	50

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	73
50%	100	100	100	48
60%	100	100	100	34
70%	100	100	100	20
80%	100	100	100	8
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	54
Water Year Types[c]				
Wet (32%)	100	100	100	82
Above Normal (16%)	100	100	100	43
Below Normal (13%)	100	100	97	46
Dry (24%)	100	100	94	31
Critical (15%)	95	90	79	50

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-19
50%	0	0	0	2
60%	0	0	0	3
70%	0	0	0	4
80%	0	0	0	2
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	0
Water Year Types[c]				
Wet (32%)	0	0	0	-6
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	-1	12
Dry (24%)	0	0	0	2
Critical (15%)	-1	0	-1	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-11-6. Folsom Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	92
50%	100	100	100	46
60%	100	100	100	31
70%	100	100	100	15
80%	100	100	100	6
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	95	54
Water Year Types[c]				
Wet (32%)	100	100	100	89
Above Normal (16%)	100	100	100	43
Below Normal (13%)	100	100	98	34
Dry (24%)	100	100	94	29
Critical (15%)	96	90	81	50

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	58
60%	100	100	100	43
70%	100	100	100	32
80%	100	100	100	19
90%	100	100	100	0
Long Term				
Full Simulation Period[b]	99	99	96	60
Water Year Types[c]				
Wet (32%)	100	100	100	92
Above Normal (16%)	100	100	100	58
Below Normal (13%)	100	100	99	58
Dry (24%)	100	100	95	33
Critical (15%)	96	95	81	38

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	8
50%	0	0	0	12
60%	0	0	0	12
70%	0	0	0	16
80%	0	0	0	13
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	1	0	6
Water Year Types[c]				
Wet (32%)	0	0	0	3
Above Normal (16%)	0	0	0	15
Below Normal (13%)	0	0	1	24
Dry (24%)	0	0	1	4
Critical (15%)	0	5	1	-12

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

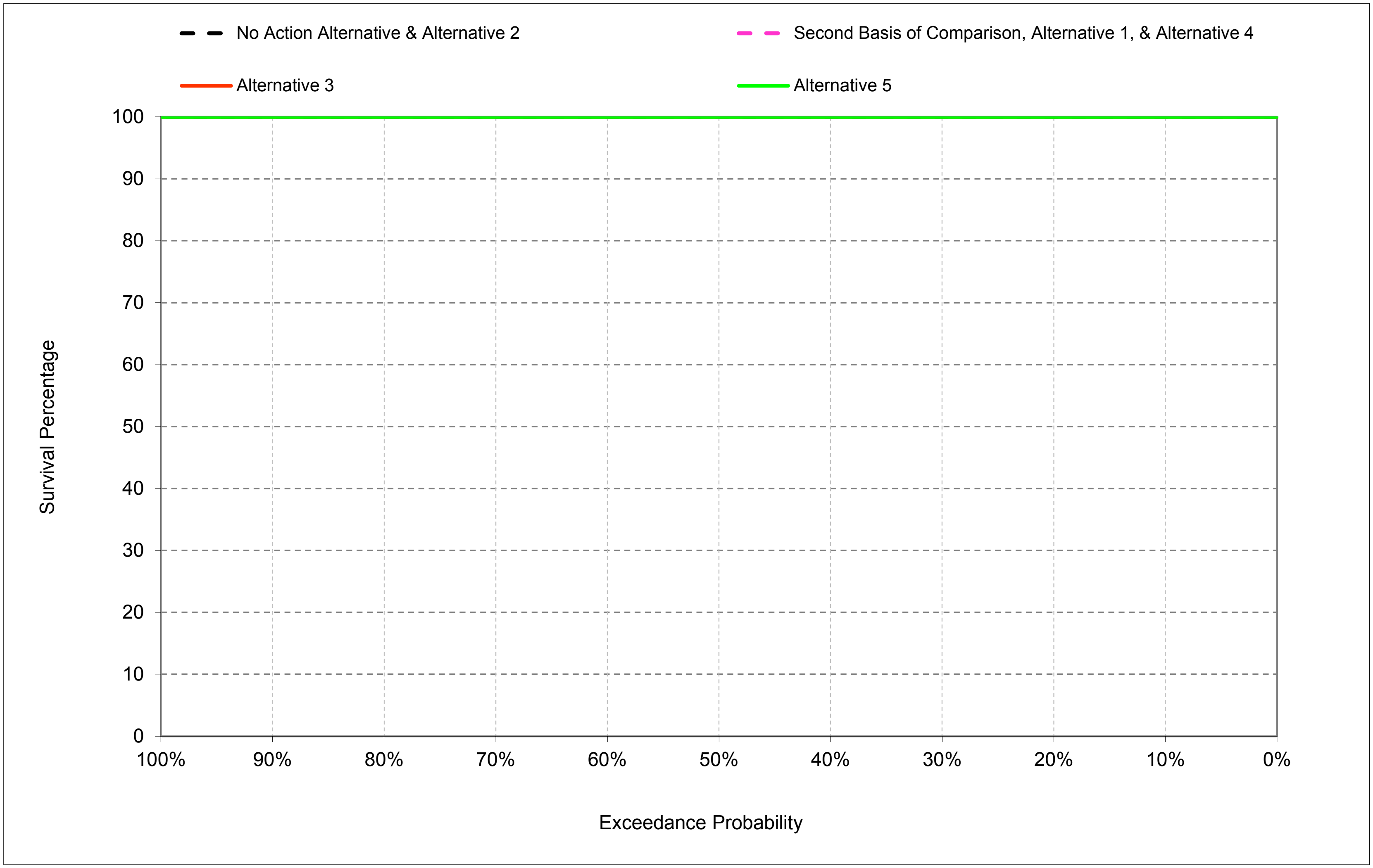
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

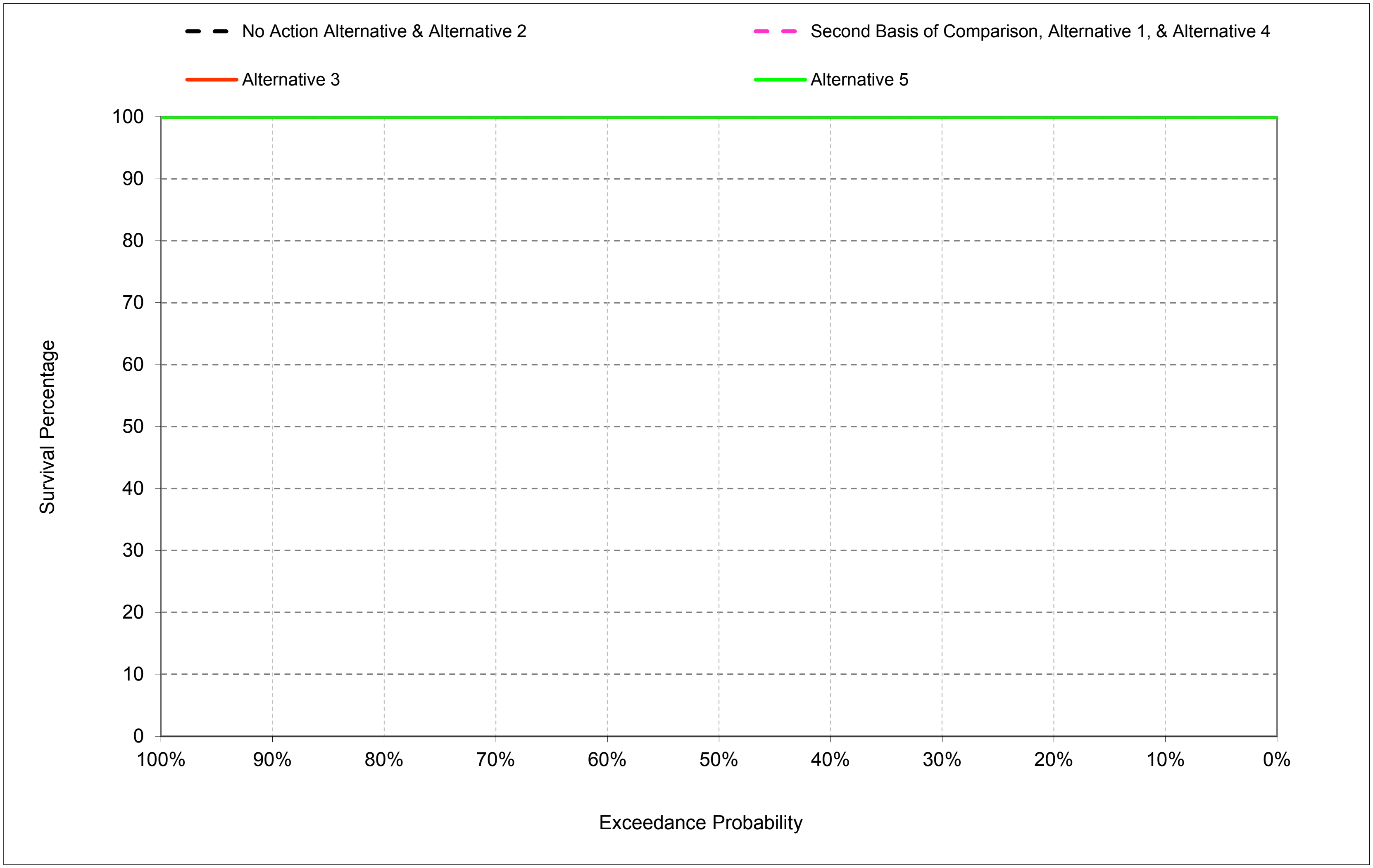
B.12. Folsom Spotted Bass Survival Percentage

Figure B-12-1. Folsom Spotted Bass Nest Survival Percentage, March



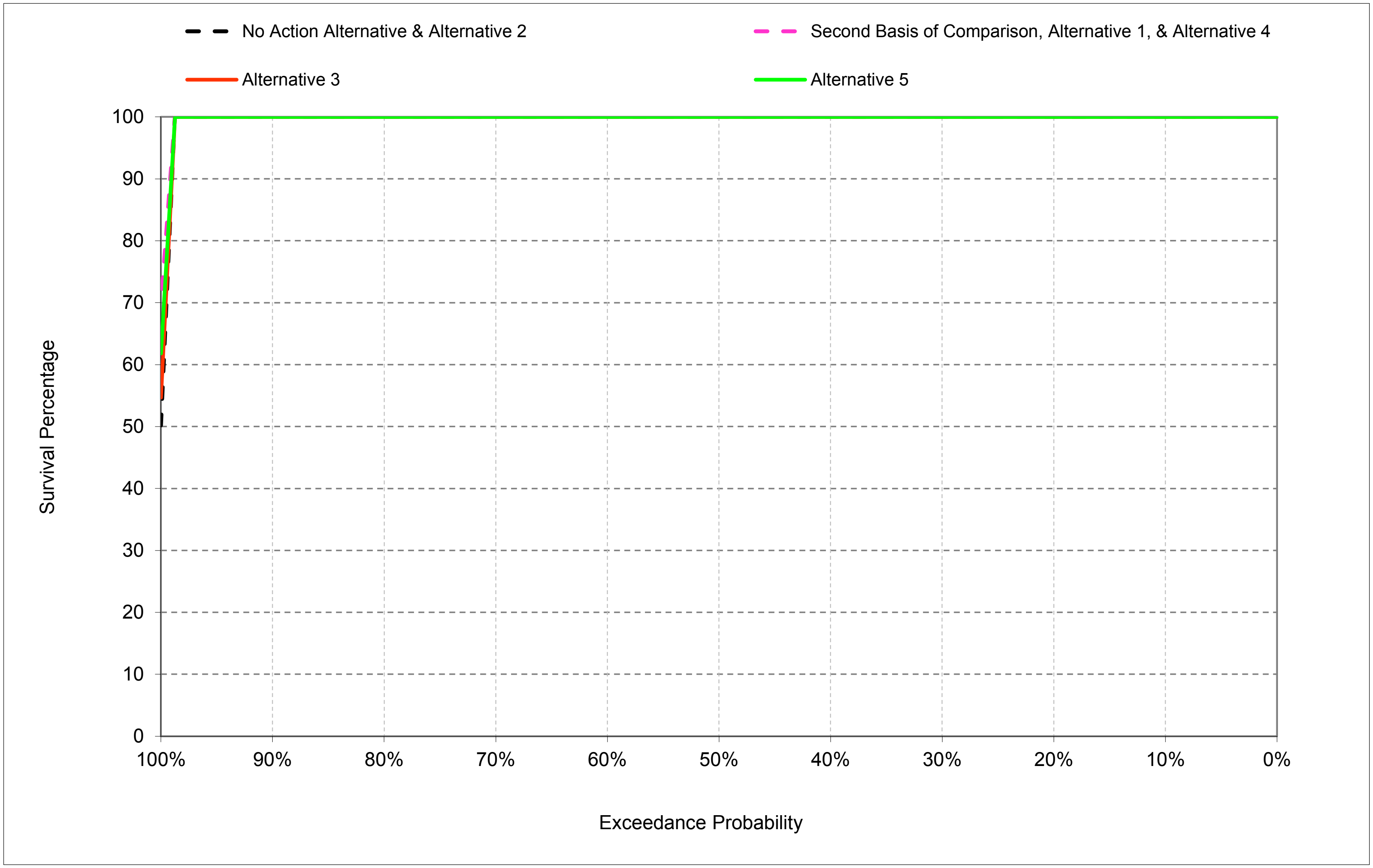
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-2. Folsom Spotted Bass Nest Survival Percentage, April



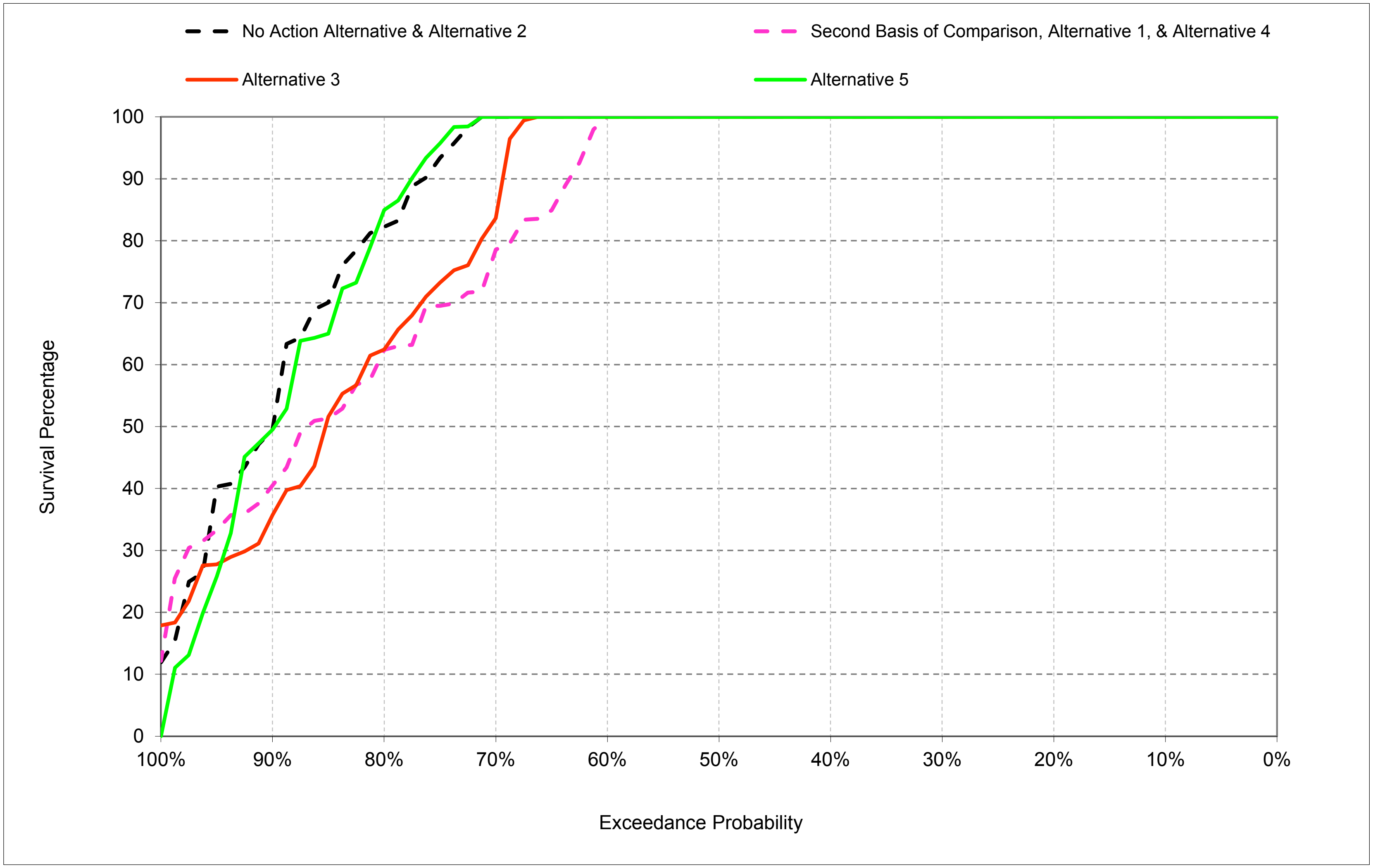
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-3. Folsom Spotted Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-12-4. Folsom Spotted Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-1. Folsom Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	81
90%	100	100	100	47
Long Term				
Full Simulation Period[b]	100	100	99	88
Water Year Types[c]				
Wet (32%)	100	100	100	100
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	100	90
Dry (24%)	100	100	100	73
Critical (15%)	100	100	91	80

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	99
70%	100	100	100	74
80%	100	100	100	59
90%	100	100	100	38
Long Term				
Full Simulation Period[b]	100	100	99	83
Water Year Types[c]				
Wet (32%)	100	100	100	99
Above Normal (16%)	100	100	100	78
Below Normal (13%)	100	100	100	68
Dry (24%)	100	100	100	72
Critical (15%)	100	100	93	85

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	-1
70%	0	0	0	-26
80%	0	0	0	-23
90%	0	0	0	-9
Long Term				
Full Simulation Period[b]	0	0	0	-6
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	0	-16
Below Normal (13%)	0	0	0	-22
Dry (24%)	0	0	0	-1
Critical (15%)	0	0	2	4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-2. Folsom Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	81
90%	100	100	100	47
Long Term				
Full Simulation Period[b]	100	100	99	88
Water Year Types[c]				
Wet (32%)	100	100	100	100
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	100	90
Dry (24%)	100	100	100	73
Critical (15%)	100	100	91	80

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	81
80%	100	100	100	62
90%	100	100	100	32
Long Term				
Full Simulation Period[b]	100	100	99	84
Water Year Types[c]				
Wet (32%)	100	100	100	98
Above Normal (16%)	100	100	100	75
Below Normal (13%)	100	100	100	84
Dry (24%)	100	100	100	70
Critical (15%)	100	100	91	83

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	**-19**
80%	0	0	0	**-20**
90%	0	0	0	**-16**
Long Term				
Full Simulation Period[b]	0	0	0	**-5**
Water Year Types[c]				
Wet (32%)	0	0	0	**-2**
Above Normal (16%)	0	0	0	**-19**
Below Normal (13%)	0	0	0	**-6**
Dry (24%)	0	0	0	**-3**
Critical (15%)	0	0	0	3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-3. Folsom Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	81
90%	100	100	100	47
Long Term				
Full Simulation Period[b]	100	100	99	88
Water Year Types[c]				
Wet (32%)	100	100	100	100
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	100	90
Dry (24%)	100	100	100	73
Critical (15%)	100	100	91	80

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	80
90%	100	100	100	48
Long Term				
Full Simulation Period[b]	100	100	99	87
Water Year Types[c]				
Wet (32%)	100	100	100	100
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	100	91
Dry (24%)	100	100	100	73
Critical (15%)	100	100	94	73

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	0
80%	0	0	0	-1
90%	0	0	0	0
Long Term				
Full Simulation Period[b]	0	0	0	-1
Water Year Types[c]				
Wet (32%)	0	0	0	0
Above Normal (16%)	0	0	0	0
Below Normal (13%)	0	0	0	0
Dry (24%)	0	0	0	0
Critical (15%)	0	0	3	-7

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-4. Folsom Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	99
70%	100	100	100	74
80%	100	100	100	59
90%	100	100	100	38
Long Term				
Full Simulation Period[b]	100	100	99	83
Water Year Types[c]				
Wet (32%)	100	100	100	99
Above Normal (16%)	100	100	100	78
Below Normal (13%)	100	100	100	68
Dry (24%)	100	100	100	72
Critical (15%)	100	100	93	85

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	81
90%	100	100	100	47
Long Term				
Full Simulation Period[b]	100	100	99	88
Water Year Types[c]				
Wet (32%)	100	100	100	100
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	100	90
Dry (24%)	100	100	100	73
Critical (15%)	100	100	91	80

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	1
70%	0	0	0	26
80%	0	0	0	23
90%	0	0	0	9
Long Term				
Full Simulation Period[b]	0	0	0	6
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	0	16
Below Normal (13%)	0	0	0	22
Dry (24%)	0	0	0	1
Critical (15%)	0	0	-2	-4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-5. Folsom Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	99
70%	100	100	100	74
80%	100	100	100	59
90%	100	100	100	38
Long Term				
Full Simulation Period[b]	100	100	99	83
Water Year Types[c]				
Wet (32%)	100	100	100	99
Above Normal (16%)	100	100	100	78
Below Normal (13%)	100	100	100	68
Dry (24%)	100	100	100	72
Critical (15%)	100	100	93	85

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	81
80%	100	100	100	62
90%	100	100	100	32
Long Term				
Full Simulation Period[b]	100	100	99	84
Water Year Types[c]				
Wet (32%)	100	100	100	98
Above Normal (16%)	100	100	100	75
Below Normal (13%)	100	100	100	84
Dry (24%)	100	100	100	70
Critical (15%)	100	100	91	83

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	1
70%	0	0	0	7
80%	0	0	0	3
90%	0	0	0	-6
Long Term				
Full Simulation Period[b]	0	0	0	1
Water Year Types[c]				
Wet (32%)	0	0	0	-1
Above Normal (16%)	0	0	0	-3
Below Normal (13%)	0	0	0	16
Dry (24%)	0	0	0	-2
Critical (15%)	0	0	-2	-1

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-12-6. Folsom Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	99
70%	100	100	100	74
80%	100	100	100	59
90%	100	100	100	38
Long Term				
Full Simulation Period[b]	100	100	99	83
Water Year Types[c]				
Wet (32%)	100	100	100	99
Above Normal (16%)	100	100	100	78
Below Normal (13%)	100	100	100	68
Dry (24%)	100	100	100	72
Critical (15%)	100	100	93	85

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	100	100	80
90%	100	100	100	48
Long Term				
Full Simulation Period[b]	100	100	99	87
Water Year Types[c]				
Wet (32%)	100	100	100	100
Above Normal (16%)	100	100	100	94
Below Normal (13%)	100	100	100	91
Dry (24%)	100	100	100	73
Critical (15%)	100	100	94	73

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	1
70%	0	0	0	26
80%	0	0	0	22
90%	0	0	0	10
Long Term				
Full Simulation Period[b]	0	0	0	5
Water Year Types[c]				
Wet (32%)	0	0	0	1
Above Normal (16%)	0	0	0	16
Below Normal (13%)	0	0	0	23
Dry (24%)	0	0	0	1
Critical (15%)	0	0	1	-11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

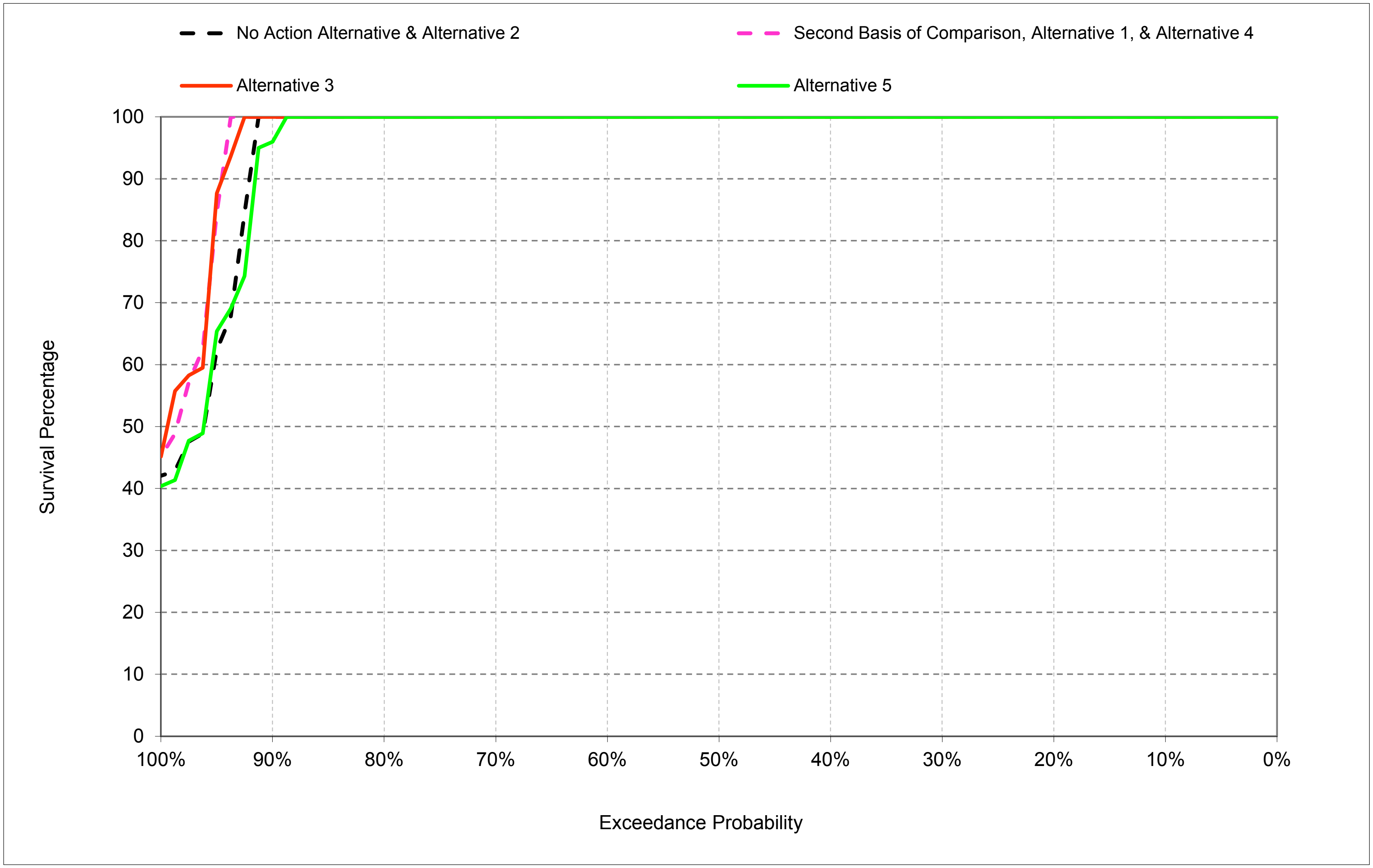
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

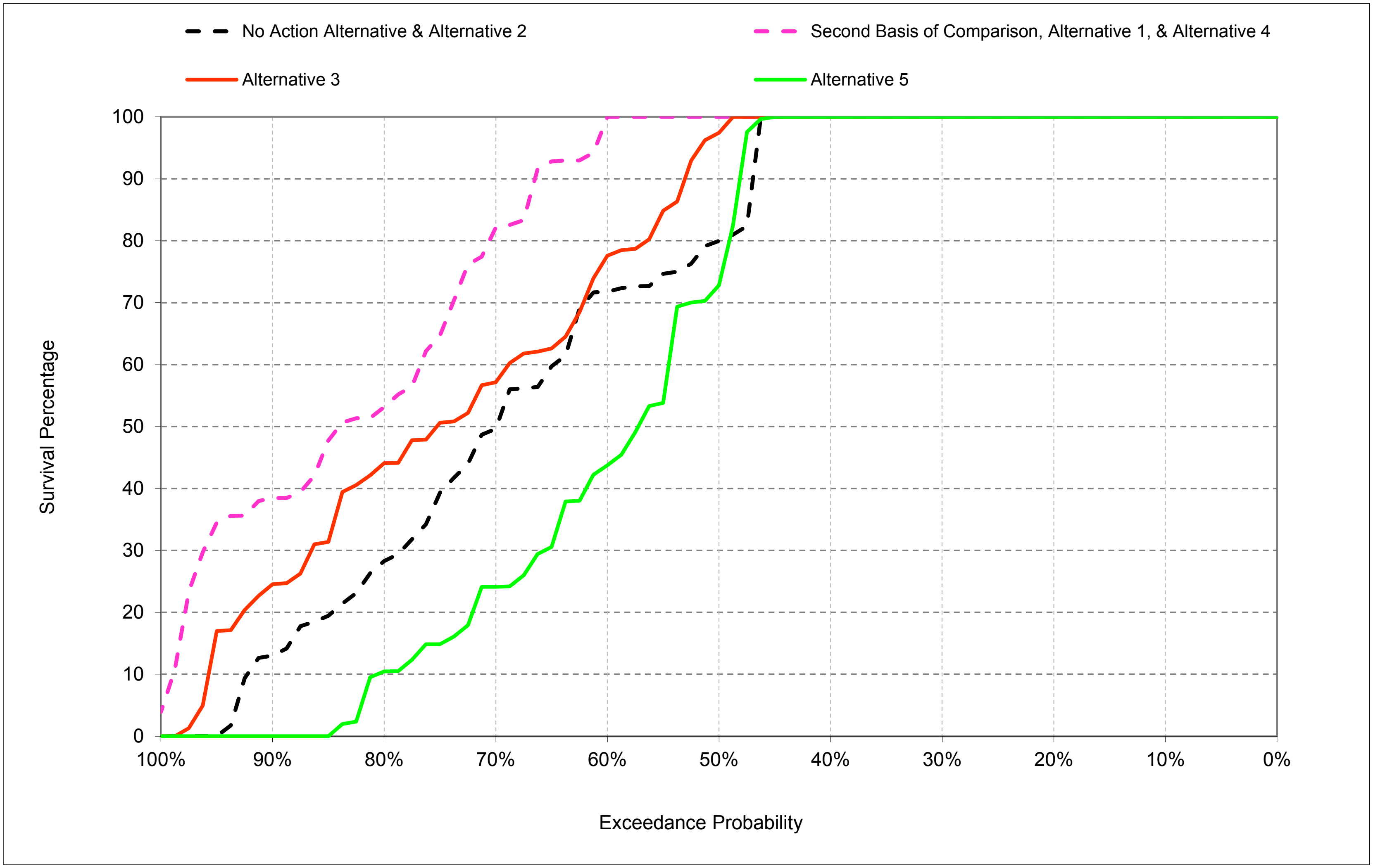
B.13. New Melones Large Mouth Bass Survival Percentage

Figure B-13-1. New Melones Large Mouth Bass Nest Survival Percentage, March



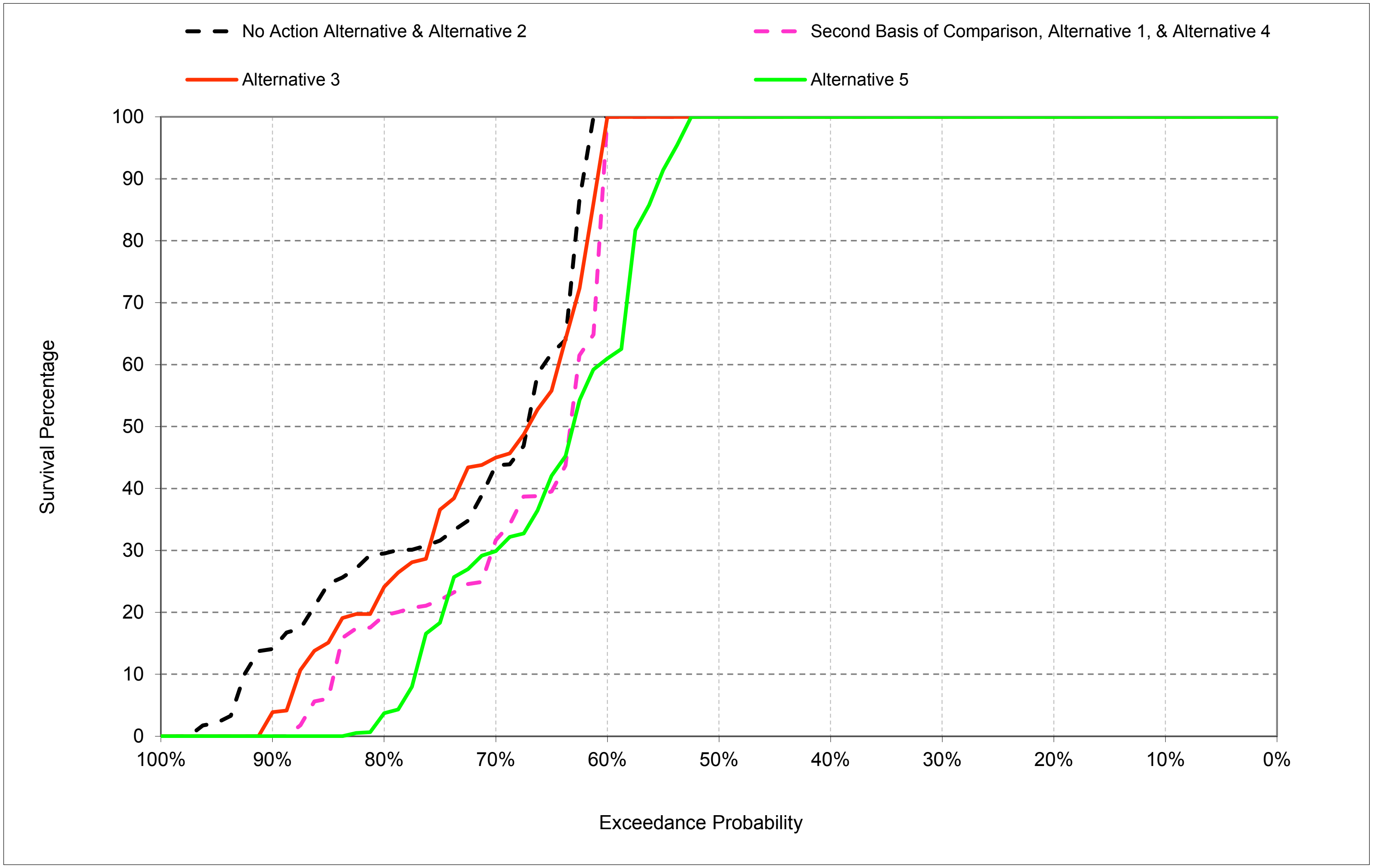
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-2. New Melones Large Mouth Bass Nest Survival Percentage, April



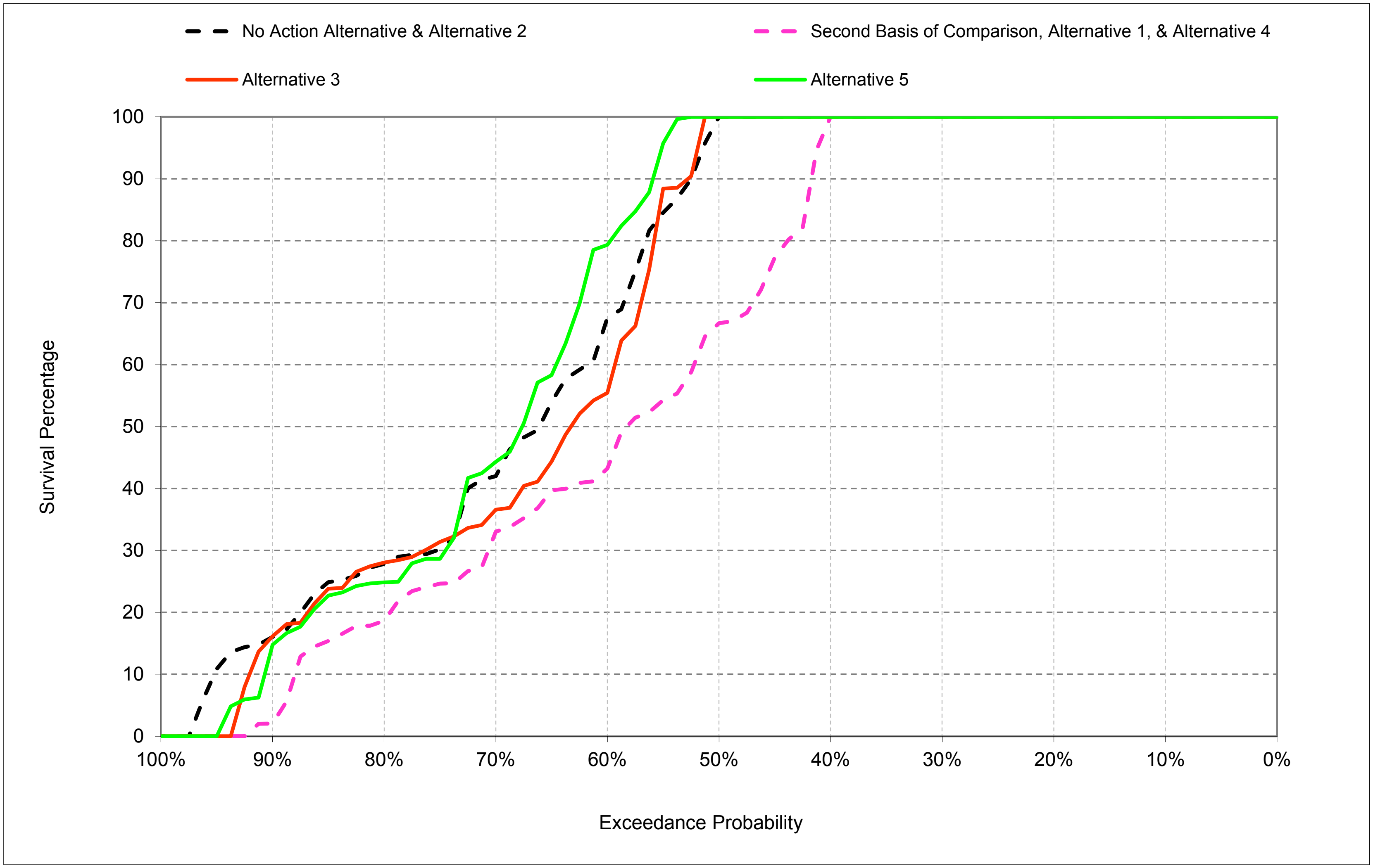
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-3. New Melones Large Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-13-4. New Melones Large Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-1. New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	80	100	98
60%	100	72	100	63
70%	100	49	40	42
80%	100	27	29	27
90%	100	13	14	15
Long Term				
Full Simulation Period[b]	95	68	72	69
Water Year Types[c]				
Wet (32%)	94	83	98	95
Above Normal (16%)	100	88	100	72
Below Normal (13%)	95	58	65	61
Dry (24%)	98	66	51	54
Critical (15%)	87	29	25	43

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	98
50%	100	100	100	66
60%	100	97	79	42
70%	100	79	27	29
80%	100	52	18	18
90%	100	38	0	2
Long Term				
Full Simulation Period[b]	97	82	67	60
Water Year Types[c]				
Wet (32%)	98	93	94	76
Above Normal (16%)	100	95	100	68
Below Normal (13%)	100	77	62	50
Dry (24%)	98	84	43	51
Critical (15%)	86	44	17	43

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-2
50%	0	20	0	-32
60%	0	25	-21	-21
70%	0	30	-13	-13
80%	0	25	-11	-9
90%	0	25	-14	-13
Long Term				
Full Simulation Period[b]	2	14	-5	-9
Water Year Types[c]				
Wet (32%)	4	10	-4	-19
Above Normal (16%)	0	7	0	-5
Below Normal (13%)	5	19	-4	-10
Dry (24%)	0	18	-7	-4
Critical (15%)	-1	15	-8	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-2. New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	80	100	98
60%	100	72	100	63
70%	100	49	40	42
80%	100	27	29	27
90%	100	13	14	15
Long Term				
Full Simulation Period[b]	95	68	72	69
Water Year Types[c]				
Wet (32%)	94	83	98	95
Above Normal (16%)	100	88	100	72
Below Normal (13%)	95	58	65	61
Dry (24%)	98	66	51	54
Critical (15%)	87	29	25	43

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	97	100	100
60%	100	75	92	55
70%	100	57	44	35
80%	100	43	21	28
90%	100	23	0	14
Long Term				
Full Simulation Period[b]	96	73	70	67
Water Year Types[c]				
Wet (32%)	98	92	91	77
Above Normal (16%)	100	94	100	90
Below Normal (13%)	100	62	73	64
Dry (24%)	98	68	46	59
Critical (15%)	83	30	30	40

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	17	0	2
60%	0	4	-8	-9
70%	0	8	4	-7
80%	0	16	-9	0
90%	0	10	-13	-1
Long Term				
Full Simulation Period[b]	1	5	-2	-2
Water Year Types[c]				
Wet (32%)	4	9	-7	-18
Above Normal (16%)	0	6	0	17
Below Normal (13%)	5	4	7	3
Dry (24%)	0	2	-4	5
Critical (15%)	-4	1	5	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-3. New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	80	100	98
60%	100	72	100	63
70%	100	49	40	42
80%	100	27	29	27
90%	100	13	14	15
Long Term				
Full Simulation Period[b]	95	68	72	69
Water Year Types[c]				
Wet (32%)	94	83	98	95
Above Normal (16%)	100	88	100	72
Below Normal (13%)	95	58	65	61
Dry (24%)	98	66	51	54
Critical (15%)	87	29	25	43

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	72	100	100
60%	100	43	60	79
70%	100	24	29	43
80%	100	10	1	25
90%	95	0	0	7
Long Term				
Full Simulation Period[b]	95	60	64	70
Water Year Types[c]				
Wet (32%)	95	87	93	97
Above Normal (16%)	100	79	94	61
Below Normal (13%)	95	50	58	59
Dry (24%)	98	45	37	52
Critical (15%)	85	14	19	60

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	-8	0	2
60%	0	-29	-40	15
70%	0	-25	-11	1
80%	0	-17	-28	-3
90%	-5	-13	-14	-8
Long Term				
Full Simulation Period[b]	0	-9	-8	1
Water Year Types[c]				
Wet (32%)	1	4	-5	2
Above Normal (16%)	0	-9	-6	-12
Below Normal (13%)	0	-8	-7	-2
Dry (24%)	0	-21	-13	-2
Critical (15%)	-1	-15	-6	17

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-4. New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	98
50%	100	100	100	66
60%	100	97	79	42
70%	100	79	27	29
80%	100	52	18	18
90%	100	38	0	2
Long Term				
Full Simulation Period[b]	97	82	67	60
Water Year Types[c]				
Wet (32%)	98	93	94	76
Above Normal (16%)	100	95	100	68
Below Normal (13%)	100	77	62	50
Dry (24%)	98	84	43	51
Critical (15%)	86	44	17	43

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	80	100	98
60%	100	72	100	63
70%	100	49	40	42
80%	100	27	29	27
90%	100	13	14	15
Long Term				
Full Simulation Period[b]	95	68	72	69
Water Year Types[c]				
Wet (32%)	94	83	98	95
Above Normal (16%)	100	88	100	72
Below Normal (13%)	95	58	65	61
Dry (24%)	98	66	51	54
Critical (15%)	87	29	25	43

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	2
50%	0	-20	0	32
60%	0	-25	21	21
70%	0	-30	13	13
80%	0	-25	11	9
90%	0	-25	14	13
Long Term				
Full Simulation Period[b]	-2	-14	5	9
Water Year Types[c]				
Wet (32%)	-4	-10	4	19
Above Normal (16%)	0	-7	0	5
Below Normal (13%)	-5	-19	4	10
Dry (24%)	0	-18	7	4
Critical (15%)	1	-15	8	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-5. New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	98
50%	100	100	100	66
60%	100	97	79	42
70%	100	79	27	29
80%	100	52	18	18
90%	100	38	0	2
Long Term				
Full Simulation Period[b]	97	82	67	60
Water Year Types[c]				
Wet (32%)	98	93	94	76
Above Normal (16%)	100	95	100	68
Below Normal (13%)	100	77	62	50
Dry (24%)	98	84	43	51
Critical (15%)	86	44	17	43

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	97	100	100
60%	100	75	92	55
70%	100	57	44	35
80%	100	43	21	28
90%	100	23	0	14
Long Term				
Full Simulation Period[b]	96	73	70	67
Water Year Types[c]				
Wet (32%)	98	92	91	77
Above Normal (16%)	100	94	100	90
Below Normal (13%)	100	62	73	64
Dry (24%)	98	68	46	59
Critical (15%)	83	30	30	40

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	2
50%	0	-3	0	34
60%	0	-21	13	13
70%	0	-22	17	6
80%	0	-9	3	10
90%	0	-15	0	12
Long Term				
Full Simulation Period[b]	0	-8	3	7
Water Year Types[c]				
Wet (32%)	0	-1	-3	1
Above Normal (16%)	0	-1	0	22
Below Normal (13%)	0	-15	11	13
Dry (24%)	0	-16	3	8
Critical (15%)	-3	-13	13	-2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-13-6. New Melones Large Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	98
50%	100	100	100	66
60%	100	97	79	42
70%	100	79	27	29
80%	100	52	18	18
90%	100	38	0	2
Long Term				
Full Simulation Period[b]	97	82	67	60
Water Year Types[c]				
Wet (32%)	98	93	94	76
Above Normal (16%)	100	95	100	68
Below Normal (13%)	100	77	62	50
Dry (24%)	98	84	43	51
Critical (15%)	86	44	17	43

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	72	100	100
60%	100	43	60	79
70%	100	24	29	43
80%	100	10	1	25
90%	95	0	0	7
Long Term				
Full Simulation Period[b]	95	60	64	70
Water Year Types[c]				
Wet (32%)	95	87	93	97
Above Normal (16%)	100	79	94	61
Below Normal (13%)	95	50	58	59
Dry (24%)	98	45	37	52
Critical (15%)	85	14	19	60

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	2
50%	0	-28	0	34
60%	0	-54	-19	37
70%	0	-55	2	14
80%	0	-42	-17	7
90%	-5	-38	0	5
Long Term				
Full Simulation Period[b]	-2	-22	-3	10
Water Year Types[c]				
Wet (32%)	-3	-6	-1	21
Above Normal (16%)	0	-16	-6	-7
Below Normal (13%)	-5	-27	-4	9
Dry (24%)	0	-39	-6	2
Critical (15%)	-1	-30	2	17

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

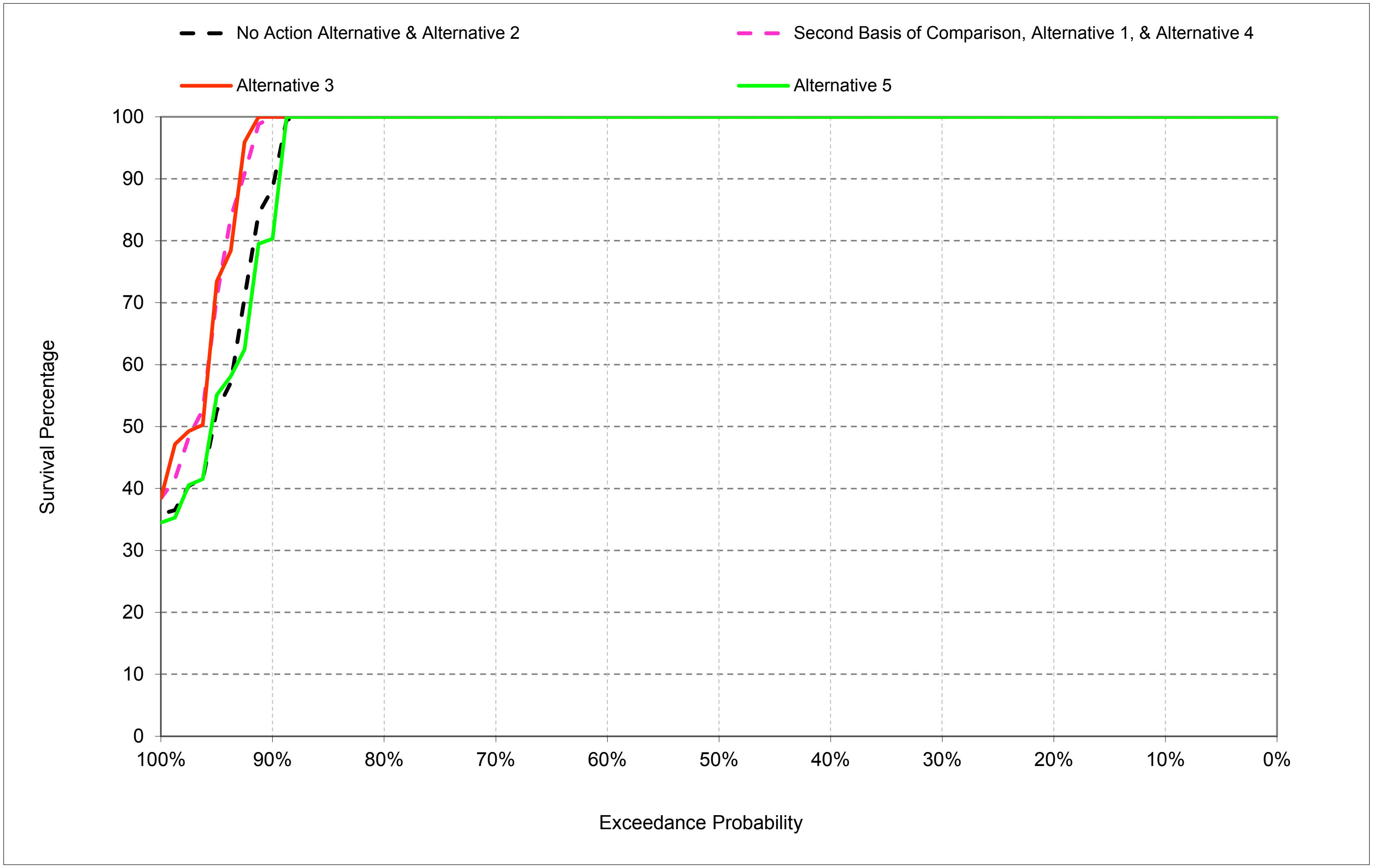
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

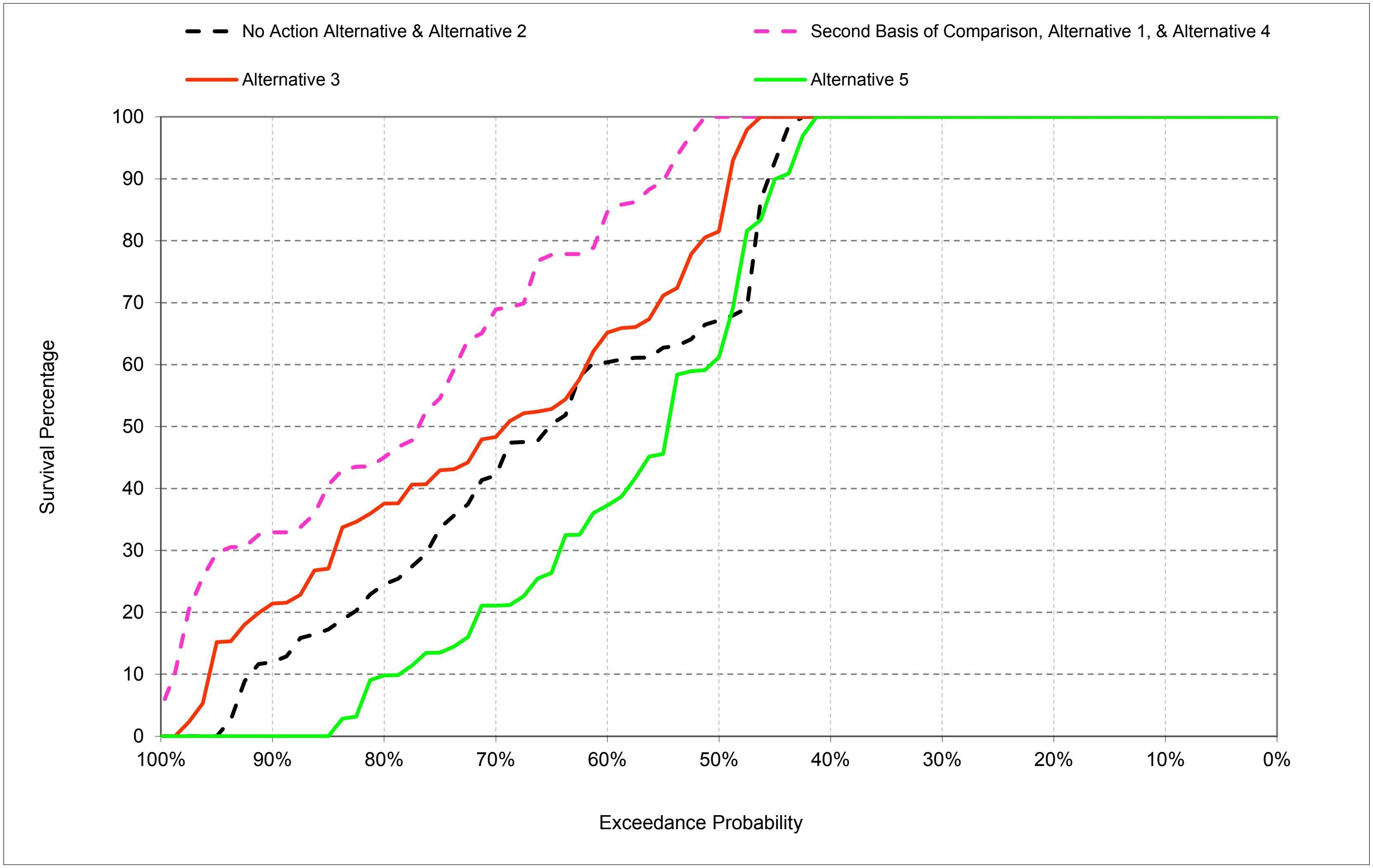
B.14. New Melones Small Mouth Bass Survival Percentage

Figure B-14-1. New Melones Small Mouth Bass Nest Survival Percentage, March



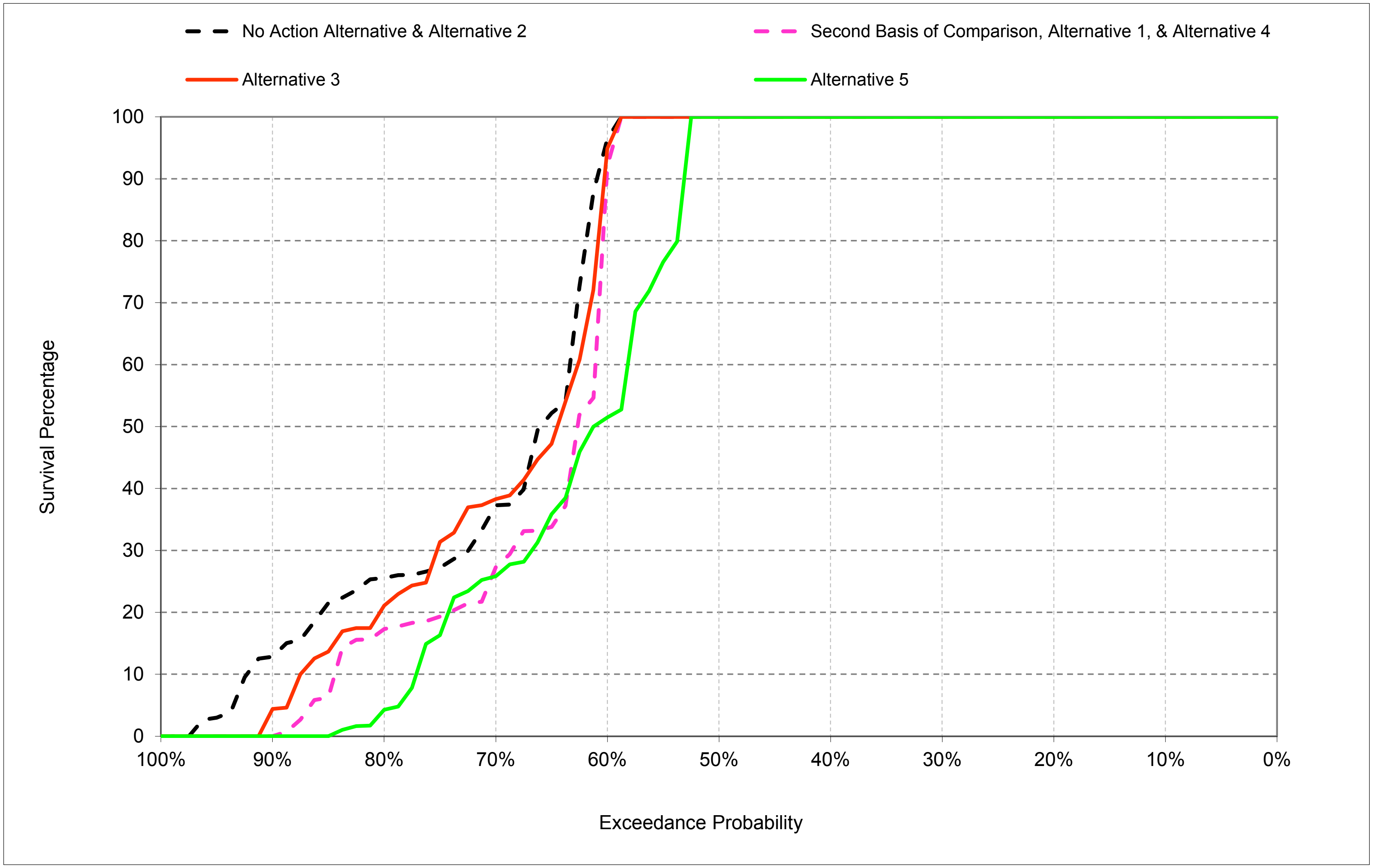
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-2. New Melones Small Mouth Bass Nest Survival Percentage, April



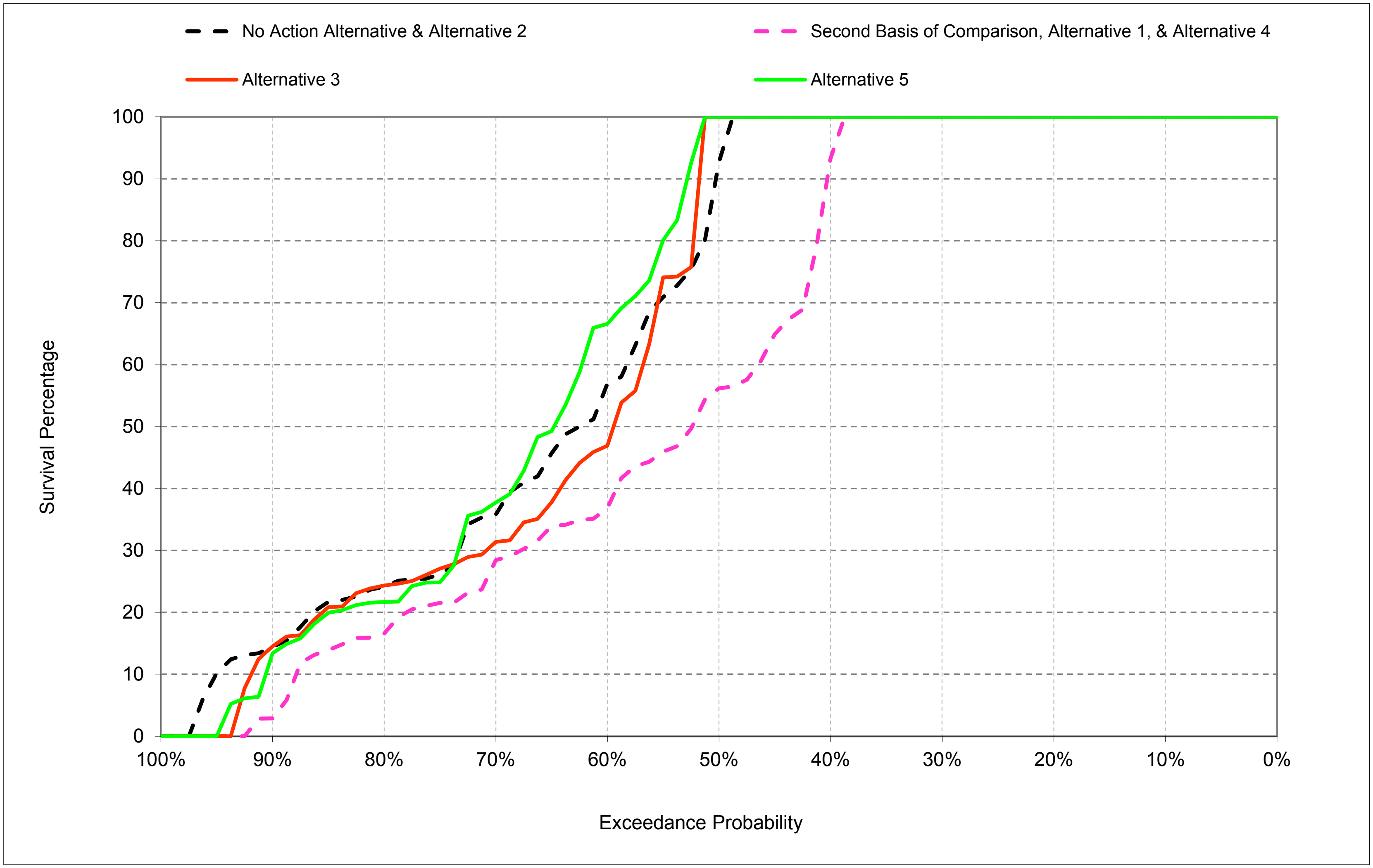
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-3. New Melones Small Mouth Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-14-4. New Melones Small Mouth Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-1. New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	67	100	86
60%	100	60	91	53
70%	100	42	34	35
80%	100	23	25	24
90%	85	12	13	14
Long Term				
Full Simulation Period[b]	94	65	70	66
Water Year Types[c]				
Wet (32%)	93	81	97	93
Above Normal (16%)	100	86	99	68
Below Normal (13%)	94	55	63	59
Dry (24%)	98	59	48	50
Critical (15%)	82	26	23	40

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	88
50%	100	100	100	55
60%	100	81	70	36
70%	100	66	23	25
80%	100	44	16	16
90%	99	33	0	3
Long Term				
Full Simulation Period[b]	96	77	66	57
Water Year Types[c]				
Wet (32%)	98	90	94	73
Above Normal (16%)	100	94	99	64
Below Normal (13%)	100	72	59	49
Dry (24%)	97	77	42	47
Critical (15%)	82	39	16	40

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	-12
50%	0	33	0	-31
60%	0	21	-22	-18
70%	0	25	-11	-10
80%	0	21	-9	-8
90%	14	21	-13	-11
Long Term				
Full Simulation Period[b]	2	13	-4	-9
Water Year Types[c]				
Wet (32%)	4	9	-4	-20
Above Normal (16%)	0	8	0	-4
Below Normal (13%)	6	17	-3	-10
Dry (24%)	-1	18	-6	-3
Critical (15%)	0	13	-7	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-2. New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	67	100	86
60%	100	60	91	53
70%	100	42	34	35
80%	100	23	25	24
90%	85	12	13	14
Long Term				
Full Simulation Period[b]	94	65	70	66
Water Year Types[c]				
Wet (32%)	93	81	97	93
Above Normal (16%)	100	86	99	68
Below Normal (13%)	94	55	63	59
Dry (24%)	98	59	48	50
Critical (15%)	82	26	23	40

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	81	100	100
60%	100	63	81	46
70%	100	48	38	30
80%	100	36	18	24
90%	100	20	0	13
Long Term				
Full Simulation Period[b]	96	70	69	65
Water Year Types[c]				
Wet (32%)	98	89	90	77
Above Normal (16%)	100	93	100	88
Below Normal (13%)	100	57	69	61
Dry (24%)	97	62	44	54
Critical (15%)	79	27	27	37

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	14	0	14
60%	0	3	-10	-7
70%	0	6	3	-6
80%	0	13	-7	0
90%	15	8	-12	-1
Long Term				
Full Simulation Period[b]	2	5	-1	-1
Water Year Types[c]				
Wet (32%)	4	8	-7	-16
Above Normal (16%)	0	7	1	20
Below Normal (13%)	6	2	7	2
Dry (24%)	0	3	-4	4
Critical (15%)	-3	1	4	-3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-3. New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	67	100	86
60%	100	60	91	53
70%	100	42	34	35
80%	100	23	25	24
90%	85	12	13	14
Long Term				
Full Simulation Period[b]	94	65	70	66
Water Year Types[c]				
Wet (32%)	93	81	97	93
Above Normal (16%)	100	86	99	68
Below Normal (13%)	94	55	63	59
Dry (24%)	98	59	48	50
Critical (15%)	82	26	23	40

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	60	100	100
60%	100	37	51	66
70%	100	21	25	37
80%	100	9	2	22
90%	80	0	0	7
Long Term				
Full Simulation Period[b]	94	57	62	67
Water Year Types[c]				
Wet (32%)	95	84	90	94
Above Normal (16%)	100	76	93	58
Below Normal (13%)	94	47	56	57
Dry (24%)	97	43	36	49
Critical (15%)	81	13	19	58

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	-7	0	14
60%	0	-24	-41	13
70%	0	-20	-9	1
80%	0	-14	-23	-2
90%	-5	-12	-13	-6
Long Term				
Full Simulation Period[b]	0	-7	-8	1
Water Year Types[c]				
Wet (32%)	1	3	-7	1
Above Normal (16%)	0	-10	-7	-10
Below Normal (13%)	0	-8	-6	-2
Dry (24%)	-1	-16	-12	-1
Critical (15%)	-1	-13	-4	18

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-4. New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	88
50%	100	100	100	55
60%	100	81	70	36
70%	100	66	23	25
80%	100	44	16	16
90%	99	33	0	3
Long Term				
Full Simulation Period[b]	96	77	66	57
Water Year Types[c]				
Wet (32%)	98	90	94	73
Above Normal (16%)	100	94	99	64
Below Normal (13%)	100	72	59	49
Dry (24%)	97	77	42	47
Critical (15%)	82	39	16	40

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	67	100	86
60%	100	60	91	53
70%	100	42	34	35
80%	100	23	25	24
90%	85	12	13	14
Long Term				
Full Simulation Period[b]	94	65	70	66
Water Year Types[c]				
Wet (32%)	93	81	97	93
Above Normal (16%)	100	86	99	68
Below Normal (13%)	94	55	63	59
Dry (24%)	98	59	48	50
Critical (15%)	82	26	23	40

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	12
50%	0	-33	0	31
60%	0	-21	22	18
70%	0	-25	11	10
80%	0	-21	9	8
90%	-14	-21	13	11
Long Term				
Full Simulation Period[b]	-2	-13	4	9
Water Year Types[c]				
Wet (32%)	-4	-9	4	20
Above Normal (16%)	0	-8	0	4
Below Normal (13%)	-6	-17	3	10
Dry (24%)	1	-18	6	3
Critical (15%)	0	-13	7	0

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.
b Based on the 82-year simulation period.
c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-5. New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	88
50%	100	100	100	55
60%	100	81	70	36
70%	100	66	23	25
80%	100	44	16	16
90%	99	33	0	3
Long Term				
Full Simulation Period[b]	96	77	66	57
Water Year Types[c]				
Wet (32%)	98	90	94	73
Above Normal (16%)	100	94	99	64
Below Normal (13%)	100	72	59	49
Dry (24%)	97	77	42	47
Critical (15%)	82	39	16	40

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	81	100	100
60%	100	63	81	46
70%	100	48	38	30
80%	100	36	18	24
90%	100	20	0	13
Long Term				
Full Simulation Period[b]	96	70	69	65
Water Year Types[c]				
Wet (32%)	98	89	90	77
Above Normal (16%)	100	93	100	88
Below Normal (13%)	100	57	69	61
Dry (24%)	97	62	44	54
Critical (15%)	79	27	27	37

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	12
50%	0	-19	0	45
60%	0	-18	12	10
70%	0	-18	14	5
80%	0	-8	2	8
90%	1	-12	0	10
Long Term				
Full Simulation Period[b]	0	-8	3	8
Water Year Types[c]				
Wet (32%)	0	-1	-3	4
Above Normal (16%)	0	-1	1	24
Below Normal (13%)	0	-16	10	13
Dry (24%)	0	-15	2	7
Critical (15%)	-3	-12	11	-3

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-14-6. New Melones Small Mouth Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	88
50%	100	100	100	55
60%	100	81	70	36
70%	100	66	23	25
80%	100	44	16	16
90%	99	33	0	3
Long Term				
Full Simulation Period[b]	96	77	66	57
Water Year Types[c]				
Wet (32%)	98	90	94	73
Above Normal (16%)	100	94	99	64
Below Normal (13%)	100	72	59	49
Dry (24%)	97	77	42	47
Critical (15%)	82	39	16	40

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	60	100	100
60%	100	37	51	66
70%	100	21	25	37
80%	100	9	2	22
90%	80	0	0	7
Long Term				
Full Simulation Period[b]	94	57	62	67
Water Year Types[c]				
Wet (32%)	95	84	90	94
Above Normal (16%)	100	76	93	58
Below Normal (13%)	94	47	56	57
Dry (24%)	97	43	36	49
Critical (15%)	81	13	19	58

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	12
50%	0	-40	0	45
60%	0	-45	-19	30
70%	0	-45	2	12
80%	0	-35	-14	6
90%	-19	-33	0	4
Long Term				
Full Simulation Period[b]	-2	-20	-4	10
Water Year Types[c]				
Wet (32%)	-3	-6	-3	21
Above Normal (16%)	0	-18	-7	-6
Below Normal (13%)	-6	-26	-3	9
Dry (24%)	0	-34	-6	2
Critical (15%)	-1	-26	3	18

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

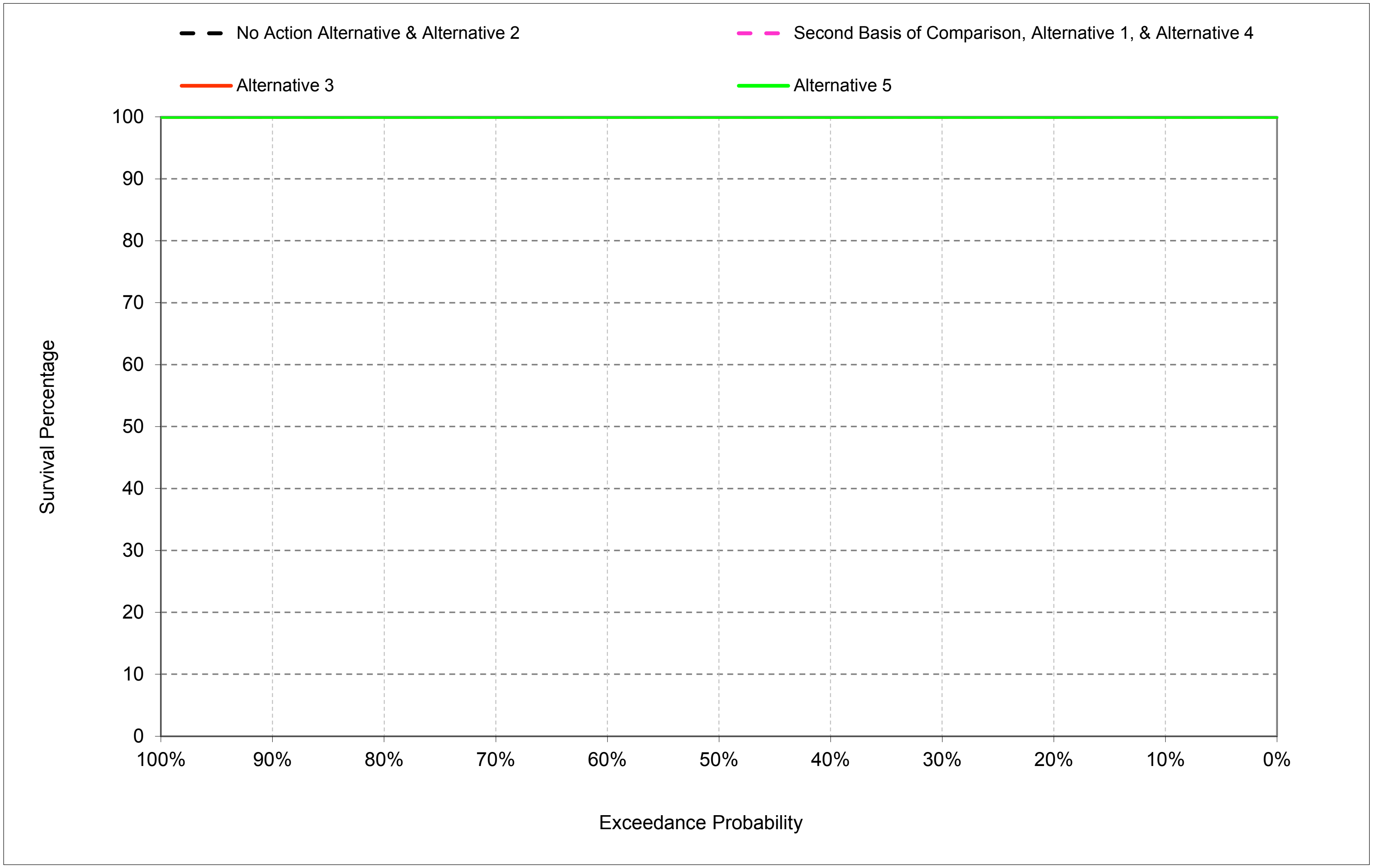
b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

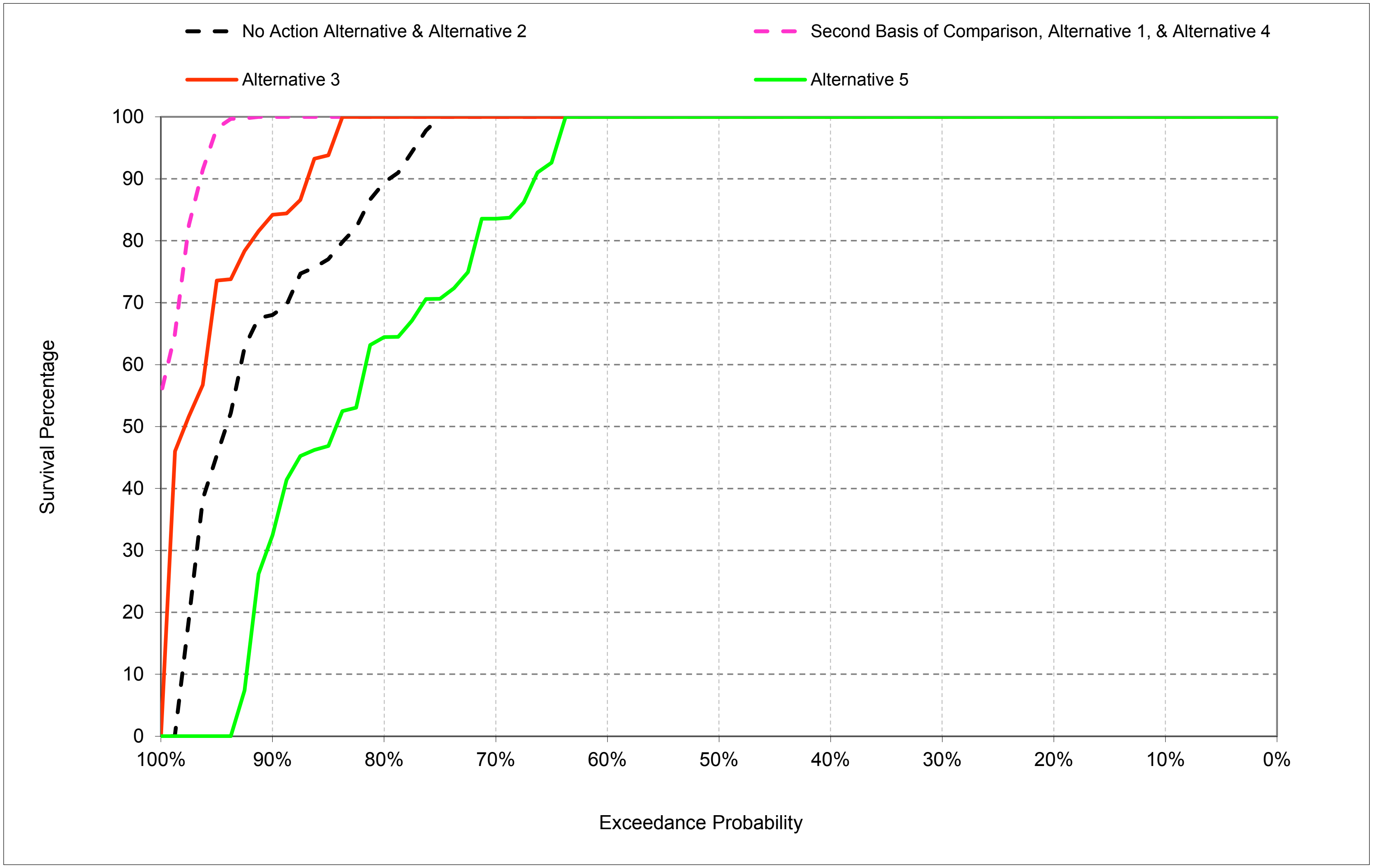
B.15. New Melones Spotted Bass Survival Percentage

Figure B-15-1. New Melones Spotted Bass Nest Survival Percentage, March



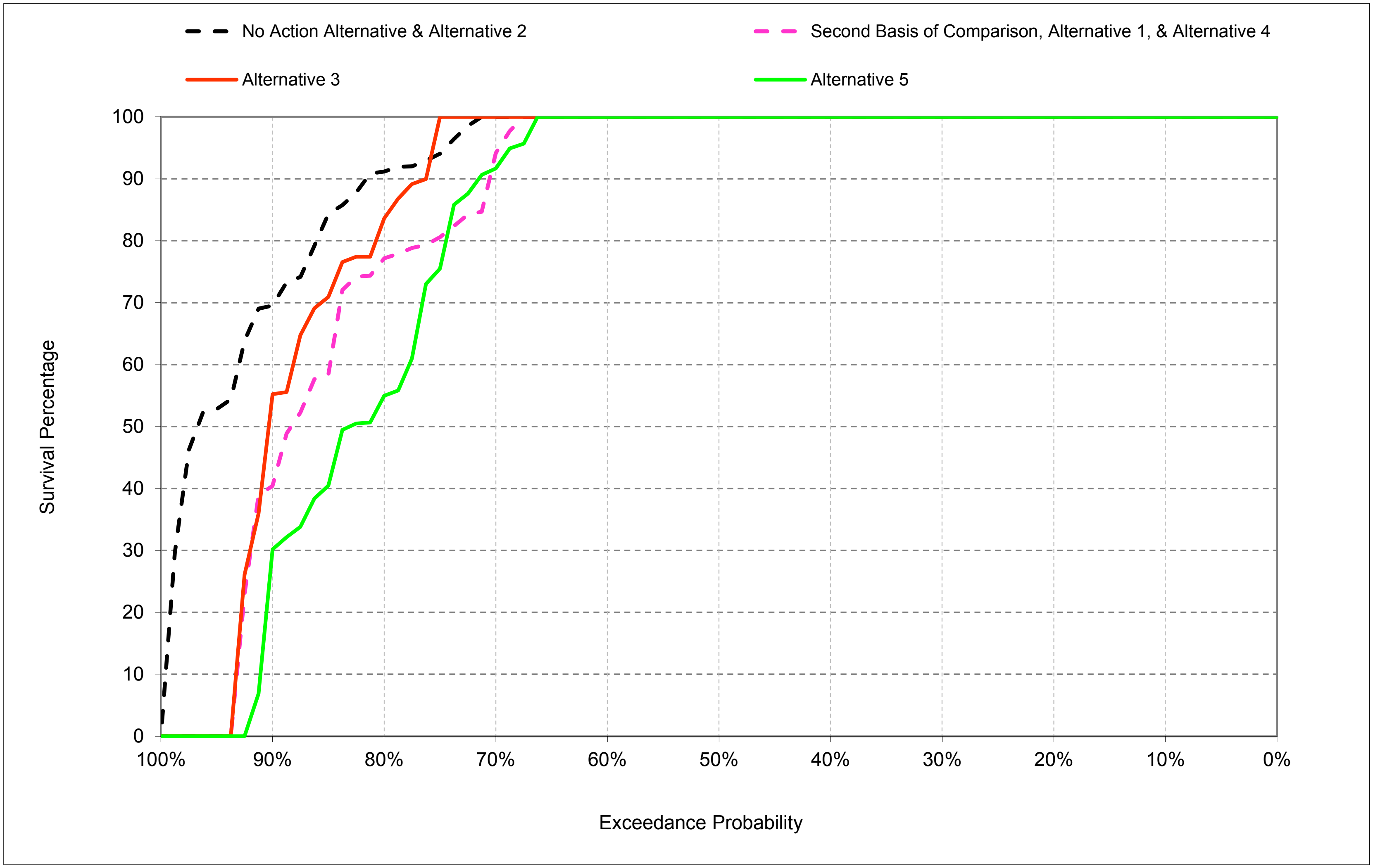
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-2. New Melones Spotted Bass Nest Survival Percentage, April



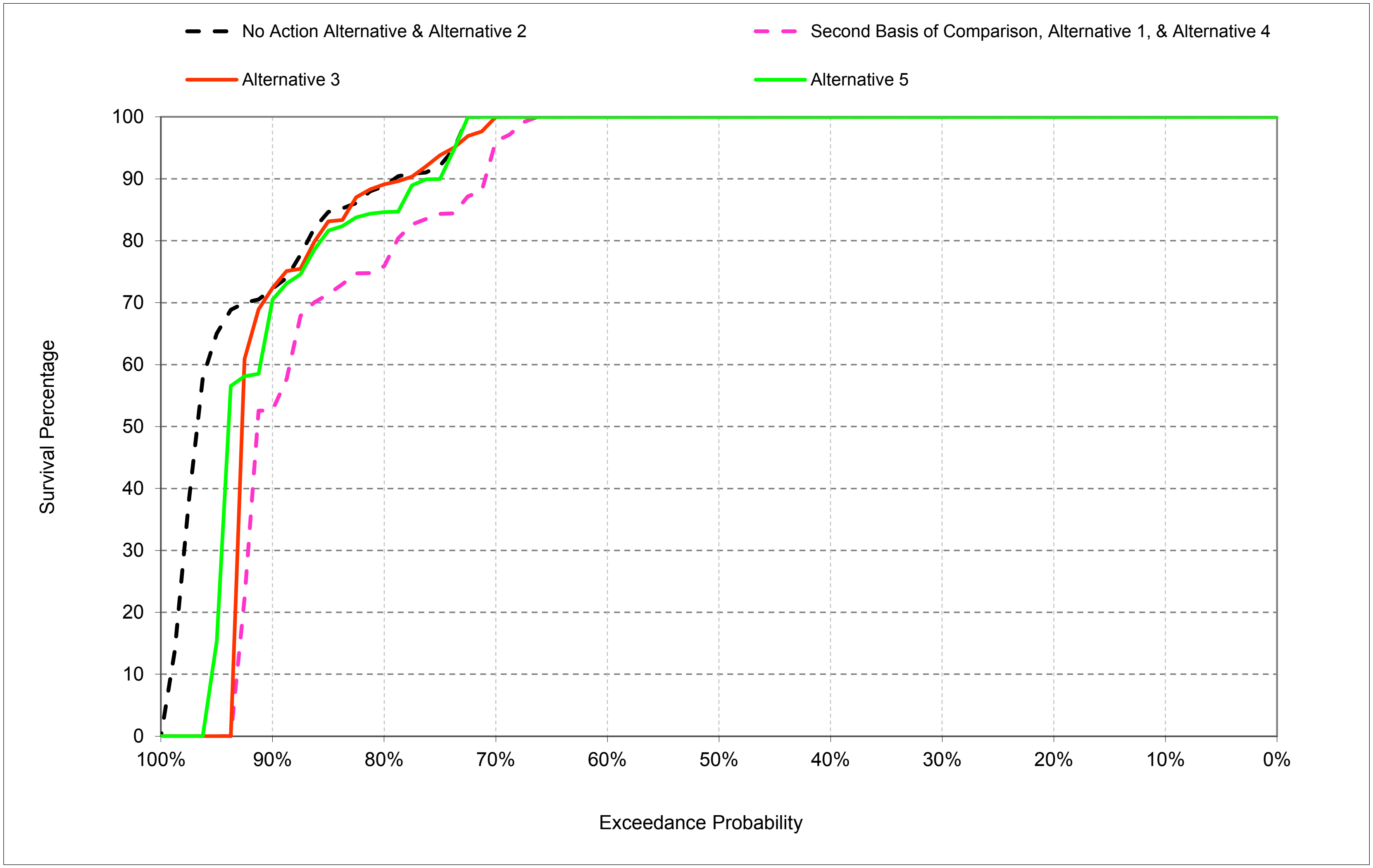
Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-3. New Melones Spotted Bass Nest Survival Percentage, May



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Figure B-15-4. New Melones Spotted Bass Nest Survival Percentage, June



Notes: 1) Exceedance probability is defined as the probability a given value will be exceeded in any one year. 2) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 3) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 4) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-1. New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	87	91	88
90%	100	68	69	71
Long Term				
Full Simulation Period[b]	99	90	91	91
Water Year Types[c]				
Wet (32%)	96	88	100	96
Above Normal (16%)	100	98	100	99
Below Normal (13%)	100	90	90	94
Dry (24%)	100	97	92	89
Critical (15%)	100	73	62	72

Alternative 1

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	88	90
80%	100	100	75	75
90%	100	100	39	53
Long Term				
Full Simulation Period[b]	100	98	84	85
Water Year Types[c]				
Wet (32%)	100	100	96	92
Above Normal (16%)	100	100	100	96
Below Normal (13%)	100	100	88	76
Dry (24%)	100	100	79	78
Critical (15%)	100	87	45	78

Alternative 1 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	-12	-10
80%	0	13	-16	-13
90%	0	32	-30	-18
Long Term				
Full Simulation Period[b]	1	8	-7	-6
Water Year Types[c]				
Wet (32%)	4	12	-4	-4
Above Normal (16%)	0	2	0	-3
Below Normal (13%)	0	10	-2	-18
Dry (24%)	0	3	-13	-12
Critical (15%)	0	15	-17	6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Second Basis of Comparison and Alternative 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-2. New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	87	91	88
90%	100	68	69	71
Long Term				
Full Simulation Period[b]	99	90	91	91
Water Year Types[c]				
Wet (32%)	96	88	100	96
Above Normal (16%)	100	98	100	99
Below Normal (13%)	100	90	90	94
Dry (24%)	100	97	92	89
Critical (15%)	100	73	62	72

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	98
80%	100	100	79	88
90%	100	82	38	69
Long Term				
Full Simulation Period[b]	99	94	86	88
Water Year Types[c]				
Wet (32%)	100	100	92	77
Above Normal (16%)	100	100	100	99
Below Normal (13%)	100	90	95	97
Dry (24%)	100	93	73	93
Critical (15%)	92	79	71	83

Alternative 3 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	0	-2
80%	0	13	-12	0
90%	0	14	-31	-1
Long Term				
Full Simulation Period[b]	0	4	-5	-3
Water Year Types[c]				
Wet (32%)	4	12	-8	-19
Above Normal (16%)	0	2	0	0
Below Normal (13%)	0	0	4	3
Dry (24%)	0	-4	-18	4
Critical (15%)	-8	6	9	11

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-3. New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	87	91	88
90%	100	68	69	71
Long Term				
Full Simulation Period[b]	99	90	91	91
Water Year Types[c]				
Wet (32%)	96	88	100	96
Above Normal (16%)	100	98	100	99
Below Normal (13%)	100	90	90	94
Dry (24%)	100	97	92	89
Critical (15%)	100	73	62	72

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	84	91	100
80%	100	63	52	84
90%	100	27	9	60
Long Term				
Full Simulation Period[b]	100	81	80	88
Water Year Types[c]				
Wet (32%)	99	99	100	100
Above Normal (16%)	100	90	100	76
Below Normal (13%)	100	78	74	92
Dry (24%)	100	78	71	85
Critical (15%)	100	38	38	80

Alternative 5 minus No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	-16	-9	0
80%	0	-24	-39	-4
90%	0	-41	-60	-11
Long Term				
Full Simulation Period[b]	1	-9	-11	-3
Water Year Types[c]				
Wet (32%)	3	11	0	4
Above Normal (16%)	0	-9	0	-23
Below Normal (13%)	0	-12	-17	-3
Dry (24%)	0	-19	-20	-5
Critical (15%)	0	-35	-24	8

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-4. New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	88	90
80%	100	100	75	75
90%	100	100	39	53
Long Term				
Full Simulation Period[b]	100	98	84	85
Water Year Types[c]				
Wet (32%)	100	100	96	92
Above Normal (16%)	100	100	100	96
Below Normal (13%)	100	100	88	76
Dry (24%)	100	100	79	78
Critical (15%)	100	87	45	78

No Action Alternative

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	100
80%	100	87	91	88
90%	100	68	69	71
Long Term				
Full Simulation Period[b]	99	90	91	91
Water Year Types[c]				
Wet (32%)	96	88	100	96
Above Normal (16%)	100	98	100	99
Below Normal (13%)	100	90	90	94
Dry (24%)	100	97	92	89
Critical (15%)	100	73	62	72

No Action Alternative minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	12	10
80%	0	-13	16	13
90%	0	-32	30	18
Long Term				
Full Simulation Period[b]	-1	-8	7	6
Water Year Types[c]				
Wet (32%)	-4	-12	4	4
Above Normal (16%)	0	-2	0	3
Below Normal (13%)	0	-10	2	18
Dry (24%)	0	-3	13	12
Critical (15%)	0	-15	17	-6

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-5. New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	88	90
80%	100	100	75	75
90%	100	100	39	53
Long Term				
Full Simulation Period[b]	100	98	84	85
Water Year Types[c]				
Wet (32%)	100	100	96	92
Above Normal (16%)	100	100	100	96
Below Normal (13%)	100	100	88	76
Dry (24%)	100	100	79	78
Critical (15%)	100	87	45	78

Alternative 3

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	100	98
80%	100	100	79	88
90%	100	82	38	69
Long Term				
Full Simulation Period[b]	99	94	86	88
Water Year Types[c]				
Wet (32%)	100	100	92	77
Above Normal (16%)	100	100	100	99
Below Normal (13%)	100	90	95	97
Dry (24%)	100	93	73	93
Critical (15%)	92	79	71	83

Alternative 3 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	0	12	8
80%	0	0	4	13
90%	0	-18	-1	17
Long Term				
Full Simulation Period[b]	-1	-4	2	3
Water Year Types[c]				
Wet (32%)	0	0	-4	-15
Above Normal (16%)	0	0	0	3
Below Normal (13%)	0	-10	6	21
Dry (24%)	0	-7	-5	16
Critical (15%)	-8	-8	26	4

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Table B-15-6. New Melones Spotted Bass Nest Survival Percentage, Monthly Percentage

Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	100	88	90
80%	100	100	75	75
90%	100	100	39	53
Long Term				
Full Simulation Period[b]	100	98	84	85
Water Year Types[c]				
Wet (32%)	100	100	96	92
Above Normal (16%)	100	100	100	96
Below Normal (13%)	100	100	88	76
Dry (24%)	100	100	79	78
Critical (15%)	100	87	45	78

Alternative 5

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	100	100	100	100
20%	100	100	100	100
30%	100	100	100	100
40%	100	100	100	100
50%	100	100	100	100
60%	100	100	100	100
70%	100	84	91	100
80%	100	63	52	84
90%	100	27	9	60
Long Term				
Full Simulation Period[b]	100	81	80	88
Water Year Types[c]				
Wet (32%)	99	99	100	100
Above Normal (16%)	100	90	100	76
Below Normal (13%)	100	78	74	92
Dry (24%)	100	78	71	85
Critical (15%)	100	38	38	80

Alternative 5 minus Second Basis of Comparison

Statistic	Mar	Apr	May	Jun
Probability of Exceedance[a]				
10%	0	0	0	0
20%	0	0	0	0
30%	0	0	0	0
40%	0	0	0	0
50%	0	0	0	0
60%	0	0	0	0
70%	0	-16	3	10
80%	0	-37	-23	9
90%	0	-73	-30	7
Long Term				
Full Simulation Period[b]	0	-17	-3	3
Water Year Types[c]				
Wet (32%)	-1	-1	4	8
Above Normal (16%)	0	-10	0	-20
Below Normal (13%)	0	-22	-15	15
Dry (24%)	0	-22	-7	7
Critical (15%)	0	-50	-6	2

a Exceedance probability is defined as the probability a given value will be exceeded in any one year.

b Based on the 82-year simulation period.

c As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Notes: 1) All alternatives are simulated with projected hydrology and sea level at Year 2030 conditions. 2) Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternative 1 and 4 results are not presented. Qualitative differences, if applicable, are discussed in the text. 3) Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented. Qualitative differences, if applicable, are discussed in the text.

Appendix 9G

Smelt Analysis

This appendix provides information about the methods and the assumptions used for the Remanded Biological Opinions on the Coordinated Long-Term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Environmental Impact Statement (EIS) analysis of Delta Smelt entrainment and Longfin Smelt abundance.

This appendix is organized into two main sections that are briefly described below:

- Section 9G.1: Smelt Modeling Methodology
  - This section presents the entrainment analysis for Delta Smelt adults, larvae and juveniles. The Delta Smelt entrainment analysis is based on regression equations that take into account the combined Old and Middle River (OMR) flow and X2[1] location. This section also describes longfin smelt abundance analysis, which is based on a regression equation that correlates an abundance index based on the X2 location.
- Section 9G.2: Smelt Modeling Results
  - This section presents the simulated Delta Smelt entrainment percentages and longfin smelt abundance indexes for each EIS alternative.

9G.1 Smelt Modeling Methodology and Assumptions

This section summarizes the modeling methodology used for simulating Delta Smelt entrainment, and longfin smelt abundance for the No Action Alternative, Second Basis of Comparison, and Alternatives 1 through 5. It describes the approach used in the quantitative evaluation of potential impacts on Delta Smelt entrainment.

9G.1.1 Delta Smelt Entrainment

Assumptions for adults, and for larvae and juveniles are discussed separately in the following sections.

9G.1.1.1 Methodology for Migrating and Spawning Adults (December-March)

The entrainment of migrating and spawning adult Delta Smelt is primarily affected by the combined OMR flow in December through March. Water exported at the Banks and Jones pumping plants typically flows through the Old and Middle River channels. A positive OMR flow indicates a northward flow in the natural direction, toward the San Francisco Bay, and contributing to the Delta

[1] The location of X2 is described in terms of the average distance of the two practical salinity units isohaline from the Golden Gate Bridge.

outflow. A negative OMR flow indicates a southward flow induced by pumping, and subtracts from the Delta outflow.

In order to simulate Delta Smelt entrainment as influenced by OMR flow, the U.S. Fish and Wildlife Service (2008) developed a regression model based on Kimmerer (2008). This regression model is subject to uncertainty and scientific dispute (Kimmerer 2011; Miller 2011), and is being revisited in the CSAMP process. The equation developed by the U.S. Fish and Wildlife Service (2008) uses the average December through March OMR flow (in units of cubic feet per second [cfs]) and yields the percentage of adult Delta Smelt that may become entrained in the pumps. The equation is:

*Adult entrainment loss [percentage] = 6.243 - 0.000957 * OMR Flow (average OMR from December through March)*

Kimmerer's (2008) original estimates of entrainment loss had large confidence limits, which Kimmerer (2008:24) noted could be reduced by additional sampling. Miller (2011) assessed the explicit and implicit assumptions of Kimmerer's estimation methods and found that of eight assumptions, there were three that may have biased the estimates of adult proportional entrainment upward and one that may have biased the estimates downward. Miller (2011) suggested methodological adjustments for three of the four assumptions that could have resulted in biased estimates of adult proportional entrainment. In response, a reanalysis by Kimmerer (2011) suggested the above equation should be reduced by 24 percent. In the event that a negative entrainment percentage was calculated, the result was changed to zero.

9G.1.1.2 Methodology for Larvae and Early Juveniles (March-June)

Larvae and early juvenile smelt (generally <60 mm) are most prevalent in the Delta in the spring months of March through June. The U.S. Fish and Wildlife Service (2008) developed a regression model based on Kimmerer (2008) to calculate the percentage entrainment of larval and early juvenile Delta Smelt in South Delta pumping facilities. This regression is dependent on two variables: March through June average OMR flow, and March through June average X2:

*Larvae and early juvenile entrainment loss [percentage] = [0.00933 * X2 (March through June) - 0.0000207 * OMR Flow (March through June) - 0.556] * 100*

Similar to described of the concerns associated with the original adult entrainment loss estimates, Miller (2011) suggested that of 10 assumptions made by Kimmerer (2008), eight would have resulted in upward bias and two would not have resulted in bias. However, Miller only provided a quantitative adjustment for only one of the assumptions resulting in bias. Subsequent review by Kimmerer (2011) rejected this adjustment such that the above equation for larval and early juvenile entrainment was used without adjustment. In the event that a negative entrainment percentage was calculated, the result was changed to zero. OMR and X2 values simulated in the CalSim II model for each alternative were used in estimating the entrainment loss.

9G.1.2 Delta Smelt Fall Abiotic Habitat Index

Feyrer et al. (2010) demonstrated that Delta Smelt abiotic habitat availability in the fall in the West Delta, Suisun Bay, and Suisun Marsh subregions, as well as smaller portions of the Cache Slough, South Delta, and North Delta subregions, is correlated with X2 location. Feyrer et al. (2010) used X2 as an indicator of the suitable salinity and water transparency for rearing older juvenile Delta Smelt. Feyrer et al. (2010) concluded that when X2 is located downstream (west) of the confluence of the Sacramento and San Joaquin rivers, at a distance of 70 to 80 km from the Golden Gate Bridge, there is a larger area of suitable habitat. The overlap of the low salinity zone (or X2) with the Suisun Bay/Marsh results in a two-fold increase in the habitat index (Feyrer et al 2010); however others (see Manly et al. 2015) have questioned the use of outflow and X2 location as an indicator of Delta Smelt habitat because other factors may be influencing survival.

In evaluating the fall abiotic habitat availability for Delta Smelt under the alternatives, average September through December X2 position in kilometers was used. X2 values simulated in the CalSim II model for each alternative were averaged over September through December, and compared for the expected changes.

9G.1.3 Longfin Smelt Abundance

Kimmerer et al. (2009) correlated log-transformed Longfin Smelt abundance based on the Fall Midwater Trawl (FMWT) data with the winter and spring location of X2. The correlation is based on the following regression equation:

*Longfin Smelt abundance index value = 10 ^ [-0.05 * (January through June X2 average position) + 7]*

The equation is based on the assumption that a lower X2 value indicates higher flows transporting longfin farther downstream, which would lead to greater longfin smelt survival. The index value indicates the relative abundance of Longfin Smelt and not the size of the population.

9G.2 Smelt Modeling Results

Modeling results are presented in tabular format for Delta Smelt entrainment, September through December X2, and Longfin Smelt abundance. The Delta Smelt analysis results show the percent entrainment for the long-term average and for each water year type for the No Action Alternative, Second Basis of Comparison, Alternative 3, and Alternative 5 in Tables B-1 and B-2. Each alternative is also compared to each of the bases of comparison (No Action Alternative and Second Basis of Comparison). Results are provided separately for adults and larvae/juveniles. Long-term average fall X2 (September through December) and average for each water year type, in KM, are presented in Table B-3. Differences between alternatives with a minus sign are closer to the Golden Gate Bridge. The Longfin Smelt abundance shown in Table B-4 provides the abundance index value for long-term average and for each water year type for the different alternatives.

Model results for Alternatives 1, 4, and Second Basis of Comparison are the same, therefore Alternatives 1 and 4 results are not presented separately. Model results for Alternative 2 and No Action Alternative are the same, therefore Alternative 2 results are not presented separately.

The EIS impact analysis starts with use of the monthly CalSim II model to project CVP and SWP water deliveries. Because this regional model uses monthly time steps to simulate requirements that change weekly or change through observations, it was determined that changes in the model of 5 percent or less were related to the uncertainties in the model processing. Therefore, reductions of 5 percent or less in this comparative analysis are considered to be not substantially different, or "similar."

9G.3 References

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Table B-1. Adult Delta Smelt Entrainment (Dec-Mar).

	Smelt Entrainment	Difference from No Action Alternative	Difference from Second Basis of Comparison
	Percent Entrainment	**Percent Entrainment**	**Percent Entrainment**
No Action Alternative			
Long-term Average	7.60	---	-1.41
Wet	6.94	---	-1.13
Above Normal	8.00	---	-1.77
Below Normal	8.28	---	-1.54
Dry	8.01	---	-1.65
Critical	7.30	---	-1.10
Second Basis of Comparison			
Long-term Average	9.01	1.41	
Wet	8.07	1.13	---
Above Normal	9.77	1.77	---
Below Normal	9.82	1.54	---
Dry	9.66	1.65	---
Critical	8.41	1.10	---
Alternative 3			
Long-term Average	7.85	0.25	-1.16
Wet	7.31	0.37	-0.76
Above Normal	8.41	0.41	-1.36
Below Normal	8.52	0.24	-1.30
Dry	8.09	0.08	-1.57
Critical	7.38	0.08	-1.02
Alternative 5			
Long-term Average	7.61	0.01	-1.40
Wet	6.94	0.00	-1.13
Above Normal	8.01	0.01	-1.76
Below Normal	8.30	0.02	-1.52
Dry	8.02	0.01	-1.64
Critical	7.31	0.01	-1.09

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-2. Juvenile Delta Smelt Entrainment (Mar-Jun).

	Smelt Entrainment	Difference from No Action Alternative	Difference from Second Basis of Comparison
	Percent Entrainment	Percent Entrainment	Percent Entrainment
No Action Alternative			
Long-term Average	8.59	---	-6.91
Wet	1.34	---	-5.56
Above Normal	3.64	---	-9.31
Below Normal	11.98	---	-9.38
Dry	12.99	---	-7.30
Critical	19.25	---	-4.32
Second Basis of Comparison			
Long-term Average	15.50	6.91	
Wet	6.90	5.56	---
Above Normal	12.95	9.31	---
Below Normal	21.36	9.38	---
Dry	20.29	7.30	---
Critical	23.58	4.32	---
Alternative 3			
Long-term Average	12.69	4.09	-2.82
Wet	5.64	4.30	-1.26
Above Normal	10.07	6.43	-2.88
Below Normal	16.93	4.95	-4.43
Dry	16.52	3.54	-3.76
Critical	20.50	1.25	-3.08
Alternative 5			
Long-term Average	7.72	-0.87	-7.78
Wet	1.23	-0.11	-5.67
Above Normal	3.39	-0.25	-9.56
Below Normal	11.01	-0.97	-10.35
Dry	11.27	-1.71	-9.01
Critical	17.56	-1.69	-6.01

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-3. X2 Position (Sep-Dec).

	X2 Position	Difference from No Action Alternative	Difference from Second Basis of Comparison
	km	km	km
No Action Alternative			
Long-term Average	84.0	---	-4.2
Wet	75.9	---	-9.8
Above Normal	81.2	---	-6.1
Below Normal	87.8	---	-0.6
Dry	89.1	---	-0.2
Critical	92.4	---	0.1
Second Basis of Comparison			
Long-term Average	88.1	4.2	
Wet	85.6	9.8	---
Above Normal	87.3	6.1	---
Below Normal	88.4	0.6	---
Dry	89.3	0.2	---
Critical	92.3	-0.1	---
Alternative 3			
Long-term Average	88.1	4.1	-0.1
Wet	85.5	9.7	-0.1
Above Normal	87.2	6.0	-0.1
Below Normal	88.1	0.3	-0.3
Dry	89.4	0.2	0.0
Critical	92.5	0.1	0.1
Alternative 5			
Long-term Average	83.9	0.0	-4.2
Wet	75.8	0.0	-9.8
Above Normal	81.2	0.0	-6.1
Below Normal	87.6	-0.2	-0.8
Dry	89.1	0.0	-0.2
Critical	92.3	-0.1	0.0

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.

Table B-4. Longfin Smelt Abundance Index.

	Longfin Smelt Abundance Index Value	Percent Difference from No Action Alternative	Percent Difference from Second Basis of Comparison
No Action Alternative			
Long-term Average	7951	---	9.6%
Wet	16635	---	5.1%
Above Normal	8989	---	15.8%
Below Normal	3166	---	21.6%
Dry	2702	---	26.2%
Critical	1147	---	21.0%
Second Basis of Comparison			
Long-term Average	7257	-8.7%	
Wet	15822	-4.9%	---
Above Normal	7762	-13.7%	---
Below Normal	2604	-17.8%	---
Dry	2140	-20.8%	---
Critical	947	-17.4%	---
Alternative 3			
Long-term Average	7345	-7.6%	1.2%
Wet	15638	-6.0%	-1.2%
Above Normal	7882	-12.3%	1.5%
Below Normal	2857	-9.8%	9.7%
Dry	2435	-9.9%	13.8%
Critical	1094	-4.6%	15.5%
Alternative 5			
Long-term Average	8015	0.8%	10.4%
Wet	16683	0.3%	5.4%
Above Normal	9037	0.5%	16.4%
Below Normal	3231	2.0%	24.1%
Dry	2800	3.6%	30.8%
Critical	1204	5.0%	27.1%

Notes: All results are based on the 82-year simulation period. The water year types are defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999); projected to Year 2030.